

TEACH



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Education for Today and Tomorrow • L'Éducation - Aujourd'hui et Demain

LE PROF

FEATURE:
What's The Game?

FUTURES:
The Challenge

WEB STUFF:
Lure of the Labyrinth

FIELD TRIPS:
Botany and Horticulture!

CURRICULA:
*Governance and
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NOTES

One of the philosophies here at TEACH is once you're a teacher, that doesn't mean you stop learning. Teacher or not, I don't think we ever stop learning – it's impossible. While putting this latest issue together, I learned the importance of personalized education. Intelligence is unique. Every mind is different, but why are there more options to customize a cell phone plan than there are ways to individualize learning?

Our feature story focuses on personalized education through self-guided technology like avatars. Kids are eager to learn when there's a fun delivery. Technology presents students with dynamic learning experiences; however, one size certainly does not fit all and technology may not be *the* solution. There are many other avenues to engage students and our Field Trips column embodies this idea. Some students prefer physical interaction in order to learn what textbooks cannot teach them. This month's spotlight subject is Botany. Students can embark on adventures through wispy gardens and flowering greenhouses to study the variety of plant species of Canada.

In his Futures column, Richard Worzel outlines specific steps as to how he'd radically change the education system. He agrees that personalized learning is prudent and shares his ideas on how to achieve this without – surprisingly – technology.

Our Web Stuff column picks up on the digital learning theme and we introduce you to a new educational game that has young students creatively solving algebraic expressions while stopping spooky monsters from taking over the world.

As the current school year draws to an end, I hope all of your goals have been met with surpassed expectations. The bees will soon pollinate all the flowers you saw during your spring field trip and students' avatars will be left behind as they run off into the summer sun, but TEACH will still be here throughout the break. Remember to visit www.teachmag.com for our upcoming *Summer Book Bag* reading lists picked especially for you and your students! And now follow [@teachmag](https://twitter.com/teachmag) on Twitter and become our fan at [Facebook.com/teachmag](https://facebook.com/teachmag) to stay in touch.

See you again in the fall!

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Richard Worzel, C.F.A.

The Challenge

Lots of people claim that the education system needs to be radically changed, but when I challenge them to tell me how they would change it, I never get any answers.” This challenge was recently thrown at me by the Deputy Minister (“DM”) of Education for one of Canada’s provincial governments.

I had just ended a presentation on moving our education system from a 19th century mass-production model to one that prepared students for the 21st century. The audience was a group of about 300 provincial civil servants from different ministries. Afterwards, I met with deputy ministers of three ministries for a private conversation. This was when the challenge was presented. Fortunately, I’ve been writing this column for 17 years now, and have been thinking about the future of education even longer so I was prepared to respond.

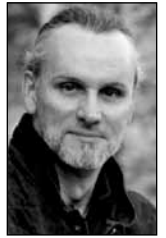
First, I agreed when he said that there are lots of good things happening all over the country in education. There are bright, capable educators doing innovative things, both with and without technology. However, my point to the DM was that few of these initiatives are making much of a difference beyond individual schools. There’s no cross-fertilization or sharing of best-practices. As a result, these initiatives are not doing much to raise education results on average. Therefore, I would create an online community for educators across the country and around the world to share thoughts on what works and what doesn’t work, on new approaches to curricula, courseware, and educational software. This website would also allow educators to trade and rate new tools, software, and programs, much in the same ways as users of Amazon or TripAdvisor. Along with this, I would initiate a national program to encourage innovation in education by teachers and put some cash behind it in conjunction with private sector companies. I want teachers to come up with innovative ways of educating students and to publicize these efforts with the potential to have them commercialized. If they become successful, I would make sure the innovative teacher got a significant royalty. The DM had a problem with this, commenting that it would be hard for the public to swallow the idea of a public

employee getting rich on the government’s dime. I acknowledged his point, but said that providing incentives to teachers to innovate was the best way to produce real world change. Teachers are the ones on the front lines and know what works and what doesn’t. Therefore, perhaps a system could be worked out where profits are split by the organization that commercializes a given innovation, the provincial government, the school board, and the teacher, but I would make sure that the teacher could make significant money if they introduced significant advances. I’m not sure I convinced him on this, but I remain convinced.

Next, I would take the best ideas and try them out

“At senior grades, I would encourage an ever-increasing amount of self-directed learning, with teachers acting not as lecturers, but as tutors, mentors, and trouble-shooters to assist students where needed. In the younger grades, I would recommend a higher proportion of teachers than today, because the primary task would be to identify each student’s unique needs. These needs would include the learning strategies that would work best for them, their particular interests, abilities, talents, and emotional intelligence.”

with young students in designated schools. Unlike so-called “experimental schools” that try novel approaches, but whose successes are never replicated elsewhere, and are therefore largely irrelevant, the purpose of these schools will be to produce superior results that can be repeated throughout a provincial education system. And by starting with young, incoming students, I don’t have to retrain students out of old ways of doing things. Then, every year, I



move the new system up a year, in effect growing the new system so that it gradually replaces the old.

The focus of my new system would be to tailor a customized curriculum to each student based on their interests. At senior grades, I would encourage an ever-increasing amount of self-directed learning, with teachers acting not as lecturers, but as tutors, mentors, and trouble-shooters to assist students where needed. In the younger grades, I would recommend a higher proportion of teachers than today, because the primary task would be to identify each student's unique needs. These needs would include the learning strategies that would work best for them, their particular interests, abilities, talents, and emotional intelligence. The purpose in learning these things would be first, to fashion a pathway through the education system that would use their interests to lead them through the broad range of subjects they need to know in order to both exalt and educate their spirits and to enable their abilities in the marketplace. Next, each student would be matched with empathetic teacher-tutors who know how to get the best out of them. This would entail a lot more evaluation of individual students than we do today, but I see this as critical to empowering them for the future.

Eventually, each student would study a unique curriculum, design their own projects, and work on their own or in self-assembled teams that might include people from outside school or from other parts of the world. With communications technology being what it is, there is no reason to restrict a student's access to only those people who live nearby.

Finally, I see schools extending their mandate beyond the education of children, becoming, in effect, the centre of their communities. If schools only educate children, then the future of education is one of continuing downsizing, budget cuts, and school closings, as

the number of children continues to dwindle. But education is critical to the future of our society at all levels. If we permit this valuable resource to fade away, then we are doing ourselves a huge disservice.

As a footnote, I commented that I also saw a global opportunity in education for Canada. Among developing countries, there is a real thirst for quality education. If we can create software, courseware, distance learning techniques, and curricula that are transportable and online, then we can sell these things to school systems around the world. In commercial terms, Canadian education has a very high brand value globally. If we offer Canadian education, perhaps starting with people who want to immigrate here, and back it up with diplomas from Canadian governments for successful completion of curricula requirements, then we can, I'm convinced, make enough money globally to pay for our entire education system here at home.

And that really got the DM's attention.

During our very animated conversation, we started in a state of what might be called, polite skepticism, progressed through interested engagement, and ended in what I perceived to be excited agreement. Even though school enrollments are dropping in most parts of Canada, the future of our education system looks, to me, more exciting than at any time in our history if we take on the challenge of reinventing what education is, and how it's delivered. We can lead the world in the most critical revolution of the 21st century – and why shouldn't we?

Richard Worzel is Canada's leading futurist, and speaks to more than 20,000 people a year. He volunteers his time to speak to high school students for free. Contact him at futurist@futuresearch.com.

TEACH
MAGAZINE

Education for Today and Tomorrow
L'Éducation - Aujourd'hui et Demain

Greetings from the editors of TEACH Magazine

Below are some compelling programs we think are relevant to what you are doing in class:

TEACH MAGAZINE'S E-NEWSLETTER DELIVERS DYNAMIC PROGRAMS, RESOURCES, CONTESTS AND PROMOTIONS TO TEACHERS. INFORMATION TEACHERS NEED AND CAN USE IN THE CLASSROOM. SIMPLE, EASY-TO-READ FORMAT.

HOT LINKS DIRECT TO THE SOURCE OF INFORMATION.



Lure of the Labyrinth - The Game

www.labyrinth.thinkport.org

Your beloved pet is missing and in order to find it you must enter a strange (and extremely smelly) world where your only friend is a mysterious bean-loving girl with wings. There are monsters all over, stinking up the joint and forcing you to do crazy jobs like make pet food out of carrots and eyeballs. How can you rescue your pet and escape this labyrinth?

This is the premise for *Lure of the Labyrinth*, a web-based digital game for middle-school pre-algebra students. It includes a wealth of intriguing math-based puzzles wrapped into an exciting narrative game that engages students in an eerie world where monsters seek world domination at any cost. The only way students can prevent that from happening is by solving the puzzles. Students will know immediately whether their solution is correct by judging the monster's reaction.

Unlike typical math games that are divided into two parts: the boring math solving section followed by a fun game playing component, *Lure of the Labyrinth* combines the two. The math problems become the fun part.

In the world of *Lure of the Labyrinth*, students progress through three sections, or "wings." Each covers one of the typical pre-algebra strands: Proportions (including fractions and ratios), Variables and Equations, and Number and Operations (including geometry, order of operations and modular arithmetic).

Each of the three wings includes three puzzles that have three levels. The levels progress from easy to hard. And continuing with the "rule of three," students have to successfully solve each puzzle three times before they can eliminate a room.

Resources

Statistics say most students are gamers. They will have no trouble jumping into the game and gleefully working their way through its world of monsters. On the other hand, teachers may not be as apt so *Lure of Labyrinth* provides educators with extensive resources.

Teachers have access to the following:

Before bringing *Lure of the Labyrinth* to the classroom:

- Handbook explaining the basic concepts of the game
- Plot and characters summaries

- First steps guide to help
- A guide to introducing *Lure of the Labyrinth* including, steps, actions, and tips.
- A plan for success
- Articles on how to think about technology, thinking about the teacher's role in the game

During:

- Guidelines on encouraging positive use of the TPC, an instant messenger that allows players to communicate with each other during game play
- Explanations of the way specific puzzles work plus related material
- Lesson plans with standards, objectives, and indicators for grades 6-8
- Clear explanations of the background mathematics that are incorporated into each puzzle

Introducing *Lure of the Labyrinth* to students:

- Setting up rules and expectations
- Setting the stage for your students
- Using graphic organizers

While working with *Lure of the Labyrinth*:

Lure of the Labyrinth was designed so students could play the game first and then bring the experience with numbers into their classrooms. When students finish the game-play, they will be looking to you to help them translate what they have experienced into the mathematics they explore in class.

- Time to be the guide on the side
- Another way to be the guide on the side
- Summing up the puzzle session

Evaluation:

- Administrator tools
- Evaluation strategies
- Going forward

What's the Game^{?:}

Everyone likes to learn. Not everyone enjoys the classroom experience, however, even the likes of Sir Winston Churchill who once said, “I am always ready to learn although I do not always like being taught.” Across the pond, Ernest Dimnet, a French priest, writer, and lecturer, who called North America home, shared the same sentiment. In his book, *The Art of Thinking*, Dimnet wrote, “children have to be educated, but they also have to be left to educate themselves.” If Dimnet and Churchill were around today, would they recommend computer games, virtual simulators, or avatars for self-directed learning?

The type of knowledge one gains from reading a textbook cover to cover is not the same as the knowledge acquired through experience. “Once you figure out something on your own, it’s empowering. You own that knowledge,” says Dr. Jeremy Friedberg, a former University Professor who is extensively involved in scientific education outreach programs through the use of interactive computer games.

The success in computer games and simulation worlds, whether educational or entertainment, lies in the player’s level of engagement. It’s easier to learn when you’re engaged. A game environment captures the mind with true multimedia: different types of audio and visual media while presenting users with challenges. Friedberg reminds us that video games are the most successful form of entertainment for that reason.

A recent study by the PEW Internet and American Life Project, a project of the PEW Research Center, found that 97% of teens aged 12-17 played video games whether computer, web, portable, or console games. If only we could harness the power of the thinking, doing, and solving engaging teens and children while playing video games and channel them toward learning, cognitive skills would skyrocket.

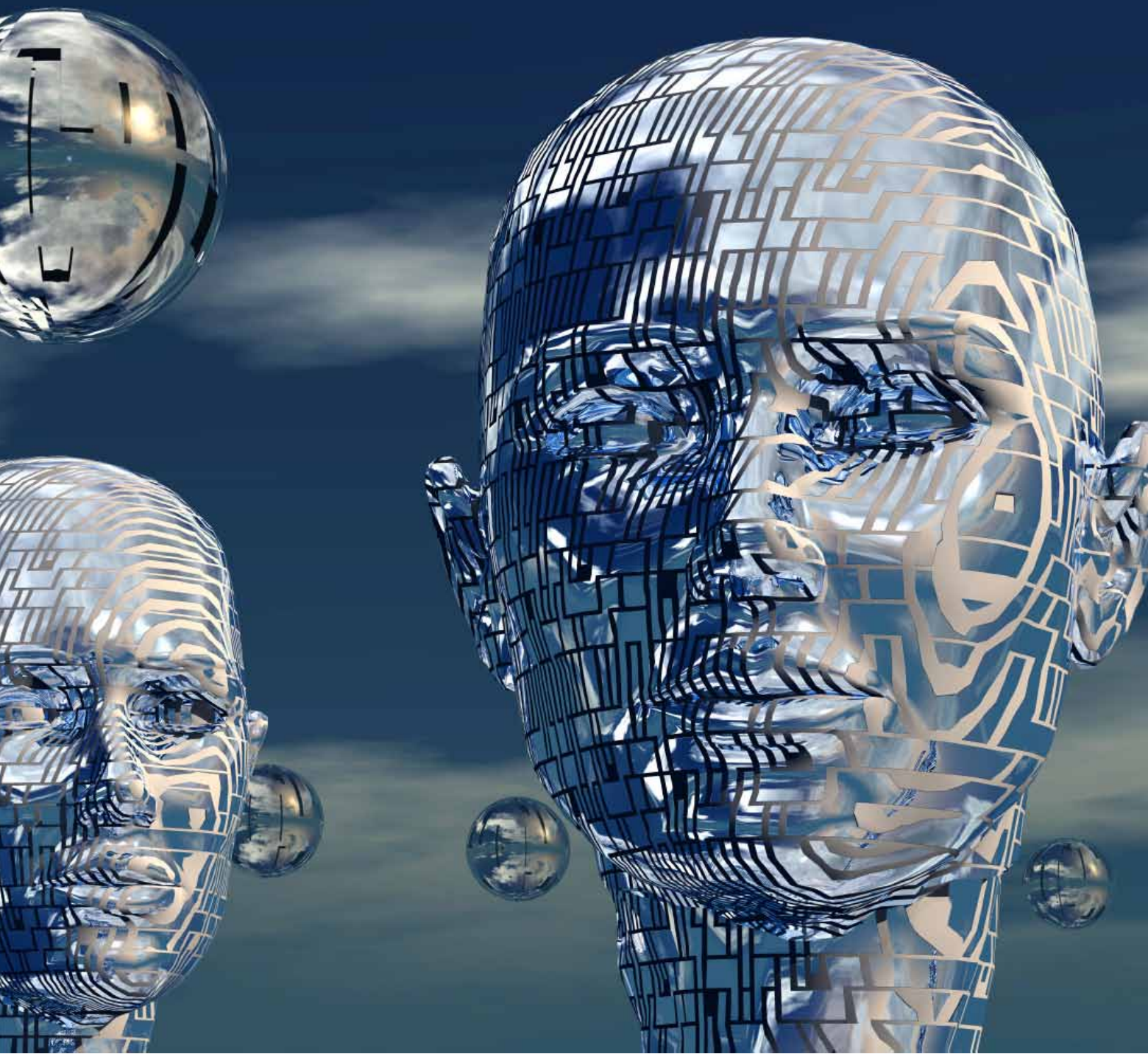
Many multimedia learning environments enter Canadian schools



AVATARS IN THE CLASSROOM

daily. A quick Google search for “avatars in education” produces a long list of fun platforms easily adaptable for the classroom. One popular platform is *Crazy Talk*. It allows teachers and students to bring famous, historical people to life as funny, talking and animated characters, for example, Mark Twain. Narration, scripts, and voiceovers are only some of the features that students use to design their own entertaining digital stories.

Younger students will especially enjoy *GoAnimate*, a web-based platform that produces animated flash skits with cartoon characters. Students can express themselves creatively by adding speech bubbles, selecting themes and backgrounds, changing characters’ facial expression, and mixing audio tracks for their projects.



Although more advanced, *Oddcast* is another fun virtual representation. Students can star in any existing movie, sporting event, or TV commercial by uploading an image of their face and mapping it onto any existing scene.

Avatar-based learning and digital personas are inherently engaging. Students construct the tales and share them; they are theirs. So far, it seems that these types of platforms are perfect for independent learning, but what if a computer program could be more effective than traditional modes of teaching?

John Harris, a teacher at Lochiel U-Connect Education Centre,



a technology school in Langley, B.C., explains that “computers are more effective when kids have to juggle a lot of different factors and that’s where a simulation can come in handy.” In the real world, whether concrete jungle or tropical rainforest, the problems we face are nonlinear. The outcomes are open-ended and there are blended causes to the problems. Simulators are great for positioning students to independently face complex scenarios.

At Lochiel U-Connect, some of the students have created *Salmonids in Troubled Waters*, a web-based interactive game that has students “designing viable salmon streams that will facilitate the

WHAT'S THE GAME?

most efficient hatch,” explains Harris. It’s one thing to tell a student that shade, woody debris, stream depth, bed structure, current speed, and toxins are crucial factors in a viable salmon stream. But when students create the streams and alter them according to conditions, they are experiencing a simulation of a naturally complex reality. “The kids play, interact, and learn. It’s immersive learning, not passive,” Harris says.

Other types of classroom-ready simulators include careful dissection of frogs for biology class, intrepid explorations of the moons of the planets in the Solar System, or recreating experiments once performed on Mars. But the most immersive self-guided learning occurs when students personalize an avatar and journey through a multitude of worlds, of any time period, using a virtual simulation game.

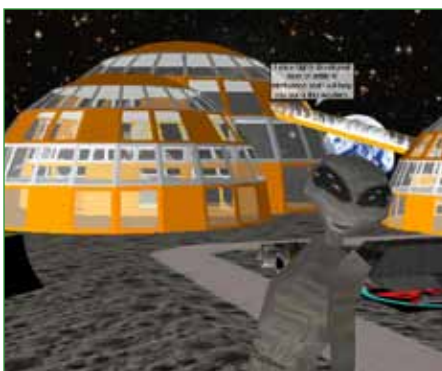
Active Worlds is a platform that teachers can use to build their own “worlds” for students to roam, interact, and learn. The program can be as simple as recreating the Roman Empire and having younger students visit the markets and sell some goods. Or, teachers with a more advanced computer programming background can create an entire virtual universe complete with a catastrophe that students must resolve through completing missions and unscrambling clues.

When students use their avatars to explore a virtual world they have access to a wealth of knowledge. When they enter a Roman Empire for example, avatars can reconstruct famous Roman monuments such as the Colosseum or the Pantheon. Students can study the architectural details, characteristic clothing, or culture of the Roman peoples. Teachers can instantly change the virtual realities by switching from historical mode to archaeological mode and now students explore Rome again, this time with different learning goals and outcomes.

Virtual worlds provide access to environments that are otherwise too expensive, inaccessible, dangerous, or completely nonexistent in real life.

Harris promises that virtual tours need not always take us to a foreign and distant land. Closer to home, students can step into nineteenth century Canada and discover the rolling hills and salty sea, just like *Anne of Green Gables*.

It’s ironic that only when students are off playing computer games and not interacting with teachers that a clearer image of their learning style is captured. An online learning environment tracks real-time engagement and demonstrates how students learn. “Tests are not good measuring sticks. One snapshot isn’t enough. They don’t show how one learns or what they learned – only how they have performed on a test. It’s a disservice to one’s mind,” states Friedberg.



Solve mysteries in a 3-D Roman world using the services of helpful virtual guides with “artificial intelligence.”



A 3D Multiple User Virtual Moon Environment where students solve problems with the help of a “intelligent robots” that follow users around, answering questions and giving advice.

On the other hand, there are some students not enticed by computers or video games. We can remind them that we’re currently living in a technology age. Today, higher education and workplaces expect detailed technological knowledge. Harris suggests that we can change these students’ attitude by linking a social element. “When kids who are reluctant to use technology receive responses to their online activities, they experience a social element. Technology phobia begins to fade.” After all, humans are innately social beings. Friedberg adds, “Some kids never play video games, but they’re addicted to Facebook.”

We are indeed living in a technology era and the “future” is only an idea away. For Harris, he predicts that new technology will help reduce some of the health problems caused by the sedentary nature of computer games. Specifically, his students at Lochiel U-Connect are developing a device that accurately measures and analyzes cardio activity when a student wears a special watch. The data is computed into personalized math problems. The greater their level of physical activity, the higher lifestyle score they achieve, that then translates into special privileges for their avatar in a virtual world. This approach reinforces good lifestyle choices, ties the real world with the virtual world, and provides students with truly personalized learning.

Friedberg also sees more avatars in the near future, or perhaps fewer because soon users can sync a single avatar with all of the virtual worlds, e-mail applications, and social

networks.

A student’s approach to learning comprises a unique character trait. Every mind is different. Personalized education could potentially meet each student’s individual learning style. One-to-one student-teacher interaction isn’t feasible whereas one-to-one student-technology is. Technology allows us to “challenge gifted students and help those who are struggling,” notes Harris. The goal is to keep students learning. Friedberg agrees, “No matter the pedagogy, whatever a student learns needs to extend outside the four walls of the classroom.” Digital storytelling, simulations, and educational games are like the empty stages of a theatre. Students are the ones directing the show by adding magic and dramatizing learning.

Check out these links:

CrazyTalk www.reallusion.com/crazytalk

GoAnimate www.goanimate.com

Oddcast www.oddcast.com

Salmonids in Troubled Waters

<http://library.thinkquest.org/05aug/00548/>

CURRICULA

LESSON 2: GOVERNANCE AND CANADA'S NORTH



Introduction:

Students will draw on the information they learned in Lesson 1 about the Inuit and their stewardship of Canada's North, (See March/April 2010) and learn more about the struggle for sovereignty in the North (for example, why it is of such interest currently). They will be introduced to the goals, challenges and limitations of international law. They will explore the concept of sovereignty as an evolving one and the implications of this as countries vie to stake their claim to territory in the Arctic, the "last frontier." The project engages students in learning more about the structures currently in place to establish governance of the Arctic, assessing Canada's current activities there, and then working together on a project to evaluate and assess the international structure set up to manage these disputes and suggest alternative rules of governance.

Materials Required:

Computers with Internet access

Detailed map of Canada's North:

<http://maps.nationalgeographic.com/maps/atlas/north-america-geophysical.html>

Writing paper and utensils

Expectations/Outcomes:

Students will:

- demonstrate understanding of Canada's political, social and economic systems in a global context;

Key Concepts and Issues:

Students will explore the concept of multiculturalism and how it connects to issues surrounding Canada's North.

Subjects:

Multiculturalism and Canada's North

Grade Level:

Grades 9 to 12

Duration:

5 to 8 classes

Curriculum Links:

Social Studies, World History
World Geography

We acknowledge the financial support of the Government of Canada through the Department of Canadian Heritage (name of program if space permits).

Nous reconnaissons l'appui financier du gouvernement du Canada par l'entremise du ministère du Patrimoine canadien (nom du programme, si l'espace le permet).

Canada



- recognize the purpose of laws within the Canadian, and international, context;
- demonstrate an understanding of an international issue affecting Canada;
- recognize the achievements of Aboriginal organizations (e.g., Inuit Tapiriit Kanatami) in gaining recognition of the rights of Aboriginal peoples in Canada;
- recognize possible differences in perspectives on issues of significance to Canadians;
- apply the concept of stewardship and sustainability to analyse a current national or international issue;
- evaluate the role of government in maintaining sovereignty in the North, and identify possible courses of action necessary for achieving this outcome;
- distinguish between primary and secondary sources of information;
- evaluate the credibility of sources and information; and organize and record information gathered through research.

Background

The North is becoming of increasing interest to various countries because global warming is melting ice, opening previously ice-covered waterways in the Arctic region. The result is more accessibility. Many countries are now expressing interest in the region as they recognize its potential for resource exploitation and development, and as a route of passage across the top of North America. Some are claiming sovereignty over portions of the Arctic seabed; many are claiming rights of access through the Northwest Passage.

The country that establishes sovereignty in this region will derive significant benefits. Canada's traditional sovereignty in the north is being challenged by many countries, including the United States, Russia, Iceland, Denmark, Finland, Norway, and Sweden. Canada is asserting that the Northwest Passage represents internal waters; other countries are arguing that these are international waters. Canada has been defending its authority over the North diplomatically, and it has been making promises to increase its presence in the region. Its commitments include building a deep-water port and supplying a fleet of limited range Arctic patrol boats. So far, however, these promises have not been delivered.

There is some general agreement about how to address some of these disputes. Because most of the region at issue is not land but impermanent ice, it falls under the UN Convention on the Law of the Sea (UNCLOS), a convention ratified by 150 nations. The convention states that nations have the right to control the belt of shoreline along their coasts, that is 12 nautical miles (22.2 km). Some Arctic waterways are as much as 100 km wide, however, due to increased ice loss as a result of climate change. This is providing widening shipping lanes, increasing foreign ship traffic. Some scientists predict the Northwest Passage could be ice-free by 2040. This makes these waters very attractive to commercial shipping interests from Europe and the Far East, as well as cruise shipping. In addition the receding ice removes barriers to exploring for oil, natural gas, diamonds, gold, and iron ore.

Canada is claiming these waters are internal and not open to foreign ships without permission. Canada, and other countries, are claiming governance over sections of the seabed (for example, Russia claims sovereignty over the Lomonsov Ridge, a huge undersea mountain chain that stretches across the Arctic Ocean from Siberia to Ellesmere Island and Greenland). The UNCLOS requires these disputes be resolved through presenting

scientific evidence proving areas claimed are geographically linked to the country, or its Arctic islands. Several, including Canada, are undertaking extensive mapping in order to comply. Ironically, Canadian, Russian, American, and Norwegian scientists are working together to collect the necessary data to further their own interests.

Step One: Teacher-Led Discussion

Begin with a general discussion about governance and what that means. Ask students why there are national laws and give some examples of these. Ask them why there are international laws (traditionally, to deal with conflict between states). To supplement their discussion, tell them that international laws develop in several ways, for example

- they arise out of international treaties and agreements between states;
- they begin as practices that become customary over time and end up as laws;
- they arise out of a commonality of principles in various states that become part of the accepted body of international law; and,
- they are recommended by international legal scholars and accepted by political leaders.

Point out that because much of international law is based on practices already followed by states, it is often adhered to; frequently there is no mechanism in place to enforce international laws that are not adhered to. There are some international (or supranational) institutions to help maintain international laws, such as the International Court of Justice, the European Court of Justice, and the International Criminal Court.

There are international laws that deal with economic law (trade and commerce), security law, diplomatic laws, environmental law, the law of war, and human rights law.

Tell students that the Arctic has been called “one of the last global frontiers” and ask what they think that means, specifically, what that might mean for Canada. Have students supplement what they’ve learned by reading the following:

- In a 2007 article in the Epoch Times, Cindy Drukier states: “In terms of land claims, it is an accepted geopolitical fact that the British ceded the 36,500 plus island Arctic Archipelago to Canada in 1880. Our claim to maritime sovereignty, however, is more shaky.”
- There are disputes about who has governance over regions in the North. There is a dispute over the Lomonosov Ridge. Russia claims sovereignty over this huge undersea mountain chain that stretches across the Arctic Ocean from Siberia to Ellesmere Island and Greenland. In 2007, they planted a flag on the North Pole seabed to stake their claim.
- Canada also claims this section of the seabed. According to the United Nations Convention on the Law of the Sea (UNCLOS) an area has to be geographically linked to the country, or its Arctic islands, making a claim for it. Canadian and Danish scientists worked together to provide evidence that the Lomonosov Ridge is an extension of the North American continent. Russia has also presented its own study however. The deadline for further evidence is 2013.
- There are other disputed areas as well.
- Denmark claimed uninhabited Hans Island and put up a flag there in 2002. Canada disputed this claim and removed the flag.
- Canada claims the waters of the Arctic Archipelago, including the Northwest Passage, as inland waters. Other states, including the United States, claim they are not. They claim navigational rights here, allowing them the right of transit passage.
- Canada and the United States dispute a border in the Beaufort Sea. There are petroleum reserves in the area that would be affected.

Step Two

Tell the students that this part of the lesson will focus on a conversation about the North as both homeland to the Inuit and a region over which Canada wishes to maintain governance. Ask them to reflect on what they learned in Lesson 1 and suggest whether they can see how these two statements might signify either conflict or common purpose.

Review with the students the current accepted concept of sovereignty as the responsibility of a country to protect, and have authority over, its territory and to be perceived as protecting it and having authority over it. As the students have discussed in Lesson 1, sovereignty is also thought to include stewardship over the territory. Have two volunteers then define sovereignty in their own words and record these definitions on the board.

"Sovereignty is a question of exercising, actively, your responsibilities in an area." – former Canadian National Defence Minister Bill Graham

"Canada has a choice when it comes to defending our sovereignty in the Arctic; either we use it or we lose it." - Prime Minister Stephen Harper, 2007

Read students the above quotes, and ask them whether they believe Canada has stewardship over the North and is "using" the region. Recall with students what they have learned about the land and culture of the Inuit in Lesson 1, and suggest that the issue of governance in the North is of great importance to the Inuit. Mention that Canada often points to the presence of the Inuit in the North as evidence of Canada's "use" of the region. Tell them that the Arctic Archipelago is a vast region, representing 40 per cent of Canada's territory. Remind them that the Arctic Archipelago is policed by the Canadian Rangers, an army reserve unit made up of Inuit who patrol with snowmobiles and rifles, "controlling" the land surrounding the disputed waters. This is known as Operation Nunavut, Inuktitut for "Land that is ours."

Next, tell students you are going to read them excerpts from speeches by two different people (or have a student read the same). Read this first one aloud. (It is from a speech by Mary Simon, President of the Inuit Tapiriit Kanatami).

"There are three key messages that I would like to give you today...."

"The first is that the Arctic is a region of Canada whose time has come. Sovereignty, environmental, economic development and social policy factors all support this conclusion."

"The second is that Sovereignty begins at home. Canada cannot successfully assert its national agenda in the Arctic while ignoring the state of civil society in the Arctic."

"The third is that the key to sustainable Arctic policies and creative policy making in Canada must be anchored in establishing a constructive partnership with Inuit."

After making sure the students understand her points, read the students this excerpt. (It is from a speech made by Prime Minister Stephen Harper in August 2006 in Iqaluit, Nunavut.)

"... [Y]ou can't defend Arctic sovereignty with words alone. It takes a Canadian presence on the ground, in the air and on the sea.... I am here today to make it absolutely clear there is no question about Canada's Arctic border. It extends from the northern tip of Labrador all the way up the East coast of Ellesmere Island to Alert. Then it traces the western perimeter of the Queen Elizabeth Islands down to the Beaufort Sea. From there it hugs the coasts of the Northwest Territories and Yukon to the Canada-U.S. border at Alaska. All along the border, our jurisdiction extends outward 200 miles into the surrounding sea, just as it does along our Atlantic and Pacific coastlines."

"No more. And no less...."

"... [The] government's first obligation is to defend the territorial integrity of its borders. And this will become more important in the decades to come - because northern oil and gas, minerals and other resources of the northern frontier will become ever more valuable. The technologies used in Arctic resource extraction and transport are increasingly sophisticated and affordable. And the Northwest Passage is becoming more accessible every year: Some scientists even predict it will be open to year-round shipping within a decade."

"In short, the economics and the strategic value of northern resource development are growing ever more attractive and critical to our nation. And trust me, it is not only Canadians who are noticing. It is no exaggeration to say that the need to assert our sovereignty and take action to protect our territorial integrity in the Arctic has never been more urgent."

"The North is poised to take a much bigger role in Canada's economic and social development. It is attracting international attention, investment capital, people, and commercial and industrial development."

"Therefore the Government of Canada has an enormous responsibility to ensure that development occurs on our terms."

"In particular, we must ensure the unique ecosystem of the North, and the unique cultural traditions of the First Peoples of the North, are respected and protected."

After making sure they understand the points in this speech, ask them to guess who the speakers are, and explain their reasons. After the discussion, tell them the names of the speakers.

Step Three

Have students review the current governance system in place in the North to assess what Canada must do in order to prove its sovereignty in the Arctic. Begin by reviewing the definition of sovereignty and encouraging students to pick out the key points that Canada needs to prove (it is patrolling and protecting the North, establishing a presence in, or "using," the North; other governments must recognize Canada's sovereignty). Have them do some research to learn more about:

- Canada's history in the North
- the promises made by governments about securing the North
- the promises made by governments to the Inuit about their role in the North
- how Canada is currently policing the North (including Radarsat-2)
- how Canada is currently handling decision-making in the North
- the scientific evidence that Canada is preparing to bolster its territorial claims in the North

After the students have had a chance to do research, meet as a class and engage the students in an evaluation of Canada's position and make suggestions about how the country might strengthen its claims to the North while following the existing laws and conventions.



Step Four

Tell the students they will assess the existing structure that is in place to resolve disputes about sovereignty in the “last frontier” and, if they believe it necessary, suggest alternatives to some parts of it or the whole structure.

First, have them do some preliminary research to find out more about other international bodies or international laws. Have them find out what types of behaviour are governed internationally, why, and how the rules or laws are upheld. Suggest that they think about what limitations there are to these laws and courts, but also have them look for examples where these laws are helping prevent, or reduce, conflicts and disputes.

Meet as a group and discuss what they have learned. Now have them reflect on their new project – evaluating the governance system in place in the Arctic and suggesting alternatives – and together, arrive at some key questions that will help them in their analysis, such as:

- What do we already know about how disputes about sovereignty in the North are being resolved? (examples: UNCLOS is requiring countries to provide scientific proof of geographical links to undersea regions; there is an accepted definition of sovereignty which requires policing, and maintaining a presence in, the North, as well as a common perception that this is being achieved)
- How did this governance system come about? Do all countries accept it? (example: the United States has not ratified UNCLOS)
- What are advantages of this governance system? (examples: based on custom and precedent; because there are no written rules about some of the verification methods, this respects the integrity of all countries, forces them to take a big-picture look at the situation, and avoids them becoming entrenched in bickering about minor letter-of-the-law points and minutiae; so far, this governance system seems to be helping countries avoid direct conflict)
- What are possible difficulties with it? (examples: there is no set-in-stone process for confirming sovereignty, for example, how do countries agree on their “perceptions” about whether or not another country is maintaining a presence in the North; how do countries which disagree express their grievances?; does it offer a foolproof failsafe method for avoiding conflict as the stakes become higher?)
- Is this the best system of governance for tackling the issues? What elements might you want to change, and why? What alternative form of governance would you set up, and why? (What advantages or difficulties might it present?)

Step Five

Provide pairs of students with sufficient time to reflect on research they have already done and to conduct any additional research required. Remind them of the importance in using accurate sources, and suggest that they keep track of all the sources they use. Review the difference between primary and secondary sources and their respective values.

(You may wish to refer them to the model negotiation statement prepared in 2008 by two teams of non-governmental experts; they made recommendations about navigation in northern waters to the American and Canadian governments:

<http://byers.typepad.com/arctic/model-negotiation-on-northern-waters.html>.)

Evaluate the research work of each individual student when completed.

Step Six

When their research is complete, have the students gather as a class to discuss their evaluations. Ask: Who decided the governance structure in place is adequate? Who decided it needed changes?

If there are students who decided the governance structure is adequate, have them be first to share their evaluations. Have the other pairs of students share next.

Encourage the class to discuss similarities and differences in evaluations and summarize the various points of view. If possible, have them reach a consensus on their views.

Optional Extension Activities:

- Students may research if any countries are making a claim to sovereignty over the North Pole and if not, why not.
- Pairs of students can look up, and read, *A Circumpolar Inuit Declaration on Sovereignty in the North*. (Some of them may have read section 1 as an extension activity for Lesson 1.) They can summarize the main points and prepare a poster, presenting the views of this group of Inuit on "Action for the North."
- In his 2006 speech in Iqaluit, Nunavut on the topic of Canada's North, Prime Minister Harper said: "Canada's Arctic sovereignty is firmly anchored in history. Almost 100 years ago, in 1909, a plaque was installed on Melville Island by famed Quebecois seaman Joseph Bernier, captain of the Canadian government ship Arctic. It proclaimed, on the ground for the first time, Canada's sovereignty over the entire Arctic Archipelago. From the 1920s through the 1940s, the great Canadian navigator Henry Larsen patrolled our Arctic waters aboard the famous RCMP schooner St. Roch. Larsen's many voyages upheld the first principle of Arctic sovereignty: Use it or lose it." Verify Prime Minister Harper's statements about history, and after conducting research, make a timeline showing other Canadian activity in the North that bolsters Canada's claim to "using" it.
- Students can investigate the Arctic Water Pollution Prevention Act, for example, when it was enacted and why, and, in particular, assess reasons for renewed political interest in the law.
- Students may research the Radarsat-2 and its impact on Canada's North. In particular, they can look at why the government blocked the sale of the satellite (in April 2008) and what mechanism allowed this government action. (This was the first time Canada blocked the sale of a domestic firm to a foreign buyer.) Have them investigate other examples of government intervening in international deals.
- Students may write a letter to the prime minister suggesting the implementation of measures they believe the Canadian government should be pursuing in order to maintain sovereignty in the Arctic while following the existing laws and conventions of governance. Remind them to write in a formal style, to check their

sources and the accuracy of any facts they present, and to provide supporting evidence for their comments. Suggest that they ask for a reply.

Assessment and Evaluation rubrics:

General

Discussion

Level 1—Did not participate or contribute to the teacher-directed discussions

Level 2—Participated somewhat in the teacher-directed discussions

Level 3—Active participation in the teacher-directed discussions

Level 4—Made a significant contribution to the teacher-directed discussions

Content

Level 1—Demonstrated limited understanding of concepts, facts and terms

Level 2—Demonstrated some understanding of concepts, facts and terms

Level 3—Demonstrated considerable understanding of concepts, facts and terms

Level 4—Demonstrated thorough understanding of concepts, facts and terms

Written Work

Level 1—Written report had many grammatical errors, is poorly structured and confusing

Level 2—Written report was generally clear but has numerous grammatical errors

Level 3—Written report was well-structured and clear but has a few significant errors

Level 4—Written report was very clear, well-organized with few errors

Oral Presentation

Level 1—Oral report was confusing, lacked emphasis and energy with no discussion resulting

Level 2—Oral report was clear but lacked energy and emphasis with little discussion resulting

Level 3—Oral report was clear and vibrantly presented but lacked some emphasis and energy with a good discussion resulting

Level 4—Oral report was clear and enthusiastically presented with energetic discussion resulting

Team Work

Level 1—1 or 2 members dominated the team, very little cooperation

Level 2—Majority of the group made a contribution with some recognition of individual strengths but cooperation was superficial

Level 3—Most members made a significant contribution with a good level of cooperation

Level 4—All members made a significant contribution, individual strengths were recognized and used effectively, excellent cooperation among group members

Specific**Step One**

Student demonstrated a poor understanding of governance

Student demonstrated a basic understanding of governance

Student demonstrated a good understanding of governance

Student demonstrated an exemplary understanding of governance

Step Two

Student demonstrated a poor understanding of sovereignty and its implications

Student demonstrated a basic understanding of sovereignty and its implications

Student demonstrated a good understanding of sovereignty and its implications

Student demonstrated an exemplary understanding of sovereignty and its implications

Step Three

Student exhibited a poor understanding of measures that could strengthen the government's claims to the North

Student exhibited a basic understanding of measures that could strengthen the government's claims to the North

Student exhibited a good understanding of measures that could strengthen the government's claims to the North

Student exhibited an exemplary understanding of measures that could strengthen the government's claims to the North

Step Four

Student demonstrated a poor ability to suggest key questions to aid analysis

Student demonstrated a basic ability to propose key questions to aid analysis

Student demonstrated a good ability to propose key questions to aid analysis

Student demonstrated an exemplary ability to propose key questions to aid analysis

Step Five

Student demonstrated poor research skills

Student demonstrated basic research skills

Student demonstrated good research skills

Student demonstrated exemplary research skills

Step Six

Student exhibited a poor ability to evaluate existing Arctic governance structure and suggest alternative

Student exhibited a basic ability to evaluate existing Arctic governance structure and suggest alternative

Student exhibited a good ability to evaluate existing Arctic governance structure and suggest alternative

Student exhibited an exemplary ability to evaluate existing Arctic governance structure and suggest alternative

Resources:

General info on Canadian International Law:

<http://www.canadianlawsite.ca/international.htm>

Inuit rights in the North and Arctic Sovereignty (article)

<http://www.theglobeandmail.com/news/opinions/fund-inuit-not-canadian-arctic-sovereignty/article1256334/>

Canadian Arctic Sovereignty (information about Canada's role in the North, Jan 2006):

<http://www.parl.gc.ca/information/library/PRBpubs/prb0561-e.htm>

Research Backs Canada's Claim on Northern Sovereignty

(article): <http://www.canada.com/topics/news/world/story.html?id=b7be4e45-1244-478e-864e-a6150b0bf679>

Canadian sovereignty (article):

<http://en.epochtimes.com/news/7-7-12/57562.html>

Challenges in policing the arctic (article):

<http://www.rcmp-grc.gc.ca/ci-rc/reports-rapports/cs-sc/index-eng.htm>

Arctic Water Pollution Prevent Act (article):

<http://www.thestar.com/article/486259>

Radarsat (article):

<http://www.walrusmagazine.com/articles/2008.06-technology-for-sale-arctic-sovereignty-radarsat-mda-michael-byers/>

North American Integration and the Militarization of the Arctic (article):

<http://www.globalresearch.ca/index.php?context=va&aid=6586>

The Race to the Arctic and International Law (blog):

<http://itssdjournallunclos-lost.blogspot.com/2008/05/httpwww.html>

China Prepares for an Ice-free Arctic (article):

<http://books.sipri.org/files/insight/SIPRIInsight1002.pdf>

The Danish Continental Shelf Project (website):

http://a76.dk/lng_uk/main.html

UNCLOS (United Nations Convention on the Law of the Sea):

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

Oceans and Law of the Sea:

<http://www.un.org/Depts/los/index.htm>

FIELD TRIPS : what's on

Just in time for spring, this month's Field Trips spotlight subject is botany and horticulture! Stop to smell the roses with your students this term on a visit to your local botanical garden. Many of Canada's gardens are open to school groups and offer interpretive walks through their flower, herb, and vegetable gardens, mixed woodland vegetations, trails, and greenhouses. The school programs are innovative and provide students with hands-on examinations of native species of flora and fauna that they otherwise cannot view. Among many interesting topics, students can learn how plants specially adapt to their local environments, study the fascinating insect-eating plants, or discover the ancient rainforests and alpine tundra of Canada.

The botanical gardens provide curriculum-based school programs. *For specific educational program outlines and curriculum connections please visit the **Field Trips** page at teachmag.com.*



FIELD TRIP OPPORTUNITIES

Memorial University of Newfoundland Botanical Garden – St. John's, NL

<http://www.mun.ca/botgarden>

The Memorial University of Newfoundland Botanical Garden is home to a 110 acre nature reserve that provides students with an opportunity to view local flora and fauna, particularly within the northern boreal forest and wetland biomes, while learning about: ecological concepts; plant and animal identification and classification; the ecology and composition of the forest; adaptations and interactions among living things; biodiversity; succession; competition and much more.

Montreal Botanical Garden – Montreal, QC

<http://www2.ville.montreal.qc.ca/jardin/en/menu.htm>

The Montreal Botanical Garden offers a wide range of educational activities related to botany, horticulture, and the natural sciences for school groups. In different seasons and in various parts of the garden, there are also thematic exhibitions that highlight, for example, Japanese culture in the Japanese Gardens or the Amerindian and Inuit culture in the First Nations Garden.

The Natural Science Activities and Programs Division, that is responsible for educational activities, also offers horticultural workshops at the Botanical Garden.

Mount Revelstoke National Park – Revelstoke, BC

<http://www.pc.gc.ca/eng/pn-np/bc/revelstoke/edu/edu3.aspx>

Mount Revelstoke National Park is a place of contrasts. Explore the variety of geographical zones, from dense old-growth rainforest of giant cedar and pine, travel up through subalpine forest, and finally alpine meadows and tundra.

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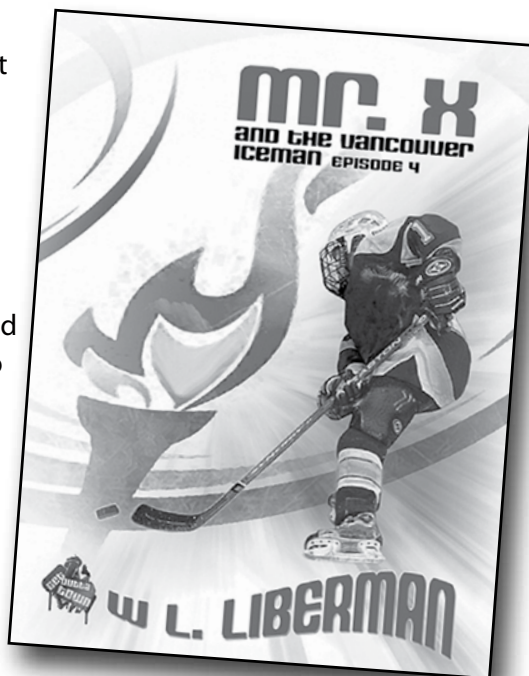
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