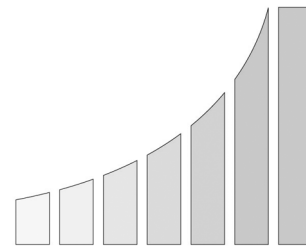


Light Up The World

*The Power to
Illuminate Lives*



LIGHT UP THE WORLD



ACGC 
Alberta Council for Global Cooperation

One Hour Class Presentation

GOAL: To inform students of LUTW initiatives, with an emphasis on the relationship between poverty, development and the environment

- High School – Grades 10-12
- 12-48 Students
- Informative and Interactive

AGENDA:

- 1. INTRO – Challenge/problem (5mins)**
 - a. Explain the problem of no electricity; ie. Kerosene lanterns etc...
- 2. LUTW History/Purpose/Projects (5mins)**
 - a. Show slideshow
- 3. Demonstrate the System (5mins)**
 - a. Have a volunteer come up and put it together
- 4. Benefits (5mins)**
 - a. Focus on the Environment
 - b. Show benefits comparison chart
- 5. Workshop (40mins)**
 - a. Split class into 4 groups – explain the objective (5mins)
 - b. Give 10-15 minutes for groups to develop answers (15mins)
 - c. Discuss results → write on board (20mins)
 - i. Relate to MDGs; how are poverty, development and the environment connected
- 6. Conclusion (as long as it takes; 1 hour is up)**
 - a. Q&A
 - b. Plug for fundraising
 - c. Write contact info on board

Desired Outcome:

- **Create awareness of LUTW**
- **Make the link between poverty, development and environment**
- **Recruit fundraisers**

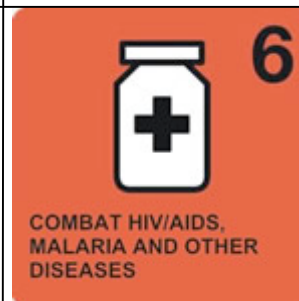
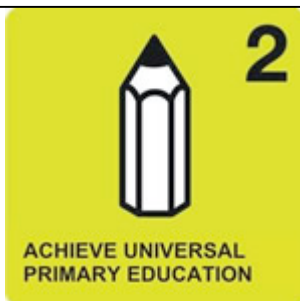
LUTW and the Millennium Development Goals (MDGs)

The Millennium Development Goals (MDGs) are eight goals (set by the United Nations) to be achieved by 2015 that respond to the world's main development challenges. The MDGs are drawn from the actions and targets contained in the Millennium Declaration that was adopted by 189 nations-and signed by 147 heads of state and governments during the UN Millennium Summit in September 2000. The MDGs are an agreed set of goals that can be achieved if all actors work together and do their part.

QUESTION: In what ways can Light Up The World (LUTW) initiatives contribute to achieving the MDGs proposed by the United Nations?

Task: Beside each icon, write down as many ideas as you can think of. Don't be shy! Write everything, it's the best way to brainstorm. (Use the reverse side if you run out of space)

Hint: Think of all the ways that we benefit from having light... For example: Could a surgeon perform an operation in the dark?



Samaritan's Purse *Turn on the Tap*



Samaritan's Purse: Household Water Program

The Household Water Program is a multi-faceted program of Samaritan's Purse that has been in operation for ten years. The objectives of this program include implementing household water treatment projects that improve the health of men, women, and children and to transform communities throughout the world. The mission of this program corresponds with the United National Millennium Development Goal number Seven:

GOAL 7: Ensure Environmental Sustainability

Target 10: Reduce by half the proportion of people without sustainable access to safe drinking water

Samaritan's Purse seeks to share God's love by assisting in the provision of clean water throughout the developing world. Samaritan's Purse does this by partnering with local groups in each country to build, install and maintain BioSand Water Filters (BSF). This affordable and sustainable technology was created by Dr. David Manz of Calgary, and is revolutionizing the lives of many in the developing world. It has proven to be very effective in improving the quality of water to make it safe for drinking, cooking, bathing and cleaning. When families and households use the BSF, practice proper maintenance and proper safe water storage, there is a myriad of health benefits for the whole family. In fact, a soon to be published study carried out by the University of North Carolina has revealed that BioSand filters reduce E.coli concentrations by 95%, and diarrheal disease by 46%. Furthermore, the rate of continued usage of the BSF is 87.5%, thereby making it highly sustainable.

The BioSand Filter also has proven widespread impacts on the community. Clean water paves the way for further development initiatives and for further community development to take place. Such holistic impacts include: improved health status, greater productivity and strengthened livelihood status, more opportunities for education, empowerment and building of community, and environmental preservation.

The Household Water Program contributes to other Millennium Development Goals including:

- *Goal 2: Ensuring that all boys and girls complete a full course of primary schooling:* Healthy children means that school attendance is strong. The education of girls is impacted because less time is spent locating and transporting water and fuel for boiling water, and it is often girls who often bear the burden of water collection.
- *Goal 3: Promote gender equality and empower women:* Gender equality is promoted as women are highly involved with filter construction, maintenance, and health and hygiene education. Women also benefit from reduced work loads and are able to dedicate time to other productive tasks.
- *Goal 4: Reduce child mortality:* Easier access to safe water increases likelihood of mothers practicing hygiene behaviors that increase infant health. There are also decreased rates of malnutrition among children due to reduction in diarrhea that prevents digestion.
- *Goal 5: Improve maternal health:* Access to sufficient safe water is essential to the health of mother and baby during pregnancy. As well, access to sufficient safe water during delivery reduces death and disease rates among both mothers and

- babies. As well, rates of maternal mortality decrease due to increased education and hygiene.
- *Goal 6: Combat HIV/AIDS, malaria and other diseases:* Clean water translates to decreased incidences of disease and significant improvements in overall health, particularly in vulnerable groups such as infants, elderly and those suffering from terminal illnesses. Water-related diseases that are specifically combated include skin diseases, eye infections, cholera, typhoid, diarrheal infections, schistosomiasis, and guinea worm infections.

Through its rapidly expanding program, Samaritan's Purse is working consistently with Millennium Goal number seven, target ten. Together with improving access to water sources and sanitation, the BioSand Filter allows for a reduction in wood consumption for fuel, and a reduction in air pollution from burning fuel. Furthermore, the Household Water Program helps build and strengthen the community, and the community is further empowered to tackle more development issues.

There is a high proportion of the global rural population that lacks access to an improved water source. According to the 2006 Millennium Development Goal report, "World targets for safe drinking water are in sight, but coverage remains spotty in rural areas."¹ Rural areas that rely on contaminated surface water are the niche of Samaritan's Purse Household Water Program. Because of the immense need for clean drinking water in rural areas of the Developing world, the Household Water Program is rapidly expanding. The aim is to provide clean water to over 500,000 people through the installation of 65,000 water filters over the next three years. SP therefore seeks to implement an effective household water treatment program to improve health and foster holistic transformation in communities throughout the developing world.

¹ <http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2006/MDGReport2006.pdf>



How big is the water problem in many African, Asian, and Latin American countries? Do people have enough water to drink? Is the water they consume safe? Can people die from drinking contaminated water? How fortunate are Canadians when it comes to having lots of safe water? Test your knowledge of water around the world by answering these questions. (Teachers: Answers are on a separate page at the bottom of this document.)

WATER FACTS and FALLACIES

1. 100 million people around the world are forced to try to survive drinking contaminated water. *TRUE or FALSE?*
2. 2.5 billion people lack access to improved sanitation, such as toilets. *TRUE or FALSE?*
3. Thirty per cent of the world's fresh water is readily accessible for direct human use. *TRUE or FALSE?*
4. The amount of fresh water that humans are taking annually from the world's lakes, rivers and aquifers has doubled in the past 200 years. *TRUE or FALSE?*
5. You can survive about a month without food, but only five to seven days without water. *TRUE or FALSE?*
6. BioSand Water Filters, installed by Samaritan's Purse in developing countries around the world, can operate on electricity, gasoline, or oil. *TRUE or FALSE?*
7. African and Asian women walk, on average, about two kilometers each trip in order to fetch water. *TRUE or FALSE?*
8. Every \$1 invested in water and sanitation creates, on average, another \$8 in costs saved and productivity gained. *TRUE or FALSE?*
9. Almost two in three people lacking access to clean water live on less than \$20 a day. *TRUE or FALSE?*
10. The average African family uses about 50 liters of water per day. The average Canadian uses about 330 – the equivalent of about three baths – at home each day. *TRUE or FALSE?*
11. One drop of oil can make up to 25 liters of water unfit for drinking. *TRUE or FALSE?*
12. Every 10 minutes, someone dies from water-related diseases. *TRUE or FALSE?*
13. The Samaritan's Purse Household Water Program has brought safe water to nearly 1 million impoverished people around the world. *TRUE or FALSE?*
14. Thirty per cent of all cases of diarrhea are caused by unsafe drinking water, inadequate sanitation, and poor hygiene. *TRUE or FALSE?*
15. At any given time, 20 per cent of the world's hospital beds are occupied by patients with water-related diseases. *TRUE or FALSE?*
16. 500,000 children die each year from diarrhea. *TRUE or FALSE?*
17. Nothing has greater impact upon national development and public health than proper hygiene practices, providing safe drinking water, and properly disposing of human waste. *TRUE or FALSE?*



18. Safe water makes all the difference when it comes to improving the health of people.
TRUE or FALSE?
19. Almost half of all people in developing countries are suffering at any given time from a health problem caused by water and sanitation problems. *TRUE or FALSE?*
20. On average, every dollar invested in water and sanitation provides an equal economic return.
TRUE or FALSE?

*Sources: Water Supply and Sanitation Collaborative Council
United Nations reports, 2006 and 2008
World Health Organization, 2008
Government and United Nations war dead statistics
Water Partners International
Government of Canada
United Nations Population Fund*



ANSWERS

1. **FALSE.** Believe it or not, 884 million people – approximately 13 per cent of the Earth's population – are forced to try to survive drinking contaminated water.
2. **TRUE.** The lack of proper sanitation pollutes much of the water consumed by the world's poorest people.
3. **FALSE.** Less than one per cent of the world's fresh water (or about 0.7 per cent of all water on earth) is readily accessible for direct human use.
4. **FALSE.** The amount of fresh water that humans take annually from the world's lakes, rivers and aquifers has doubled in the past 50 years and is expected to double again in 30 years.
5. **TRUE.** You can become dehydrated in a remarkably short time. That's why so many people carry water bottles.
6. **FALSE.** BioSand Water Filters don't need any power source to operate. That's one of the reasons they are so effective in developing countries, where fuel often costs more than families can afford.
7. **FALSE.** African and Asian women walk, on average, about six kilometers each trip in order to fetch water. Some spend an entire day just getting water for their family.
8. **TRUE.** Safe water can improve the standard of living for an entire community because less time is lost to sickness and less money is spent on medicine to stop diarrhea.
9. **FALSE.** Almost two in three people lacking access to clean water live on less than \$2 a day. So they rarely have enough money to buy safe water, even if it was readily available.
10. **TRUE.** Here's how residential indoor water use in Canada breaks down: toilet – 30 per cent; bathing and showering – 35 per cent; laundry – 20 per cent; kitchen and drinking – 10 per cent; cleaning – 5 per cent.
11. **TRUE.** We normally hear about oil spills harming ocean wildlife, but having oil in drinking water can cause long-term health problems in people.
12. **FALSE.** Every 20 seconds, someone – usually a child – dies from a water-related disease.
13. **TRUE.** Samaritan's Purse Canada and its partners have built and installed about 100,000 BioSand Water Filters. Each filter provides all the daily water needs for up to 10 people.
14. **FALSE.** 88 per cent of all cases of diarrhea are caused by unsafe drinking water, inadequate sanitation, and poor hygiene.
15. **FALSE.** At any given time, *half* of the world's hospital beds are occupied by patients with water-related diseases.
16. **FALSE.** 1.4 million children die each year from diarrhea – *more than 3,800 each day.*
17. **TRUE.** When people have safe water, proper hygiene, and improved sanitation, their income and education levels increase and governments can spend less money on hospitals and doctors.
18. **FALSE.** Human health improvements are influenced not only by using safe water, but by hygiene habits and using sanitation facilities.
19. **TRUE.** That's why the value of having safe drinking, cooking and cleaning water cannot be over-estimated.
20. **FALSE.** On average, every dollar invested in water and sanitation provides an economic return of eight dollars.



Every 20 seconds, a person in the developing world – usually a child – dies from diseases caused by polluted drinking water. But this heart-breaking issue extends even to rich countries like Canada, where water contaminated by animal waste has been a problem.

Through basic information and challenging activities, these junior high (grade 7-9) science resources are intended to teach students principles around water stewardship and water treatment, while adhering to government education guidelines. Learn about Samaritan's Purse's work helping families get safe water and involve your students in thinking about world water issues and how to solve them.

WATER FACTS

Facts about water, the world-wide water crisis, drinking water, and water-related disease.

Did you know...

- 884 million people – approximately 13 per cent of the world's population – are forced to try to survive drinking contaminated water.
- 2.5 billion people lack access to improved sanitation.
- Less than one per cent of the world's fresh water (or about 0.7 per cent of all water on earth) is readily accessible for direct human use.
- The amount of fresh water that humans are taking annually from the world's lakes, rivers and aquifers has doubled in the past 50 years and is expected to double again in 30 years.
- You can survive about a month without food, but only five to seven days without water.
- Millions of women and children spend several hours a day collecting water from distant, often polluted sources.
- African and Asian women walk, on average, about six kilometers each trip in order to fetch water.
- Every \$1 invested in water and sanitation creates on average another \$8 in costs averted and productivity gained.
- Thanks to the generosity of Canadians, Samaritan's Purse Canada has been able to install about 100,000 BioSand Water Filters around the world, bringing safe water to nearly 1 million people.
- Almost two in three people lacking access to clean water live on less than \$2 a day.
- The average African family uses about 50 liters of water per day. The average Canadian uses about 330 – the equivalent of about three baths – at home each day.
- Here's how residential indoor water use in Canada breaks down: toilet – 30 per cent; bathing and showering – 35 per cent; laundry – 20 per cent; kitchen and drinking – 10 per cent; cleaning – 5 per cent.
- A five-minute shower with a low-flow shower head uses about 60 liters of water.
- One drop of oil can make up to 25 liters of water unfit for drinking.



Facts about water-related diseases

- Every 20 seconds, someone – usually a child – dies from a water-related disease.
- For children younger than five, water-related diseases are among the leading causes of death.
- 88 per cent of all cases of diarrhea are caused by unsafe drinking water, inadequate sanitation, and poor hygiene.
- BioSand Water Filters, installed around the world by Samaritan's Purse, remove most bacteria, viruses, protozoa, and other organisms that cause diarrhea, cholera, and typhoid fever.
- At any given time, half of the world's hospital beds are occupied by patients with water-related diseases.
- 1.4 million children die annually from diarrhea – more than 3,800 each day.
- Nothing has greater overall impact upon national development and public health than providing safe drinking water and properly disposing of human waste.
- Human health improvements are influenced not only by using safe water, but also by hygiene habits and using sanitation facilities.
- Almost half of all people in developing countries are suffering at any given time from a health problem caused by water and sanitation problems.
- 98 per cent of water-related deaths occur in the developing world.

*Sources: Water Supply and Sanitation Collaborative Council
United Nations reports, 2006 and 2008
World Health Organization. 2008
Water Partners International
Government of Canada
Samaritan's Purse Canada (www.turnontheTap.ca)
United Nations Population Fund*



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SOME WATER TREATMENT OPTIONS – QUICK OVERVIEW

- 1. BioSand Water Filters** are most appropriate where people don't have access to wells, pumps, or piped water. Built with concrete, sand, gravel, and plastic piping, they are particularly good when people rely on open, unprotected water (rivers, ponds, mud puddles, etc.) and where the water is visibly polluted. In these situations, BioSand Water Filters dramatically improve water quality. The filters – built and installed in tens of thousands of homes in the developing world by Samaritan's Purse Canada – are heavy and should not be moved, so they are not good for a nomadic population.
- 2. SODIS** (Solar Disinfection, using clear plastic bottles) is best in places where the water is clear but polluted, and where there is intense sunlight, since the required UV rays will not penetrate sufficiently and kill bacteria if the water is cloudy. This treatment requires little technology, but the maximum effective bottle size is two liters, so many bottles must be constantly kept in use by each household to produce enough water for all needs.
- 3. Chlorination** can be used anywhere, but silt or mud can interfere in the process. If people use silty or muddy water, they must filter it or let the dirt settle before chlorinating it. Users must buy chlorine on an ongoing basis – resulting in an affordability issue – and the product must be reliably available.
- 4. The PUR water packet** is used in water with some silt or mud. It is a powdered mixture developed by Proctor & Gamble that is available in small packets. People stir the mixture into their water until micro-organisms and suspended matter clump together into “flocs” which can then be filtered off of the water before drinking. PUR is not always reliably available and represents an ongoing cost, so there can be affordability issues. PUR is a very good product in emergency situations, because it works quickly and in silty, muddy water. Relief organizations often supply PUR during emergencies.
- 5. Ceramic filters** are very effective in filtering out the same harmful contaminants as the BioSand Water Filter. The advantage of the ceramic filter is that it is portable, so it may be more appropriate for people who move around. The disadvantage is the pots used in filtering can break and often aren't replaced. Ceramic filters can be locally made and many people already bake ceramic pots. The filter pot requires a few minor adjustments in the production process.
- 6. Rainwater harvesting** can be implemented quickly. The basic system consists of a tank to capture rainwater falling on the roof and guttering to bring it to the tank. But it is costly to build, and not suited to being used as a stand-alone water supply solution, because the increase in tank capacity needed to bridge a long dry season can be very expensive.

Source: Samaritan's Purse Canada, www.turnonthetap.ca



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TREATMENT OPTIONS:

1. BIOSAND WATER FILTERS

The BioSand Water Filter is an award-winning adaptation of slow-sand filtration developed by Dr. David Manz, a former University of Calgary professor.

The filters are a proven, effective, and inexpensive technology. From start to finish, the filters can be constructed and ready to install in roughly 10 days. The average cost of the filters is \$100, which covers the raw materials, construction, transportation, supervision, training for recipients in filter maintenance and personal hygiene, as well as monitoring and evaluation. Each filter serves up to 10 people.

The filter removes organisms responsible for diseases spread by water, such as cholera, typhoid fever, and amoebic dysentery. The filter also strains out particles causing cloudiness and much of the organic matter responsible for taste, color and odor.

By early 2009, about 100,000 BioSand Water Filters had been installed by Samaritan's Purse and its partners, bringing safe water to an estimated 800,000 individuals worldwide, with tens of thousands of additional filters slated for construction and installation each year.

The filtration process

The filter is very durable; constructed from concrete, sand, gravel, and plastic piping. These materials can be found in almost every country, and enable beneficiaries to help construct the filters on location.

Water is poured into the top and flows through layers of sand. Water requiring filtration usually contains organic matter, sediment, and living organisms. The water first passes through the diffuser plate, which reduces the disruptive force of the water and large debris, and protects the "biological layer."

The sand functions as a barrier that traps particles and larger organisms, causing them to accumulate in the uppermost layers of the filter. Organic material and organisms caught in the sand eventually develop into a dense population referred to as the biological layer.

As the water passes through the biological layer, contaminants such as bacteria, viruses, and organic contaminants are consumed by the organisms. The filter is designed to hold water above the top of the sand to sustain the biological layer while the filter is not in use.

The fine sand acts as a sedimentation bed as the water passes through the filter, helping remove cloudiness, odor, bad taste, and harmful micro-organisms from the water. The size and shape of the sand grains are critical to the filtration process and, therefore, the effectiveness of the filter. Sand is carefully selected and prepared to achieve proper filtration. By the time the water reaches the coarse sand and gravel at the bottom, 95 to 99 per cent of microbial contaminants have been eliminated.¹

The filtered water flows out of the spout and is collected in a safe storage container to prevent post-treatment contamination. The average flow rate of the filter is 630 ml per minute, which enables 38 liters to be filtered per hour, enough to provide a family of eight with sufficient water for their daily



drinking, cooking, cleaning, and hygiene needs. An individual requires between 7.5 and 15 liters of water per day for basic needs², which is well within the capabilities of the BioSand Water Filter.

Maintenance

Operating and maintaining the filter is simple. There are no moving parts that can break or any special skills to operate it. Over time, continued use of the filter causes the pore opening between grains in the sand layer to become clogged with debris. As a result, the water flow rate through the filter decreases. Filter recipients are trained in the simple maintenance procedures to restore the flow rate.

To clean the filter, the surface of the sand must be agitated, thereby suspending captured material in the standing water on top of the sand. This dirty water can then be removed using a small container. The process can be repeated as many times as necessary to regain the desired flow rate. After cleaning, the biological layer re-establishes itself quickly.

Benefits, drawbacks and appropriateness

The benefits of BioSand Water Filters are:

- Because the water is treated at point of use, there is less risk of contamination during transport.
- Easy to use. Pour water in the top, and it pushes out water that has passed through the sand layers. There's almost no waiting, no moving parts, no energy required, and nothing for the user to do but make sure a clean container is available for the improved water.
- There are no additional operating costs, so people are able use it every time they need water.
- After filtering, the water tastes better, has less sedimentation, and cools as it passes through the sand. No other technology has these three quality improvements, and this is often stated by users as one of the finest attributes of the filter.
- Reduces incidents of diarrhea by up to 40 per cent.

The drawbacks of BioSand Water Filters are:

- Very heavy, so putting them in place to operate takes a lot of effort.
- Not designed to be moved, so inappropriate for nomadic people.
- Do not filter out every pathogen.

Suggested Activities:

- Watch the filter construction video, plus videos about the Turn on the Tap program and the difference it's making, at www.turnonthetap.ca.
- Design a comparison study to discover the similarities between how wetlands and BioSand Water Filters improve polluted water.
- Are there places and situations where BioSand filters could be used in Canada? Have students research the question and present their answers and explanations.

Source: Samaritan's Purse Canada, www.turnonthetap.ca

Dan Kaskubar, an intern with a Ugandan non-governmental organization

¹Elliot et al., 2006. Intermittently operated slow sand filtration for point of use water treatment. Safe Drinking Water Symposium, University of North Carolina.

²The Sphere Project, 2004, Humanitarian Charter and Minimum Standards in Disaster Response.



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TREATMENT OPTIONS:

2. SODIS

Solar disinfection (SODIS) was developed in the 1980s to inexpensively disinfect water used for oral rehydration solutions used to treat diarrhea. In 1991, the Swiss Federal Institute for Environmental Science and Technology began to investigate and implement SODIS as a household water treatment option, to prevent diarrhea in developing countries.

SODIS users fill one-liter or two-liter plastic soda bottles with low-turbidity water, shake them to oxygenate, and place the bottles on a roof or rack for six hours (if sunny) or two days (if cloudy). The combined effects of UV-induced DNA alteration, thermal inactivation, and photo-oxidative destruction wipe out disease-causing organisms.

In the laboratory, SODIS has been proven to inactivate the viruses, bacteria, and protozoa that cause diarrheal diseases. Field data have also shown reductions of bacteria in developing countries' waters treated with SODIS. In four trials, SODIS reduced the amount of diarrhea in users between 9 and 86 per cent.

Where is it used?

More than 2 million people in 28 developing countries use SODIS for daily drinking water treatment.

Important partners are community-based organizations such as women's clubs, youth associations or self-help groups, well-established non-governmental organizations working on community development projects, institutional organizations such as health posts, hospitals, and teacher training centers, and government programs.

Benefits, Drawbacks, and Appropriateness

The benefits of SODIS are:

- Proven reduction of viruses, bacteria, and protozoa in water.
- Proven reduction of diarrheal disease incidence in users.
- Easy to use, so little resistance by potential beneficiaries.
- No cost to the user after obtaining the plastic bottles.
- Minimal change in water taste.
- Recontamination can easily be kept to a minimum by serving the water directly from the small, narrow-necked bottles (with caps) in which it is treated.



The drawbacks of SODIS are:

- The need for pre-treatment (filtration or flocculation) of silty, muddy waters.
- User acceptability concerns because of the limited amount of water that can be treated at once and the length of time required to treat it.
- The large supply of intact, clean, clear, colorless plastic bottles required.
- It does not change the chemical quality of water, so it's ineffective against chemical pollutants.
- Extensive education is needed to help beneficiaries understand how and why the system works.
- Bottles can crack and even if they don't, they will still need replacing eventually.

Suggested activities:

- Have students go through the SODIS treatment method – getting bottles, filling them with clear water (river water is a good example), leaving them outside for the prescribed amount of time, then bringing the results to class.

*Sources: Centers for Disease Control
Swiss Federal Institute of Aquatic Science and Technology*



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TREATMENT OPTIONS:

3. CHLORINATION

Chlorine acts as a powerful disinfectant when used on its own, as sodium hypochlorite (bleach) or as calcium hypochlorite. Added to water in tiny quantities – six drops in bleach form is enough to disinfect four liters of water – chlorine quickly kills bacteria and other microbes. In fact, putting chlorine in drinking water (in Canada, this began in the early 1900s) is a major reason for the end of typhoid fever epidemics, which killed thousands of people in the 1800s.

In addition to purifying water, chlorine helps remove unpleasant tastes and odors, controls the growth of slime and algae in pipes and storage tanks, and helps remove unwanted nitrogen compounds from water. In Europe, more than 90 per cent of drinking water is chlorinated. In white powder form (called calcium hypochlorite). It's also used as a disinfectant in swimming pools.

In the developing world, people who collect drinking water from lakes, rivers or wells are able to disinfect it using a water storage container and bottle of chlorine liquid or a packet of solid treatment chemicals. The chemicals are measured into the water container. Point-of-use treatment is certainly not as convenient as centralized treatment, but evidence shows this simple, low-cost method reduces the risk of disease and death.

Cancer controversy

There is controversy about chlorine's long-term health effects. During the 1970s, it was discovered chlorine and materials found naturally in water, such as decomposing plant and animal materials, can combine to create compounds which can increase the risk of rectal, colon and bladder cancer.

However, there are considerable differences of opinion on how great that risk is. And the consensus for developing nations, with their huge numbers of deaths and illnesses from water-related diseases, is chlorine remains among the best treatment options available.

Nonetheless, alternatives should be constantly considered to reduce the potential for adverse health effects related to chlorine.



Benefits, Drawbacks and Appropriateness

The benefits of chlorine are:

- Easy to use.
- Widely available.
- Works quickly, so appropriate in emergency relief situations.
- Effective in many ways.

The drawbacks of chlorine are:

- Potential cancer-causing agent.
- Muddy, silty water can reduce chlorine's effectiveness.
- Affordability, due to its ongoing cost.
- Must have reliable supply, so not always appropriate in remote areas.

Suggested activities

- Organize a TV-style debate over this question: when do potential long-term health problems overrule short-term benefits when it comes to safe water?
- Ask students to research the water they drink from their tap and any bottled water they or their families might buy. Is it chlorinated? If yes, what does the bottler and/or their municipality say about the safety of this water?

Sources: Samaritan's Purse Canada, www.turnonthetap.ca
The Toronto Star, Nov. 21, 1999
Euro Chlor, representing the chlor-alkali industry in Europe
Triangular Wave Technologies



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TREATMENT OPTIONS:

4. PUR

PUR water packets, used in emergency water response by Samaritan's Purse and some other international relief organizations, contain a powdered mixture that removes two major sources of contamination: micro-organisms and suspended matter (mud and organic matter).

PUR renders previously contaminated water safe to drink, with a quality that meets World Health Organization Guidelines for Drinking Water, and Sphere Guidelines for Water Quality in an emergency.

Each PUR Household Kit provides a multiple-barrier approach to purifying water: filtration, followed by disinfection.

PUR comes in a four-gram sachet, and each sachet treats 10 liters of water. It contains a chlorine disinfectant for killing bacteria and an iron salt coagulant for removing sediment, protozoa (parasites), and viruses. It can even remove poisonous arsenic.

PUR was developed by Procter and Gamble in collaboration with the U.S. Centers for Disease Control and Prevention, and requires only a few simple tools (which Samaritan's Purse provides in its emergency water filtration kits).

The PUR Household Kit includes enough PUR sachets to sustain a five-person household for two weeks, as well as a bucket and lid, filter cloth, stirring utensil, scissors, hard soap, and user instruction card diagram in the local language.

PUR was awarded the 2005 Stockholm Industry Water Award, recognizing innovative development of water and wastewater process technologies.

PUR costs about 10 cents to treat the drinking water for a family of five for one day, and reduces the incidence of diarrhea in young children by about 50 per cent.

Benefits, drawbacks and appropriateness

The benefits of PUR are:

- Effective against bacteria, viruses, parasites, and arsenic.
- Clears up muddy, silty water.
- Simple to use; requires no technology or power source.
- Appropriate in emergency situations.



The drawbacks of PUR:

- Ongoing cost, so potential affordability issue.
- Potential availability issues.
- Not appropriate for long-term safe water needs.

Suggested activities:

- Have students research which approach is better in emergency situations, from effectiveness, availability and cost perspectives: PUR or chlorine?
- Are there places and situations where PUR could have been used in Canada? Have students research the question and present their answers and explanations.

Sources: Samaritan's Purse Canada, www.samaritanspurse.ca
Proctor & Gamble



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TREATMENT OPTIONS:

5. CERAMIC FILTERS

Locally manufactured ceramic filters have traditionally been used throughout the world to treat water. Currently, the most widely implemented household water treatment system involving a ceramic filter is the Potters for Peace design, which is flowerpot-shaped, holds between eight and 10 liters of water, and sits inside a plastic or ceramic receptacle.

These filters are produced locally at ceramics facilities, then impregnated with colloidal silver to ensure complete removal of bacteria in treated water and prevent bacteria growth inside the filter. Numerous other locally made and commercial ceramic filters are widely available in developed and developing countries.

Most ceramic filter systems are based on a filter/receptacle model. To use the ceramic filters, families fill the top receptacle or the ceramic filter itself with water, which flows through the ceramic filter or filters into a storage receptacle. The treated water flows out through a spigot embedded within the water storage receptacle.

The effectiveness of ceramic filters in removing bacteria, viruses, and protozoa depends on the quality of the filter. Most are effective at removing most larger protozoal and bacterial organisms, but not at removing smaller viral organisms.

Locally manufactured ceramic filters cost from \$7.50 to \$30 each. Distribution, education, and community motivation can add significantly to program costs.

Ceramic filtration programs have been implemented in more than 20 countries and Potters for Peace has helped establish filter-making factories in 17 countries.

Benefits, Drawbacks, and Appropriateness

The benefits of ceramic filtration are:

- Proven reduction of bacteria and protozoa in water.
- Simple to use, so widely accepted.
- Proven reduction of diarrheal disease incidence in users.
- Long life if the filter remains unbroken.
- A relatively low one-time cost.



The drawbacks of ceramic filtration are:

- Lower effectiveness against viruses.
- Lack of post-filtering protection that can lead to recontamination if water is stored unsafely.
- Potential lack of quality control in locally produced filters.
- Filter breakage over time, and need for spare parts.
- The need to regularly clean the filter and receptacle, especially when using muddy/silty water.
- A low flow rate of 1 to 3 liters per hour.

Ceramic filtration is most appropriate in areas where there is capacity for quality ceramic filter production, a distribution network for replacing broken parts, and user training on how to maintain and use the filter.

Suggested activities

- Have groups of students research, assemble and operate ceramic filters, then demonstrate them in class.

Source: U.S. Centers for Disease Control



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TREATMENT OPTIONS:

6. RAINWATER HARVESTING

Domestic rainwater harvesting is an innovative solution to meeting water needs, and can be implemented quickly and modularly. Renewed interest in the technology is reflected in the water policies of many developing countries, where it is often cited as a source of household water.

The basic system consists of a tank to capture rainwater falling on the roof of a house, and gutters to bring it to the tank. More sophisticated systems also have some filtering.

Rainwater systems are decentralized and independent of topography and geology.

There are three main components:

1. Roofs and other surfaces to collect water. These are best made from plastic sheets, tiles, thatched palm leaves, or galvanized, corrugated steel.
2. Gutters and drainpipe, usually made from bamboo or untreated timber, to transport water to a storage reservoir.
3. A reservoir – usually a wood, plastic, fiberglass, concrete, or cement-block tank – to store the water until it is used, plus a tap, pump, or rope and bucket.

The efficiency of rainwater collection depends on materials used, construction, maintenance and total rainfall. If cement tiles are used as roofing, about 75 per cent of rainwater is collected. Clay tiles collect usually less than 50 per cent. Plastic and metal sheets have an efficiency of 80-90 per cent.

Rainwater sources and types of use

Rainwater systems can be further classified by their reliability, with four types of user regimes:

- Occasional – water is stored for only a few days in a small container. Suitable when there is a uniform rainfall pattern with very few days without rain and there is a reliable alternative water source nearby.
- Intermittent – in situations with one long rainy season, when all water demands are met by rainwater; however, during the dry season, water is collected from non-rainwater sources.
- Partial – rainwater is used throughout the year but the 'harvest' is not sufficient for all demands. For instance, rainwater is used for drinking and cooking, while water from other sources is used for bathing and laundry.
- Full – for the whole year, all water for all domestic purposes is rainwater. In such cases, there is usually no alternative source and water must be well managed, with enough storage to bridge dry periods.



Is it ready to use?

Rainwater is clean and safe to drink. However, as the rain falls on roofs and runs through gutters into the reservoir, it has many opportunities to become contaminated. Leaves, debris, dust and even mice or monkey feces can end up in the water reservoir as the water runs over the roof and through the gutters.

To combat this, many catchment systems have some sort of filter or “first flush” system to try to eliminate this contamination. However, because of the possibility of this contamination, it is recommended water in the reservoir be treated with chlorine before using.

Benefits, drawbacks, and appropriateness

The benefits of rainwater harvesting are:

- The water source is close to people, so it is convenient and requires a minimum of energy to collect.
- Less back problems and growth reduction, particularly among children and women, since the water doesn't have to be humanly transported over long distances.
- More time for education and personal development, particularly for young girls as time saved from carrying water is now used for school attendance or homework.
- Users own, maintain and control their system.

The drawbacks of rainwater harvesting are:

- Very limited use in dry climates.
- Initial installation is costly and laborious.
- It is not a good stand-alone water supply solution in any but the most water-stressed situations, since the increase in tank capacity necessary to bridge a long dry season can be very expensive.
- The collected water may still require chlorination.

Suggested activities:

- Research where rainwater harvesting has been extensively used. Was the driving impetus in each case the same? What conditions, environmental and/or economic, made it possible?
- Have students research what kind of rainwater harvesting system they would install on their family dwelling. Is it worth the cost?
- Have students research what kind of rainwater harvesting system is becoming popular in Canada (rain barrels attached to evestrough downspouts, for watering gardens and lawns). Have students find out where these barrels can be bought and how to install them.

Sources: Samaritan's Purse Canada, www.turnonthetap.ca
<http://www.ircsa.org/factsheets/lowincome.htm>
<http://www.lboro.ac.uk/well/resources/fact-sheets/fact-sheets-htm/drh.htm>



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WATER TREATMENT CASE STUDIES

Source: Samaritan's Purse Canada, www.turnonthetap.ca

Teachers: Resources are available on this website to help you and your students explore solutions to the challenges posed in these six case studies. The resources include a quick overview of the most common water treatment systems used around the world, plus detailed explorations of each system. We recommend reviewing these resources before discussing these case studies.

The case studies can be used in at least three ways:

1. To introduce students – by providing one story per group, or one or two stories for the entire class – to the concept of water stewardship and water treatment methods. You can lead the discussion using points in each case study's 'Things to think about' section.
2. As a method of testing students after they have learned about the basic water treatment methods available.
3. As a starting point for students writing their own case studies and testing each other on potential solutions.

Of course, you are welcome to find other uses that fit with your curriculum needs.



CASE STUDY #1 – SOLVING THE WATERHOLE WOES

Fatu glances at the setting sun in the African nation of Liberia as she and her friends carefully climb down a steep bank into the waterhole to fetch the last bucket of water for the day.

The laughter of the girls had echoed in the tree canopy as they walked the jungle path from the village to their traditional water hole. Shooing the dog away from the water's edge and ignoring the woman who is bathing at the far end, Fatu enters the coffee-with-milk colored water until it is deep enough for her to dip in her blue plastic bucket without touching the bottom.

When the girls have filled their buckets, they carefully place them on their heads and climb the slippery bank to begin the 30-minute return trip to their village. Fatu has many brothers and sisters, and it's her and her two younger sisters' responsibility to bring enough water for their household of 10 people. The family lives in a traditional mud hut with a thatch roof.

On the way, Fatu and her friends pass by the small, local school and look with wonder and a tinge of envy at the children lucky enough to attend. She imagines what they could be learning, and part of her wishes someone else could fetch the family's water and prepare the food so she could go to school. As she looks longingly, she stops to let the yapping dog following her take a drink of water from her bucket, then she continues home.

Things to think about:

- This open, unprotected water source is probably highly contaminated from animals, people bathing, washing laundry and dishes, and women entering the water to fill their buckets.
- The coffee-with-milk colored water suggests there may be high silt content.
- Unless the silt is settled (by letting the bucket sit until the silt sinks to the bottom) the high silt content makes it difficult to properly chlorinate the water.
- High silt also easily clogs a ceramic pot filter. And the flow rate would likely not produce enough safe water for the entire family.
- High silt content also makes it unsuitable for SODIS because sunlight will not be able to penetrate the water sufficiently.
- Using a BioSand filter is a good option in this situation. The family might want to strain the silty water through a cloth first, since this will reduce the amount of maintenance needed on the filter.
- Although there are usually high rainfalls in a jungle, the family's thatch roof would not be appropriate for a rainwater harvesting system. Beyond not having an appropriate roof, the system would require a large amount of start-up funds, which Fatu and her family do not appear to have.

Potential questions: What is the best way for Fatu's family to solve its water problem? Are there any solutions beyond treating their water? Which water treatment solution is best? Why? If that method isn't available, is there a second-best treatment solution? Why don't the other treatment methods work as well? Would there be a situation or place in Canada where the best treatment solution could be used?



CASE STUDY #2 – THE MODERN, BIG-CITY WATER CHALLENGE

José lives with his wife, Maria, in a small apartment in a densely populated neighborhood in Manila, the capital of the Philippines. He works as a teacher and she is a social worker. Together, they live in a small one-bedroom apartment on the third floor of a stone building.

The breeze through the open windows brings some relief from the stifling heat, but also adds the fumes and noise of the busy traffic on the street below. They get their water from a tap in their tiny kitchen. The stone counter beside the sink also holds the electric hotplate they use for cooking.

Like many cities in developing countries, Manila finds it difficult to keep up with the rapidly increasing demand for water. So many people are moving to the city that the water supply system is overloaded, and regular maintenance is a challenge.

Sometimes, water lines break or develop leaks that suck dirt into the distribution system. While their water appears clear from the tap, it seems that every few months, José, Maria or their neighbors experience medium to severe stomach pain.

Things to think about:

- While water from the tap may *look* clean, the quality is unreliable and may at times be contaminated.
- This seems to be a modern, educated, middle class couple with jobs and some purchasing power.
- If they live together in this tiny apartment, José's and Maria's drinking water needs may be relatively modest. There is no need to treat large quantities of water for them.
- Chlorinating their water is an option. Their level of education would probably enable them to learn to dose their water appropriately. However, they may find the taste unacceptable.
- They may choose to boil their drinking water and then store it. However, boiled water tends to taste "flat." Aerating it, perhaps by stirring and letting the boiled water stand overnight, can improve the taste. They could also improve the taste by putting a drop of lemon or lime in each glass of water.
- If they could afford it, José and Maria might buy a ceramic pot filter. There are periodic replacement costs, but they would have many years of safe water.

Potential questions: What is the best way for José and his wife to solve their water problem? Are there any solutions beyond treating their water? Which water treatment solution is best? Why? If that method isn't available, is there a second-best treatment solution? Why don't the other treatment methods work as well? Would there be a situation or place in Canada where the best treatment solution could be used?



CASE STUDY #3 – A BIG OR SMALL SOLUTION TO A CAMPUS WATER PROBLEM?

Charlie is a third-year student at a government-run training institute in the African nation of Zambia, where he stays with his classmates in a dormitory on the premises. The institute runs on a shoestring budget and isn't able to buy expensive water treatment systems.

The water on campus is pumped from a nearby river through a barrel filled with sand. That barrel removes silt and debris from the water before storing it in a small water tower. While the barrel removes silt and debris, the sand is too coarse and the flow rate is too fast to remove bacteria.

Water from the tank flows by gravity to a communal point from which staff and students get their drinking water. The distribution site is a cement wall with taps. Below the taps, a series of sinks enable students to wash and do laundry.

For bathing, they carry buckets of water from the distribution site into a bath shelter for a splash bath from the pail. Each dorm contains a covered red plastic bucket that is filled at the distribution site to provide drinking water.

An aid group came to Charlie's village when he was younger, and he remembers a lesson he learned from them about the importance of pre-treating the water by letting the silt settle. He and his friends at the dorm continue this practice, but they notice that even when silt settles to the bottom of the bucket, someone in the dorm is usually sick with some sort of stomach pain.

Things to think about:

- The rapid sand filter removes silt and debris as well as parasites from the water. However, it does not remove bacteria or viruses.
- If the water is fairly clear with little organic matter, chlorination could be the best solution, especially if it is done at the central distribution point.
- The institute probably has staff capable of dosing the chlorine correctly.
- The red drinking water buckets could be at risk of re-contamination, especially if students use cups to dip water from the bucket. Dosing the chlorine directly to the red buckets may reduce this risk.
- There may be a challenge in achieving community acceptance of the value of safe water. While some are taking an extra step toward drinkable water, others may not be, and that's negating the efforts of Charlie and his friends.

Potential questions: What is the best way for the training institute to solve its water problem? Is there a way for Charlie and his dorm to solve the problem on their own? Are there any solutions beyond treating their water? Which water treatment solution is best? Why? If that method isn't available, is there a second-best treatment solution? Why don't the other treatment methods work as well? Would there be a situation or place in Canada where the best treatment solution could be used?



CASE STUDY #4 – MAKING WATER SAFE AFTER A DISASTER

Chiraz has just returned to his home in Bangladesh. Several weeks earlier, he and his family had to flee the area when a big storm inundated large parts of the region where he had lived. The sight of the bloated, decaying bodies of drowned people and cattle remains burned in his memory.

As Chiraz looks over his tiny flooded yard, he notices the chicken coop has disappeared and the fish pond he shares with his neighbors is filled with mud and water. The garden is washed away and the rice in his paddy behind the house is covered under silt.

The yard and his house are coated with clay deposited by the storm tide. The wells in town are contaminated and it will take weeks before they are cleaned and repaired. Some drinking water is trucked in by relief organizations, but delivery is unreliable, with sometimes days or a week between deliveries. At such times, the only water available is silt-laden from the river.

Things to think about:

- Water in the river may contain high loads of bacteria and/or viruses, especially if it has contained decaying bodies of people and animals. This is an extremely dangerous situation that can give rise to very serious disease outbreaks and more deaths.
- Disasters like this often attract non-government organizations and other external assistance. These organizations may have access to special flocculation-chlorination packets (PUR etc.) that can be distributed so people can treat their water.
- Hopefully, this is a temporary situation until the well is cleaned, repaired, and “shock” chlorinated.
- Chiraz will likely have incurred losses to his livelihood and may not have much money to buy treatment materials. He will probably need to rely on assistance from others.
- Chiraz will need to learn how to add flocculent, stir, wait for the chemicals to work, and then decant or strain the water through a cloth to make it ready for drinking.
- Until flocculation-chlorination packets become available, Chiraz can dip water from the river, let it settle or filter it through a cloth and boil the clear water. The storm will likely have felled trees and created debris that could be used as fire wood.
- The water may be too silty to use with a ceramic filter, which would plug quickly. However, if Chiraz can let the silt settle, he could use the decanted (clear) water in a ceramic filter.
- A BioSand Filter may not be the best solution because it would take time to make and install, and for the biological layer to become active.

Potential questions: What is the best way for Chiraz to solve his family's water problem? Are there any solutions beyond treating their water? Which water treatment solution is best? Why? If that method isn't available, is there a second-best treatment solution? Why don't the other treatment methods work as well? Would there be a situation or place in Canada where the best treatment solution could be used?



CASE STUDY #5 – SEARCHING FOR A MOVEABLE SOLUTION

Mariama lives with her family in a large leather tent that is typical for the nomadic tribe to which they belong in the African nation of Niger. Mariama's people herd cattle throughout the arid pastoral belt separating the Sahel from the Sahara desert.

Outside, her brother, Abdul, is watering the goats and sheep, using a bucket made from a truck tire inner tube to haul water from the same open well the family uses for its drinking water.

Abdul is short for his age and tends to drag the bucket through the manure-strewn mud as he empties it in the water troughs. By dipping the dirty bucket back into the water, he introduces bacteria from the manure into the well.

The well is deep and the water is cool and known for its good taste. Mariama's family is using this well while remaining in this area, until the area has been grazed down to the point where the family will move on to other pastures.

Things to think about:

- Even though this region experiences intense sunlight, the SODIS treatment might be too cumbersome to maintain. It would require many bottles to provide the family with drinking water and those bottles would need to be carefully maintained so they remain in direct sunlight. There is also the danger of the bottles being damaged by the cattle.
- Certainly, the nomadic lifestyle isn't suitable for heavy BioSand Water Filters because they would be too difficult to carry from place to place. Once installed, the filters should not be moved to avoid damaging the biological layer.
- In this desert environment, wood is difficult to find. This makes it expensive to boil enough water.
- Mariama's people enjoy daily tea ceremonies. The tea is made on tiny charcoal burners, just large enough to hold the tiny teapot. This provides them with some of their daily liquid intake. Moreover, Mariama's people seem to drink remarkably little, considering the harsh, hot environment in which they live.
- A ceramic filter (possibly from locally made clay pots) is one option for Mariama's family. These filters are portable, although they are also prone to breakage. However, local pottery is readily available in the region.
- The region where Mariama's people live is too remote to be able to rely on a regular supply of chlorine or flocculation-disinfection packets or other commercially available materials. They may travel for months before entering a town.

Potential questions: What is the best way for Mariama and her family to solve their water problem? Is there a viable method for the entire tribe to which they belong? Are there any solutions beyond treating their water? Which water treatment method is best? Why? If that method isn't available, is there a second-best treatment solution? Why don't the other treatment methods work as well? Would there be a situation or place in Canada where the best treatment solution could be used?



CASE STUDY #6 – WELL, IT SURE LOOKS CLEAN AND CLEAR . . .

With a sigh, Bill lowers his backpack to the ground, awed by the scenery around him. The sight of the little mountain lake in front of him made the arduous climb well worth it. It was day two of the week-long trek for Bill and his friend through the back trails of the Rockies.

With dismay, Bill picked up bits of paper a previous camper must have left at the campground at the water's edge. The lake was close enough to civilization to attract hikers throughout the year. As Bill and his friend moved deeper into the back country, there would be fewer signs of humanity.

The beaver dam at the far end of the lake reminded Bill that even in these pristine settings, the supposedly clear and clean wilderness water is polluted. He had heard many a tale of hikers returning with the dreaded "Beaver Fever" – a reference to a type of diarrhea (*Giardia Lamblia*) that can be transmitted by beavers. The name is not fair to the beaver because the spread of *Giardia Lamblia* into the back country is in large part due to poor sanitary practices of *human* visitors.

At the end of the day's hike, Bill and his friend surveyed everything they brought to treat water from the lake: plastic bottles, a cooking pot, a travel-sized ceramic filter and some chlorine tablets.

Maybe they didn't need *everything* they brought, but in Bill's mind, better safe than sorry. After all, his favorite band was performing in town the day they were supposed to return from the hike and Bill wasn't going to get sick and miss the concert.

Things to think about:

- Even though the setting may look pristine, its accessibility to human visitors increases the risk of pollution from people (or their pets) relieving themselves in unsanitary ways (e.g. no latrines, open defecation rather than burying their feces.)
- The water may look clean and clear, but it can still contain bacteria and parasites.
- *Giardia Lamblia* is transmitted by digesting the tiny cysts that may lead to diarrhea.
- Camping and hiking equipment stores sell micro filters that can filter out the cysts and make water safe.
- SODIS bottles could work if there was sufficient sunlight, but would be difficult to use while hiking. As well, SODIS, would not kill the *Giardia* cysts.
- Adding chlorine to the water could kill bacteria, but is unlikely to kill the *Giardia* cysts. The levels required to kill *Giardia* would make the water undrinkable.
- A BioSand Filter might fit in a large, full-length backpack, but imagine taking one on a hike?!
- The best option in this case (if you don't have a micro filter) might be to boil the water for five minutes to kill the cysts. Note, however, that you'd need to boil for longer because at high altitudes, water boils at a lower temperature.

Potential questions: What is the best way for Bill to solve his water problem? Are there any solutions beyond treating the water? Which water treatment solution is best? Why? If that method isn't available, is there a second-best treatment solution? Why don't the other treatment methods work as well?



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WATER STEWARDSHIP CLASS PROJECTS

Source: Samaritan's Purse Canada, www.turnonthetap.ca

These project suggestions can be done at any time during your class's exploration of water stewardship issues. However, we recommend students first review the detailed explorations of water treatment methods used around the world, found on this website.

Many of these suggestions can help students apply what they've learned so they can explore solutions to water stewardship in Canada, too.

- How is water made safe for drinking in Canada's cities and towns? Are there any connections between the systems used in this country and the water treatment methods used in developing nations?
- Explore the Walkerton (Ontario) water tragedy of 2000. What happened? Why? What came out of the government investigations of the tragedy? Have there been other incidents of deadly contaminated water in Canada?
- Investigate the water situation in countries where Samaritan's Purse Canada and its partners are working to improve the water supply. In Africa: Uganda, Liberia, Kenya, Ethiopia, Niger and Burkina Faso. In Central America: El Salvador and Honduras. In South America: Brazil and Bolivia. In Asia: Cambodia and Indonesia. What are the problems associated with water in these countries? How did they come about? How serious is the situation? Is it improving or becoming worse?
- Review Canada's bottled water industry. How big is it? Where does the water come from and how is it processed? Is the bottled water sold at grocery stores safer than water from your tap?
- Plan fun activities, such as a tournament, bake sale, or winter carnival, for the entire student population to raise funds to help families in the developing world get safe water through BioSand Water Filters built and installed by Samaritan's Purse Canada. Every \$100 raised pays for the construction and installation of a filter, plus health and hygiene training and follow-up maintenance. Each filter provides the long-term water needs for up to 10 people.

CHF

Deforestation – What Do Trees Mean to Me?



ACGC 
Alberta Council for Global Cooperation

Lesson 4: Deforestation — What Do Trees Mean to Me?

Description

1x60 minute lesson

Deforestation is a complex issue. In this activity, students gain an understanding of the many causes of deforestation and how humans impact their natural environment. Students then apply this knowledge to analyze how deforestation can impact the lives of people in rural areas of developing countries. In Part 1 of the activity, students take part in an introductory discussion about deforestation to brainstorm what they know. In Part 2, students work cooperatively in small groups using role playing scenarios to develop an understanding of how deforestation affects the lives of different people in rural communities in developing countries.

Subjects

Science (Grades 7 & 10), Geography (Grades 7, 8 & 9)

See the Curriculum Connections section for detailed links to courses and expectations.

Materials Needed

Chart Paper
Markers

Student Handout ([BLM 4.1](#)) Role Playing Scenario – Male Farmer in Vietnam
Student Handout ([BLM 4.2](#)) Role Playing Scenario – Female Farmer in Vietnam
Student Handout ([BLM 4.3](#)) Role Playing Scenario – Boy in Vietnam
Student Handout ([BLM 4.4](#)) Role Playing Scenario – Girl in Vietnam

Note: French BLMs/Student Sheets can be found [here](#).

Lesson Preparation

1. Photocopy the role playing scenarios (BLM 4.1-4.4). The number of photocopies will depend on how many students are in each group after you divide the class into 4 groups. Each group will be assigned one role and each person in the group will receive a photocopy of their specific role playing scenario.
2. Review the Teacher Background Notes for this lesson for suggested answers for the guiding questions in Part 1 as well as a sample mind map. Also see the [Country Information](#) section and [Resources](#) section under [Extra Resources](#). The resources found under the Country Information section can be used to give students further information about Vietnam (such as maps, statistics, flags, histories, etc.).

CHF is a non-profit organization dedicated to enabling poor rural communities in developing countries to attain sustainable livelihoods, since 1961.
www.chf-partners.ca

Teaching/Learning

Part 1: Understanding Physical Components of Deforestation

1. Create a Mind Map about deforestation with the class while having a class brainstorming session about deforestation. A Mind Map is a method of brainstorming resulting in a visual representation of ideas and their connections, radiating from a single focus.
2. Guiding questions:
 - What is deforestation?
 - What are the causes of deforestation?
 - What are some of the environmental effects of deforestation?

See Teacher Background Notes of this lesson for additional information about these questions and a sample Mind Map.

Part 2: Understanding Social Implications of Deforestation

1. Divide the class into four groups. Each group will be assigned one role (male farmer, female farmer, girl child or boy child). Give each group their scenario cards (BLM 4.1-4.4).
2. Students read their scenario cards and discuss as a group how deforestation will affect their lives as that person (e.g., girl child). Each student should have a pen and paper to take notes. Students should be encouraged to be creative and think beyond the specific details on the scenario card.
3. One student from each group meets to form a new “family” group (consisting of one male farmer, one female farmer, one girl child and one boy child). Each member shares with the group how he/she will be affected by deforestation.
4. Debrief as a large group with the following questions:
 - How did the effects of deforestation compare for the different family members?
 - What could be done to reduce deforestation?
 - How would those actions impact the life of the person you were assigned (e.g., male farmer, girl child)?

Extension Activities

- Conduct further research into deforestation in Northern Vietnam.
- Research examples of deforestation and/or reforestation in other countries, such as Kenya or Brazil and see how they compare to what has already been learned in this lesson on Northern Vietnam.
- Students find examples of organizations involved in reforestation projects in Canada

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Teacher Background Notes

What is Deforestation?

Deforestation is the destruction and removal of a forest and its undergrowth by natural or human means. Deforestation is a complex issue that does not have one simple cause or one simple solution. (See <http://www.fao.org/forestry/en/> for further information on forestry from the Food and Agriculture Organization of the United Nations).

Who's to Blame?

The causes of deforestation are many and include (all of these are common uses of trees):

- Cutting trees to use the wood for building homes, fences or other buildings
- Cutting trees to burn the wood for cooking purposes
- Clearing land of trees to plant crops such as rice or corn
- Clearing land of trees to build roads or new buildings
- Clearing land of trees for mining exploration

Other factors that can affect deforestation are:

- Population growth
- Migration of people to a new area because of war or conflict

What are the Effects of Deforestation?

Loss of Food Products from Trees

Some trees produce nuts or fruits which are an important source of food for local people in developing countries. Once that tree is removed, all future food harvest from that tree is lost. This can negatively impact human health and nutrition, since nuts provide a valuable source of protein and fruits provide many vitamins and minerals.

Loss of Other Plants and Animals

Many plant and animal species require forest conditions for survival. Without the protected cover of the forest trees other plants may die. These plants may have been used for food or medicine and are then lost as a resource. Animals that lived in the forest must move to other forested regions to survive. If these animals were used for food by hunters, this food source will be gone. If there is no forest habitat remaining nearby, the animals will simply die. The loss of large tracts of forest can lead to extinction of animal species.

Erosion and Flooding

Soil erosion can become a serious problem once deforestation has occurred. When the trees are removed, there are no longer leaves or branches of trees to intercept the rain

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and break the fall of raindrops. These raindrops hit the ground with such force that they can cause the top layer of the soil to compact (become hardened). This creates a hard surface on the top of the soil, similar to pavement. When rain water hits this ground, it does not soak readily into the soil but quickly runs off like a little stream on the surface of the soil. When trees and roots are removed, it also takes away small pores and channels in the soil that the water would use to help infiltrate into the ground.

As a result, streams of rainwater wash away the top layer of soil, and in some cases can cause severe flooding. The top layer of soil contains the most nutrients. When the topsoil is washed away, the land is much poorer in nutrients and crop yields will be decreased. Less food produced means that people remain hungry and they must find new land to grow more food. Finding new land can often involve clearing forest to make more land available for agriculture. Deforestation can lead to more deforestation in order to meet basic needs.

Drought

As a result of the erosion and flooding, the soil and crops may experience longer periods/extensive drought conditions. As flooding and erosion increases, the amount of rain infiltrating into the soil decreases, and the soil can become very dry. This reduced moisture in the soil can significantly decrease crop yields as the crops are not able to support the drought conditions. Fewer yields mean less food for families.

Reduced Air Quality

Trees play a very important role in performing photosynthesis which releases oxygen into the air. Without trees and other plants there would be no method to recycle the carbon dioxide that humans and other animals exhale, into oxygen.

Loss of Shade

Trees are very important in providing shade. This is especially important in tropical countries where temperatures can regularly be over 30°C. In farming communities, the shade of a tree is a very welcoming place for lunch or a break to get away from the burning and dehydrating effects of the sun. Loss of shade can have negative health effects on people, contributing to heat exhaustion and other fatigue.

Loss of Wood for Human Use

Trees are harvested and the wood is used by humans in many ways. Trees provide lumber for building and firewood for cooking. As deforestation occurs, trees become scarcer and it can be difficult to collect enough wood. In some developing countries, women must walk long distances to collect wood that will be used as firewood for cooking. As deforestation occurs, women must walk longer distances to find wood. This takes a lot of time, so other responsibilities that the women have may not be fulfilled. This can have many impacts on the health and well-being of the family. For example, the vegetable garden may not be planted or watered, because there is no time to

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prepare the land or to walk and get water. This would result in less food and a less healthy diet for the family. Poorer nutrition can contribute to increased chance of illness which can have long-lasting and severe impacts on the family.

Deforestation Around the World

Deforestation occurs in many countries, but has a significant impact on poor people in developing countries that depend on trees and agricultural land to directly meet their basic needs each day.

Deforestation rates of selected countries are listed in the chart below. When a negative value appears in the *Annual rate of change* column this indicates a decrease in forest cover.

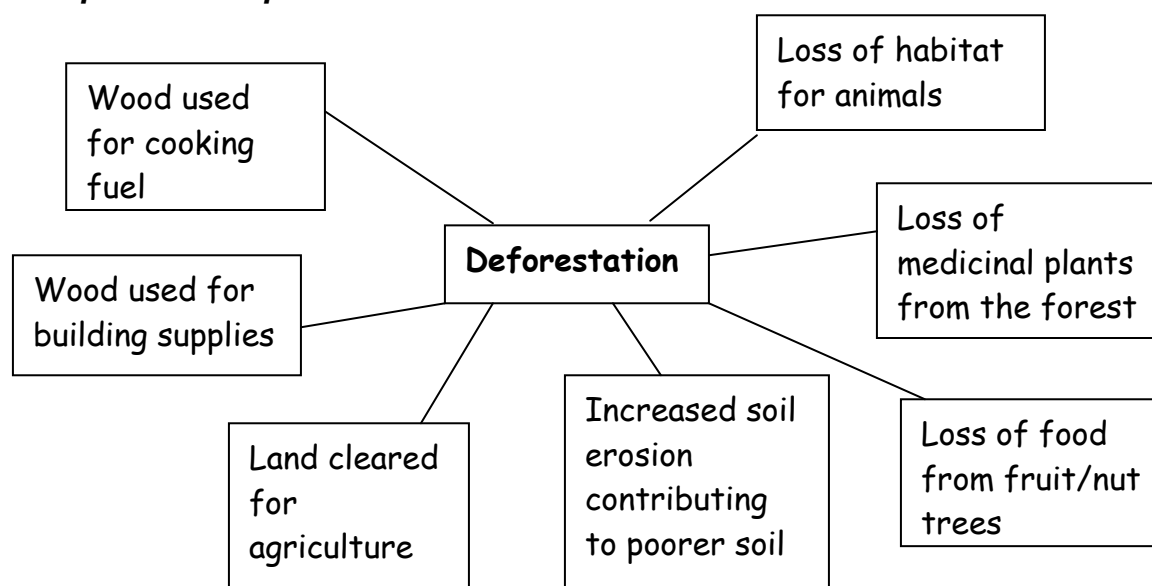
Region of the World	Country	Annual rate of change (%) in forest cover from 2000-2005
North America	Canada	0.0
	United States	0.1
Africa	Ethiopia	- 1.1
	Ghana	- 2.0
	Kenya	- 0.3
	Niger	- 1.0
Asia	Philippines	- 2.1
	Sri Lanka	- 1.5
South America	Brazil	- 0.6

Source: Food and Agriculture Organization of the United Nations, 2007

State of the World's Forests 2007 <http://www.fao.org/docrep/009/a0773e/a0773e00.htm>

(Retrieved April 9, 2009)

Sample Mind Map about Deforestation



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BLM 4.1 - Role Playing Cards

Male Farmer

You are a male farmer in the small, remote village of Qua Chau, Vietnam. You have a wife and six children. The main crop you grow is rice. You spend most of your day in the rice paddies preparing the land, planting the rice seeds, transplanting small rice plants to other fields where they can grow for the next 2 - 5 months. During the rice growth, you must look after the plots to prevent weeds and to make sure all of the rice plants have water. After two years of growing rice in one plot, the soil will be exhausted of the nutrients and you will need to find new land to grow the rice. You will probably have to cut some trees in the surrounding forested area and clear the land for agriculture.

You are a relatively rich farmer in your community. This is shown in part by the fact that your house is made out of solid wood, not bamboo. Your home is old and in need of repairs. Some days are spent repairing your home by replacing old boards and repairing the leaking roof.



In the evening, you relax in your small house where your wife prepares dinner for you and your children. She cooks rice and vegetables on the small fire. Then, you go to the local meeting area and sit on benches with the other men from the village to hang out and talk.

BLM 4.2 - Role Playing Cards

Female Farmer

You are a female farmer in the small, remote village of Qua Chau, Vietnam. You have a husband and six children.

It is your role as the woman of the family to do all of the cooking. To cook the meals, you must first collect wood from the forest with your children and bring it back home to make a fire to cook your food on. It can take up to two hours to walk through the forest to find large pieces of wood. You must also go and collect water from the stream for drinking and cooking the rice. The stream is a 30-minute walk from your home.

You must also spend time planting and looking after the small vegetable garden that your family has beside your house. This includes watering the garden, weeding the garden and making a fence out of sticks to put around the garden, so that the neighbour's cows do not come and eat the vegetables right from your garden!



While doing all of your daily tasks, you must continue to look after three young children at home. Two of your sons go to primary school nearby and your oldest daughter is 10 years old, so she is able to help you with some of the chores around the house, including fetching firewood and water. Your five-year-old daughter is responsible for collecting edible roots from the forest while you collect firewood.

BLM 4.3 - Role Playing Cards

Boy child

You are a six-year-old boy in the small, remote village of Quy Chau, Vietnam. You have a father, mother, two brothers and three sisters. You go to school each day Monday to Saturday. The school day is only four hours long, but it takes you 1.5 hours to walk to school each way, so most of your day is spent attending school.

During busy farming times, you are unable to attend school and must help your family with the rice crop, especially during harvest time.

In the evening, your mother prepares your dinner of rice and vegetables over the open fire. Yesterday, when you arrived home from school, the neighbour's cow had been eating the green

leafy vegetables in your family's vegetable garden. Your family has decided to build a wooden fence around the garden to keep out the animals. You will have to help build the fence and will have to miss school this week.



BLM 4.4 - Role Playing Cards

Girl Child

You are a 10-year-old girl in the small, remote village of Quy Chau, Vietnam. You do not go to school. Your family cannot afford to send all of the six children in your family to school, so only your two brothers attend the local village school.

You spend your day helping your mother perform all of her tasks to care for the family, such as cooking, cleaning, and looking after the rice crop and small vegetable garden. To cook the meals, you must first collect wood from the forest and bring it back home to make a fire to cook your food on. It can take up to two



hours to walk to the nearest forest to collect this wood. You must also go and collect water from the stream for drinking and cooking the rice. The stream is a 30-minute walk from your home.

You must also spend time planting and looking after the small vegetable garden that your family has beside your house. This includes watering the garden, weeding the garden, and making a fence out of branches to put around the garden so that the neighbour's cows do not come and eat the vegetables right from your garden! While doing all of your daily tasks, you must continue to look after your three young brothers and sisters at home.

BLM 4.1 – Cartes de jeu de rôle

Homme agriculteur

Vous êtes un homme agriculteur et vous habitez dans le petit village éloigné de Quy Chau, au Vietnam. Vous avez une femme et six enfants. Le riz est votre principale culture. Vous passez la plus grande partie de votre journée dans les rizières pour préparer la terre, semer les graines de riz et transplanter les petits plants de riz dans d'autres champs où ils pousseront pendant 2 à 5 mois. Pendant la croissance du riz, vous devez prendre soin des parcelles de terrain pour prévenir les mauvaises herbes et pour vous assurer que les plants de riz ont assez d'eau. Lorsque le riz a poussé pendant deux ans dans une parcelle de terrain, le sol ne contient plus d'éléments nutritifs et vous devez trouver de nouveaux terrains pour faire pousser le riz. Vous aurez probablement à couper des arbres dans la forêt avoisinante et défricher la terre pour l'agriculture.



Vous êtes dans la communauté un agriculteur relativement riche. Votre maison est donc fabriquée en bois solide et non en bambou. Votre maison est vieille et doit être réparée. Certains jours vous faites des réparations, pour arrêter les fuites dans le toit, et remplacez des vieilles planches de bois.

Le soir, vous vous reposez dans votre maison et votre femme prépare le repas pour vous et vos enfants. Elle prépare du riz et des légumes sur le feu. Vous vous rendez ensuite sur la place commune et vous assoyez sur un banc avec les autres hommes du village pour discuter.

BLM 4.2 – Cartes de jeu de rôle

Femme agricultrice

Vous êtes une femme agricultrice et vous habitez dans le petit village éloigné de Quy Chau, au Vietnam. Vous avez un mari et six enfants.

En tant que mère de famille, vous devez préparer tous les repas. Pour cuisiner, vous allez chercher du bois dans la forêt avec vos enfants et le ramenez à la maison pour faire un feu et cuisiner votre repas. Cela peut vous prendre jusqu'à deux heures pour vous rendre dans la forêt et trouver des morceaux de bois assez grands. Vous devez également aller puiser de l'eau dans la source pour boire et cuisiner le riz. La source est à 30 minutes à pied de la maison.

Vous devez également vous occuper du petit potager de votre famille qui est à côté de la maison. Vous arrosez le jardin, enlevez les mauvaises herbes et fabriquez une clôture en tiges de bois pour protéger le jardin afin que les vaches du voisin ne viennent pas directement manger vos légumes !

Tout en faisant vos tâches ménagères, vous devez vous occuper de vos trois jeunes enfants à la maison. Deux de vos fils vont à l'école primaire avoisinante. Votre fille aînée a 10 ans et elle peut donc vous aider dans les tâches ménagères, comme chercher du bois et puiser de l'eau. Votre fille de cinq ans a la tâche de trouver des racines mangeables dans la forêt où vous prenez le bois.



BLM 4.3 – Cartes de jeu de rôle

Enfant garçon

Vous êtes un garçon de six ans et habitez dans le petit village éloigné de Quy Chau, au Vietnam. Vous avez un père, une mère, deux frères et trois sœurs. Vous allez à l'école du lundi au samedi. La journée d'école ne dure que quatre heures, mais il vous faut 1 h 30 pour marcher à l'école matin et après-midi, donc vous passez la plus grande partie de votre journée à l'école. Pendant les saisons d'agriculture très occupées, vous ne pouvez pas aller à l'école et devez aider votre famille dans les champs, surtout pendant la récolte.



Le soir, votre mère vous prépare un repas de riz et de légumes sur le feu extérieur. Quand vous êtes rentré de l'école hier, la vache du voisin avait mangé les légumes verts à feuille dans le potager de votre famille. Votre famille a décidé de fabriquer une clôture en bois autour du potager pour éloigner les animaux. Il faudra que vous aidiez à fabriquer la clôture et donc vous absenter de l'école cette semaine.

BLM 4.4 - Cartes de jeu de rôle

Enfant fille

Vous êtes une fille de dix ans et habitez dans le petit village éloigné de Quy Chau, au Vietnam. Vous n'allez pas à l'école. Votre famille n'a pas les moyens d'envoyer les six enfants à l'école, donc il n'y a que vos deux frères qui vont à l'école locale du village.

Vous passez votre journée à aider votre mère dans les tâches ménagères, comme faire les repas, le ménage et prendre soin de la rizière et du petit potager. Pour préparer les repas, vous devez aller chercher du bois dans la forêt et le ramener à la maison pour faire un feu. Cela peut vous prendre jusqu'à deux heures pour vous



rendre dans la forêt et trouver des morceaux de bois assez grands. Vous devez également aller puiser de l'eau dans la source pour boire et cuisiner le riz. La source est à 30 minutes à pied de la maison.

Vous devez également vous occuper du petit potager de votre famille qui est à côté de la maison. Vous arrosez le jardin, enlevez les mauvaises herbes et fabriquez une clôture en tiges de bois pour protéger le jardin afin que les vaches du voisin ne viennent pas directement manger vos légumes ! Tout en faisant vos tâches ménagères, vous devez vous occuper de vos trois jeunes frères et sœurs qui sont à la maison.

Assessment

Each student's contributions to the class and small group discussions can be observed and recorded anecdotally by the teacher. A rubric is provided that can be used for assessment/evaluation purposes.

Deforestation — What Do Trees Mean to Me?

Student's Name: _____

Evaluator: Teacher: ____ Peer: ____ Self: ____

Criteria	Level 1	Level 2	Level 3	Level 4
Knowledge/ Understanding	Demonstrates limited knowledge and understanding of concepts.	Demonstrates some knowledge and understanding of concepts.	Demonstrates considerable knowledge and understanding of concepts.	Demonstrates thorough knowledge and understanding of concepts.
Thinking	Analysis of scenarios is limited in effectiveness.	Analysis of scenarios is moderately effective.	Analysis of scenarios is effective.	Analysis of scenarios is highly effective.
Communication	Expresses and organizes ideas and information with limited effectiveness.	Expresses and organizes ideas and information with some effectiveness.	Expresses and organizes ideas and information with considerable effectiveness.	Expresses and organizes ideas and information with a high degree of effectiveness.
Application	Predictions and connections between contexts (environmental, social, and cultural) made with limited effectiveness.	Predictions and connections between contexts (environmental, social, and cultural) made with some effectiveness.	Predictions and connections between contexts (environmental, social, and cultural) made with considerable effectiveness.	Predictions and connections between contexts (environmental, social, and cultural) made with a high degree of effectiveness.

Glossary

Canadian International Development Agency (CIDA): The federal agency charged with planning and implementing most of Canada's development cooperation program in order to reduce poverty and to contribute to a more secure, equitable and prosperous world.

Deforestation: The loss of forests due to over-cutting of trees.

Developed Country: A basic classification of countries with a high level of *per capita* income, industrialization and modernization. Such countries usually have lower levels of population growth.

Developing Country: A basic classification of low-and middle-income countries in which most people have a lower standard of living with access to fewer goods and services than do most people in developed countries.

Ecological Footprint: A measure of how much land and water is needed to produce the resources we consume and to dispose of the waste we produce.

Environmental Degradation: The decline of environmental conditions to a lower condition, quality or level.

Fair Trade: A trading method committed to social justice in which employees and farmers are treated and paid fairly, sustainable environmental practices are followed and long-term trade relationships are fostered.

Food Security: A state where all people, at all times, have enough food to eat and the food meets their overall nutritional requirements.

Gender: Culturally defined roles and responsibilities for females and males that are learned, may change over time, and vary among societies.

Global Citizenship: Awareness of the world as a global community and recognizing the rights and responsibilities of citizens to take action with a global consciousness.

Globalization: The idea, popularized in the 1960s, that the entire world and its inhabitants are becoming one large community with interconnected needs and services.

Gross Domestic Product (GDP): The value of all goods and services produced within a nation in a given year.

Human Development Index: An annual ranking of countries in which the health, education and wealth of each nation's citizens is examined. Life expectancy, educational achievement and standard of living are measured.

International Development: Efforts to assist nations, and their citizens and institutions, to develop a higher quality of living. This is often done through social or economic programs.

Millennium Development Goals: The eight goals that all 191 United Nations member states have agreed to try to achieve by the year 2015.

Non-Governmental Organization (NGO): An organization that is not part of the local, state or federal government.

North American Free Trade Agreement (NAFTA): An agreement implemented in 1994 committing Canada, the US and Mexico to the elimination of all tariffs, quotas and other trade barriers between them before 2009.

Poverty: The state of being without, often associated with need, hardship and lack of resources across a wide range of circumstances.

Subsistence Agriculture: A type of farming in which livestock is raised and crops are cultivated for local food and energy requirements rather than for sale.

Sustainable Development: Development that meets the needs of the present generation without compromising the ability of future generations to meet their needs.

Sustainable Livelihood: The capabilities, assets (including both material and social resources) and activities required for a means of living that can be maintained into the future, recover from shocks and does not compromise natural resources.

United Nations: An international organization formed in 1945 to promote peace and economic development.

Country Information

For further information on Vietnam, please see the following resources:

- World Atlas Website www.worldatlas.com click on Asia and then Vietnam
- CIA Vietnam Profile www.cia.gov click on World Factbook and then choose Vietnam
- CIDA Vietnam Profile www.acdi-cida.gc.ca/vietnam-e
- Vietnam Government Website www.chinhphu.vn
- CHF Vietnam Project Description www.chf-partners.ca click on Our Projects, Asia, Vietnam

For further information on Ghana, please see the following resources:

- World Atlas Website www.worldatlas.com click on Africa and then Ghana
- CIA Ghana Profile www.cia.gov click on World Factbook and then choose Ghana from the dropdown menu
- CIDA Ghana Profile www.acdi-cida.gc.ca/ghana-e
- Ghana Government Website www.ghana.gov.gh/
- CHF Ghana Project Description www.chf-partners.ca click on Our Projects, Africa, Ghana

For further information on Zimbabwe, please see the following resources:

- World Atlas Website www.worldatlas.com click on Africa and then Zimbabwe
- CIA Zimbabwe Profile www.cia.gov click on World Factbook and then choose Zimbabwe from the dropdown menu
- CIDA Zimbabwe Profile www.acdi-cida.gc.ca/zimbabwe-e
- Zimbabwe Government Website www.gta.gov.zw/
- CHF Zimbabwe Project Description www.chf-partners.ca click on Our Projects, Africa, Zimbabwe

For further information on countries in the Caribbean, please see the following resources:

- World Atlas Website www.worldatlas.com click on Caribbean
- CIA Profiles of various countries within the Caribbean www.cia.gov click on World Factbook and then choose a country from the dropdown menu
- CIDA Profiles of various countries within the Caribbean (select country name from map) www.acdi-cida.gc.ca/Americas
- CHF Guyana Project Description www.chf-partners.ca click on Our Projects, Americas, Guyana

For further information on Ethiopia, please see the following resources:

- World Atlas Website www.worldatlas.com click on Africa and then Ethiopia
- CIA Ethiopia Profile www.cia.gov click on World Factbook and then choose Ethiopia from the dropdown menu
- CIDA Ethiopia Profile www.acdi-cida.gc.ca/ethiopia
- Ethiopia Government Website www.mfa.gov.et/
- CHF Ethiopia Project Description www.chf-partners.ca click on Our Projects, Africa, Ethiopia

For further information on Kenya, please see the following resources:

- World Atlas Website www.worldatlas.com click on Africa and then Kenya
- CIA Kenya Profile www.cia.gov click on World Factbook and then choose Kenya from the dropdown menu
- CIDA Kenya Profile www.acdi-cida.gc.ca/kenya-e
- Kenya Government Website www.kenya.go.ke/
- CHF Kenya Project Description www.chf-partners.ca click on Our Projects, Africa, Kenya

Resources

Reference Books

Hammond World Atlas 3e, by Hammond, 1999

Worldmark Chronologies, Vol. 1: Chronology of Africa, by Karen Christensen, 1997

Web Sites

CHF www.chf-partners.ca

Gifts That Matter campaign www.giftsthatmatter.ca

Canadian International Development Agency (See Teacher Zone) www.acdi-cida.gc.ca

Earth Day Network (Quiz) www.earthday.net/footprint/index.html

Footprint of Nations www.ecologicalfootprint.org

Global Footprint Network www.ecofoot.net

Transfair Canada Website www.transfair.ca

Make Poverty History Website www.makepovertyhistory.ca/

World Bank PovertyNet www.worldbank.org click on "Topics" and then "Poverty"

National Anti-Poverty Organization www.napo-onap.ca/

The Assembly of First Nations Website: Making Poverty History Article

www.afn.ca/article.asp?id=2903

United Nations Development Programme: Poverty Reduction www.undp.org/poverty/

United Nations Development Report Website <http://hdr.undp.org>

Food and Agriculture Organization of the United Nations (Forestry Information)

www.fao.org/forestry/en/

Campaign 2000 Website www.campaign2000.ca/rc/

UN Millennium Development Goals www.un.org/millenniumgoals/

UN Millennium Project www.unmillenniumproject.org/

Millennium Campaign Website <http://endpoverty2015.org/>

World Bank Student/Teacher Website <http://youthink.worldbank.org/>

Global Education Network www.global-ed.org

Water Resources Commission of Ghana www.wrc-gh.org

Updated Currency Conversion www.oanda.com/convert/classic

Summary & Next Steps

The first step in reducing poverty and injustice in developing countries is to **look deeper** and understand the realities faced and the connections between people around the world. This is an important step in creating empathy for the rural poor in the next generation of leaders — today's students!

This guide was developed to help children understand rural communities in developing countries and some of the forces that perpetuate their cycles of poverty. More importantly, this guide is to give students hope that change is possible. Everyone can contribute to empowering communities to have the resources to be self-sufficient and break their cycle of poverty. (Please see the Head, Heart and Hand Approach on page 4 which highlights the importance of action.)

The second step is to move informed students to action. Students will see how their actions will lead to healthier children, families and communities. Their support will enable families to earn better incomes so they can afford school fees for their children as well as meet other needs. Families will feel empowered and will have more hope for their future.

Your students can help CHF improve the lives of people in rural communities in developing countries by engaging in one of CHF's activities or fundraising events. CHF has many successful stories of schools that are supporting our projects in various developing countries. Visit our web site at www.chf-partners.ca and click on **Teachers** for the latest school success story.

CHF encourages your school to get involved!

Sign up for our Gifts That Matter campaign today! (See page 5 for further information on this campaign).

For more information please contact:

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323 Chapel Street
Ottawa, Ontario K1N 7Z2

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Phone: (613) 237-0180 ext. 229 or 1-866-242-4243

Centre For Affordable Water and Sanitation Technology (CAWST)

Sanitation Ladder



Sanitation Ladder Instructions

What is it?

The sanitation ladder helps people to identify options for improving sanitation in their community and realize that this can be a gradual process.

Why use it?

This activity helps participants to:

- Describe the community's sanitation situation
- Identify options for improving sanitation
- Discover that improvements can be made step-by-step

How to use it

1. Depending on how many people and/or groups you are working with, print out as many copies as you need so that each group has a complete set of cards.
2. Introduce the exercise to the participants. Give the participants the pictures depicting the various methods of excreta disposal. It may be useful to have some paper and pen so that participants can draw other methods which are not included in the set of drawings.
3. Ask the participants to sort the pictures into steps according to improvements in sanitation practices. Participants can take 15 – 20 minutes for this work.
4. When the groups have completed this task, ask the group to explain its sanitation ladder to the other participants.
5. After the presentations, encourage a group discussion covering:
 - The similarities and differences in the way the options have been arranged as steps.
 - The options that have been identified as best for the community
 - The advantages of each option
 - The difficulties or obstacles that would make moving up the ladder difficult
 - How these decisions were reached
6. Explain to the group that the next activity will help it to develop a plan to get from where it is now to the situation it would like to have in the future.

Alternative Methods

If the size of your group is almost the same as the number of illustrations you have (about 16) give one illustration to each participant. Have the participants arrange themselves in a line, in order from worst sanitation practice to best. Starting from the worst end of the line, ask each participant to explain to the group why their illustration is a better practice than the previous illustration. The group and the facilitator can discuss whether they agree with the order.

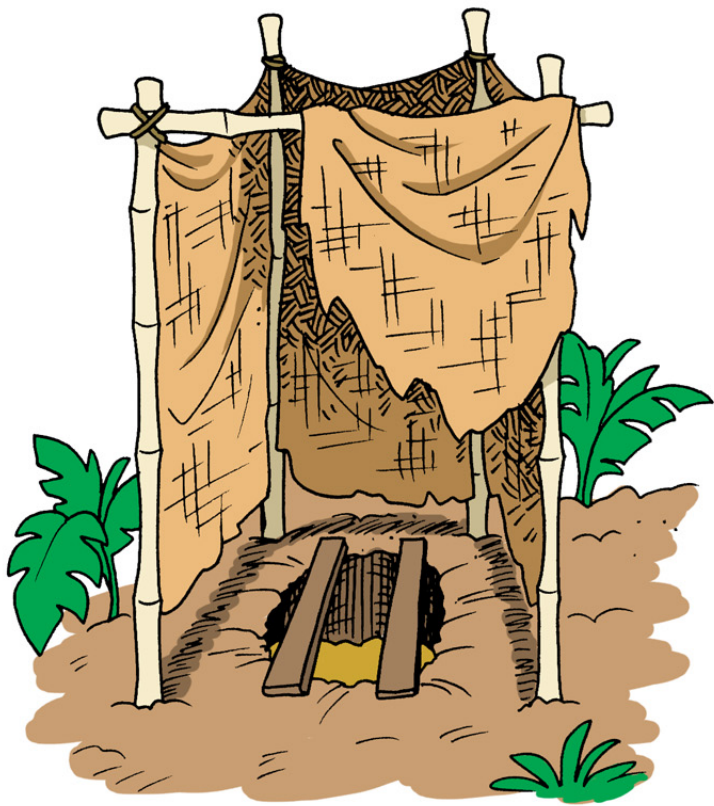
This activity can also be used to deal with other questions and other problems. For instance the sanitation ladder can be adapted to make a water ladder. The activity would be conducted in the same way, but using drawings showing different water options for improving quality, quantity and access to water supply. The options shown would need to range from most simple to the more complex. Drawings of unsafe or unprotected

water sources and collection would have to be included since some communities would be starting from this step.

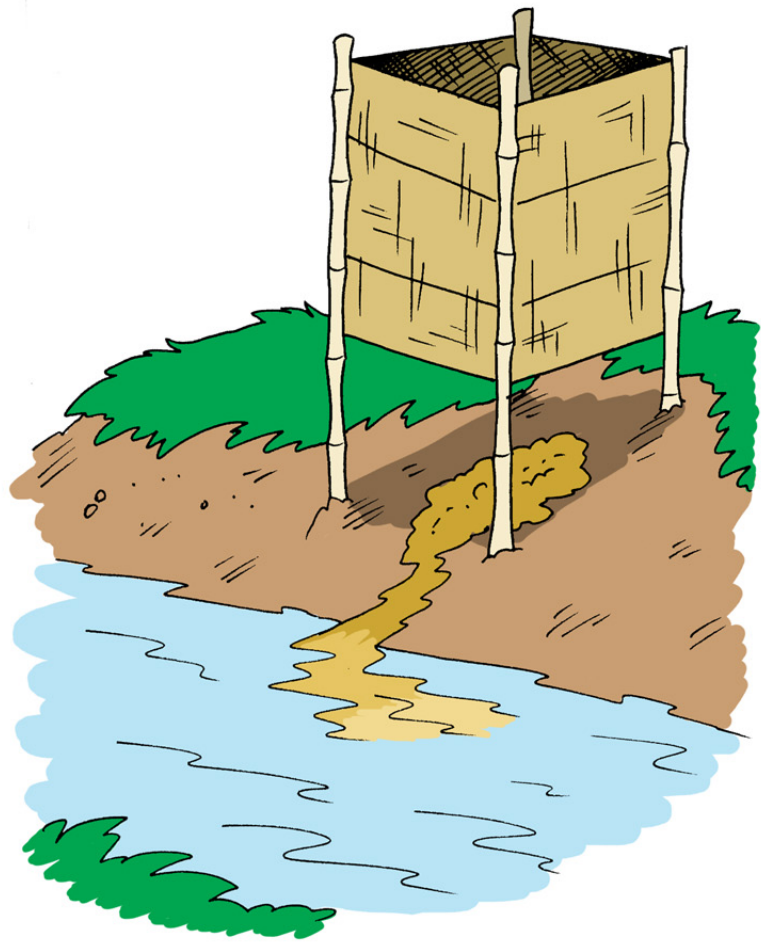
Facilitator Notes

- Before you begin this activity it would be helpful to have information on:
 - The design principles of different sanitation options
 - The effectiveness of different options
 - The use and maintenance of each option
 - The cost of different options
 - The durability and sustainability of each option
- The sanitation ladder shows that improvements can be made step by step. The idea that a community can progress up the ladder at different rates can be very appealing to groups. They realize that changes can be made over time, at a pace that is appropriate and manageable to them. When groups discover this, it can inspire them to become more involved.
- Some options are equally good. Two options can be placed side by side so the ladder has “branches”. The idea of progression and choosing for the future is more important than the shape of the ladder.

(Adapted from WHO, 1998)



SANITATION LADDER 1



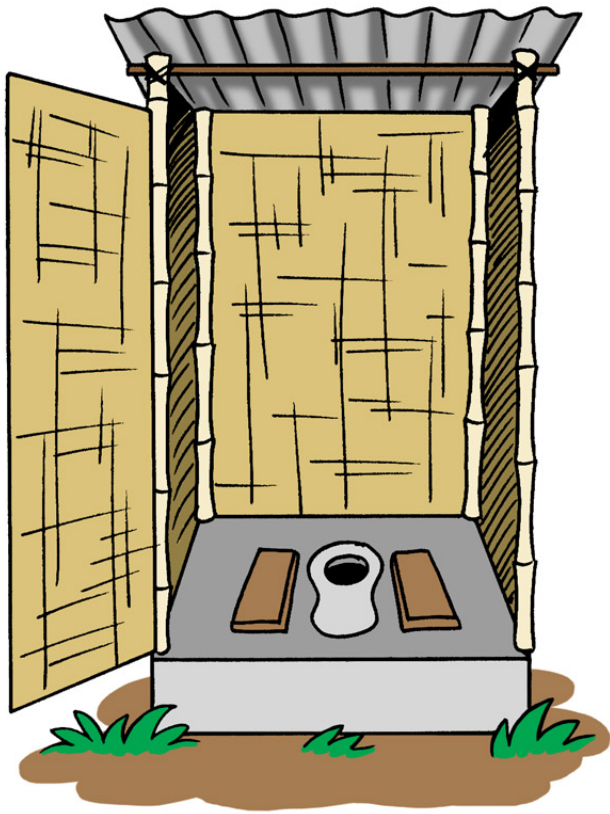
SANITATION LADDER 2



SANITATION LADDER 3



SANITATION LADDER 4



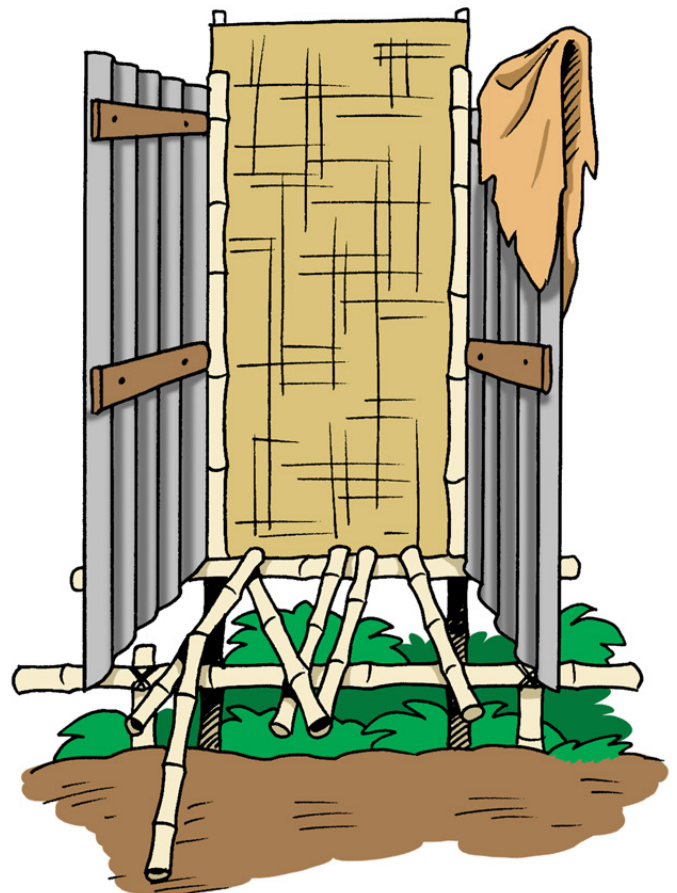
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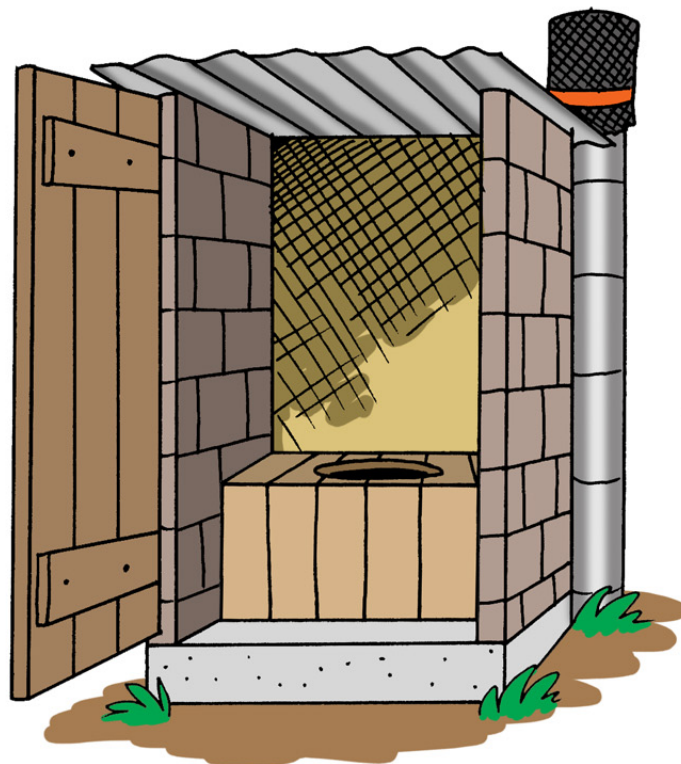
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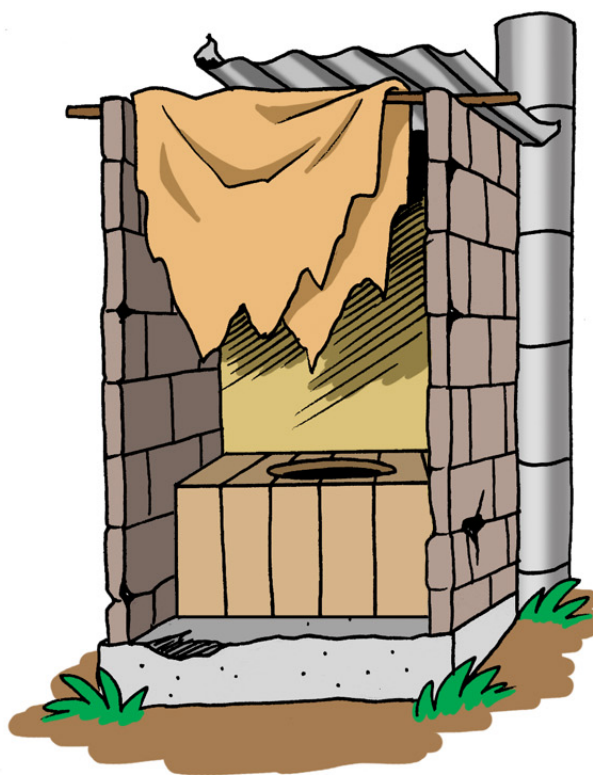
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SANITATION LADDER 14



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SANITATION LADDER 16

United Nations Association in Canada (UNAC)

Youth of Today, City of Tomorrow



**United Nations
Association
in Canada** | *Edmonton
Branch*



ACGC 
Alberta Council for Global Cooperation

YOUTH OF TODAY, CITY OF TOMORROW

INTRODUCING HUMAN SETTLEMENT ISSUES IN THE CLASSROOM

Resource Manual for Secondary Teachers



United Nations Association in Canada
Association canadienne pour les Nations Unies

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YOUTH OF TODAY, CITY OF TOMORROW

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*Produced by
The United Nations Association in Canada*

The United Nations Association in Canada (UNA-Canada)

UNA-Canada is a national charitable organization founded in 1946. As a 'think and do' organization, UNA-Canada supports a network of 17 volunteer branches with a National office in Ottawa and a Western professional office in Vancouver. Our mandate is to engage Canadians in the work of the UN and the critical global issues which affect us all, through innovative projects, policy research, and on-going communications with Canadians.



United Nations Association in Canada
Association canadienne pour les Nations Unies

Youth of Today, City of Tomorrow (YTCT)

Developed by the United Nations Association in Canada (UNA-Canada), YTCT is an innovative project that engages youth in learning and debating the issues of urban settlement and sustainability. The project raises awareness among youth and their communities on human settlement and urbanization issues, while engaging and inspiring young Canadians to take action that influences positive change.

The goal of the project is to utilize a series of research papers commissioned by Western Economic Diversification (WD) on issues of sustainability that were addressed at the Third Session of the World Urban Forum (WUF3) in Vancouver, June 2006.

YTCT was implemented in Calgary, Edmonton, Kootenay Region, Saskatoon, Vancouver, Victoria and Winnipeg.

Please check www.unac.org/YTCT for more information on this exciting project.



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	2.	Habitat Action: My Story	pg. 7-11	100 minutes	English, Geography, Social Studies	All
	3.	Community Mapping	pg. 13-15	60 minutes	Social Studies, Geography, First Nations Studies	Youth Friendly, Planning, Livable, Learning
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**Note: BLM stands for Blackline Master*



Acknowledgements

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Gratitude is also extended to Regional Coordinators who promoted and shared YTCT with youth in Calgary, Edmonton, Kootenay region, Saskatoon, Vancouver, Victoria and Winnipeg. Appreciation is especially extended to Amanda Tetrault, Anna Reitman and Megan Read, who collaborated on compiling and developing Lesson plans for this Resource Guide, bringing their in-classroom experience and knowledge to the task of integrating World Urban Forum themes into the curriculum strands for Alberta, British Columbia, Manitoba and Saskatchewan.

Acknowledgement should as well be given to Canadian youth who participated in the YTCT activities in the seven communities for their enthusiastic participation and contribution to the mural projects and Model UN Habitat Simulations, and passing of Resolutions on Cities Without Slums.

Appreciation also goes to teachers who reviewed and offered constructive feedback that helped UNA-Canada to produce a resource that is user-friendly and caters to the teaching needs of Canadian secondary school teachers. As always, so many of UNA-Canada project officers contributed in so many ways to making this a stronger resource.

Finally, acknowledgement and gratitude are extended to Sarah Kambites, Programme Manager at UNA-Canada for her professional expertise and steadfastness in managing the YTCT team and ensuring a smooth and effective implementation of the overall project, including editing, incorporating teachers' feedback and finalizing this Resource Manual.

Kathryn White
Executive Director
UNA-Canada
Ottawa, Canada

September 2007





Introduction

This resource guide is an educational legacy to the Third Session of the World Urban Forum (WUF3) hosted by Canada in Vancouver in June 2006. Developed by the United Nations Association in Canada (UNA-Canada), the Youth of Today, City of Tomorrow (YTCT) project engages Canadian youth in WUF3 activities and raises their awareness on human settlement issues, and in particular, on urbanization and sustainable cities.

In using this resource as an educator, you are helping build youth's knowledge and facilitate their participation in a sustainable future for our world. UNA-Canada's goal in designing this resource is to create useable and engaging lesson activities for teachers and students to explore issues of human settlement and to empower youth in their capacity to create a sustainable and livable urban environment.

This resource is based on an experiential learning model of engaging students in their capacity for action through building knowledge and generating empathy in an interactive way. Each lesson includes three main components:

- a 'Warm-up' activity to spark students' interest in the presented ideas;
- an 'Activity' unit to build knowledge, understanding or empathy;
- a 'Wrap-up and Action' section to create closure, excitement and empowerment to take action.

All activities are designed to be teacher-friendly and include a summary of objectives and a list of materials needed for each unit.

Possible learning outcomes of several provinces, along with extensions to relevant activities and Internet links, are included in the appendices. Assessment options are noted and a general rubric for evaluation is also listed in the appendices.

This resource manual comprises both stand-alone lessons and complete mini-units of study on human settlement issues and WUF themes. The contents are NOT listed in a suggested teaching order however, we invite you to use them as best fits your needs.

For further information on the project, please follow the link: www.unac.org/ytct to locate the full versions of the planning papers on which all the lesson ideas are based. These papers are required in their entirety for the 'Youth Forum on Urbanization' lesson. To learn more about YTCT and other projects of UNA-Canada, please visit: www.unac.org.

Ideas and feedback from teachers and students are always welcome. A feedback sheet is included in the appendices.

Thank you for taking the time to explore this resource.

Sarah Kambites,
Programme Manager, YTCT





Section One: Lessons

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Lesson 1

Urbanization and Imagination

Objectives

Students will:

- Work individually and collaboratively to evaluate possible effects of global urbanization in the future.
- Present their ideas on how to create a sustainable future in groups.
- Complete an individual assignment discussing their opinions on the effects of urbanization and the role of imagination in sustainable development.

Time needed

50-60 minutes

Materials

Lesson guide, 1 copy of BLM #1 and BLM #2 for each student, 8 pieces of chart paper and 8 coloured markers (students could also use pen and notepaper), chalkboard/whiteboard with pre-written vocabulary words, pre-arranged attention signals (bell, lights, etc.)

Vocabulary

urban | urbanization | rural | sustainability | social | economic | environmental

Procedure

Warm-up (10 minutes)

1. Ask students if they know the current world population - take a few guesses. Write the guesses on the board (hopefully one is correct - you could 'plant' a student with the correct answer to ensure this). Ask for a show of hands for each guess before revealing the correct answer.
2. Ask students to raise their hands if they think there are more people on the planet living in urban areas than in rural areas, then ask those who think there are more living in rural areas to raise their hands.
3. Inform them that, right now, there are more people living in rural areas, but by 2050, the situation is predicted to be reversed - notify them that this process is called urbanization.
4. Explain to them that for urbanization to be sustainable, cities must be maintained environmentally, socially, and economically through appropriate planning.
5. Ask students to imagine the effects of worldwide cities that are becoming larger and more crowded. Then ask them to share some of their thoughts.
6. Briefly discuss the vocabulary words and facilitate their understanding.

Activity (20 minutes)

1. Explain to the class that students need to imagine the effects of urbanization by the year of 2050 and work together to brainstorm ideas about sustainable urbanization. Hand out 1 double-sided BLMs (BLM #1 and BLM#2) to each student. Have students individually read the statistics or read them out loud to the whole class (BLM #1). Inform students that they will have 5 minutes to write three possible effects of urbanization - ask them to consider sustainability from the perspective of the environment, the economy and social conditions. (10 minutes)
2. At 5 minutes, stop students and ask them to read the instructions at the bottom of BLM #1. Ask them to stand up and hold their papers without talking. Then paraphrase the instructions and instruct students to mingle with each other until they find another person with at least ONE SIMILAR effect





being previously written down; they will then need to form a group of 2 and mingle until they find another group of 2 with at least ONE SIMILAR effect to form a group of 4. At your signals (lights, bell, or...), students will stop mingling and groups will move to separate areas to imagine and brainstorm ideas of sustainable urbanization based on their shared effects. If there were students without a group of 4, help them combine the lesser groups. (10 minutes)

Wrap-up and Action (25 minutes)

1. Students brainstorm ideas in their groups on how to plan for sustainable urbanization on their shared effects, using factors of the environment, the economy, and social sustainability - also remind them to write down all ideas on the chart paper with coloured felt pens and explain that they will share the ideas with the rest of the class. (10 minutes)
2. Ask groups to define their shared effects and present their ideas on sustainable urbanization to the class. (10 minutes)
3. Explain the written assignment - either allocate time in class for it or assign it as homework (BLM #2). (5 minutes)
4. If time permits, carry out the debriefing process with students by responding to questions including: What did they find surprising or difficult? Do they feel positive or negative about the future in light of urbanization? Do they know who plans cities? Do they think that they can evoke change towards sustainable urbanization? If not, why? If so, how? What effects does imagination have on planning for sustainability? Students may also want to contact their legislators, local planners and governments to express their views about these issues.

Assessment

Did students:

- Identify and discuss possible effects of urbanization on global systems (Activity 1-2, Wrap-up 1)?
- Collaborate with others and work effectively in groups to present ideas on planning for sustainable urbanization (Wrap-up 1-2)?
- Deliver a written opinion on the topic of urbanization and imagination (Wrap-up 3)?
- Participate in class discussions (Warm-up 5, Wrap-up 4)?

Resources

Statistics

<http://www.un.org/Pubs/CyberSchoolBus/habitat/index.asp>

General Information

Government of Canada, Western Economic Diversification

<http://www.wd.gc.ca>





BLM #1

URBANIZATION is the growth of cities.

SUSTAINABILITY is the development of a socially, environmentally, and economically healthy society, not only for today but for generations to come.

Fact Box

*There are now 6.2 billion people in the world... and a century ago, the vast majority of the world's population lived in rural areas. But...

****By sometime in 2008 more than half of all people will live in urban areas.**

*There are **21 MEGACITIES** in the world with populations of **more than 10 million**.

- The largest is Tokyo, Japan at over 35 million;
- The next largest is Mexico City, Mexico with 19 million.

To compare: (energy consumption)

- The population density of Tokyo is 10 times higher than that of Houston, Texas;
- On average, each person in Houston consumes over 7 times more fuel than what the average person does in Tokyo.

*60 million people are added to the world's urban population each year - roughly the population of France... and mostly in low-income urban settlements of developing countries - these are often called **SLUMS**.

****There are more than ONE MILLION people around the world moving to cities every week!**

*Cities cover merely 0.4 % of the earth's surface, but generate the bulk of the world's carbon emissions... **CITIES ARE THE KEY TO SOLVING THE GLOBAL CLIMATE CRISIS.**

To compare: (annual income)

- Urban people in North America earn an average of \$20,000 each year;
- Urban people in Africa earn an average of \$200 each year.

Imagine, and write down **THREE** possible effects (social, economic or environmental) of having, for the first time in history, **MORE** people in urban areas than in rural areas. Then carry out the following actions:

- Share your answers with other students, find someone with at least one similar possible effect as you and form a pair.
- Now find another group with at least one similar possible effect as your group of 2 and form a group of 4.
- Work together to brainstorm ways to create a sustainable future based on your group's shared effects - write down your ideas using your maximal imagination.
- Present your group's ideas on planning for sustainable urbanization to the class.





BLM #2

Urbanization and Imagination

What do you think?

Re-read the statistics you began with and consider your class discussion and collaboration. Now list the three most important effects, in order of importance to you, of having for the first time in history more people in urban areas than in rural ones.

1. _____
2. _____
3. _____

Share your opinions

1. Which ideas do you find most interesting/important for planning a sustainable urban future?

2. What could you do, as an individual, to help create sustainable urbanization?

3. Is imagination an important tool for creating a sustainable future? Explain.





Lesson 2

Habitat Action: My Story

Objectives

Students will:

- Discuss local and global urban youth-driven initiatives.
- Express opinions about local community issues.
- Collaborate and discuss solutions for local community issues.
- Present ideas about what could improve their city/community.
- Choose and complete a written assignment to express their ideas.

Time needed

50-60 minutes

Materials

Lesson guide, 5 chairs, 1 copy of YTCT story page (BLM #1 being cut into 5 pieces), students' notebooks, 3 sticky notes per student, 5-10 pieces of chart paper, 5-10 felt pens, 1 copy of 'Habitat Action' (BLM #2) per student

Procedure

Warm-up (10 minutes)

1. Place 5 chairs at the front of the class, having each of the 5 story paper pieces placed on each chair. Ask for 5 volunteers from the class to read, in order, the 5 YTCT stories, and invite those students to the front of the class.
2. Discuss these stories by asking students what are similar about these stories, and enquiring as to whether these stories bring any others to mind. Conclude by summarizing that all stories show youth being empowered to improve their habitat - ask students about the 5 tangible actions that the youth in the stories did and write them down on the board under the heading 'ideas for action' (and they are: magazine publication, puppet show drama, community garden production, solar cooker technology, public forum and policy).
3. Explain to students that they will be examining ways to improve their habitat during this class period - they will be creating their own stories by examining habitat issues in their community and considering ways to solve them.

Activity (20-30 minutes)

1. Give students 5 minutes to list 6 or more habitat issues (e.g. positive and/or negative aspects about their community/city) in their notebooks. Examples could be skateboard park (or lack of), traffic jams, great bike paths (or lack of), homeless people, etc. (5 minutes)
2. Collect a list of issues by asking students to give their ideas, and write them on the board under the heading 'habitat issues'. Group these ideas into different categories with the help from students. Leave enough room beside these issues for sticky note voting (see Activity 3). (5-10 minutes)
3. Hand out 3 sticky notes per student and explain that they need to 'vote' on issues of the most importance to them. If they consider one particular issue much more important than the others, they may choose to place all 3 of their sticky note 'votes' under that category. Ask students to 'vote' (discussions will likely take place as this happens). (5 minutes)
4. After 'voting', ask students to return to their seats. Some issues should emerge as the most important through the 'voting' result. Highlight them on the board by circling or starring them. These will be the





'habitat action groups'. Using the top 5-8 issues as topics, ask students to choose one out of these 'habitat action groups' to join. Designate classroom areas for each group and explain that students need to brainstorm solutions and ideas for action responding to the 'habitat issue'. Ask students to recall some of the ideas in the YTCT stories (Warm-up 3).

5. Form groups, let them brainstorm ideas for action and write their ideas on the chart paper. Remind students that they will need to briefly present their ideas to the class - they need to be open to all ideas no matter how bizarre they may seem. *(10-15 minutes)*

Wrap-up and Action (15 minutes)

1. Ask groups to present their ideas for action on their habitat issue to the class. *(10 minutes)*
2. Explain the choices of the action assignment (BLM #1) - either allocate time in class for it or assign it as homework. *(5 minutes)*

Assessment

Did students:

- Analyze and discuss global urban youth-driven initiatives (Warm-up 2)?
- Identify local urban issues (Activity 1-3)?
- Collaborate with others and work effectively in a group to present ideas for action on a local issue (Activity 5, Warm-up 1)?
- Choose and complete one out of the four assignments (Wrap-up 2, BLM #2)?

Resources

Statistics and stories

Government of Canada, Western Economic Diversification

<http://www.wd.gc.ca>





BLM #1

Youth of Today, City of Tomorrow Story #1: In Canada, Aboriginal youth are more likely to be born into poverty, to suffer poor health, abuse and neglect, to experience imprisonment and placement in the child welfare system away from their families and communities. In 1997, young urban Natives came together, using the media to promote social justice, build understanding and create their own systems of representation. They established Redwire, Canada's first-ever magazine run by Aboriginal youth, where Native youth tell their stories in their own voices. This award-winning publication counters stereotypes about Native people in the media and fights the continued oppression of Native people.

Youth of Today, City of Tomorrow Story #2: Suluin Maa (Earth's Grandchildren) is a group of youth in Venezuela who, seeing their community being ravaged by diarrhea, put on puppet plays to present basic health information to their peers and mothers. With the technical advice from health service providers, they developed skits with simple information such as how children needed to be fed, kept clean and how to treat diarrhea. Elmis, 14, an initiator of the group, says that the plays are successful because the information is adapted to their reality while being presented in a fun way. Within a year, the youth made over 50 presentations in and around their community. The municipality health officials claimed that mortality rates were reduced by half for that year. It was realized that youth had an incomparable ability to educate communities and could help improve health conditions.

Youth of Today, City of Tomorrow Story #3: The Environmental Youth Alliance (EYA) Youth Garden in Vancouver was stemmed from the extremely successful Strathcona Community Garden. The Strathcona Community Garden has gained a legal lease for land to grow food on small plots in inner-city Vancouver, through numerous battles with the city officials who owned the land and massive efforts organized by the local community. The EYA Youth Garden educates hundreds of children and youth on the basics of growing food and protecting the nature. The youth harvest what they grow, often share meals, make medicines and collect seeds for low-income gardeners, schools and next year's crop. They learn the cycle of life and acknowledge the revolutionary effect of growing food, which never goes away.

Youth of Today, City of Tomorrow Story #4: Azola Lingani is 13 years old. With the help of her school Eco-club, she has come up with some inventions: a solar cooker and "wonderbox." A "wonderbox" is a type of insulated box that can be used to cook food; the solar cooker has a reflective surface that can be used to cook food with the heat of the sun. These inventions are sold in Azola's community as an inexpensive and healthy alternative to electricity. Working in partnership with her classmates and teacher, Azola has developed a sustainable environmental strategy that is practical and based on the local needs and assets of the community. Their innovation not only helps the environment, but also provides a potential source for revenue generation.

Youth of Today, City of Tomorrow Story #5: In 2002, with support from Youth Action Effecting Change, youth from Prince George, British Columbia, held a public forum to engage youth and the community in discussing transportation issues during the municipal elections. Local citizens and municipal candidates discussed issues concerning sustainable transportation through a youth-facilitated process (which also included the community mapping). The forum was a great success: 17 of 22 election candidates attended, along with close to 50 community and youth participants. A positive and effective relationship was established among the students, the community and incoming councilors. Following the forum, students and the community remained involved in the formal policy process and were consulted in the design of Prince George's transportation system.





BLM #2

Habitat Action: My Story

Habitat Action #1: Write a letter to your local governmental planning department about one of the 'habitat issues' being brought up in class. Send/Cc a copy of the letter to the editor of a local paper and your political representatives, such as Councilor, Member of Legislative Assembly (MLA) and Member of Parliament (MP). Use the mini-template below as guidance for the format of the letter.

City Planning Department Address		Your Name Your Address
Cc: Editors, Politicians		
Dear _____,		Date
Describe your thoughts and ideas about one 'habitat issue'.		
		Sign your name

Habitat Action #2: Write an 'action plan' for one of the 'habitat issues' being discussed. Use the mini-template below for guidance. If you choose not to do the action, send it to the school newspaper, local papers, or local planners for publication or use. You may also publish it (can be anonymous) by making a number of copies and leaving them in public places. Write 'Please pass this on.' on the copies.

Define the 'habitat issue' What is it?
Describe the 'habitat action' Who will need to be involved? How will you do it? When will it be done? Where will it happen?
Action? Will you follow through on this action? Why or why not?





Habitat Action #3: Write a poem or a story about one of the 'habitat issues' being discussed; or about the actions in one of the 5 stories; or about one of the actions that a classmate chose to do; or about a local action. Publish it (can be anonymous) either by sending it to the school newspaper, local papers or by making a number of copies and leaving them in public places. Write 'Please pass this on.' on the copies.

Habitat Action #4: Hold a school forum about one of the 'habitat issues' and collect more ideas for solutions to it. Invite the public, local planners, the media, and political representatives. Remember to discuss your plans with school staff and comply with school regulations. Record ideas and send them to local media.





Lesson 3

Community Mapping

Objectives

Students will:

- Work collaboratively to create a community map of their city.
- Present the highlights of their group work to the class.
- Discuss similarities/differences in the maps and positive/negative aspects of the community.
- Consider differences between individuals/groups of individuals for needs/wants in the community.
- Self-evaluate their collaborative work; express their learning and ideas in writing.

Time needed

50-60 minutes

Materials

Lesson guide, chalkboard/whiteboard, 1 piece of large paper (chart paper size minimum) per 5-6 students, 1 piece of 11"x17" paper per 5-6 students, 1 or more coloured felt pens per student, masking tape, 1 copy of the self-evaluation form (BLM #1) per student

Vocabulary

habitat | youth | community mapping

Procedure

Warm-up (5 minutes)

1. Ask students: What is a habitat? What would a human habitat be? Look like? Include? - Facilitate some responses. Ask students if anyone has heard of the UN Habitat for Humanity and World Urban Forum? Inform students that more than 50% of the world's urban population is under the age of 19. Write 'Habitat for Youth' on the board. Ask students whether a habitat for youth would be different than one for adults? - Facilitate some responses.
2. Inform students that they will be drawing their habitats cooperatively (show them a blank piece of paper) by doing some community mapping. Explain that this is a process being used around the world to understand human habitats.

Activity (45 minutes)

1. Give students the following challenge and tip.
 - **Challenge:** Which group can get the most detailed habitat drawing in just 20 minutes? (This challenge ensures active collaboration and the most pen-to-paper time - without it, many groups might spend the entire time discussing and finish with blank maps).
 - **Tip:** Inevitably, on a blank map, someone will put something down in the 'wrong' place, make the best of it, keep pens to paper, and laugh it off!
2. Divide students into groups of 5 or 6, supply each group with a large piece of paper (minimum chart paper size), one piece 11"x17" paper, and coloured felt pens (minimum one per student). (5 minutes)
3. After the mapping activity starts, circulate the class to facilitate student cooperative skills and mapping ideas. Pay attention to what might be missing, e.g. parks, roads, water and landmarks, etc.
4. When there is 5 minutes left, remind students to write down on the 11"x17" paper the most important aspects or highlights of their group's map. Inform them that they will be giving a guide of their group's map to the class. (20 minutes).





5. Have each group post their map and take 1 minute to present it. *(10 minutes)*
6. Debrief the community mapping experience by initiating ideas such as: What was difficult or surprising about the process? How different would it be between the maps made by you here today and those made by younger people/older people? What about a car commuter versus a bike commuter? Discuss similarities/differences in the mapping habitats. Do any positive or negative aspects of your community emerge? Is there anything that could be changed for the better? *(10 minutes)*

Wrap-up (10 minutes)

1. Handout the self-evaluation form (BLM #1) and ask students to either hand it in before leaving class or take it home as assignment.

Assessment

Did students:

- Collaborate with others and work effectively in a group to present ideas of planning for sustainable urbanization (Activity 4-6)?
- Participate in class discussion (Warm-up 2, Activity 7)?
- Self-evaluate their collaborative work and provide a written opinion on the community mapping (Wrap-up 3, BLM #1)?

Resources

The Youth Friendly City

Government of Canada, Western Economic Diversification

<http://www.wd.gc.ca/ced/wuf/youth>





BLM #1

Youth of Today, City of Tomorrow

Self-evaluation Form

Name: _____ Date: _____

Circle the answer that shows your honest reflection about your work today.

1. I encouraged others in my group.
Yes No Not sure
2. I took an active role in my group (i.e. contributed my ideas and inputs).
Yes No Not sure
3. I did my best.
Yes No Not sure

Give your opinion by answering the following questions. *(Please give as much detail as you can. Use examples when applicable.)*

1. Did you enjoy the community mapping process? Explain why/why not?

2. What did you find most interesting about the community mapping that you did today?

3. What do you think are the most important aspects of your community map?

4. What could be changed/improved in your community for youth?





Lesson 4

Urbanization and the Arts: Dance and the City

Objectives

Students will:

- Consider the facts of urbanization and discuss the phenomenon.
- Read an article about thematic dance (urbanization).
- Improvise dance movement as a group to represent the urbanization facts.
- Choreograph, perform, and experience small group performances of urbanization themes.
- Evaluate urbanization as a theme for dance.

Time needed

50-60 minutes

Materials

Lesson guide, 1 copy of BLM #2 (optional), 1 copy of BLM 1 for each student (or have students read out facts on BLM #1 and distribute 1 sheet per group)

Procedure

Warm-up (5minutes)

1. Hand out BLM #1.
2. Ask six students to read the 6 facts out to the class.
3. Ask students what all these facts have in common and discuss.

Activity (30 minutes)

1. Read the article on BLM #2 to the whole class.
2. Discuss the ideas of using urbanization as a theme for dance. (10 minutes)
3. As a class, do improvisational dance for each of the 8 facts - call it out and have students dance the theme. (10 minutes)
4. Break students into groups and have them plan a dance based on one of the 8 facts. (10 minutes)

Wrap-up and Action (20minutes)

1. Perform the dances and have audience guess the fact being presented. (15 minutes)
2. Discuss urbanization as a dance theme. Ask students what could be represented to respond a local issue. Ask students to read papers for more urbanization facts (which could then be added to the dance theme), bring them to class with citations and submit them to the YTCT website. (5 minutes)

Assessment

Did students:

- Improvise dance based on the 8 facts? (Activity 3).
- Participate in class discussions (Warm-up 3, Activity 2, Wrap-up 2)?
- Plan and perform a dance with a small group on urbanization themes (Activity 4, Wrap-up 1)?





Resources

City statistics and facts

Government of Canada, Western Economic Diversification

<http://www.wd.gc.ca>

Papers on WUF themes

UNA-Canada, SPUD, UNESCO

www.unac.org/ytct, www.spud.ca, www.UNESCO.org

Article of Choreographer challenged by Urbanization Project, by Webb, Portia T.

The Daily Collegian Online, Friday, Jan. 26, 2001

<http://www.collegian.psu.edu/archive/2001/01/01-26-01tdc/01-26-01darts-11.asp>





BLM #1

Urbanization Fact Sheet

Urbanization Fact #1: Over 15,000 runaways are reported in BC each year. There are 500 - 1,000 youth on the street on any given night.

Urbanization Fact #2: Immigration has been the major source for population growth in Canada and has greatly enriched its cultural tapestry. The aging society and the looming labour shortage are making immigration an even more important source for Canada's population growth. How does the society's need for immigrants contrast with the experiences and reality for immigrants in the Canadian society.

Urbanization Fact #3: 29% of the cities in developing countries are considered as inaccessible or dangerous to the police. In Latin America and the Caribbean, this figure is 48%. In Canada, 2005 was dubbed the 'Year of the Gun' with gun-related murders reaching at an all-time high.

Urbanization Fact #4: Buses and minibuses are the most common mode of transport in cities around the world. Cars are the second most common mode being used, while walking being the third most common one. Travel time in Asian cities appears to be the longest with an average of 42 minutes per trip. What would the world be like if walking became the most common transport mode? What about cars? Bicycles.

Urbanization Fact #5: Grocery products in Canada travel about 2,500 kilometers on average to reach their points of sale - they still need to travel to your home. Most groceries travel by transport truck to stores and by car to your home. What would happen if we chose and demanded local produce, or have groceries delivered to our door through an online shopping service.

Urbanization Fact #6: There are 6.2 billion people in the world: 3.1 billion live in cities and 3.1 billion live in rural areas. By 2050, for the first time in history, there will be more people living in urban areas than rural ones.





BLM #2

Choreographer Challenged by Urbanization Project

By Portia T. Webb, Collegian Staff Writer, Daily Collegian Online, Friday, Jan. 26, 2001,
<http://www.collegian.psu.edu/archive/2001/01/01-26-01tdc/01-26-01darts-11.asp>

Choreographer Ben Munisteri looked forward to working with the Pennsylvania Dance Theatre on the Urbanization Project and the growth potential for doing so.

"The challenge is what excites me, to stay within this theme," Munisteri said, referring to the Urbanization Project.

Munisteri was born in Brooklyn and graduated from Oberlin College with a dance minor. Life in New York City has equipped him with special insight into the ways in which population growth can affect open spaces such as recreations and parks. It is with this knowledge that he will translate the way in which overcrowding generates movement.

"We made this dance by beginning to crowd the dancers in a small space and seeing how the environment changes how the dancers move," he said, describing one of the dances for the project.

The dancers will interpret level changes as a result of confined space. The idea of limiting space is a central theme to the dances he has choreographed. He chooses to contrast the negative and positive results of urbanization through background music that will underscore his work. He is specifically excited about some of the lyrics that deal with the social alienation of the standard work force.

Munisteri will use classical pieces too. He wants the audience to understand that major artists have and still do perform in major cities. His own dance company has been developing since 1994.

His shows have been produced at popular New York venues including Central Park SummerStage and the NYC International Fringe Festival. In addition, Munisteri has been a guest choreographer at The Julliard School Drama Department. He has taught dance technique at Drew University and the University of Kentucky. He has also been a substitute teacher at the School of American Ballet and the Alvin Ailey School.

Although modern dance may appear to be his overriding inspiration, he describes his prior training as varied. Because he has had extensive training, Munisteri does not necessarily deal in specifics. There are no narratives and no characters in his dances for the project. As a choreographer he references modern dance, ballet, gymnastics and even break-dancing as sources for his creativity.

"My arts background encompassed music, and I started dancing in my teens," he said. The Urbanization Project will be Munisteri's first time choreographing for the PDT. He is whole-heartedly grateful for the opportunity to work with Ann Van Kuren.

"I came up with an idea that reflects Ann's concerns. It's great just to get someone who is interested in your work."





Lesson 5

Urbanization and the Arts: In My World...

Objectives

Students will:

- Watch and discuss an online video by photographer Ed Burtynsky as a class.
- Apply his ideas to the urban landscape in a photography assignment.
- Create a class exhibit of images and a school gallery of captioned photographs.
- Post images to the YTCT website and Ed Burtynsky's website.

Time needed

2 class periods (50-60 minutes per class)

Materials

Lesson guide, computer with Internet access, a LED projector, digital cameras (based on the availability of students), printers, and the PhotoShop Program

Procedure

Warm-up (10 minutes)

- Ask the class to watch the video of Ed Burtynsky's talk and slideshow at:
www.ted.com/tedtalks/tedtalksplayer.cfm (10 minutes)

Activity (20 minutes)

- Facilitate a class discussion about the film and photography with the class. (20 minutes)

Wrap-up and Action (25 minutes)

- Discuss the example 'In my world... everything is recyclable' and inform students that they will be applying this 'new advertising' to their own urban environment by creating a photograph with the caption 'In my world... _____' (5 minutes)
- Assign students the task of taking a photograph in their environment and coming up with a caption to go with it. They should bring it to the next class period, depending on your teaching situation, either as a hard copy or have it ready for downloading to class computers.
- Create a school gallery of captioned photographs; invite local media to review the exhibition. Have fun with it: have an invitation-only opening night (ask students to bring desserts etc.)
- Have students post digital images to the YTCT website and Ed Burtynsky's website.

Assessment

Did students:

- Participate in class discussions about the film and photography (Activity 1)?
- Create captioned photographs of their own environments (Wrap-up 2)?
- Create a gallery of images and invite the school and local media to the event (Wrap-up 3)?
- Post images online (Wrap-up 4)?

Resources

Ed Burtynsky

<http://www.ted.com/tedtalks/tedtalksplayer.cfm>





Lesson 6

Water in the Time of Cholera

Objectives

Students will:

- Watch an online video as a class.
- Discuss questions in small groups.
- Create class criteria for an assignment.
- Complete the assignment.

Time needed

60 minutes

Materials

Lesson guide, computer with Internet access, a LED projector, and 1 copy of BLM #1 per group

Procedure

Warm-up (10 minutes)

1. As a class, watch the video Human Waste, Science and Super Cities at http://www.ted.com/tedtalks/tedtalksplayer.cfm?key=s_johnson. (10 minutes)

Activity (20 minutes)

1. Break the class into small discussion groups and supply each group with a copy of BLM #1. (5 minutes)
2. Give students 15 minutes to discuss the questions and the assignment on BLM #1. (15 minutes)

Wrap-up and Action (30 minutes)

1. As a class, discuss the assignment on BLM #1. (10 minutes)
2. Create criteria for the assignment as a class by discussing BLM #1. (20 minutes)
3. Post a copy of the criteria in the classroom.
4. Have students either complete the assignment in class or as homework. (BLM #1)

Assessment

Did students:

- Discuss the online film in small groups (Activity 2)?
- Collaborate as a class to create criteria for the timeline assignment (Wrap-up 1-2)?
- Complete the timeline assignment according to the class criteria (Wrap-up 3-4)?
- Participate in class discussions (Activity 2, Wrap-up 1)?

Resources

Human Waste, Science and Super Cities

http://www.ted.com/tedtalks/tedtalksplayer.cfm?key=s_johnson





BLM #1

Firstly, watch the video:

http://www.ted.com/tedtalks/tedtalksplayer.cfm?key=s_johnson

Secondly, discuss the following questions in a small group:

- **Water** - Where does your water come from/go to? How is it treated?
- **Pandemics/diseases** - What are the current/modern pandemics, locally/nationally/internationally? How are they dealt with? Are they more of an issue in urban areas? Why or why not? Discuss.
- **Public health** - What are the public health issues in our region/country/world? Are they more of an issue in urban areas? Why or why not? Discuss.
- **Policy and planning** - in the video, we saw how policy (dumping cesspools into the river) created more problems. What are some of the local policies that may contribute to alleviating problems in your region? How were the problems solved? (Hint: local input) Can you relate the idea of local input to a community issue? How would it help solve this issue?

Thirdly, choose a research topic and design a research assignment:

- **Individually**, consider which idea you would be most interested in researching. Discuss this with your group on how the research results could be best presented to the class.
- **As a group**, design a research assignment that could be used for any of the topics above. Include 5 criteria - Criteria should be clear and concise descriptions of the critical aspects of a presentation or a product (e.g. the assignment you will hand in). Include both quantitative and qualitative criteria, such as how long should the assignment be to answer the question (minimum, maximum)? What should the product be (poster, pamphlet, report, and video or...)? Should it include visuals? Sources? Are there more details that need to be added to the questions to focus on the topics? Should there be a presentation component?





Lesson 7

The Sustainability Puzzle

Objectives

Students will:

- Collaborate and work on consensus-building in small groups to connect political cartoons and quotations to the theme of sustainable development.
- Participate in class discussions on the issue of sustainable development.
- Prepare a written response to 'critical questions' (critical thinking) on sustainable development.

Time needed

50-60 minutes

Materials

1 copy of the Triangle Puzzle (BLM #1-1) and the Cartoons (BLM #1-2, 1-3, 1-4, 1-5, 1-6) per group, 1 copy of the Quotes (BLM #2) per group - all the cartoons and quotes should be cut individually

Subject Areas

English language arts, Social studies, Political thinking

Procedure

Warm-up (10 minutes)

1. Divide students into three groups - they can remain seated in their original seats, but specify clear lines that distinguish the three groups.
2. Give each group a beat to follow. Some examples are:

a. Group 1:	Clap - Pause - Clap - Pause	and Repeat
b. Group 2:	Clap - Snap fingers - Clap - Snap fingers	and Repeat
c. Group 3:	Clap - Clap - Drum on desk - Pause	and Repeat

3. Assign one different beat to each group. Then first separately practice that beat with each group, while the other two groups staying silent.
4. Have all the beats practice together - Start with Group 1's beat, then Group 2 follows, and finally Group 3's beat.

Activity (20-30 minutes)

1. Break students into small groups of 4 or 5.
2. Provide every group with a complete copy of the Triangle Puzzle, the Cartoons and the Quotes (the Cartoons and Quotes should be already cut individually).
3. Inform the students that they need to decide whether the Cartoons or the Quotes represent a social, economic, or environmental issue?
4. Students must then place the corresponding cartoons or quotes at the ends of the triangle to demonstrate their choices.
5. Because many of the themes are interrelated, there may be more than one appropriate spot for each cartoon or each quote. Explain that each group must reach agreement/consensus about the placement of the cartoon or the quote.





Wrap-up and Action (10-20 minutes)

1. Debrief the process and concepts with students through open discussions.
2. In students' notebooks, respond to the following questions: Is sustainability a difficult or simple puzzle? Which cartoon/quotation was the most difficult to reach consensus on? Was consensus hard to build - why/why not?

Assessment

Did students:

- Participate in collaborative group work?
- Participate in class discussions?
- Respond in their notebooks to the proposed questions?

Sources

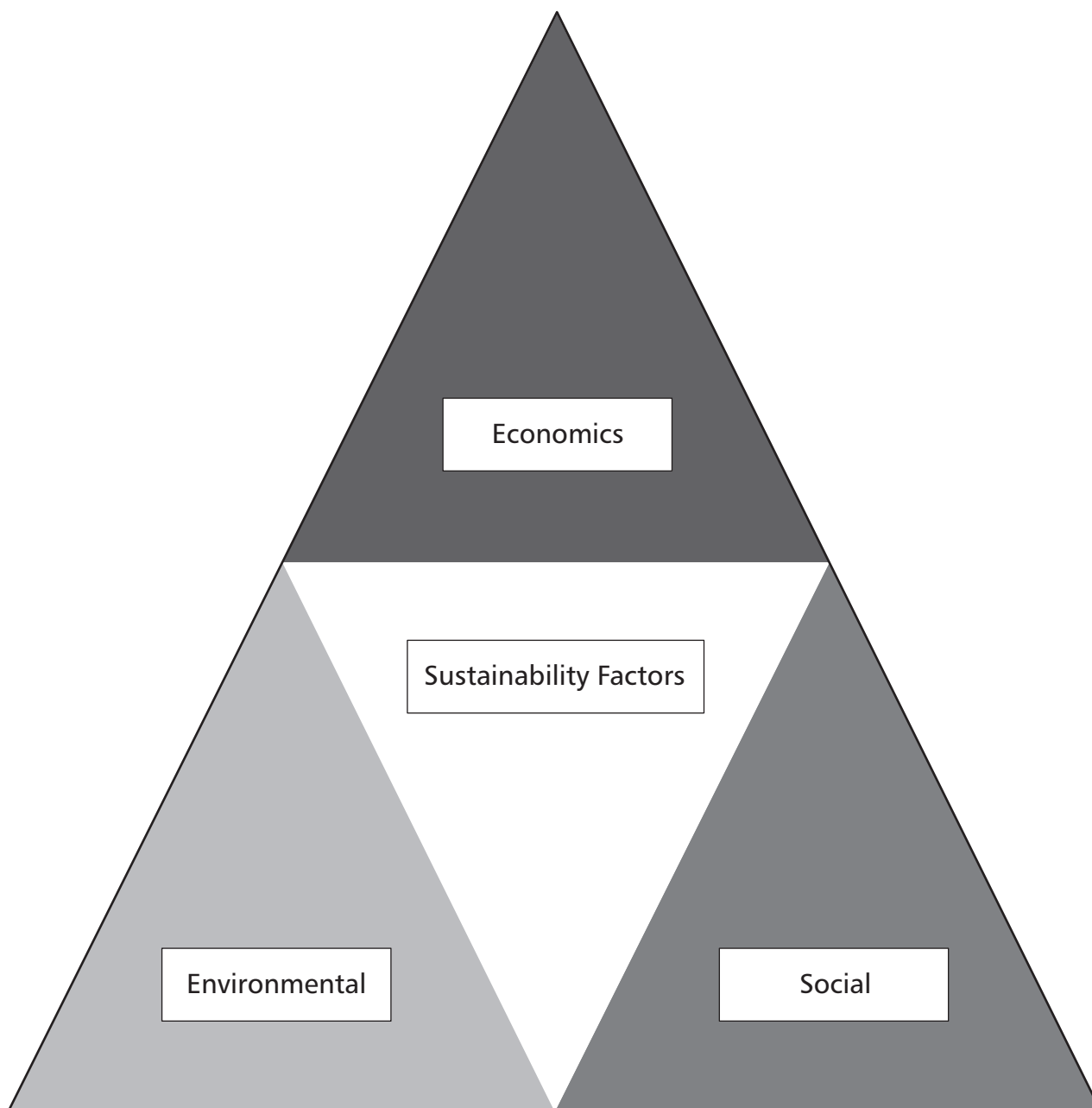
Cartoons

The United Nations Regional Information Center (UNRIC) of Western Europe



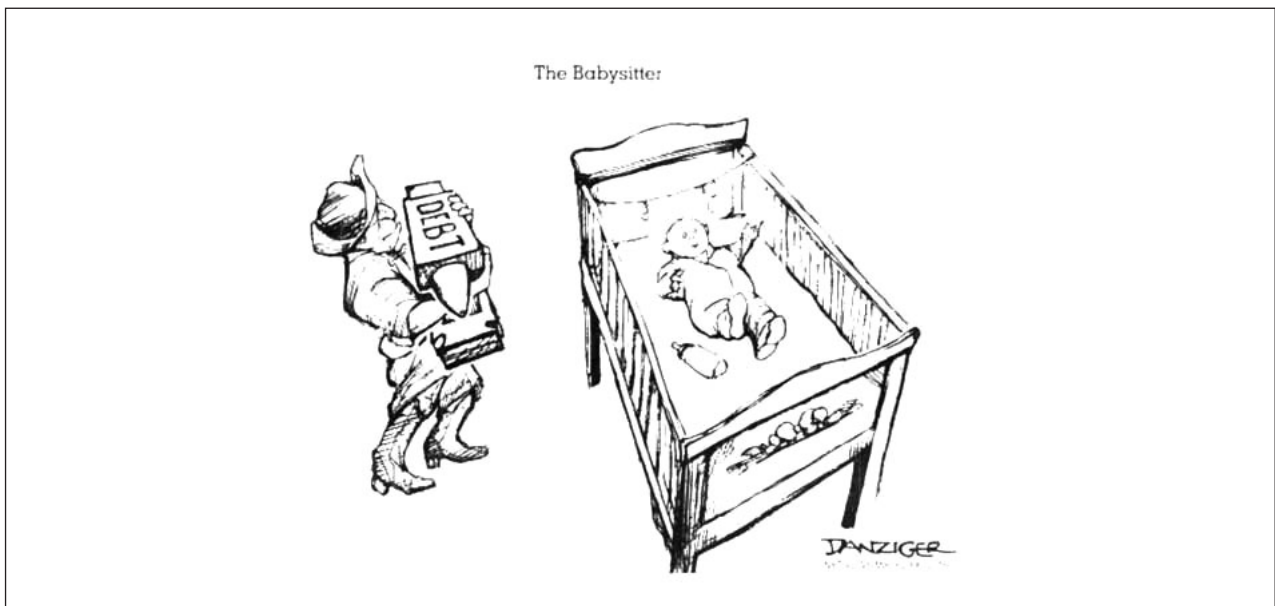


BLM #1-1 Triangle Puzzle





BLM #1-2



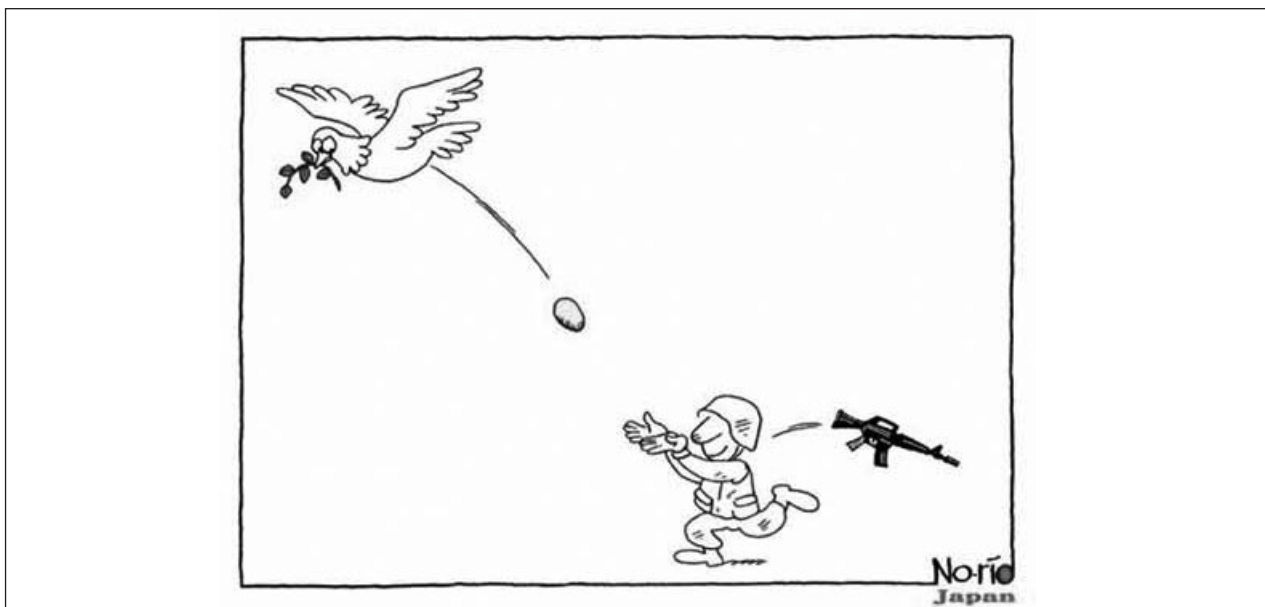


BLM #1-3





BLM #1-4





BLM #1-5





BLM #1-6





BLM #2

Quotes

Quote #1: First rule of Economics 101: our desires are insatiable. Second rule: we can stomach only three Big Macs at a time. (Doug Horton)

Quote #2: The heart of the matter, as I see it, is the stark fact that world poverty is primarily a problem of two million villages, and thus a problem of two thousand million villagers. (E. F. Schumacher (1911 - 1977))

Quote #3: A community is democratic only when the humblest and weakest person can enjoy the highest civil, economic, and social rights that the biggest and most powerful possess. (A. Philip Randolph (1889 - 1979))

Quote #4: A map of the world that does not include Utopia is not worth even glancing at, for it leaves out the one country at which Humanity is always landing. (Oscar Wilde (1856 - 1900))

Quote #5: Although the connections are not always obvious, personal change is inseparable from social and political change. (Harriet Lerner)

Quote #6: Art is the most intense mode of individualism that the world has known. (Oscar Wilde (1856 - 1900))

Quote #7: Comedy is a socially acceptable form of hostility and aggression. That is what comics do, stand the world upside down. (George Carlin (1937 - ____))





Section Two: Mini-units

Mini-unit 1

Messenger of Truthpg. 37-40

Mini-unit 2

To Expand or Not to Expandpg. 41-47

Mini-unit 3

Building a Sustainable Home (Lesson 1-15)pg. 49-67

Lesson 4

Youth Forum on Urbanizationpg. 69-75

Lesson 5

Global Change (Lesson 1-6)pg. 77-97





Mini-unit 1

Messenger of Truth

Objectives

Students will:

- Read an article about aboriginal rap artists and play a game to enhance comprehension.
- Discuss music as a communication tool.
- Present a song as a tool for communication on human settlement issues.

Time needed

60 minutes

Subject Areas

First Nations studies, English language arts, Music

Materials

1 copy of BLM #1 and BLM #2 per student

Procedure

Warm-up (5 minutes)

- Ask if anyone has ever heard of the artist Hellnback.
- Ask if anyone can think of any music that talks about human settlement issues. What are some of the human settlement issues?

Activity (35 minutes)

1. Divide the class into 2 teams and have each team member write down 3 questions and their answers that can be found by reading the article (BLM #1). Also remind students to underline the answers in the article for reference in case of dispute later. Explain other activities of this lesson to the class. (5 minutes)
2. Read Jeremy Young's article on Hellnback (BLM #1) and write down 3 questions while reading. Example questions from Paragraph 1 are: What is the community of hiphop artists in the article known as? Res Rappers? What is the epicentre of Res Rap? (10 minutes)
3. Hold a team quiz show - let each team choose sounds to indicate when they agree on the answer or announce that the time is up for the other team. One team asks a question to the other team which has 1 minute to respond - if the team gives a correct answer before the time is up, they receive 1 point; if the team gives a wrong answer or the time is up before they can give an answer, the questioning team gets 1 point. Play back and forth. (20 minutes)

Wrap-up and Action (10 minutes)

1. Discuss the question: Do you think music is a good tool for communicating human settlement issues? Can music be a tool for change?
2. Hand out the assignment/criteria (BLM #2) and discuss the assignment and its due date.
3. Carry out the presentation and assessment session - consider giving self/peer feedback using the criteria. Ask for reflections: What would I do differently next time? Did I give my best effort?





Assessment

Did Student:

- Participate in the team quiz show and class discussions (Activity 1-3, Wrap-up 1)?
- Complete the assignment and assessment (Wrap-up 3, BLM #2)?

Resources

Article about Hellnback, by Jeremy Youngthe

McGill Daily, November 13, 2006

www.mcgilldaily.com





BLM #1

"I will never stray away from my people," raps native artist Hellnback. The theme of community finds yet another artery in the great circulatory system of contemporary hip hop culture. You may not be familiar with this particular community of native hip hop artists, or Res Rappers, but the scene is growing rapidly, from the urban epicentre of Edmonton to the rural plains of both Canada and the U.S.

Res Rap blends the cultural heritage of traditional storytelling with the heavy stylistic influence of American hip hop. This cultural hybrid arose out of a connection many natives living in reservations felt with the images of impoverished urban ghettos in American hip-hop, finding it easy to identify with the hardships of black ghettos.

Res Rap is both a reference to this cultural bridge, which attempts to create a more unified North American society, and a unique form of its own. Aboriginal instruments and traditional chants frequently make their way into native producers' beats. The historical and social issues that affect the native nations are constant themes running through the lyrics. Hellnback talks about "residential mistreatin'/ the drug addiction and alcoholism/ colonialism/ in natives that's locked up in prison."

Alberta's War Party is famously known for their messages of hope and empowerment, and for informing youth about the problems of drug abuse, suicide, and political activism. Their slogan - "making music to make a difference" - can be extended to accommodate the goals of Res Rap in general. Redd Nation is another hip hop collective hailing from Alberta. Despite their strong dedication to their own Cree culture, Redd Nation denies the label of "native" for the purposes of keeping their image non-exclusive. The collective garnered quite a few nominations in the recent 2006 Aboriginal People's Choice Music Awards.

Kasp, another Cree MC from the group 7th Generation, similarly uses hip hop as a medium for change. In an interview with Exclaim!, Kasp talked about how the native youth struggle to find their own identities in the face of social deprivation.

"The kids follow what they see, right, so they're going to see some guy sipping on a 40, rockin' all this ice and saying he's dealing this and that and he's smoking all this weed - they're going to go out and do the same thing, and that's what I'm not feeling."

Litefoot, an extremely influential Cherokee rapper, has been in the music business since 1989. Not only has he succeeded in music, but he is also the CEO of Native Style Inc, a motivational speaker, a non-profit spokesperson and an actor. You may have seen him starring in such movies as *The Indian in the Cupboard* or *Mortal Kombat* - I know I did.

Hip hop acts regularly perform at large pow-wows to audiences filled with both die-hard fans and new listeners unaware of the movement. The result is always positive. Native communities feel that this popular art form is an extremely effective vehicle of promoting nation-specific values.

In American hip hop, individual identity plays a huge role. While a rapper's roots usually have a big influence, culture is often something that artists set out to oppose. For members of the Res Rap community, culture is what they set out to protect and preserve. Res Rappers are using music as a medium for political empowerment and social betterment. As Vancouver artist Os12 maintains, "our voice is our weapon/ our truth the bullets."





BLM #2

Using Song as a Tool to Communicate Human Settlement Issues

Practice Instructions:

- Choose a song which communicates an issue or issues of human settlement and answer the following questions.
- Play the song and present your responses to the class on _____ (due date).
- You may present your responses in anyway you choose. Your presentation should be 5-10 minutes.
- You may also write your own song and record or play it for the class.

Student Name _____

Song Title: _____

Artist: _____

Album: _____

Label: _____

Date/Release/Copyright: _____

Questions to be answered:

1. What urban settlement issue(s) are addressed in the song? What is the song about (message/main idea)?
2. Give some examples of lyrics which address some of these human settlement issues. How is the music used to communicate these issues (e.g. voice, sound, instruments, etc.)?
3. Do you like this artist - why or why not?
4. Do you think musician(s) have a message of truth? Explain.
5. Does the song provide solutions for any human settlement issues? Is this issue a concern locally/provincially/nationally/globally?

Assessment *(You will be assessed by the following)*

Outstanding	Good	Satisfactory	Incomplete
*Clearly meets all criteria set in instruction *Engages audience, easily understood *Presents clear message and main ideas *Shows detailed planning, excellent organization *Includes interesting, relevant details *Makes few, if any, errors *Makes insightful connections between assignment, life experience, song, and concerns beyond the classroom	*Meets all criteria set in instruction *Involves the audience, easily understood *Presents a message and main ideas *Shows careful planning and organization of material *Includes relevant details *Makes few errors *Makes explicit connections between assignment, life experience, song, and concerns beyond the classroom	*Meets most criteria set in instruction *Considers the audience and can be understood *Attempts to present a message and main ideas *Shows evidence of planning and organization *Includes some details which may not be relevant *Makes some errors *Makes connections between assignment, life experience, song, and concerns beyond the classroom	*Meets few criteria set in instruction *Fails to consider the audience, is difficult to follow *Fails to include a message or main ideas *Shows little planning and lacks organization *Gives few if any details *Makes errors which interfere with meaning *Makes few, if any, connections between assignment, life experience, song, and concerns beyond the classroom

****Highlight/Circle Statements which Best Apply**





Mini-unit 2

To Expand or Not To Expand

Objectives

Students will:

- Understand that there are a variety of perspectives to any issue and learn to respect and listen to others' opinions.
- Be able to research his or her particular issue from the perspective of his or her position and speak to the reasoning behind that position.
- Hand in research his or her position paper (BLM#1)/speak in the debate (BLM#2).
- Be appropriate with one another's opinions.

Time needed

Approximately 4 class periods (50-60 minutes per class)

Materials

Teacher background information from a variety of sources (attached in Appendices), Student Roles (BLM #4), Telephone Etiquette forms (BLM #5), Cue cards created by students

Procedure

Warm-up (15 minutes)

- Introduce the idea of local city/town expanding. (5 minutes)
- Provide to students the background of the proposed Waverly West project (or a fictitious future suburb in their community): This project will see 13,000 homes built in the southwest of Winnipeg (their community) over the next three decades, potentially affecting over 40,000 people. The mayor and two councilors have been given the task to determine whether or not to go ahead with the proposed plan. All concerned stakeholders have been invited to attend a public consultation debate to share their opinions that can assist the city council in deciding the fate of the Waverly West project. (5 minutes)
- Bring up some discussions by asking students' position - whether the project should go ahead as scheduled (for/against)? (5 minutes)

Activity (2-3 classes)

1. Students will choose/be given a role in the controversial issue of Waverly West in Winnipeg (or their community) - the roles can be chosen from the list (BLM #4), or be created by students relating to their own local situations.
2. Within the role chosen/given, students will need to:
 - Research their position and fill the outline form (BLM #3).
 - Write a position paper.
 - Create cue cards for use at the presentation debate (Max 3 minutes per student).
 - Debate and open for comments from one stakeholder to another in order to have their own supporting points accepted.
3. While researching their position, students are encouraged to contact and interview individuals (BLM #5) in the community who actually represent the position taken by the student.





Action (1 class)

1. Request students to dress up for their role and prepare a folded piece of paper with their name and role to be placed in front of them.
2. Remind students of appropriate debating behaviours, such as respect for others' opinions and good listening skills.
3. Ask students to hand in position paper prior to the debate.

Assessment

- Rating scale for position paper (BLM #1)
- Rating scale for debate performance (BLM #2)





BLM #1

Position Paper Rating Scale

Student name: _____

Total Mark /20	4	3	2	1
States position clearly				
Gives several points supporting position				
Supplies alternative views				
Defends own position against alternative views				
Spelling/grammar				

Student name: _____

Total Mark /20	4	3	2	1
States position clearly				
Gives several points supporting position				
Supplies alternative views				
Defends own position against alternative views				
Spelling/grammar				





BLM #3

Outline for Position Paper

My Role	
My position (for/against Waverly West)	
Key points about Waverly West	
Information regarding my role	
Key points supporting my position	
Potential points against my role/position	
My defense against those points against my position	





BLM #4

Student Roles as Different Stakeholders

Farmer that owns the land	Community group that lives near the proposed land, being worried about increased traffic
City councilor of inner city concerned about the "donut effect"	Tax-payer concerned about the cost of the infrastructure of this new development
Ladco Company (developer)	Urban sprawl group worried about this occurring
Council of Women - concerned about lack of public consultation	City planner who was involved in the design of Waverly West
Minister of Education - interested in the proposed 8 new schools (but going against the current government's policy that it will not build new schools or expand crammed schools in new subdivisions if there are empty seats elsewhere in the division)	Provincial bureaucrat who is in charge of the policy that the province will not build new schools or expand crammed schools in new subdivisions if there are empty seats elsewhere in the division
Big Box-store owner in the area (ex. Wal-Mart, Home Depot)	A group that says without more desirable lots people will continue to move outside the city limits
Anti-poverty group concerned of the possibility of lack of lower cost homes in the community	City Councilor in the area
University of Manitoba President	Plan Winnipeg city planner
MLA in the area	Local Hospital Administrator (who just closed their maternity ward)
The Mayor	
City Councilor who has no obvious stake in Waverly West	Or, any others proposed/created by students





BLM #5

Telephone Etiquette Form

_____	_____
_____	_____
_____	_____

What to speak

"Hello, may I please speak to _____ or someone regarding _____?"

Contact name if you have one? My name is _____, and I am a grade _____ student from _____ School."

1. Purpose: I am calling because _____

2. Information (record any information that your contact gives you):

Who you spoke to: _____

Other information: _____

"Thank you for your time. May I call you back if I have more questions?"

_____ yes _____ no

****Add and attach additional sheets if necessary.**





Mini-unit 3

Building a Sustainable Home - Lesson 1

Objectives

Students will:

- Understand that there are multiple aspects that must be considered when looking at sustainable home design and learn that they are huge consumers of water and energy
- Complete take-home water and electricity charts

Time needed

50-60 minutes

Subject Areas

Math (consumer & applied), English, Social studies

Materials

Daily Water and Energy Consumption Chart (BLM #1) - prepare 2 additional copies to total 7 days for exercise

Procedure

Warm-up (15minutes)

- Introduce to students the use of natural resources and inform them that they need to take home BLMs for recording water consumption and energy use for the next 7 days (BLM #1).
- Explain to students how to measure water consumption - determine the amount of water per flush (most toilets say it on the back of the toilet) and shower/bath capacity by filling a jug of water and timing it (e.g. if it takes 30 seconds to fill a 5-litre jug, that equals a flow rate of 10 litres per minute).
- Ask students to complete the Ecological Footprint quiz at www.redefiningprogress.org.

Activity

1. Students will now be divided into research teams of 4-5 students based on their interests. The research choices include the following:
 - **Sustainable energy sources** for home use in Winnipeg, i.e. solar panels, wind turbines, geothermal heating
 - **Sustainable energy uses** to be used within home, i.e. energy efficient appliances, lighting, heat sources, water heaters
 - **Sustainable water waste practices** within home, i.e. composting toilets, grey water diversion, ultra low-flow toilets, low-flow shower heads
 - **Sustainable interior products** to be used within home, i.e. flooring (e.g. recyclable carpet), furniture and other items
 - **Sustainable waste practices** in and around home such as the use of chemicals (phosphate free) and building supplies, i.e. the use of recycled materials to build/renovate home
2. Provide students with introductory materials to get started, e.g. MB Hydro Booklets.

Wrap-up and Action (25 minutes)

1. Students begin basic research and the development of their ideas.
2. Remind students of the take-home exercise for learning: record the daily water use and energy consumption.





Assessment

Did students:

- Record daily on the water and energy consumption chart?
- Complete the Ecological Footprint quiz?

Resources

Pamphlets, booklets, web based resources

MB Hydro

<http://www.hydro.mb.ca>

Daily Water and Energy Consumption Chart (BLM #1)

"We are all Downstream: Teaching Science from a Sustainability Perspective", by Amanda Freedman Tetrault





BLM #1

Daily Water and Energy Consumption Chart

Day of Week _____	Minutes in one day or number of times/day	# litres	Total
Shower/bath (time it takes to fill tub)	X _____	_____ =	
Toilet	X _____	_____ =	
Brush teeth	X	4 (if you leave the water running) or 1 (if you turn off the water while brushing) =	
Laundry	X	200 =	
Dishwashing	X	40 (if dishwasher) or 35 (if by hand) =	
Additional drinking water (found in foods)		15 =	
Leaky plumbing		50 =	
Total			

Day of Week _____	Minutes in one day or number of times/day	# litres	Total
Shower/bath	X _____	_____ =	
Toilet	X _____	_____ =	
Brush teeth	X	4 or 1 =	
Laundry	X	200 =	
Dishwashing	X	40 or 35 =	
drinking water		15 =	
Leaky plumbing		50 =	
Total			

Day of Week _____	Minutes in one day or number of times/day	# litres	Total
Shower/bath	X _____	_____ =	
Toilet	X _____	_____ =	
Brush teeth	X	4 or 1 =	
Laundry	X	200 =	
Dishwashing	X	40 or 35 =	
drinking water		15 =	
Leaky plumbing		50 =	
Total			





Mini-unit 3

Building a Sustainable Home - Lesson 2

Objectives

Students will:

- Understand what Sustainable Development (SD) means.
- See how an NGO applies issues of SD in a practical format within businesses and communities.

Time needed

50-60 minutes

Subject Areas

Social studies

Materials

White/chalk board

Procedure

Warm-up (15 minutes)

1. Draw a Venn diagram on the board and point to the middle of the diagram as "quality of life".
2. Ask students the question - What do we as human being need in order to have a positive "quality of life?" (Remind them to look for big-picture ideas).
3. Lead students towards the understanding that in order to have a good quality of life, which differs depending on where they live, they need to have a healthy environment to live in, some money (economics) and to be fit.
4. Encourage discussion about variance in difference areas, e.g. you might need less money to live in Winnipeg than in Vancouver or New York City. Discuss the interaction of the three factors, e.g. if you are poor and ill, would it be harder to get medication and to get better? If you are poor, would you be living in an area that has more pollution? (Or a hog factory? Relate to the idea of putting the hog factory in Tuxedo in Winnipeg - NIMBY).
5. List some points from students that fit under each category - refer to the following priority areas being designated by the United Nations (no need to mention them all):

Socio-Cultural	Environmental	Economic
Human rights Peace and human security Justice Gender equality Cultural diversity and intercultural understanding Community and culture Health HIV/AIDS Governance Demographics Equity and rights Natural resources:	<ul style="list-style-type: none"> • water • energy • agriculture • biodiversity • and habitat • conservation • fish • forests • air Climate change Rural transformation Sustainable urbanization Disaster prevention and mitigation	Poverty reduction Corporate responsibility and accountability Market economy Energy efficiency and conservation Consumption and waste management Economic performance Agricultural viability Mining Employment Education





Activity (20 minutes)

1. Explain what is called Sustainable Development or SD.
2. Ask students how do we as citizens make better choices in a sustainable manner? Give them an example of using the 4 Systems Conditions created by The Natural Step, which is a NGO created by a children's cancer doctor who saw a discrepancy between how people acted in regards to their environment and how they felt about their future.
3. Ask students what need to be kept in mind when making choices - try to lead them to come up with these 4 ideas.

The Four System Conditions

In the sustainable society, nature is not subject to systematically increasing:

- concentrations of substances extracted from the Earth's crust, (stop taking things out of the earth such as oil, minerals, etc.)
- concentrations of substances produced by society, (stop putting stuff that cannot break down into the environment and into landfills/incinerators)
- degradation by physical means (stop damaging the planet - over harvesting, losing topsoil, etc.)
- people are not subject to conditions that systematically undermine their capacity to meet their needs (make sure all humans have access to basic needs such as food, water, shelter, etc)

When making decisions, we should keep the framework in mind and will need to do that in future lessons. (Students should write these system conditions in their notebooks for future reference.)

Extension Learning Activities

Research different companies (Home Depot, Starbucks) or communities (Whistler, BC; Canmore, Alberta)

Assessment

Student class participation and discussion

Resources

We are all Downstream: Teaching Science from a Sustainability Perspective, by Amanda Freedman Tetrault
www.naturalstep.ca





Mini-unit 3

Building a Sustainable Home - Lesson 3-5

Objectives

Students will:

- Understand that there are a variety of concerns to consider when looking at what is sustainable within a home.
- Know how to use the internet and other resources to determine what is required.
- Be able to access a variety of sources for information, including local "experts".

Time needed

3 class periods (50-60 minutes per class)

Subject Areas

Social studies, Science

Materials

Internet, library access

Procedure

Warm-up (15 minutes)

Remind students of which group they chose to participate in during the first lesson:

1. Sustainable energy sources for home use in Winnipeg, i.e. solar panels, wind turbines, geothermal heating
2. Sustainable energy uses to be used within home, i.e. energy efficient appliances, lighting, heat sources, water heaters
3. Sustainable water waste practices within home, i.e. composting toilets, grey water diversion, ultra low-flow toilets, low-flow shower heads
4. Sustainable interior products to be used within home, i.e. flooring (e.g. recyclable carpet), furniture and other items
5. Sustainable waste practices in and around home such as the use of chemicals (phosphate free?) and building supplies, i.e. the use of recycled materials to build/renovate home

Activity (2 lessons)

In either the computer lab or the classroom, students will research based on the requirements of their individual topic. They have 2 lessons to complete research before presenting to the class. Students can use a variety of sources, including local experts, who can be contacted through telephone or email (BLM #1 & 2 for the telephone and email etiquette templates).

Wrap-up and Action

Students continue researching and planning presentation as "experts" in their subject area.

Assessment

Did students:

- Work independently or with their research group, either in the computer lab or the classroom, to find out what is required of their specific topic?





Resources

Telephone and email etiquette forms

We are all Downstream: Teaching Science from a Sustainability Perspective, by Amanda Freedman Tetrault,
<http://www.emailreplies.com/>





BLM #1

Telephone Etiquette Form

_____	_____
_____	_____
_____	_____

What to speak

"Hello, may I please speak to _____ or someone regarding _____?"

Contact name if you have one? My name is _____, and I am a grade _____ student from _____ School."

1. Purpose: I am calling because _____

2. Information (record any information that your contact gives you):

Who you spoke to: _____

Other information: _____

"Thank you for your time. May I call you back if I have more questions?"

_____ yes _____ no

****Add and attach additional sheets if necessary.**





BLM #2

Email Etiquette Form

Checklist

- ___ Complete subject line: _____ (Clear, short and meaningful)
- ___ Email address of person being contacted _____
- ___ Title of person contacted _____
- ___ Date email sent _____
- ___ Use appropriate titles (if person's name is known)
- ___ Introduce yourself (name, purpose)
- ___ What you are looking for _____
- ___ Ask for additional contact person(s) if this person cannot help _____
- ___ Date to response by (be reasonable) _____
- ___ Appropriate grammar
- ___ Spelling checked
- ___ No emoticons in a formal email
- ___ Pay attention to formatting - colour and font may be difficult for the reader





Mini-unit 3

Building a Sustainable Home - Lesson 6-7

Objectives

Students will:

- Understand that there are many factors to consider when looking at sustainable factors related to a home.
- Listen to presentations and present their own research.

Time needed

Two class periods (50-60 minutes per class)

Subject Areas

Social studies, English, Science

Materials

Completed student reports & presentations

Procedure

Students will present their report to the rest of the class. They will also be required to share this report with the teacher and all students electronically (to cut down on paper usage).

Assessment

Students will be assessed based on BLM #1

Resources

Students will provide an electronic copy of their report to the entire class (including resources used).

Homework Learning Activities

Students are to continue working on water and energy consumption charts





BLM #1

Group Members: _____

Date of Presentation: _____

Presentation & Written Report Rating Scale

Total /40	1	2	3	4
Presentation Basics				
Clarity, volume				
All group member participate equally				
Fall within time requirements (10-15 minutes)				
Impacts in both report and presentation				
Environmental				
Economic				
Human Health & Well-being				
Local information				
Report Basics				
Structure				
Spelling/grammar				
Minimum 2 pages type-written, emailed to teacher and class				

Additional comments of the teacher:





Mini-unit 3

Building a Sustainable Home - Lesson 8

Objectives

Students will:

- Apply what they have recorded about their water and energy consumption use.
- Attempt to decrease their individual consumption by 50% in the coming week.

Time needed

50-60 minutes

Subject Areas

Social studies, Science, Math

Materials

Completed water and energy consumption charts by students

Procedure

Warm-up (25 minutes)

Students will share their water use charts and the size of their personal ecological footprints - students will graph water use.

Activity (10 minutes)

Students will discuss implications of the total water/energy use by this classroom.

Wrap-up and Action (15 minutes)

Students will attempt to cut their water use by 50% in the upcoming week (supply them with a new copy of BLM #1). They will now be put into "Home Builder" groups - each group contains one "expert" from the five topics researched and reported in the previous classes. These groups are now given their final assignment to create their own sustainable home and to build a model of it.

Assessment

Did students:

- Complete initial water use charts and ecological footprint quiz?
- Work on completing new charts?





BLM #1

Water and Energy Consumption Chart

Day of Week _____	Minutes in one day or number of times/day	# litres	Total
Shower/bath (time it takes to fill tub)	X _____	_____ =	
Toilet	X _____	_____ =	
Brush teeth	X _____	4 (if you leave the water running) or 1 (if you turn off the water while brushing) =	
Laundry	X _____	200 =	
Dishwashing	X _____	40 (if dishwasher) or 35 (if by hand) =	
Additional drinking water (found in foods)		15 =	
Leaky plumbing		50 =	
Total			

Day of Week _____	Minutes in one day or number of times/day	# litres	Total
Shower/bath	X _____	_____ =	
Toilet	X _____	_____ =	
Brush teeth	X _____	4 or 1 =	
Laundry	X _____	200 =	
Dishwashing	X _____	40 or 35 =	
drinking water		15 =	
Leaky plumbing		50 =	
Total			

Day of Week _____	Minutes in one day or number of times/day	# litres	Total
Shower/bath	X _____	_____ =	
Toilet	X _____	_____ =	
Brush teeth	X _____	4 or 1 =	
Laundry	X _____	200 =	
Dishwashing	X _____	40 or 35 =	
drinking water		15 =	
Leaky plumbing		50 =	
Total			





Mini-unit 3

Building a Sustainable Home - Lesson 9-14

Objectives

Students will:

- Discuss in their groups as to priorities to include in their home
- Negotiate what they value as financially important
- Design a model home using recycled materials

Time needed

Five class periods (50-60 minutes per class)

Subject Areas

Social studies, Math, Science, English

Materials

Reports from previous lessons, Spreadsheet program, internet for research/email, recycled materials (brought by students)

Procedure

Warm-up (10 minutes)

1. Read Problem Based Learning BLM #1 to the class.
2. Explain to students that the teacher is a facilitator for this project and they must rely on their "experts" within their groups for guidance.

Activity (4 classes)

1. Students determine actions within their groups (see BLM #2).
2. Students work within their groups to complete their assigned tasks.

Wrap-up and Action

Students complete work and get ready for presentations next lesson.

Assessment

Did students:

- Complete peer assessment forms on the group work (BLM #3)?





Problem BLM #1

You have inherited \$250,000 from an eccentric uncle. This uncle was very concerned about the future of our planet and has made some specific stipulations on your money. In order to claim it, you must use it for a specific purpose. He knew that you wanted your own place, so the money will be used to purchase a home in the City of Winnipeg. But to get the fund released, you must give a presentation, which must be accepted by his lawyer.

The money must be used to purchase and retrofit an existing home into a sustainable home. You must determine the best way of carrying out this from your previous knowledge and your “expert” group. You must come up with real numbers and facts as well as create a model (out of recycled materials) to be shown to the lawyer.

You know that you will have roommates or hope to have a family one day, so the home should be comfortable enough for people to live together. You will have to determine where you will purchase this home (using MLS listings) and show all the materials used within the home. Imagine you are starting from scratch, as you have no furniture either. The only thing you do not need to factor in is labour, as your uncle has provisions for that.





BLM #2

Group Responsibilities Form

*Each student leads specific items, not total responsibility.

*Some examples of items that must be accomplished:

- Complete Spreadsheet organization
- Bring in specific recycled materials
- Conduct additional research
- Contact and find "expert" information, etc.

Student Name	Lead Responsibility	Date due by





Mini-unit 3

Building a Sustainable Home - Lesson 15

Objectives

Students will:

- Present model homes and spreadsheets to the “lawyer”.

Time needed

50-60 minutes

Subject Areas

Social studies, Science, English, Math

Materials

Completed spreadsheets, completed model homes

Procedure

- Finds either a local sustainability expert or even a school administrator to act as the “lawyer”.
- Students present model homes to the “lawyer”.

Assessment

Students will be assessed based on the design of the sustainable model (e.g. choice of materials, energy sources, etc.), the preparation of the spreadsheets, and the presentation to the ‘lawyer’.





Mini-unit 4

Youth Forum on Urbanization

Objectives

Students will:

- Read a planning paper and collaboratively answer and discuss questions.
- Participate in a local youth forum on urbanization.
- Use peer evaluation to discuss presentations.
- Compare opinions about important issues for the next World Urban Forum.
- Write an opinion paragraph about the most important issue and submit to UNA-Canada.

Time needed

3 class periods (45-55 minutes per class)

Vocabulary

United Nations (UN) | Habitat for Humanity | Western Economic Diversification (WD) | Youth of Today, City of Tomorrow (YTCT) | World Urban Forum (WUF) | consensus

Materials

Lesson guide, students' notebooks/pens, whiteboard/blackboard, 1 copy of each of the 8 World Urban Forum Planning papers and short summaries (BLM #4 and appendices) - divided into sections for individual students in groups (30 students = 30 different readings), 5 sticky notes, class set of computers, 1 copy of each BLM for students (4).

Notes:

- One page of a given planning paper is equal to about 500 words. Careful, silent reading of 1000 words (or 2 pages of a planning paper) should take about 10 minutes at the secondary level. Choose 500 words (or one page) at the middle school level. (Reading 44 2003:126)
- Each planning paper is 7-8 pages, therefore a class of 30 students reading about 2 pages each in 10 minutes should allow all papers to be presented. Ideally all papers will be read for this lesson; however, teachers/facilitators may decide to choose specific papers for smaller class sizes or to meet specific provincial learning outcomes.

Background Research Paper(s)

All research papers

Procedure

Warm-up (Class 1)

1. Inform students that in this lesson, they will be acting as if they were the youth delegates from their city at the UN HABITAT World Urban Forum in Nanjing in 2008. They will be examining one of the most pressing issues in the world today: rapid urbanization and its impact on communities, cities, economies, and politics.
2. Students respond in their notebooks to the following question written on the board: From your perspective, what is the biggest problem in cities today?
3. Quickly facilitate responses from each individual. Comment on the diversity/similarity of issues mentioned.





Activity (Class 1-2)

1. Explain to students that in this lesson, they will be reading planning papers commissioned by the Western Economic Diversification (a division of the Government of Canada) on ideas and issues discussed at the World Urban Forum in Vancouver in 2006.
2. Divide class into 8 'task forces' (groups) named after the planning papers and either hand out 1 of 8 planning papers to each group (to be divided up among members), or use the online versions on the YTCT homepage at www.unac.org/YTCT.
3. Hand out a copy of planning paper summaries to each individual (BLM #4)
4. Have students read their sections of the paper, then answer the questions on BLM #1 individually and in small groups/task forces. (30 minutes)
5. Ask students to organize a presentation for the youth forum (BLM #1)

Class 2:

1. Hold the youth forum on urban settlement issues. Put the class into a large circle for the forum. Each group will have 3 minutes to report their findings (answers) to the class. Remind students that they will be critiquing another group's presentation (BLM #1).
2. Group critiques follow at the end of the forum. Ask each individual in the group for their feedback (BLM #1). (20 minutes)

Wrap-up and Action (20 minutes)

1. Read BLM #2 with students and ask them to complete the opinion portion. Pass out 5 sticky notes for each student during this time.
2. Ask each student to give their top 3 issues and write them on the board as they say them (leaving room for sticky note voting). Write each issue down only once on the board - ask students to say only issues which have not yet been written. (5 minutes)
3. Allow students to cast 5 votes with their sticky notes. Let them know if an issue is particularly important to them, they may vote more than once for that issue. (2 minutes)
4. Examine the voting to see which issues emerge as the top 5. Negotiate a consensus with the class. You may need to discuss true consensus and majority rules. Ask students to write down the class' top 5 issues and respond to the consensus question. (5 minutes)
5. Assign the paragraph writing and give students the opportunity to make notes on the issue, while the forum discussions are still fresh. Explain that these paragraphs will be posted online at the YTCT site and accessed for next WUF.
6. Assign Poster project (BLM #3).

Class 3 (optional)

- Work period for posters/paragraphs.

Assessment

Did students:

- Read a WED Planning Paper and answer questions individually to share with a group (Activity 3)?
- Collaborate with others and work effectively in a group to present a planning paper at a youth forum on urbanization (Activity 4-5)?
- Provide critique to another group's presentation and express opinions verbally to class (Activity 6)?
- Decide/write which issues are most important in their opinion, offering some solutions (Wrap-up 1)?
- Participate in the process of finding class consensus on important urban issues (Wrap-up 3-4)?
- Write an opinion paragraph about an urban issue (Wrap-up 5)?
- Participate in class discussions (Warm-up 3, Wrap-up 4)?
- Create a poster on a current event and planning paper (Wrap-up 6)?

Resources

Reading 44, A Core Reading Framework, SD No. 44, North Vancouver: 2003





BLM #1

World Urban Forum (WUF) Task Force:

'The _____ City'

WUF Delegate Name: _____ Home Community: _____

Planning Paper section, page numbers: _____

READ your section of the planning paper and answer the following questions in writing:

1. What are some of the main issues/problems in your section of the planning paper?

2. What solutions does the paper suggest responding to the issues?

3. What facts or ideas did you find the most interesting?

SHARE your answers with your group in the order the paper was written.

DISCUSS as a group (designate a scribe to record ideas):

4. The summary of the paper - is it accurate? Why/why not? What issues stand out most to you? How can you relate this planning paper to the community in which you live? Does this paper apply more to a global perspective, or a national, or a regional one?
5. Do you think this paper topic is included in a forum on urban issues (WUF)? Why?

ORGANIZE a two-minute group presentation on your paper. To do so, read the summary and the critique criteria and apply the most important/interesting ideas discussed in your group. Decide who will say what and in what order.

PRESENT your paper as a group at the mini-conference.

CRITIQUE another group's presentation.

Critique Criteria: 'The _____ City'

1. Did the presentation relate the planning paper to our community/city?
2. Did the group relate the planning paper to the world picture?
3. Did the group use examples to illustrate their main points?
4. Did the group discuss why this topic is important to the WUF?





BLM #2

Opinion and Consensus

You have now read and discussed more about human settlement issues than most people on the planet. (Congratulations!) If you were participating in the planning of the next World Urban Forum, list in order of importance, your opinion of the five most important issues for Youth of Today, Cities of Tomorrow.

OPINION

1. _____
2. _____
3. _____

What is/are some solution/s to your main issue (#1)?

Write the community consensus top 5 issues.

CONSENSUS

1. _____
2. _____
3. _____
4. _____
5. _____

Did you feel that this process resulted in a true consensus or were some of your ideas left out? Do you think this is fair?

Choose one of the top 5 issues (or one of your own if you did not feel consensus was reached) and write an paragraph expressing your opinions on 'Why this issue is an important topic for the next World Urban Forum.' Your paragraph should include 5-7 points to support your opinion and identify some possible solutions.





BLM #3

Urbanization and Communication

Follow the local, national, and international newspapers in the coming weeks and find an article on urbanization/human settlement issues, specifically on one of the World Urban Forum (WUF) Planning paper themes. Create a poster using images and words to convey the five main ideas in the article. Tie it to the WUF planning papers.

Name _____

Name of Article & Author _____

Publication _____

Date of publication _____

1. What are the five most important/interesting facts/ideas in the article?

- a) _____
- b) _____
- c) _____
- d) _____
- e) _____

2. What is the main point that the article is trying to make?

3. What solutions, if any, does the article suggest would help solve the human settlement issue?

4. Which planning paper best applies to the issue?





BLM #4-1

Research Paper Summaries

The Learning City

- "Empowerment comes through knowledge."
- Partnership Building: Academic Institutions should court corporate, government, community partnerships.
- Improving Service: Increase quality of education, access to education for all; educators need to include issues of sustainability in curriculums.
- Improving Design: Campuses should be eco-friendly; offer green-zones; build energy efficient buildings.
- Making Changes in teaching: Educate those who affect change; students should be allowed to study a variety of subjects.

The Resilient City

- Industry closure trends
- Economic Loss
- Population Loss
- Environmental Damage

All lead to the closure of cities.

- Cities need to anticipate industry closures in urban planning.
- All stakeholders should expect to provide financial support to cities that have been closed due to industry/resource depletion.

The Youth Friendly City

More than 50% of the World's Urban Population is under the age of 19.

- Nations need to actively engage youth in governance.
- Youth tend to be prone to higher levels of poverty, social inclusion, substance abuse, crime, sexual exploitation, and HIV/AIDS, etc.
- As a result, Media portray youth as incapable, violent, uncommitted individuals, stereotypes, which create barriers.
- *REDWIRE Magazine- Example of Alternative Media Breaking down boundaries
- Outreach Efforts need to recognize and include non-mainstream groups.
- Partnerships with youth promote capacity-building and youth who are open to change.
- Think Globally, Act Locally. Youth can often affect change. Example: "Growing up in Cities." The idea of going 'Global'.





BLM #4-2

The Livable City

- Green Space in a concrete jungle
- Public Transportation/Access for all
- Public Celebrations-Promote Civic pride
- Social Services need to be in place for all groups, including those that tend to be marginalized.
- Cities Plus - A model adopted by the Greater Vancouver Regional District
- Infrastructures need to be in place to combat crime

The Planning City

Future City Planners need to look towards three themes of sustainability:

- Economic Sustainability
- Social Sustainability
- Environmental Sustainability

The Ideal City

The Ideal City deals with such themes as:

- Utopia
- Fine line between the Ideal City and an Autocratic State
- There are differing perspectives as to what constitutes the perfect city.
- Great paper for educators to challenge their students

The Secure City

The Secure City deals with such headline grabbing topics as:

- Pandemics: SARS, Avian Influenza
- Global Terrorism
- Urbanization: Coastal Cities on the edge. Ecosystem Degradation.
- Vulnerabilities in the Urban System: Crime, drug-related trafficking,
- Community Safety
- Landscapes of Fear
- Crystal Meth on the rise
- Tent Cities - The divide between the Haves and Have-not's is enormous.





Mini-unit 5

Global Change - Lesson 1

Objectives

Students will:

- Work in pairs to complete a 'quiz'.
- Discuss their experiences of global cities.
- Complete a reflection on the class discussion.
- Complete an assigned homework page for the following class.
- Begin building unit portfolio of urbanization and global change

Time needed

45-50 minutes

Subject Areas

English language arts, Social studies

Materials

1 copy of BLM #1 per student/pair, student notebooks/pencils, 1 copy of BLM #3 per student

Procedure

Warm-up (15 minutes)

1. Ask students to form pairs for a pop quiz - explain it is not for marks. You could also do this quiz as a class to cut down on photocopying.
2. Hand out the urbanization quiz (BLM #1) to complete together. Mark orally with BLM #2.

Activity (15 minutes)

1. Let students know that you are beginning a mini-unit on urbanization and global change and that all assignments will become part of an individual unit portfolio - hand out the general criteria (BLM #4).
2. Explain that a class discussion on urbanization will be facilitated.
3. Facilitate a class discussion on students' experiences of cities by asking questions such as those bulleted below - allow storytelling and encourage all students to participate:
 - What is the largest city you have ever been to and what province/country/continent is it in/on?
 - What are large cities like? Does anyone have a story to tell about an experience there?
 - What is the nicest city you've ever been to and why?
 - How does your city/community compare to large cities?
 - What are some of the good things about cities (small ecological footprint/capita; innovation due to people meeting together; arts and culture etcetera)? What are some of the bad things about cities?

Wrap-up (15 minutes)

1. Ask students to respond to the reflection questions on the board; complete and hand in a written reflection on the class discussion.
2. Hand out homework assignment (BLM #3) and go over it with students - fill in due date.
3. Explain that next class they will share their information with a group - marks will be given for the quality of its completion (outstanding, good, satisfactory, or incomplete)
4. Explain that articles and summaries will be posted in the classroom.





Assessment

Did students:

- Complete the urbanization quiz and participate in class discussions?
- Reflect on class discussions?
- Complete the homework assignment?





BLM #1

Urbanization Quiz

Name _____ Date _____

- 1) The world population is _____.
- 2) The largest city (by population) in the world is _____.
- 3) Urban is another word for _____.
- 4) Rural is another word for _____.
- 5) Is Urbanization the growth? OR the shrinking? of cities. *(Select one and circle/underline it.)*
- 6) Homeless people in London England live 25 years less/10 years less/3 years less than other Londoners?
(Select one and circle/underline it.)
- 7) The population density of Tokyo, Japan is about 10 times higher than the population density of Houston, Texas, USA; but on average, each person in Houston consumes over 7 times more fuel than the average person in Tokyo. Why?

- 8) To be healthy, a city must meet the _____ needs of _____ who lives there.





BLM #2

Answer Key to the Urbanization Quiz

- 1) World population 6,584,390,998, as of 5:44 EST Mar 25, 2007
- 2) Urban is another word for cities.
- 3) Rural is another word for countryside or agricultural areas.
- 4) Urbanization means the growth of cities.
- 5) Before 2050 it is expected that urban areas will have more people than rural areas.
- 6) Homeless people in London England live 25 years less than other Londoners.
- 7) The population density of Tokyo, Japan is about 10 times higher than the population density of Houston, Texas, USA but on average each person in Houston consumes over 7 times more fuel than the average person in Tokyo. WHY? Answers will vary - discuss.
- 8) To be healthy, a city must meet the BASIC needs of EVERYONE who lives there.





BLM #3

Global Cities

Pay attention to the media this week and find some information about a city in North America and another one about a city outside of North America.

Bring in the articles and the completed summary page below and present to the class on _____ (date).

North American City

City: _____

Country: _____

Continent: North America _____

Source of Information _____

Summary of information: _____

International City

City: _____

Country: _____

Continent: _____

Source of Information _____

Summary of information: _____





BLM #4

Portfolio Assessment

Assessment (You will be assessed by the following)

Outstanding	Good	Satisfactory	Incomplete
<ul style="list-style-type: none"> *Clearly meets all criteria set in instructions *Engages audience, easily understood *Presents clear message and main ideas *Shows detailed planning, excellent organization *Includes interesting, relevant details *Makes few, if any, errors *Makes insightful connections between assignment, life experience, and concerns beyond the classroom 	<ul style="list-style-type: none"> *Meets all criteria set in instructions *Involves the audience and is easily understood *Presents a message and main ideas *Shows careful planning and organization of material *Includes relevant details *Makes few errors *Makes explicit connections between assignment, life experience, and concerns beyond the classroom 	<ul style="list-style-type: none"> *Meets most criteria set in instruction *Considers the audience and can be understood *Attempts to present a message and main ideas *Shows evidence of planning and organization *Includes some details which may not be relevant *Makes some errors *Makes connections between assignment, life experience, and concerns beyond the classroom 	<ul style="list-style-type: none"> *Meets few criteria set in instruction *Fails to consider the audience is difficult to follow *Fails to include a message or main ideas *Shows little planning and lacks organization *Gives few if any details *Makes errors which interfere with meaning *Makes few, if any, connections between assignment, life experience, and concerns beyond the classroom

****Highlight/Circle Statements which Best Apply**





Mini-unit 5

Global Change - Lesson 2

Objectives

Students will:

- Present articles found in newspaper.
- Group articles by continent in class display.
- Participate in class discussions.
- Complete a reflection on the class.
- Complete an assigned homework reading and summary sheet for the following class.

Time needed

50 minutes

Subject Areas

English language Arts, Social studies, First Nations studies

Materials

1 copy of BLM #1 per student, student notebooks/pencils, black/white board, wall/bulletin board space, 1 copy of BLM #2 or BLM #3 per student

Procedure

Warm-up (15 minutes)

1. Ask students to walk around the classroom and find a group of 3 to share their North American articles with.
2. Have students find a second group of 3 to share their global article with.

Activity (20 minutes)

1. Ask students to then get into continental groups according to their global article.
2. Have them post their articles and summaries in the classroom in their continental groups, assist them to group their display according to social, environmental, and economic issues.
3. Have continental group do a quick presentation of the cities and issues addressed in their articles.
4. Ask students to respond to the following reflection questions to be handed in at the end of class:
 - Do the articles represented in your classroom have a more positive or a more negative message about urbanization? Support your opinion.
 - What is the most interesting article/information you heard about?
 - What was the most concerning article/information you heard about?

Wrap-up (15 minutes)

1. Hand out homework reading (1 of 4 readings) (BLM #2-4) and sheet (BLM #1); go through them with students.
2. Explain to the students that next class they will be expected to share their information with a group and the class, as well as hand in BLM #1.

Assessment

Did students:

- Complete the reflection?
- Participate in class discussions?

Resources

<http://www.citymayors.com/>, <http://www.cbc.ca/correspondent/060507.html>





BLM #1

Name: _____

Article Title: _____

Author: _____

What are the 5 most important/interesting ideas in the article? You can support these ideas with facts or statistics.

1. _____

2. _____

3. _____

4. _____

5. _____

What is the main point that the article is making?

What solutions/examples does the article suggest would help solve problems or alleviate concerns of urbanization?





BLM #2

Progress in the world's cities will decide the future of Planet Earth

A report by the Worldwatch Institute

http://www.citymayors.com/society/cities_earth.html

13 January 2007: If global development priorities are not reassessed to account for massive urban poverty, well over half of the 1.1 billion people projected to join the world's population between now and 2030 may live in under-served slums, says a report published in January 2007. Additionally, while cities cover only 0.4 per cent of the Earth's surface, they generate the bulk of the world's carbon emissions, making cities key to alleviating the climate crisis, notes the report.

The report 'State of the World 2007' by the Washington-based Worldwatch Institute further points out that as recently as a century ago, the vast majority of the world's people lived in rural areas, but by sometime during 2008 more than half of all people will live in urban areas. Over 60 million people—roughly the population of France—are now added to the planet's burgeoning cities and suburbs each year, mostly in low-income urban settlements in developing countries.

Unplanned and chaotic urbanization is taking a huge toll on human health and the quality of the environment, contributing to social, ecological, and economic instability in many countries. Of the three billion urban dwellers today, one billion live in slums, defined as areas where people cannot secure key necessities such as clean water, a nearby toilet, or durable housing. An estimated 1.6 million urban residents die each year due to lack of clean water and sanitation as a result.

For a child living in a slum, disease and violence are daily threats, while education and health care are often a distant hope," said Molly O'Meara Sheehan, Worldwatch project director. "Policymakers need to address the 'urbanization of poverty' by stepping up investments in education, healthcare, and infrastructure." From 1970 to 2000, urban aid worldwide was estimated at \$60 billion—just 4 per cent of the \$1.5 trillion in total development assistance.

The Commission for Africa has identified urbanization as the second greatest challenge confronting the world's most rapidly urbanizing continent, after HIV/AIDS. Only about 35 per cent of Africa's population is urban, but it is predicted that this figure will jump to 50 per cent by 2030. "The promise of independence has given way to the harsh realities of urban living mainly because too many of us were ill-prepared for our urban future," notes Anna Tibaijuka, executive director of UN-HABITAT, in the report's foreword. The report also describes how community groups and local governments have emerged as pioneers of groundbreaking policies to address both poverty and environmental concerns, in some cases surpassing the efforts of their national governments. "The task of saving the world's modern cities might seem hopeless—except that it is already happening," said Christopher Flavin, president of the Worldwatch Institute. "Necessities from food to energy are increasingly being produced by urban pioneers inside city limits." Among the many examples of cities taking the lead in shaping a sustainable future cited in the report:

In Karachi, Pakistan, the Orangi Pilot Project has linked hundreds of thousands of low-income households in informal settlements with good-quality sewers. By taking charge of the pipes connecting their houses to lane sewers, local residents cut costs to a fifth of what they would have been charged by the official water and sanitation agency.





- In Freetown, Sierra Leone, after the cessation of a multi-year civil war, a swelling population has successfully turned to urban farming to meet much of its food demand.
- In Rizhao, China, a government programme enabled 99 per cent of households in the central districts to obtain solar water heaters, while most traffic signals and street and park lights are powered by solar cells, limiting the city's carbon emissions and urban pollution.
- In Bogotá, Colombia, engineers improved upon the iconic bus rapid transit system of Curitiba, Brazil, to create the TransMilenio, which has helped decrease air pollution, increase quality of life, and inspire similar projects in Europe, North America, and Asia.

Cities around the world have also begun to take climate change seriously, many in response to the direct threat they face. Of the 33 cities projected to have at least 8 million residents by 2015, at least 21 are coastal cities that will have to contend with sea-level rise from climate change.

In the United States, over 300 cities-home to more than 51 million Americans-have joined the US Mayors' Climate Protection Agreement, committing to reducing their emissions and lobbying the federal government for a national climate policy. Chicago, for example, has negotiated with a private utility to provide 20 per cent of the city government's electricity from renewable sources by 2010, and aims to become "the most environmentally friendly city in America." Not to be outdone, New York mayor Michael Bloomberg recently announced plans for his city to become the nation's leader in reducing greenhouse gas emissions.

While no single set of 'best practices' would enable all cities to successfully address the challenges of poverty and environmental degradation, the report focuses on areas where urban leadership can have huge benefits for the planet and human development. These include providing water and sanitation services to the urban poor, bolstering urban farming, and improving public transportation. Additionally, the report recommends devoting more resources to information gathering on urban issues so that city, national, and international entities can better assess development priorities.

"A city is a collective dream. To build this dream is vital," observes Jaime Lerner, the former governor of Paraná, Brazil, and the former mayor of Curitiba, in his foreword to the report. "It is in our cities where we can make the most progress toward a more peaceful and balanced planet, so we can look at an urban world with optimism instead of fear."





BLM #3

Megacities must urgently address the needs of slum dwellers to prevent human disaster

By Patricia Nunan (VoA), with additional research by City Mayors

8 March 2006: The world's population is booming - no more so than in its cities. Today, there are 21 megacities around the world, three-quarters of them in developing nations like India. By 2020, research by City Mayors predicts there will be at least 27 megacities. That staggering rate of urbanization brings its own problems, especially in developing nations, where the majority of the megacities will be found. Mumbai (formerly Bombay) is one of India's megacities and forecast to become the world's second-largest urban agglomeration.

Employment and educational opportunities are the main attraction of urban centers. But hopes for a better life are often dashed as overpopulation puts a huge strain on cities' infrastructures and their ability to provide basic necessities - like clean water and a decent place to live.

Many rural migrants who come to Mumbai fail to find adequate work, and therefore cannot afford decent housing. The World Bank says 54 per cent of Mumbai's 15 million residents live in slums.

The problem of slums caused by migration is shared by India's other two megacities, Delhi and Calcutta, as well as urban centers throughout the developing world. The problem is pressing, with the United Nations predicting half the world's population is expected to be living in cities by next year.

The three fastest growing megacities are Mumbai, India; Tokyo, Japan; and Lagos, Nigeria. India's former chief city planner, Edgar Ribeiro, says Mumbai was doing moderately well by comparison. "Comparing these three, they say that infrastructure is so weak in Lagos and it cannot catch up with the rate of growth, so it's already a disaster," he says. "Tokyo will never face a disaster because it knows how to deal with [it] in its investments in infrastructure and services. Mumbai has learned how to deal with it. It's not good enough. It's not bad enough either. It's somewhere in between." Still, nearly everywhere that there is a spare piece of land in Mumbai, slums emerge along the side of train tracks and highways, and even on sidewalks. Many say addressing land and housing issues should be the city's top priority.

Ribeiro disagrees. He says the demands of transport, improved housing for slum residents, environmental protections and other issues must all be addressed in tandem to catch up to residents' needs. "Today the infrastructure in Mumbai would have been wonderful for eight million, but you have 12 million," he explains. "When you start improving it, you will say it's wonderful for 12 million - but it's gone up to 16, and so on. It is catching up - infrastructure. How fast it is catching up, how fast it learns to have integrated growth are the issues."

In the meantime, there is a pressing need for basic amenities for slum residents. Darryl D'Monte, an environmental journalist and an advocate for improved urban planning, explains what might help. "If you granted them a lease - not everywhere, but in some places, a lease meaning you have a right to rent your pitch, your space, you pay a rent. Don't forget that's 1.1 million families. You pay rent of 100 or 200 rupees a month - that's enough for the government to provide these basic amenities, which is water, sanitation, lighting," he said. "[And] the big advantage of that alternative is that you'd provide employment within the slum for masons, carpenters."





Improving conditions for slum-dwellers is also a matter of public health. In the Mumbai slum of Golibar, a room about 15 square meters is home to a family of eight. Among them is Dewa Ramchandra Bhalerao, 21, who has been fighting tuberculosis for four years. His sister-in-law, who also lived here, recently died of the disease, leaving behind a young son. The family has nowhere to go outside the slum, and Bhalerao says he's afraid he may be infecting the others. He says he is trying to get well, but he can no longer afford the expensive medicine, and his health has declined and he cannot eat well. He says he is really scared since his sister-in-law died.

The threat of diseases in crowded cities has taken on a new urgency with the looming threat of a bird flu pandemic. India reported its first ever outbreak in chickens in Maharashtra state, where Mumbai is located. Officials have contained the spread and there are no cases of humans becoming infected for now. "[It's] very difficult to gauge the magnitude in that case," says Dr. Tushar Rane, who is with UNICEF. "But definitely the magnitude is on the higher side for all the airborne diseases. We have seen tuberculosis or measles - which we see as the major killer of the child. But we haven't seen such an epidemic or such a thing happening in the slum area." Could it be a disaster? "Yes," replies Dr. Rane, "it could be a very big disaster." Like in so many developing nations, Indian authorities are working to improve infrastructure and slum conditions, but resources are limited. Mumbai's population will continue to grow. The question is whether the city and other mega-cities like it - can take the strain.





BLM #4

Slum Cities: A Shifting World

May 7, 2006

<http://www.cbc.ca/correspondent/060507.html>

(This is a description of the CBC show the Correspondent which aired on May 7, 2006 a documentary by Avril Benoît)

Every year, millions of people around the world are leaving the countryside for cities, hoping to find a better life. But most end up in slums. In fact, the United Nations estimates that by the year 2020, 40% of the population will be slum-dwellers.

We travel with CBC reporter Avril Benoît into the slums of Mumbai, India and Rio de Janeiro, Brazil. Her journey through areas suffering from abject poverty is also a journey to the heights of human strength and tenacity.

MUMBAI

The city of Mumbai (formerly Bombay) has a population of 10 million. Double that if you were encompassing the greater metropolis. Mumbai is the largest city in India - the third largest in the world, after Tokyo and Mexico City, according to City Mayors. While slum pockets cover a mere 6% of the land in Mumbai, they hold 60% of the population. This means that those tiny slum enclaves hold a staggering 6 million people. Avril travels with her crew to Dharavi, the largest slum in Asia. There, her visit highlights the mixed results of India's slum rehabilitation projects.

Mumbai's slums are under mounting pressure. The land they sit on is in the heart of the city-some of the most valuable real estate in Asia. But they're illegal-the residents have no title to the land. The state has entered into deals with private industry to re-develop the land and provide new housing for slum dwellers-but that housing is often out in the countryside, far from the places most slum dwellers work.

Our cameras were rolling during a very dramatic scene - a slum demolition by government crews that happened without warning to the residents. This near-daily occurrence has a devastating impact on its dwellers. These flimsy shacks are their everything - their home, their shelter, their only possession. But these slum dwellers are the backbone of India's society and economy. They work as construction workers, train operators, factory workers and do all the other low-paying jobs that keep Mumbai's economy functioning.

Avril takes the viewers to meet with various stakeholders in Mumbai's slum situation:

- * Mukesh Mehta, a developer with a grand scheme to transform Dharavi into a middle class neighbourhood.
- * P.K. Das, an urban planner and architect with doubts about Mehta's plans for a "Slum-Free Mumbai."
- * Jockin, head of Shack/Slum Dwellers International
- * Aasif, a young man you might have talked to-he works at a call centre, fielding calls from North America & Britain. He lives in "Squatter's Colony," another of Mumbai's illegal settlements. He strives to move up in the world and, more importantly, "out" of the slum.

And we hear the passion of Shabana Azmi, a Bollywood star and Member of Parliament fighting for the rights of slum-dwellers.





RIO DE JANEIRO

Rio de Janeiro is home to 12 million people. One third of Rio's population lives in slums, known as favelas. There are almost 800 favelas in Rio de Janeiro alone. They often co-exist side by side -- but in sharp contrast with the opulent neighbourhoods and tourist-filled beaches of Ipanema and Copacabana.

Avril takes the viewer on an exploration of the bustling favela of Rocinha, the largest in Rio. Although Rocinha is still a favela, it has developed from a shanty town into an urbanized slum. Unlike the wooden shacks that are characteristic of the slums of Mumbai, the favelas of Rio de Janeiro are substantially more built up. Almost all the houses in Rocinha are five to seven stories high and made of concrete with basic sanitation, plumbing and electricity. But don't let this facade fool you.

Rocinha, like many of Rio's favelas, falls under the control of drug-trafficking groups and gangs. These groups maintain a very high level of control over social behaviour, strictly prohibiting street crimes such as rape, muggings and break-ins. They are, however, heavily involved in drug-trafficking. Rocinha alone is responsible for 30% of narcotraffic in Rio. Such gangs in Rio have historically been involved in armed struggles, bank robberies, kidnapping and murder. Not only that, but the frequency of gun battles between police and rival gangs in these communities present real dangers. Our crew got caught up in a gun battle as the cameras were rolling. It was a dangerous experience for the crew but a true reflection of the dangers that underlie a seemingly quiet veneer.

However, the residents of Rocinha are tenacious and entrepreneurial. We meet::

*Valda Lopes, a businesswoman from Rocinha who set up a small boutique in the squatter community

*Washington Ferreira, a young man who volunteers his time teaching adults and children English

*Tony Barros, a photographer who works in Cidade de Deus (City of God), one of the poorest and roughest of Rio's favelas. He hopes to reflect through his photography both the beautiful and the tragic aspects of life in the favelas to a world audience.

We then go to Vigário Geral, another favela on the northern edge of Rio de Janeiro that is infamous for its intense drug trade and for a massacre in 1993 in which police killed 21 residents. There, we meet members of the rock and hip hop band AfroReggae whose members empower children from Rio de Janeiro's favelas through workshops in dance and art. They use culture to steer youths away from the drug trade and provide them with the means to communicate with society in a way that has captured the attention of national and international foundations, governments and the news media.





Mini-unit 5

Global Change - Lesson 3

Objectives

Students will:

- Share assigned article summaries with a group.
- Participate in group discussions.
- Create a group poster to convey the most important points of the article.
- Write a reflection for a pamphlet project on urbanization.

Time needed

50 minutes

Subject Areas

English language arts, Social studies, First Nations studies

Materials

Student homework assignments from last class, chart paper (5-10 pieces per 4-5 students), coloured markers for each group, 1 piece of white paper (letter) per student

Procedure

Warm-up (25 minutes)

1. Students get into groups of 4-5 members who have read the SAME article.
2. Students will share their main points and ideas with their group and create a group poster to convey the main ideas/solutions of the article on a piece of chart paper - students should try to present the information in an engaging way. (20 minutes)
3. There may be 2 or more groups who have read the same article - they will both present.

Activity (20 minutes)

1. Each group presents their chart paper articles and posts them on the wall of the classroom (about 3 minutes per group for the presentation).
2. As groups are presenting, students will reflect on a blank piece of paper - e.g. explain this will be used for a pamphlet project on urbanization in classes to come - reflections can be pictures, city names, statistics, facts, ideas, words...
3. May model this on the board during the first group presentation.

Wrap-up (5-10 minutes)

1. Students will complete reflections and may walk around classroom to get details from posters or articles to add to their draft.
2. Put names on reflections and hand in before class is dismissed.
3. Ask students: Have you ever noticed how, once you read or hear about something new (a word or idea), suddenly you see it again?
4. Assign homework to students: keep eyes and ears open for information about urbanization - jot it down - consider offering bonus marks for anyone bringing in anymore information on urbanization.





Assessment

Did students:

- Complete the reflection?
- Participate in class discussions and presentations?

Resources

<http://www.citymayors.com>



United Nations Association in Canada
Association canadienne pour les Nations Unies



Mini-unit 5

Global Change - Lesson 4

Objectives

Students will:

- Create graphs from population tables.
- Participate in group discussions.
- Answer questions about statistical trends.

Time needed

50 minutes

Subject Areas

English language arts, Social studies, First Nations studies

Materials

1 copy of BLM #1 for each student, student notebooks/pencils, graph paper (2 per student), 1 coloured pencil package per group of about 5-6 students

Procedure

Warm-up (5-10 minutes)

1. Ask for homework assignments from last class - students can share it with the class (make sure you have something to share as the teacher).
2. Ask the population of Canada (32,650,000); Tokyo (35,000,000); France (60 million).

Activity (30 minutes)

1. Explain that the class will be working with statistics in groups.
2. Explain that they will be given some data in tables, questions, and the challenge to create a single graph out of the data - explain that they will be given 2 pieces graph paper, a set of colored pencils and that they should work together - ask them to put their desks into a group of 4-5 students.
3. Hand out assignment - facilitate its completion.

Wrap-up (5-10 minutes)

1. Wrap-up by brainstorming for urbanization poster (from class 3).

Assessment

Did students:

- Complete the graph and the paragraph?
- Participate in class discussions and presentations?

Extension

Plot cities on a world map for portfolio

Resources

<http://www.citymayors.com/>





BLM #1

Name: _____ Date: _____

Table 1: Largest cities and urban areas in 1950 (1 to 10)

Rank	City/Urban area	Country	Population in 1950 (millions)
1	New York	USA	12.3
2	London	England	8.7
3	Tokyo	Japan	6.9
4/5	Paris	France	5.4
4/5	Moscow	Russia	5.4
6/7	Shanghai	China	5.3
6/7	Essen	England	5.3
8	Buenos Aires	Argentina	5.0
9	Chicago	USA	4.9
10	Calcutta	India	4.4

What was the average size of the largest cities in 1950? _____

Table 2: Largest cities and urban areas in 2006 (1 to 10)

Rank	City/Urban area	Country	Population in 2006 (millions)
1	Tokyo	Japan	35.53
2	Mexico City	Mexico	19.24
3	Mumbai (Bombay)	India	18.84
4	New York	USA	18.65
5	São Paulo	Brazil	18.61
6	Delhi	India	16.00
7	Calcutta	India	14.57
8	Jakarta	Indonesia	13.67
9	Buenos Aires	Argentina	13.52
10	Dhaka	Bangladesh	13.09

What was the average size of the largest cities in 2006? _____





Table 3: Largest cities and urban areas in 2020 (1 to 10)

Rank	City/Urban area	Country	Average annual growth, 2006 to 2020, in %	Population in 2020 (millions)
1	Tokyo	Japan	0.34	37.28
2	Mumbai (Bombay)	India	2.32	25.97
3	Delhi	India	3.48	25.83
4	Dhaka	Bangladesh	3.79	22.04
5	Mexico City	Mexico	0.90	21.81
6	São Paulo	Brazil	1.06	21.57
7	Lagos	Nigeria	4.44	21.51
8	Jakarta	Indonesia	3.03	20.77
9	New York	USA	0.66	20.43
10	Karachi	Pakistan	3.19	18.94

- What is the average size of the largest cities projected to be in 2020? _____
- Which cities remain in the top 10 largest cities? _____

CHALLENGE: Display all of the above information, including your answers to the questions on a single graph. Also, write a paragraph discussing the trends apparent in the above data.





Mini-unit 5

Global Change - Lesson 5-6

Objectives

Students will:

- Work on urbanization pamphlets.
- Complete urbanization portfolios.

Time needed

50 minutes and homework

Subject Areas

English language arts, Social studies, First Nations studies, Fine arts

Materials

Previous mini-units, posters and papers

Procedure

Warm-up (5-10 minutes)

1. Ask students what makes a good pamphlet (colour, visuals, words, ideas, presentations, titles, subtitles)? Remind students that they will be making an urbanization poster to communicate the ideas and information that they have learned to other youth.
2. Set the criteria as a group - remind them about the general criteria from lesson 1 (include size, colour, etc.)
3. Explain that this class will be used as a work period to get information for posters and work on them - pamphlets and portfolio to be due for next class.
4. Ask what should be done with completed pamphlets - consider a fundraising or a budget for double-sided photocopies to be left around the school, or sent to UNA-Canada?

Activity (40 minutes)

1. Work period for creating pamphlets and portfolios.

CLASS 5

Wrap-up (5-10 minutes)

1. Consider a celebration of some kind as students completed their portfolios - world food, music may be fun!
2. Do have students carry pamphlets around in a circle to see what is important to individuals - stand in circle - pass pamphlets to the right every 30 seconds until you receive your own back again.

Assessment

Did students:

- Complete their portfolios and pamphlets?





Section Three: Appendices

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Appendix I

Extensions and Links

Extensions

- Brainstorm the sustainable future of your own city.
- Write letters to government representatives or newspaper editors, expressing ideas about local urban sustainability.
- Search newspapers and magazines for articles on the subject of urbanization and urban planning.
- Invite a planner in to speak in your class.
- Write letters to local governments and planners regarding the need to involve youth in the process of urban planning decision-making.
- Use 'habitat action' ideas in BLM #2 of Urbanization and Habitat (Lesson 2).

Links

www.citymayors.com

An excellent site for statistics, issues, and information about world cities

www.statcan.ca

Statistics Canada

<http://www.citypopulation.de/>

A plethora of stats and articles - great for research on cities and urban issues

<http://www.census.gov/ipc/www/popclockworld.html>

A site with an up-to-the-minute pop clock showing the world population

<http://www.cbc.ca/correspondent/060507.html>

Interesting documentary descriptions and photo galleries of contemporary urban issues

<http://www.araburban.org/childcity/>

The Arab Urban Development Institute, the Municipality of Greater Amman, and the World Bank host this website which describes youth urban issues in the Middle East and North Africa. A youth conference in 2002 involved youth in planning urban issues.

<http://www.un.org/Conferences/habitat/>

The purpose of the second (1996) United Nations Conference on Human Settlements (Habitat II) is to address two themes of equal global importance: "Adequate shelter for all" and "Sustainable human settlements development in an urbanizing world". Human beings are at the centre of concerns for sustainable development.

<http://www.hiphoparchive.org/>

An interesting and contemporary look at social and political issues from the eyes of world Hip-hop artists. Try 'the Circle' for interesting reading and referenced articles of interest to youth.

<http://www.walkingthetalk.bc.ca>

A teacher's link for sustainability education in BC





Appendix II

Introducing UN-HABITAT

The UN-HABITAT (United Nations Settlement Programme) is the UN agency for human settlements. It is mandated by the UN General Assembly to promote socially and environmentally sustainable towns and cities with the goal of providing adequate shelter for all. The main documents outlining the mandate of the organization are the 'Vancouver Declaration on Human Settlements', 'Habitat Agenda', 'Istanbul Declaration on Human Settlements', the 'Declaration on Cities and Other Human Settlements in the New Millennium', and 'Resolution 56/206'. (www.unchs.org)

The UN-HABITAT was established in 1978 after a meeting in Vancouver known as Habitat I, at a time when the impacts of urbanization were less significant. A major revitalization of UN-HABITAT occurred from 1997 to 2002, by which time half of the world had become urban. In 1996 the UN's second conference on cities, Habitat II, was held in Istanbul, Turkey to assess progress since Vancouver and set goals for the new millennium. The political document that emerged, the 'Habitat Agenda' containing over 100 commitments and 600 recommendations, was adopted by 171 countries. On 1 January 2002, the mandate of UN-HABITAT became an official programme of the UN system in United Nations General Assembly Resolution A/56/206.

The World Urban Forum is held every two years by UN-HABITAT as a global initiative to address and keep abreast of our planet's transition to an urban world. The first was held at UN-HABITAT's headquarters in Nairobi, Kenya in 2002; and the second took place in Barcelona, Spain from 13 to 17 September 2004. Participation is open to representatives of national governments and Habitat Agenda parties, including local authorities, non-governmental organizations, community based organizations, academies of learning, private businesses and non-profit sectors.





Appendix III

Manitoba Curricular Outcomes

30S Current Topics in Science

SLO B1: Describe scientific and technological development, past and present, and appreciate their impact on individuals, societies, and the environment, both locally and globally.

SLO B3: Identify the factors that affect health and explain the relationships of personal habits, lifestyle choices, and human health, both individual and social.

SLO B5: Identify and demonstrate actions that promote a sustainable environment, society, and economy, both locally and globally.

SLO C2: Demonstrate appropriate technological problem solving skills and attitudes when seeking solutions to challenges and problems related to human needs.

SLO C3: Demonstrate appropriate critical thinking and decision-making skills and attitudes when choosing a course of action based on scientific and technological information.

SLO C4: Employ effective communication skills and use a variety of resources to gather and share scientific and technological ideas and data.

SLO C5: Work cooperatively with others and value their ideas and contributions.

English

Grade 10 English Language Arts

GLO 1 - Students will listen, speak, read, write, view, and represent to explore thoughts, ideas, feelings, and experiences.

1.1 Discover and Explore

Express Ideas

- consider the potential of emerging ideas through a variety of means [such as talking, mapping, writing journals, rehearsing, drafting, role-playing, brainstorming, sketching...] to develop tentative positions

1.2 Clarify and Extend

Explain Opinions

- explain opinions, providing support or reasons; anticipate other viewpoints

Combine Ideas

- connect ideas and experiences through a variety of means to gain understanding when generating and responding to texts

Extend Understanding

- explore ways in which real and vicarious experiences and various perspectives affect understanding when generating and responding to texts

GLO 4 Students will listen, speak, read, write, view, and represent to enhance the clarity and artistry of communication.





4.4 Present and Share

Effective Oral and Visual Communication)

- use appropriate voice production factors [such as pitch, tone, pauses...] and non-verbal cues [such as gestures, stance, eye contact...] to clarify intent in personal and public communication

Attentive Listening and Viewing

- demonstrate active listening and viewing behaviours [such as observing gender portrayals, inclusion and exclusion, stereotyping, respectful and disrespectful portrayals...] to understand and respond to presentations using a variety of means [such as small-group discussion, personal writing...]

Grade 11 English Language Arts - Comprehensive Focus

Express Ideas (1.1.1)

- connect ideas, observations, opinions, and emotions through a variety of means to develop a train of thought and test tentative positions

Consider Others' Ideas (1.1.2)

- seek others' responses through a variety of means [such as consulting elders, e-mail correspondence, surveys...] to clarify and rework ideas and positions

Develop Understanding (1.2.1)

- examine and adjust initial understanding according to new knowledge, ideas, experiences, and responses from others

Explain Opinions (1.2.2)

- explore various viewpoints and consider the consequences of particular positions when generating and responding to texts

Combine Ideas (1.2.3)

- combine ideas and information through a variety of means to clarify understanding when generating and responding to texts

Extend Understanding (1.2.4)

- extend understanding by exploring and acknowledging multiple perspectives and ambiguities when generating and responding to texts

Prior Knowledge (2.1.1)

- examine connections between personal experiences and prior knowledge of language and texts to develop understanding and interpretations of a variety of texts [including books]

Comprehension Strategies (2.1.2)

- use and adjust comprehension strategies to monitor understanding and develop interpretations of a variety of texts

Textual Cues (2.1.3)

- use textual cues and prominent organizational patterns to construct and confirm meaning and interpret texts

Cueing Systems (2.1.4)

- use syntactic, semantic, graphophonic, and pragmatic cueing systems to construct and confirm meaning and interpret texts

Use Personal Knowledge (3.1.1)

- determine inquiry or research focus and parameters based on personal knowledge and on others' expertise

Ask Questions (3.1.2)

- formulate and revise questions to focus inquiry or research topic and purpose

Participate in Group Inquiry (3.1.3)

- explore group knowledge and strengths to determine inquiry or research topic, purpose, and procedures

Create and Follow a Plan (3.1.4)

- develop, use, and adapt an inquiry or research plan appropriate for content, audience, purpose, context, sources, and procedures





Identify Personal and Peer Knowledge (3.2.1)

- select ideas and information from prior knowledge of inquiry or research topic appropriate for audience, purpose, and personal perspective or focus

Identify Sources (3.2.2)

- identify and discuss the purpose and usefulness of information sources [including books] relevant to particular inquiry or research needs

Evaluate Sources (3.2.3)

- evaluate how perspectives and biases influence the choice of information sources for inquiry or research

Access Information (3.2.4)

- access information using a variety of tools, skills, and sources [such as books, electronic networks, libraries, oral histories...] to accomplish a particular purpose

Make Sense of Information (3.2.5)

- use knowledge of text cues, organizational patterns, and persuasive techniques to sort and relate ideas in extended texts [including books]; adjust reading and viewing rates according to purpose, content, and on text

Organize Information (3.3.1)

- organize and reorganize information and ideas in a variety of ways for different audiences and purposes

Record Information (3.3.2)

- summarize and record information, ideas, and perspectives from a variety of sources; document sources accurately

Evaluate Information (3.3.3)

- evaluate information for completeness, accuracy, currency, historical context, relevance, and balance of perspectives

Develop New Understanding (3.3.4)

- explain the importance of new understanding to self and others; assess own inquiry and research skills

Generate Ideas (4.1.1)

- generate, evaluate, and select ideas to develop a topic, express a perspective, engage an audience, and achieve a purpose

Choose Forms (4.1.2)

- select and use a variety of forms appropriate for content, audience, and purpose

Organize Ideas (4.1.3)

- select and use a variety of organizational structures and techniques and appropriate transitions in oral, written, and visual texts to communicate clearly and effectively

Appraise Own and Others' Work (4.2.1)

- appraise own choices of ideas, language use, and forms relative to purpose and audience, and provide others with constructive appraisals

Revise Content (4.2.2)

- analyze and revise drafts to ensure appropriate content and to enhance unity, clarity, and coherence

Enhance Legibility (4.2.3)

- use appropriate text features to enhance legibility for particular audiences, purposes, and contexts

Enhance Artistry (4.2.4)

- use effective language, visuals, and sounds, and arrange ideas for emphasis and desired effect

Enhance Presentation (4.2.5)

- use appropriate strategies and devices to enhance the clarity and appeal of presentations

Grammar and Usage (4.3.1)

- select appropriate words, grammatical structures, and register for audience, purpose, and context

Spelling (4.3.2)

- know and apply Canadian spelling conventions and monitor for correctness using appropriate resources; recognize adapted spellings for particular effects





Capitalization and Punctuation (4.3.3)

- know and apply capitalization and punctuation conventions to clarify intended meaning, using appropriate resources as required

Share Ideas and Information (4.4.1)

- demonstrate confidence when presenting ideas and information; revise presentations as needed for subsequent occasions

Effective Oral and Visual Communication (4.4.2)

- use appropriate voice and visual production factors to communicate and emphasize intent in personal and public communication

Attentive Listening and Viewing (4.4.3)

- demonstrate critical listening and viewing behaviours [such as analyzing message, qualifications of presenter, support used, reasoning used...] to understand and respond to presentations in a variety of ways

Cooperate with Others (5.1.1)

- use language to build and maintain collaborative relationships; take responsibility for respectfully questioning others' viewpoints and requesting further explanation

Work in Groups (5.1.2)

- demonstrate flexibility in assuming a variety of group roles and take responsibility for tasks that achieve group goals

Use Language to Show Respect (5.1.3)

- recognize and analyze how personal language use may create and sustain an inclusive community

Evaluate Group Process (5.1.4)

- evaluate the effectiveness of group process to improve subsequent success

Math

Consumer Math Half Course I

Spreadsheets

D-1 Create a spreadsheet and use different formatting options

D-2 Create a spreadsheet using formulas and functions

D-3 Use a spreadsheet template to solve problems

D-4 Use a spreadsheet to answer "what if" questions

Consumer Math Half Course II

Consumer Decisions

C-1 Determine the best buy on a consumer item and justify the decision

C-2 Solve problems on the application of sales taxes in Canada

C-3 Describe a variety of sales promotion techniques and their financial implications for the consumer

Consumer Math Half Course III

Unit E: Data Analysis and Interpretation

E-1 Display and analyze data on a line plot

E-2 Use measures of central tendency to support decisions

E-3 Manipulate the presentation of data to represent a point of view

Consumer Math Half Course V

Unit D Design and Measurement

D-1 Draw simple objects as oblique projections

D-3 Draw the constituent parts of a simple object to scale

D-5 Solve problems involving estimation and costing for objects, shapes, or processes when a design is given

D-6 Plan the construction of an object within a specified budget





Unit G: Investigative Project

Complete an investigative project related to consumer mathematics skills, strategies, and activities

Consumer Math Half Course VI

Unit A Problem Analysis

A-1 Explain and solve problems using a variety of primarily non-algebraic approaches

A-2 Describe the approach and the mathematics used in solutions to problems or activities

Grade 10 Applied Math

Unit A- Spreadsheets

A1 Use words and algebraic expressions to describe the data and interrelationships in a table with rows/columns that are not related recursively (not calculated from previous data)

A2 Create and modify tables from both recursive and non-recursive situations

A3 Use and modify a spreadsheet template to model recursive and non-recursive situations

A4 Solve minimum/maximum problems

A5 Solve problems involving combinations of tables using:

- Addition or subtraction of two tables
- Multiplication of a table by a real number
- Spreadsheet functions and templates

Unit E: 2D/3D Projects

E1 Determine the volume of rectangular solids as the product of the area of the base and height; follow this with the volume of any figure whose base is a polygon, circle, or other recognizable geometric shape

E2 Calculate the volume and surface area of a sphere using formulas that are provided

E3 Determine the relationships among linear scale factors, areas, surface areas, and volumes of similar figures and objects

E4 Interpret drawings and use the information to solve problems

Grade 11 Applied Math

Unit B - Personal Finance

Solve consumer problems, including:

- Wages earned in various situations
- Property taxation
- Exchange rates
- Unit prices

Unit E Budgets and Investments

E1 Solve budget problems using graphs and tables to communicate solutions

Grade 12 Applied Math

Unit C Personal Finance

C1 Design or use a financial template to allow users to input their own variables

Unit F Design and Measurement

F3 Design an object, shape, layout, or process within a specified budget

F4 Use simplified models to estimate the solutions to complex measurement problems





Social Studies

KL-030 Describe urban environmental and economic issues, Examples: land use, relationship to hinterland, infrastructure...

KE-051 Identify issues related to urban growth and decline

KL-031 Describe the role of urban planning and use examples to illustrate its importance

S-100 Collaborate with others to achieve group goals and responsibilities

S-103 Promote actions that reflect principles of environmental stewardship and sustainability

S-107 Make decisions that reflect social responsibility

S-200 Select information from a variety of oral, visual, material, print, or electronic sources, including primary and secondary

S-201 Organize and record information in a variety of formats and reference sources appropriately. (Examples: maps, graphs, tables, concept maps...)

S-307 Propose and defend innovative options or solutions to address issues and problems

S-400 Listen to others to understand their perspectives

S-401 Use language that is respectful of human diversity

S-402 Express informed and reasoned opinions

S-404 Elicit, clarify, and respond to questions, ideas and diverse points of view in discussions

S-405 Articulate their perspectives on issues

S-406 Debate differing points of view regarding an issue





Appendix IV

Alberta Curricular Outcomes

The research papers and World Urban Forum (WUF) themes have Grade 9-12 curriculum entry points in the core subjects, social sciences, art, and career and technology studies courses. Human settlement patterns are in particular well represented in the social sciences geography courses for grade 11 and 12. The research papers can be easily tied to the forum themes in terms of curriculum framework and subsequent Lesson guideline.

One of the richest sources for entry points on sustainability practices is in Alberta's Career and Technology Studies (CTS) courses because they are subject specific. They are also open-ended, and can be taken in any junior high (introductory level) or high school grade (introductory, intermediate, and advanced levels), without normal deadlines and semester cut-offs. Drawbacks to the CTS courses do exist; although there is one standard CTS program for the province, each school selects content based on student and community needs, and available resources. The CTS program will also be undergoing revision soon. This revision will translate the existing 22 strands to career clusters; however, this will create a more focused program in the future and any curriculum that is written for the 22 strands should translate well into the career clusters.

Social Studies

Grade 9

General Outcome 9.2:

Issues for Canadians: Economic Systems in Canada and the United States; Local and Current Affairs

Specific Outcome 9.2.6:

Critically assess the interrelationship between political decisions and economic systems by exploring and reflecting upon the following questions and issues:

How do government decisions on environmental issues impact quality of life (i.e. preservation, exploitation, and trade of natural resources)?

Grade 10

Key Issue:

To what extent should we embrace globalization?

Related Issue 3:

To what extent does globalization contribute to sustainable prosperity for all people?

General Outcome 3:

Students will assess economic, environmental, and other contemporary impacts of globalization.

Specific Outcome 3.1:

Recognize and appreciate alternative viewpoints that exist with respect to the relationships among politics, economics, the environment, and globalization

Key Issue:

To what extent should we embrace globalization?

General Outcome 4:

Students will assess their roles and responsibilities in a globalizing world.

Specific Outcome 4.8:

Analyze how globalization affects individuals and communities (migration, technology, agricultural issues, pandemics, resource issues, contemporary issues).





Grade 12

Key Issue:

To what extent should we embrace an ideology?

General Outcome 1:

Students will explore the relationship between identity and ideology

Specific outcome 1.6:

Explore themes of ideologies (nation, class, relationship to land, environment)

Specific outcome 1.8:

Analyze common good as a foundation of ideology (principles of collectivism; collective responsibility, collective interest, cooperation, economic equality, adherence to collective norms)

Specific Outcome 1.9

Analyze the dynamic between individualism and common good in contemporary societies

Science

Grade 9

Unit A:

Biological Diversity (social and environmental emphasis)

Focusing Question:

What impact does human activity have on biological diversity?

General Outcome 1:

Investigate and interpret diversity among species and within species, and describe how diversity contributes to species survival

Specific Outcome:

Identify examples of niches, and describe the role of variation in enabling closely related living things to survive in the same ecosystem

General Outcome 4:

Identify impacts of human action on species survival and variation within species, and analyze related issues for personal and public decision making

Specific Outcomes:

1. Describe the relative abundance of species on Earth and in different environments
2. Describe ongoing changes in biological diversity through extinction and extirpation of native species, and investigate the role of environmental factors in causing these changes

Unit C:

Environmental Chemistry (social and environmental emphasis)

Focusing Question:

What substances do we find in local and global environments? What role do they play, and how do changes in their concentration and distribution affect living things?

General Outcome 1:

Investigate and describe, in general terms, the role of different substances in the environment in supporting or harming humans and other living things

Specific Outcome:

Identify questions that may need to be addressed in deciding what substances - in what amounts - can be safely released into the environment (e.g. identify questions and considerations that may be important in determining how much phosphate can be released into river water without significant harm to living things)



**General Outcome 3:**

Analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment

Specific Outcomes:

1. Comprehend and interpret information on the biological impacts of hazardous chemicals on local and global environments
2. Investigate and evaluate potential risks resulting from consumer practices and industrial processes used in providing information and setting standards to manage these risks

Grade 10**Unit D:****Energy Flow in Global Systems (social and environmental contexts emphasis)****Focusing Questions:**

What evidence suggests our climate may be changing more rapidly than living species can adapt? Is human activity causing climate change? How can we reduce our impact on the biosphere and on global climate, while still meeting human needs?

General Outcome 4:

Investigate and interpret the role of environmental factors on global energy transfer and climate change

Specific Outcomes:

1. Investigate and identify human actions affecting biomes that have a potential to change climate, and critically examine the evidence that these factors play a role in climate change.
2. Assess, from a variety of perspectives, the risks and benefits of human activity, and its impact on the biosphere and climate

English Language Arts

Grade 11**General Outcome 1:**

Explore thoughts, ideas, feelings, and experiences

Specific Outcome 2.3.b:

Extend Awareness - set personal goals for language growth - set goals and employ strategies for language growth in relation to formal and informal personal communications and community involvement (for example, auditioning for a play or applying to be a volunteer)

Specific Outcome 2.3.c:

Identify and access learning resources and opportunities; assess, weigh, and manage risk; and demonstrate a willingness to continuously learn and grow

Pure Math 30

Grade 12**Topic 2 - Exponents, logarithms and geometric series****General Outcome:**

Represent and analyze exponential and logarithmic functions, using technology as appropriate

Specific Outcome 2.6:

Model, graph and apply exponential functions to solve problems.





CALM 20

Grade 11

General Outcome 1:

Students will apply an understanding of the emotional/psychological, intellectual, social, spiritual and physical dimensions of health-and the dynamic interplay of these factors-in managing personal well-being.

Specific Outcome P9:

1. Demonstrate and apply effective communication, conflict resolution and team-building skills
2. Examine methods of communication, barriers to communication and strategies to enhance communication
3. Describe the stages of conflict, strategies for negotiating conflict, and issues and difficulties in resolving conflict

Political Thinking 20

Grade 11

Objectives

1. Provide an understanding of the process of political decision making
2. Further an understanding of the democratic process
3. Establish awareness on the part of the student of different political points of view and to create in the student an element of political sophistication
4. Illustrate the relationship that exists in society between freedom, on the one hand, and responsibility on the other
5. Emphasize the above objectives in terms of their relevance to the Canadian political system.

Content

1. The exercising of political power
2. Political/economic philosophies

Local and Canadian Geography 20

Grade 11

Objectives

The objectives of the courses in geography are that the student should:

1. Acquire an understanding of the following major organizing concepts in geography: areal association, density, human occupancy, pattern, region, scale, spatial distribution, and spatial interaction;
2. Have the opportunity to develop positive attitudes in relation to the following topics:
 - a. interdependence among peoples
 - b. respect for similarities and differences among peoples
 - c. clarification of values in respect to other value systems
 - d. respect for the scientific method of inquiry
 - e. knowledge of multiple causation.

Content

Theme 1: The Change in Settlement Patterns in Local Areas

- a. the neighbourhood and the city
- b. the city in relation to neighbourhood and settlement patterns
- c. relationship of the urban industrial resources to the rural primary resources
- d. the relationship of systems to the city
- e. the settlement patterns of a particular town or city related to the physical features of the site and the social characteristics of the people





Theme 2: Settlement Patterns in Western Canada

- a. the human occupancy of Western Canada
- b. the human occupancy regions of Western Canada
- c. depth studies of regions

Theme 3: Settlement Patterns in Eastern Canada

- a. the human occupancy of Eastern Canada
- b. depth studies of regions
- c. studies of the larger regions in Eastern Canada
- d. population (summation)

World Geography 30

Grade 12

Objectives

Refer to Local and Canadian Geography 20

Content

Theme 1: World Patterns of Population and Settlement

- a. the human occupancy of Canada
- b. the human occupancy of the world
- c. case studies in population and settlement
- d. humankind's settlement types and patterns
- e. cities of the world and world urbanization

Theme 2: World Patterns of Humankind's Use of the Earth

- a. human economics
- b. primitive hunting, fishing, collecting
- c. pastoralism or livestock economy
- d. agriculture of the world
- e. world industry and resources
- f. manufacturing
- g. Japan: case study of industrialization
- h. world transportation and commerce

Theme 3: World Patterns of Physical Elements

- a. the lithosphere
- b. landforms
- c. climate: elements, controls, regions
- d. vegetation; soils

Applied Sociology 30

Grade 12

Objectives

The objectives of the courses in sociology are designed to develop within the student a better understanding of group behaviour. This understanding should be based on fact rather than opinion. The sociological perspective focuses on "what is" rather than "what ought to be." Students should be able to analyze occurrences around them objectively. They should feel to be a part of society, understand its influence on their lives, and visualize their roles in societal change.





Content

Theme 4: Changes in Culture

- a. social and cultural change
- b. social movements

Microeconomics 30

- People, prices, and profits

Grade 12

Objectives

Students who have studied economics at the high school level should:

1. Understand basic economic concepts and generalizations
2. Be able to construct economic models
3. Be able to draw conclusions, inferences and generalizations from relevant economic data

Content

Agriculture and economics

Macroeconomics 30

- Markets, Money and Management

Grade 12

Objectives

Refer to Microeconomics 30

Content

Economics and developing countries

Art

Grade 9

Objectives/Encounters

Source of Images:

Students will consider the natural environment as a source of imagery through time and across cultures.

Impact of Images:

Students will become aware of the importance society places upon various works of art.

Concepts

1. The ways people use art changes through time.
2. Society has various ways of preserving and displaying public and private art works.

Grade 10 (Art 10)

Objectives/Encounters

Art making articulates thought and imagination. Through images, we communicate with one another within our communities and across time and cultures. Encounters with the sources, transformations and impact of images are essential for understanding art.





Sources of Images

1. Students will investigate natural forms, human-made forms, cultural traditions and social activities as sources of imagery through time and across cultures
2. Students will investigate the process of abstracting form from a source in order to create objects and images

Impact of Images

1. Students will understand that art reflects and affects cultural
2. Students will become aware of the relationship between function and form in artistic productions

Grade 12 (Art 30)

Objectives/Encounters

Refer to Art 10

Transformations through Time

- Students will understand that the role and form of art differs through time and across cultures
- Students will analyze the factors that generate a work of art, or an artistic movement: the experiences of the artists and the impact of the culture

Career and Technology Studies

Energy and mines: Module ENM1100: Conservation Challenge - Introductory level (Junior High and High School)

Theme

Management and conservation

Module Learner Expectations

Propose personal and shared actions that foster conservation and responsible use of an energy or mineral resource

Assessment criteria

Given a current issue regarding societal use of an energy or mineral resource, negotiating and debating the issue while assuming the role of one or more stakeholder groups

A proposal (oral, written, or visual) that suggests one personal action and one leadership role in relation to resource conservation and environmental citizenship

Enterprise and Innovation: Module ENT1010: Challenge and opportunity - Introductory level (Junior High and High School)

Theme

Getting the idea

Module Learner Expectations

1. Demonstrate competencies in; identifying opportunities, creating and generating ideas, establishing needs, wants, and priorities, assessing alternatives, assessing environmental impact
2. Describe career options where enterprise and innovation are particularly important

Specific Learner Expectations

Planning a venture - identify non-profit ventures (e.g. Community organizations)





Community Health: Module CMH2030: Community Volunteerism - Intermediate Level (High School)

Theme

Sociocultural perspectives

Module Learner Expectations

Perform, as a volunteer, assigned tasks and responsibilities efficiently and effectively

Concept

Volunteerism

Specific Learner Expectations

List and assess the societal benefits of volunteerism

Concept

Career Exploration

Specific Learner Expectations

Match the volunteer activity(ies) to a possible career opportunity

Wildlife: Module WLD2060 - Interactions (wildlife and society) - Intermediate Level (High School)

Theme

Management and Conservation

Module Learner Expectations

Describe the effects of land use practices on wildlife

Assessment criteria

Describe different land use practices, and the consequences of each for wildlife, e.g. urban planning

Agriculture: Module AGR3130 - Sustainable agriculture systems - Advanced Level (High School)

Theme

Management and Conservation

Module Learner Expectations

Develop and present strategies for ensuring the sustainable use of natural resources

Develop assessment criteria and present plans for an agriculture venture that demonstrates principles of sustainable development. Venture plan to address:

- background information regarding conservation, preservation and sustainable development
- a strategy for multiple land use
- a strategy for soil fertility and conservation
- a strategy for water management practices
- interrelationships and dependencies among domestic and non-domestic plant and animal species
- legislated environmental regulation and constraint

Design Studies: Module DES3170: Visualizing the future - Advanced level (Grade 12)

Theme

Business/Issues/History

Module Learner Expectations

Identify a potential design challenge and design a solution for it, provide research supporting the design solution



**Assessment criteria and conditions**

Production of drawings and/or models and/or prototypes of a designed solution, presentation of research in writing and/or through discourse during the presentation/critique

Energy and mines: Module ENM3050: Sustainable energy (the power and potential) - Advanced level (High School)**Theme**

Technology and applications

Module Learner Expectations

1. Identify alternatives and consequences associated with current issues involving energy supply and demand
2. Analyze two or more current issues regarding energy supply and demand at local and global levels, addressing social, economic, environmental and technological perspectives.

Assessment criteria

Complete a research project on applications of renewable and nonrenewable energy technology in sustainable energy development. Research to address:

- benefits and obstacles related to the use of the renewable and the non-renewable
- the role of alternative energy options, energy efficiency and conservation lifestyles in achieving sustainable energy development.

Legal Studies: Module LGS3060: Controversy and Change - Advanced Level (Grade 12)**Theme**

Social Context

Concept

Effecting Change

Specific Learner Expectations

Analyze various methods used to bring about changes in the law, propose possible solutions to effect changes in the law - possible topics include a wide variety of urban safety and security issues





Appendix V

Saskatchewan Curricular Connections

Research Paper	Saskatchewan
Ideal City	
Planning City	Math 9: data management; ELA B10; ELA A30; Math 10 C; Math 30 B.6
Capable City	ELA B10; ELA A30; ELA B30;
Learning City	ELA 20
Youth Friendly City	Math 9: problem solving, Math 30 B.2, B.5, B.6
Resilient City	Math 9: data management;
Livable City	Math 10 C;
Secure City	ELA B10;





Appendix VI

British Columbia Learning Outcomes

BIOLOGY 11 (1996)

Ecology

It is expected that students will:

- describe factors that limit and control population growth
- collect, display, and interpret data

ENGLISH LANGUAGE ARTS 8-12 (1996-1998)

Comprehend and Respond (Strategies and Skills)

Comprehend and Respond (Comprehension)

Comprehend and Respond (Engagement and Personal Response)

Comprehend and Respond (Critical Analysis)

Communicate Ideas and Information (Knowledge of Language)

Communicate Ideas and Information (Composing and Creating)

Communicate Ideas and Information (Improving Communications)

Communicate Ideas and Information (Presenting and Valuing)

Self and Society (Personal Awareness)

Self and Society (Working Together)

Self and Society (Building Community)

FIRST NATION STUDIES 12

SKILLS AND PROCESSES

It is expected that students will:

Demonstrate the ability to think critically, including the ability to:

- define an issue or problem
- develop hypotheses and supporting arguments
- gather relevant information from appropriate sources
- recognize cause and effect relationships and the implications of events

Demonstrate skills associated with active citizenship, including the ability to:

- collaborate and consult with others
- respect and promote respect for the contributions of other team members
- interact confidently

Demonstrate appropriate research and oral and written presentation skills, including the ability to:

- present in oral and written form
- design, construct, compose, and perform
- create and interpret maps
- present and interpret data in graphic form

CULTURAL EXPRESSIONS - ORAL TRADITIONS AND LITERATURE

It is expected that students will:

- explain the function and significance of the oral tradition

GEOGRAPHY 12

The Nature of Geography (Themes)

It is expected that students will:





Apply the following geography themes to relevant issues:

- location (position on the earth's surface)
- place (the physical and human characteristics that make a location unique)
- human and physical interaction (the way humans depend on, adapt to, modify the environment)
- describe the applications of geography to present and future careers

The Nature of Geography (Systems)

It is expected that students will:

- identify the social, economic, cultural, and political components of human systems
- explain how physical and human systems interact within an ecosystem

Resources of the Earth (Nature of Resources)

It is expected that students will:

- explain contemporary concepts of sustainability
- assess the consequences of the uneven distribution of: fresh water, a non-renewable resource, a renewable resource other than fresh water

Resources of the Earth (Management of Resources)

It is expected that students will:

- contrast the different ethics related to resource management and use
- explain how conditions within a biome can affect resource management

Resources of the Earth (Sustainability of Resources)

It is expected that students will:

- assess the compatibility of human activities and population growth with concepts of sustainability
- analyze factors that make proposed resource-management solutions challenging to implement

MATHEMATICS 8-12

Media Arts 11

Fine Arts 11

Visual Arts 8-10

Music 12

Music 11

SOCIAL STUDIES 11

SKILLS AND PROCESSES OF SOCIAL STUDIES

- apply critical thinking- including questioning, comparing, summarizing, drawing conclusions, and defending a position- to make reasoned judgments about a range of issues, situations, and topics
- demonstrate effective research skills including accessing and assessing information, collecting and evaluating data, organizing and presenting information, citing sources
- demonstrate effective written, oral, and graphic communication skills
- demonstrate skills and attitudes of active citizenship, including ethical behaviour, open-mindedness, respect for diversity, and collaboration





POLITICS AND GOVERNMENT

- Demonstrate understanding of the political spectrum
- Explain how Canadians can effect change at the federal and provincial levels

HUMAN GEOGRAPHY

- explain the significance of changes in world population with references to:
 - population pyramids
 - distribution
 - density
 - demographic transition models
- compare Canada's standard of living with those of developing countries, with reference to poverty and key indicators of human development
- assess environmental challenges facing Canadians, including
 - fresh water supply and quality

SCIENCE 8 (1996)

Applications of Science

It is expected that students will:

- analyze the costs and benefits of making alternative choices that impact on a global problem
- describe how scientific principles are applied in technology

Life Science

(Social Issues)

It is expected that students will:

- assess different impacts of using renewable and non-renewable natural resources
- compare and contrast the practical, ethical, and economic dimensions of population growth and polluted environments
- relate the extraction and harvest of earth's resources to sustainability and reduction of waste

Life Science

(Global Ecosystems)

It is expected that students will:

- evaluate how major natural events and human activity can affect local and global environments and climate change
- critique the hypothesis that the earth is like a living organism

Science and Technology 11 (1995)

Module 5: Resource Management and Environmental Planning

It is expected that students will:

- demonstrate an awareness of the challenges faced by resource management and predict how technology might address these concerns
- describe how supply and demand create stress on particular resources
- analyze the economic significance of our resources in the context of political and ecological concerns

Module 7: Energy and Environmental Trade-offs

It is expected that students will:

- identify technologies created as a result of society's concern for dwindling non-renewable energy resources (e.g., solar power, electric cars)
- identify the organizations (and their roles) and the processes involved in making energy decisions in B.C. and globally
- identify alternative energy sources in B.C. and the potential impact of their use





Module 9: Shelter

It is expected that students will:

- describe the interactions of technology and society in the development of alternative forms of shelter
- describe the interactions of science and technology in shelter design
- identify or describe technological advances in the service systems (e.g., heat, electricity, water, sewage) of a modern house
- relate safety and building codes to the specific service systems and identify the technological changes in service systems from the past to the present
- explain the concept of shelter and describe basic structural principles
- describe the relationships among shelter design, population, and community planning

Module 11: Technology for the Home

It is expected that students will:

- identify the influence of technologies on family life and the home
- trace or outline the development of specific home appliances
- discuss the changes in lifestyle created by so-called labour-saving appliances in the home
- describe the interaction of science and technology in the development of a specific appliance or home technology

Module 12: Consumerism and Population

It is expected that students will:

- describe world population growth and the factors contributing to it
- outline scientific and technological solutions to the problems associated with population growth
- compare the consumption of resources in developed countries with that in developing countries
- analyze their individual consumption of resources (e.g., water, paper, food, electricity)
- describe the use of technology in the advertising industry and the influence of advertising on consumption patterns
- differentiate between human needs and human wants

Module 15: The Future

It is expected that students will:

- analyze the effects of technologies on society and predict future effects, locally and globally
- demonstrate an awareness that decisions made today will influence the future of society





Appendix VII

Planning Papers: Complete Summaries & Curricular Applications

For the full versions of the planning papers, please follow the link: www.unac.org/YTCT.





Appendix VIII

Feedback Sheet

UNA-Canada needs your help in improving its educational resource. Please review and assess this YTCT Resource Manuel.

Name of Assessor _____ Date _____

School _____ City _____ Province _____

Grade/Subject area of teaching _____

Please comment on the following:

1. Design, lay-out and clarity of material.

2. Relevance to your provincial learning outcomes (8-12).

3. Pedagogical methodology (delivery style) and relevance of WUF planning papers to your provincial curriculum.

4. Are the lessons teacher/user-friendly? Are the appendices useful? What would you change?

5. Would you use individual lessons as stand alone activities as well as mini-units? Why or why not?

6. Usefulness of cross-curricular links.





7. Assessment tools and ideas.

8. What lessons did you try? Which would you try?

9. Are the appendices useful?

10. Would you recommend this resource to a colleague?

11. How could this resource be best shared by the UNA-Canada?

Once completed, please submit to:

info@unac.org

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Tel: (613) 232-5751 Fax: (613) 563-2455 Web: www.unac.org



United Nations Association in Canada
Association canadienne pour les Nations Unies

Thank you for exploring this resource.

Thank you for contributing to youth development.

Thank you for helping build a sustainable future.



*Youth of Today, City of Tomorrow
was developed by UNA-Canada with the generous support of
the Government of Canada: Western Economic Diversification*



Gouvernement
du Canada

Government
of Canada

Engineers Without Borders - Canada

Learning About ENGINEERING: Modules for Teachers Resource



engineers without borders
ingénieurs sans frontières
Canada



ACGC 
Alberta Council for Global Cooperation

Learning about **ENGINEERING**: Module for Teachers

Age Group: Grade 7-12 students

Note to teachers: This presentation is designed for students to gain a basic, general understanding of what engineering encompasses for students having little or no knowledge of the field. This is to be used in collaboration with the included digital presentation to allow students to think, make personal connections, and ask questions regarding their field of interest. Ideally, the audience for this presentation will be students looking into, interested in, or considering the engineering field (most probably high school students). The following questions and topics of discussion can be used at any point during the presentation, but is best if presentation is run through once by the teacher before presenting to students so that the following material can be used at the appropriate times.

Introduction

1. Ask students about how they define engineering. Allow them to share their perceptions, ideas, feelings about the field and what they think of it; including personal stories and connections. Allow for open discussion and debate.
2. Lead them through common myths and stereotypes of engineering; are some of these similar to what had been shared?

After presenting these myths and common misconceptions to the students, tell them a little more about the field:

In reality, engineering is a field that does indeed involve using skills such as science and mathematics, but requires artistic, open-minded, unique individuals to challenge daily problems from different angles. The dictionary defines engineering as a branch that applies not only the scientific and mathematical principles to help design structures, processes, materials, machines, and other devices to improve the lives of people, but also uses economic, social, business, and management skills. In actuality, the skills most appreciated in engineers are not the technical, scientific skills, but the innovative and creative thinking that

allows for humans to enhance their lifestyle by new designs engineers have a role in.

The number of women in engineering is steadily increasing to what it was 10 years ago- engineering just requires individuals who are able to think practically and logically while applying the above principle- so it is indeed NOT restricted to simply males! Individuals having all sorts of hobbies and interests have become successful engineers- not only restricted to simply those who play video games and repair computers. Due to the open nature of the field, engineers do not just work in offices or buildings, but can spend time in laboratories, outdoor areas, or even remote villages! Remember, because engineers solve global issues, they can work anywhere in the world...

Engineering is a profession that attempts to solve global issues through application of the above mentioned skills for the betterment of society as a whole. There are many areas that individuals can choose, depending on one's interest.

ENGINEERING DISCIPLINES

After showing students each respective clip of all sectors of the field, you can read them the following information and answer any questions they may have.

Civil Engineering- This area deals with the construction and design of structures that people use on a daily basis; this could include bridges roads, dams, buildings, skyscrapers, or even city parks and streets. Because these are common structures that affect people everyday, the work of a civil engineer ensures proper construction and maintenance of these designs.

Mechanical Engineering- Engineers in this field work with machines and tools, and mechanical systems as a whole. This area deals with learning about heating and cooling systems, mechanics, dynamics, kinematics, thermodynamics, and even areas from other disciplines such as electrical energy systems and fluid flow principles. The work of a mechanical engineer might include designing a robot, a medical device, a car engine system, or even a spaceship! Mechanical engineering is the broadest discipline because it includes so much information from different areas.

Electrical/Computer Engineering- These branches deal with the concepts of electricity and magnetism, electronics, computer science, and software/hardware design. There are thus many areas that fall under this branch, such as power systems, alternative energy sources, computer programming, circuit design, and communications technologies. Engineers in this field may work in areas such as automotive engineering, oil industry, telecommunications industry, or even research in alternative energy sources.

Chemical Engineering- Especially big in Alberta, chemical engineers use concepts from other areas of science like chemistry and biology to convert raw materials into other forms, like petroleum and oil and gas products. This may also encompass areas such as biomedical engineering, or environmental engineering. Chemical engineers may work in plants, offices, oil fields, and have to think both practically and economically as well. Other areas within chemical engineering include: electrochemistry, food engineering, biomolecular applications, oil refinery and oil exploration, processing engineering, and even water technology.

***C*losing**

Once students have looked at the different disciplines and asked and answered questions, offer them information from local post-secondary institutions, and let them know ways they can find out more about the field by contacting a local university.

Engineering is a great way to solve and tackle arising global matters, from environmental sustainability, to health, energy, and even social issues.

Once an engineering student, the options are endless as to what field you can choose to match your interest. Are you planning on going into an engineering program in the fall and are wondering what it is like to be an engineering student? The best way to find out about any field is to ask someone. To find out more about a particular area or the faculty in general, contact your teacher or your local college or university.

Please see http://prezi.com/txulftgze2_p/the-realms-of-engineering/ for digital presentation.

