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22 Every Drop Counts: Keeping Water Education Fresh

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Publisher / Editor:
Wili Liberman

Associate Editor:
Lisa Tran

Editorial Intern:
Alexandria Saracino

Contributors:
Martha Beach, Craig Bouvier,
Meagan Gillmore

Art Direction:
Kat Bezner

Design / Production:
Studio Productions

Editorial Advisory Board:
Bernice Slotnick
Teacher (retired)

John Myers
Curriculum Instructor,
Ontario Institute for Studies in Education/
University of Toronto

Rose Dotten
Directory of Library and Information
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Happy Summer!

Who should teach financial literacy—teachers, parents, or the big banks? Financial education. It's a small phrase, but it holds big meaning. Some say teach it at home. Others say integrate it into existing curriculum. Some advocate for personal finance courses. One thing on which we should all agree, however, is that this catch-all idea of financial education—handling personal finances, asset management, understanding debt, proper credit use, comparison shopping, retirement funds, building saving accounts—is of utmost importance. Read our first **Feature Story** to find out how to best address financial education.

Water—the source of life. Living in the Western world, it's easy for us take it for granted. Every time we turn on the tap, there's a steady flow of water. So, how do we teach the concept of water scarcity to students who likely will never experience it? Many people want to teach environmental education, but they take the wrong approach. They tend to focus only on the problem. Children then become burdened with serious issues of pollution and climate change. Instead, teachers should show students how to find solutions. Our second **Feature Story** takes a look at the different ways to teach water conservation. Sometimes, tangible activities are the best way to illustrate a difficult topic. Fortunately, water lends itself to fun games and makes learning more interesting for students.

In **Classroom Perspectives**, educator Craig Bouvier discusses relational intentionality that is, using relationships as a teaching tool. You have to maintain a balance of being an instructor and authority figure while building a positive relationship with students. This is different than becoming friends with your students, which can be dangerous. Take a look to find out why relationships are crucial to learning and life.

Elsewhere in the issue is **Field Trips** that suggests some media literacy excursions. Today, children and youth are surrounded by screens of all kinds and inundated with media messages. A media literacy workshop can help teach students about understanding, evaluating, and analyzing the role of the media, without taking it for granted. As well, in **Webstuff**, we feature some apps that teach reading comprehension because without comprehension, reading is simply sounding out words from left to right.

We wish you a wonderful summer holiday and look forward to seeing you for our August issue.

Until next time,

Lisa Tran,
Associate Editor
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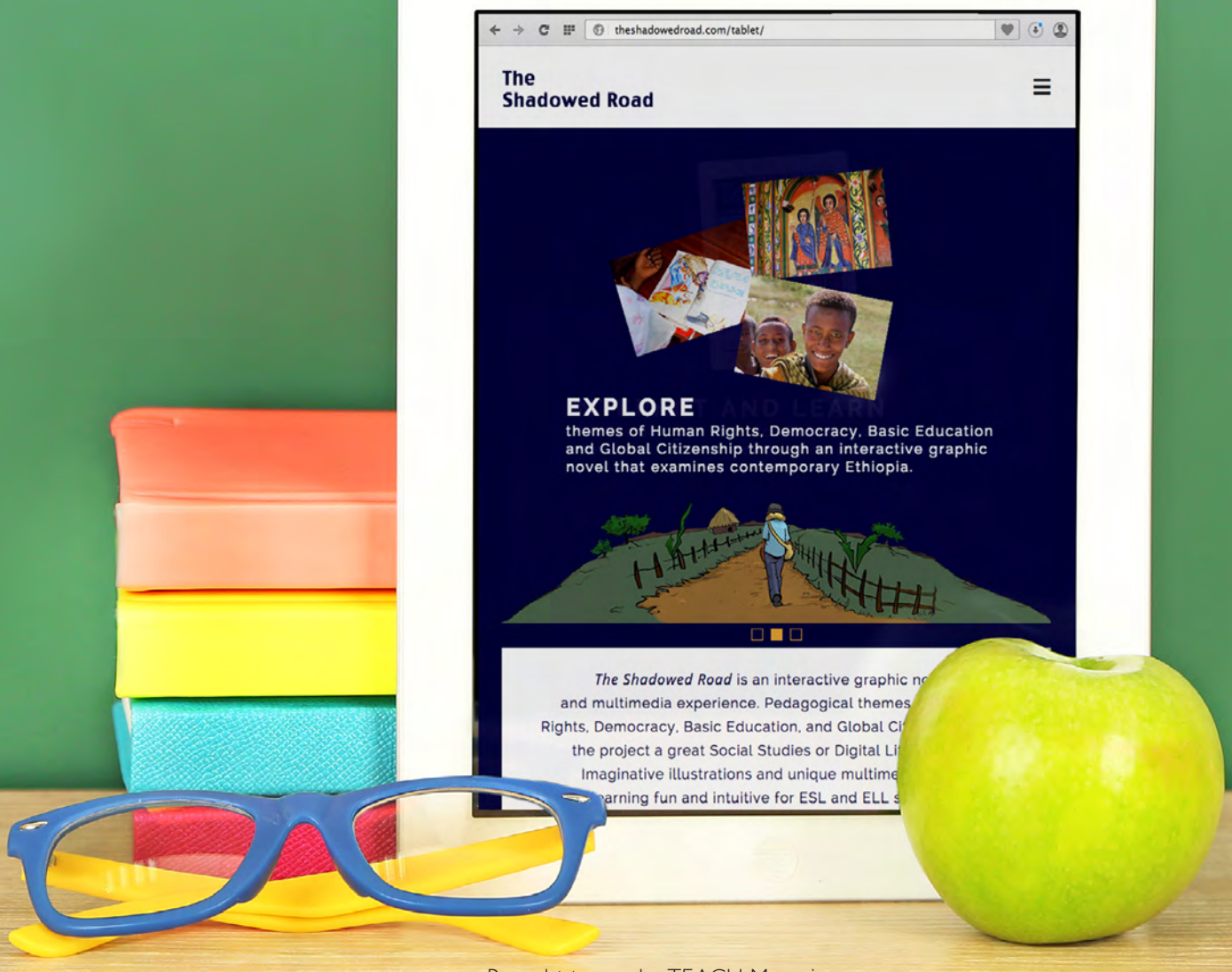

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WHO SHOULD TEACH FINANCIAL LITERACY?

by Martha Beach

Kyle Provost, a high school teacher in Manitoba, moved to a rural town outside Winnipeg for his current teaching gig. With no rental opportunities in the area, Provost's only option was to buy a house. He quickly realized that he had little knowledge of personal finances needed. "I had 18 years of education, but I had no idea how to buy a house," Provost says. "I knew money exchanged hands, but I didn't know what an interest rate was all about or any other details like that."

Financial education. It's a small phrase, but it holds big meaning. Some say, teach it at home. Others say, integrate it into existing curriculum. Some advocate for personal finance courses. One thing on which we should all agree, however, is that this catch-all idea of financial education—handling personal finances, asset management, understanding debt, proper credit use, comparison shopping, retirement funds, building saving accounts—is of utmost importance.

Canada has been on the road toward financial literacy for a few years now. The federal government launched a task force in 2009 that made 30 recommendations. In 2012, November was designated as Financial Literacy Month. The following year, the Financial Literacy Act suggested a Financial Literacy Leader, and in 2014 Jane Rooney was named as the first person to fill that role. But the focus is not just on students: late 2014 saw the launch of a financial literacy strategy for seniors.

Provost sums it up perfectly: "It's a Canadian issue, not just a student issue." Shortly after being faced with one of the biggest financial decisions of his life, Provost, a humanities teacher, decided to found the site ***MyUniversityMoney.com*** with Justin Bouchard, another educator in Manitoba. (Provost is also the author of *More Money for Beer and Textbooks*, a practical book for teens on how to save money for and during post-secondary education.)

Why would a humanities teacher be so invested in personal finance? Because learning math equations is not the main problem when it comes to financial education.

"Math is the sidebar component. It's about decision-making and good financial behaviour," says Gary Rabbior, president of the Canadian Foundation for Economic Education (CFEE). "The formula is only 10 percent of the battle," Provost agrees. We have to address the behavioural aspects of why citizens max out credit cards and spend their pension fund on a mortgage. Personal finance in the current generation is more an issue of lifestyle and social norms. "It's a combination of behaviour and math. If you don't know how to compare renting versus purchasing in terms of how it fits your lifestyle,

Learning math equations is not the main problem when it comes to financial education. "Math is the sidebar component. It's about decision-making and good financial behaviour."

you can't put that into a formula," says Provost.

There is currently a fairly substantial generational difference between teens now and their parents or grandparents in terms of access to credit cards, lines of credit, mortgages, greater social acceptance of debt, as well as fewer job prospects and radically different retirement plans. Many adults caught in this "vortex," as Provost calls it, don't know the answers. "I call it the 'emperor has no clothes' syndrome," Provost says. "They have no plan. They don't want to think about it, don't want to admit they don't know."

This syndrome is particularly problematic because most lifestyle lessons are taught at home. "Parents are our children's first teachers," says Carla Hindman, director of financial education at Practical Money Skills. "But not every child has the same opportunities at home," Hindman admits.

Ideally, it's a shared responsibility, Rabbior says. "We have to have parents and teachers working together." But in reality, parents may not be qualified. "Most adults statistically get a failing grade when it comes to personal finance," Provost says. And money is still a taboo topic in a lot of homes—parents are more apt to discuss sex education at the dinner table than money. But Rabbior points out that parents, despite having little financial education, have had years of experience. "They've made mistakes, they've made good decisions. They can pass on that experiential knowledge," says Rabbior.

So, it seems school may be the best official financial launching pad. "However, we know teachers have so many responsibilities," Hindman says. Practical Money Skills, from Visa Canada, has three levels of apps and games: Peter Pig Money Counter for ages four to six, Money Metropolis for ages seven to twelve, and Financial Soccer for the older set. They also have a curriculum program called Choices and Decisions available for Grade 10 students. "The goal is to understand spending, managing debt, and the ins-and-outs of finances. But we try to keep it at the most basic and separate from the brand," says Hindman. "We don't try to hide the fact that we operate out of Visa Canada. But it's by no means a way to promote the product," says Hindman.

Similarly, RBC has put money into developing programs: they offer a curriculum called It All Adds Up. "It teaches young Canadians about personal finances in an interesting, relatable and practical way," says Andrew Block, senior manager of communications at RBC.

Corporate-public partnerships may be the way to go. "It's one of the only ways to be sure resources get in. Schools are just spread so thin," says Rabbior. BMO and CFEE have teamed up to create *Talk to Your Kids about Money Day*, an April event that encourages conversation. "It's about linking the home with the school," Rabbior says.

Provost is, understandingly, concerned about big banks doling out this type of information. "It's like Monsanto teaching biology. Clearly they have a stake in it," he says. Some not-for-profit companies do provide resources like the Ontario Securities Commission's ***GetSmarterAboutMoney.ca*** or CFEE, which is not-for-profit. But these are, unfortunately, few and far between.

"You need to make it real and relevant. Instead of simply teaching interest calculations, give a real life example," Block says. "Talk about the mortgage on your house. Talk about your credit card bill or your grocery bills. Instead of simply teaching percentages, explain sales tax and how the price on the sale tag is not the total net cost."

Weaving financial behaviour lessons and decision-making throughout the early grades and across a range of subjects is thought of as most beneficial, says Rabbior. But it has to be done during the elementary grades. "You don't just

You need to make it real and relevant. Instead of simply teaching interest calculations, give a real life example….

grab them in one course in high school, you have to lay the foundation early on," says Rabbior. Ontario has done a lot of work on integrating personal finance into every day curriculum. They have two Scope and Sequence of Expectations documents that outline exactly how to weave financial education into everything from gym to science class.

Amanda Thacker, a Grade 12 student in Cambridge, Ontario, has learned all she knows about finances from her family. "They don't teach us anything about personal finance in school, which is unfortunate," she says. "Solely because of my parents, I feel pretty well-informed on the issues of debt, savings, money management, and that sort of thing."

While Thacker's year is a little old to judge whether the integration method is working, we know that integration is harder to do than to say. "It's really good in theory. It looks good on paper," Provost says. "But we're already integrating so many things. Teachers are inundated. We're at our limit," Provost says. What's on paper isn't trickling down to the students. "The answer is not integration," Provost says. The answer is lobbying and advising for a series of personal finance courses throughout a student's school career. "It's the best in the long term." And Provost does his best to practice what he preaches. He received a school-initiated credit (SIC) for a personal finance course he developed. The course is in its third year at his high school, and he has high hopes for expanding it across Manitoba.

The question arises again, though, who is best qualified to teach Canadian youth about personal finance? Provost feels strongly that a general teacher is not the answer. "Teachers may be some of the least qualified to teach personal finance. Teachers don't need to pay attention to it. We have unparalleled job security. We have rigid job levels. The vast majority of insurance is covered. Because of this, we have an even more apparent 'emperor has no clothes' syndrome," Provost says. A personal finance course would ideally be taught by an educator who specializes in the material, just as band class is (theoretically) taught by a musician and chemistry is taught by a specialized science teacher. On the other hand, Rabbior thinks any teacher can educate kids about the choices and importance surrounding personal finance. Though most teachers don't have this type of educational background, it doesn't mean they're unable. "Their lack of confidence and knowledge is probably one of the biggest roadblocks," says Rabbior. "But when you teach it, you learn it."

For now the answer may be to just take a stab at it. Seek out some resources—from a corporation or public body—and start a conversation. Talk about realistic expectations for a salary, how much homes cost, how to save for education, how to comparison price shop for groceries. Send home some research projects about comparing TFSAs and RRSPs. You'll learn. The students will learn. The parents will learn. But most importantly, the wheels will start turning and the conversation will begin.

Martha Beach is a graduate of Ryerson University's journalism program. Currently, she is a freelance writer and factchecker in Toronto.

Media Literacy

These days, media is everywhere! Children and youth are surrounded by screens of all sorts—whether they're gaming on an iPad, researching on the computer, or watching something on the television screen. Media literacy is about understanding, evaluating, and analyzing the role media plays, without taking it for granted. Learning interactive media skills empowers students to take control of media and can allow them to understand and question the media surrounding them. Here are some suggested field trip and in-school workshops that can do just that.

I AM COMPELLED

I Am Compelled is a national organization that offers in-school assemblies for K-8 students featuring media clips of stories highlighting Canadian history. The show also features interactive theatre and game components. Students follow the lives of two characters as they journey together and learn what it means to be Canadian, and the responsibility that each student has to be the change. Key topics include First Nations, Métis, and Inuit People, Native storytelling, levels of government, Canada's Founding Fathers, and how to use social media in a positive way. *I am Compelled* inspires students to think of ways to give back to their school and community, and to write the next chapter of history in Canada. For more information, please visit ***www.iamcompelled.ca***.

MUSEUM OF VANCOUVER

With *Reel to Real*, the Museum of Vancouver offers a full-day workshop where students in Grades 5+ can work with professional animators to storyboard a plot, animate characters, and use dialogue and sound effects to create an animated story. Topics include: Vancouver Fire, Mummy Panechates, Gold Rush, and the 1907 Anti-Asian Riots. Visit ***www.museumofvancouver.ca*** for further inquiries.

IN THE MIX

With components of dance and physical education involved, *In the Mix* uses iPads to have students work collaboratively to create a dance. They are guided appropriately by instructors to create, interpret, record, and edit their own music videos. This fun form of physical engagement encourages student's creativity, media skills, and social interaction. *In the Mix* offers workshops in Toronto and Brampton. To book a workshop, visit ***www.inthemixprogram.com***.

SCRATCH LAB

Scratch Lab, located in Toronto, provides programs customizable to Ontario curriculum needs pertaining to Theory, Creation and/or Analysis. *Scratch Lab* combines media literacy and music. In the workshop, students at the beginner level are challenged to develop skills in music composition, orchestration, and arrangement through turntables, mixers and various related technologies. More information can be found at ***www.scratchlab.ca***.

TORONTO INTERNATIONAL FILM FESTIVAL (TIFF)

TIFF school programs, *Doc in a Day* and *Film in a Day* have been revised for the 2015/2016 school year. In these programs, students are immersed in the world of filmmaking. Working collaboratively, they plan, pitch, and shoot a short documentary or film that speaks to their own experience or an issue important to them. All films include interviews and a re-enacted scene. These programs, for students in Grades 7-12, can be facilitated in French or English. Book at workshop at ***www.tiff.net/education/learningprogrammes***.

INTRODUCING TEACH MAGAZINE'S NEWEST PROJECT

SHATTERED GROUND: SOLDIERS MARCHING OFF TO WAR

An educational interactive project commemorating the First World War centenary. Shattered Ground is designed to engage students in an exploration of the main educational themes related to the First World War, the impact of War on a way of life, and the legacy of sacrifice that is part and parcel of engaging in conflict.

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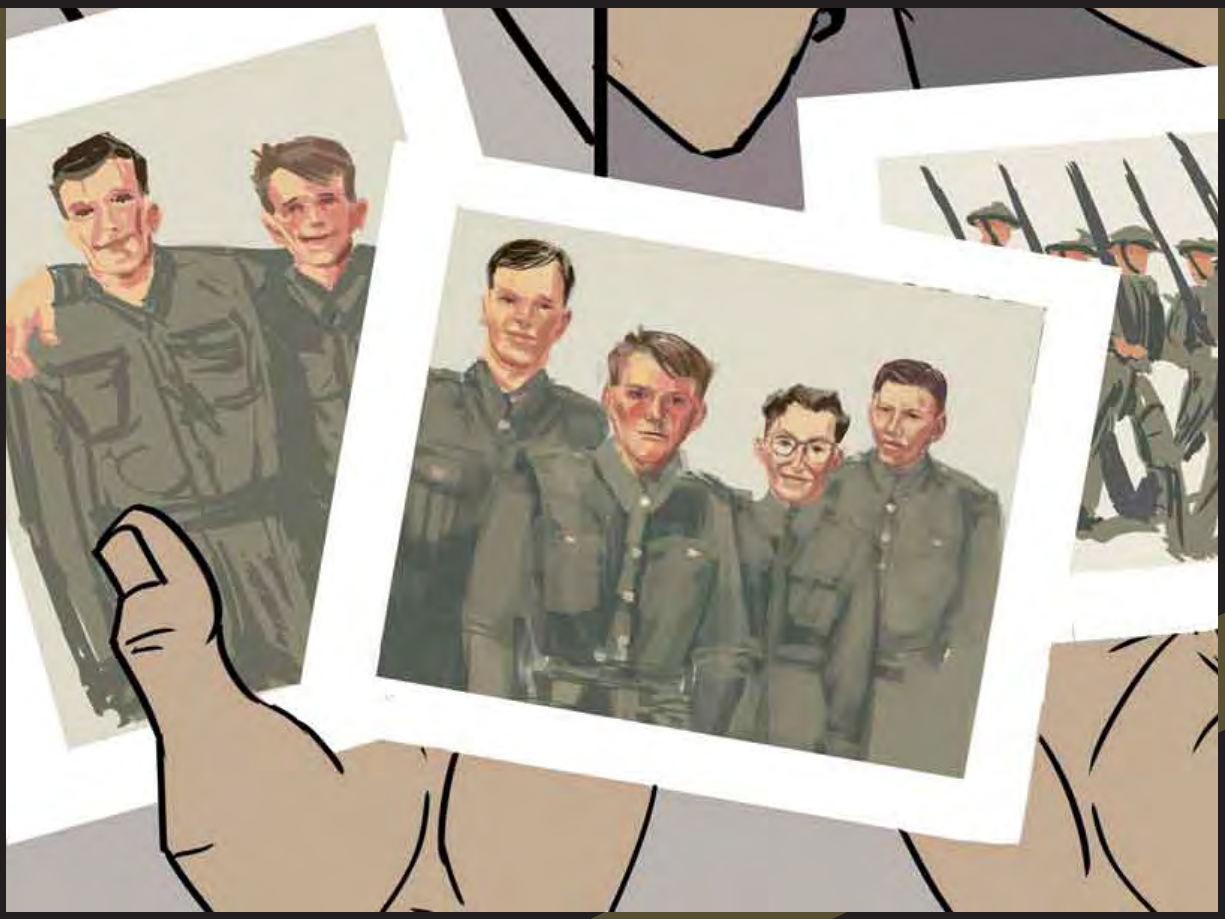

RELATIONSHIPS
as a Teaching Tool

by Craig Bouvier

I have lost count of the number of times I have been told that rules without relationships lead to rebellion. Yet today, relationships with students seem to be feared instead of embraced. Over the years, quite by accident, I have discovered that this precept from days gone by is critical to classroom rules and to learning itself. Relationships are an essential part of learning, especially relationships between teachers and students.

Educators interact with their students in two important ways: personal or impersonal. It is not difficult to understand that a personal interaction is better than an impersonal one. As a father, every instruction I give my children is impacted by many factors, but one of the more important ones is my personal relationship with them. I am their father; therefore, I have a growing relationship with them that motivates them to listen to me (well, at least most of the time).

As teachers, we often complain that our students do not listen, daydream too much, and talk while we are speaking. Whether we realize it or not, these are examples of students interacting with their learning environment, but often, to our frustration, their interaction is with the wrong part—each other. What I came to realize is, the interaction I demanded from my students was already taking place. The problem was not their lack of interaction; it was was how to become a meaningful part of their ongoing interaction.

Initially, I tried to control my class only with my voice. I would raise it when I wanted students to settle, and lower it when I was content with their behaviour. Unbeknownst to me, people absorb information through their senses, equally, with one exception: the auditory sense. According to Patricia Wolfe who wrote the book, *Brain Matters: Translating Research into Classroom Practice*, auditory signals are slightly different. They are recorded as an *echoic memory* and that requires more time to process than the other senses. I did not realize that by only using my voice, I was using the slowest sense to control my class.

> **Friendship is built on equality and commonality; teaching and mentoring is not.**

So what is the answer to positively interact with students so that they learn? For me it became one word—relationships! I know what you are thinking, *I have relationships with my students*, and I believe that you do, but I am advocating something I call *relational intentionality*. *Relational intentionality* involves maintaining

our authority while building relationships with students. It involves intentional actions. You could think of it as if it were part of the instructional plan. It is a relationship that models respect and cordiality in ways that teach both.

Relational intentionality is making sure you know your students names. It is using please and thank you with them at all times regardless of their response. It is calling them Miss and Sir. It is wanting to know details of their lives. It is saying thank you to them for a kind act. It is finding their successes in order to balance out their failures. It is understanding that they are children and allowing them to be children. As their teacher, you are modelling, through *relational intentionality*, the relationship you want to have with them, and how they should relate to their world—you are their mentor.

Again, *relational intentionality* is not becoming friends with your students; it is building relationships that go beyond friendship. I once had a colleague announce at an awards banquet that he was going to miss two seniors who were graduating that year. In his very fine speech, he called them his "best friends" several times. After the night was over, I pulled him aside and gently reminded him that, as a 34-year-old married father of two, it did not seem wise to announce to the world that your two best friends were 17-year-old high school students. This is not building relationships with your students. This is becoming friends with your students and it is very dangerous, especially in today's culture. Friendship is built on equality and commonality; teaching and mentoring is not.

Often students become disengaged when learning abstract concepts. They may talk to their classmates or drift off into daydreams. These complex topics in education or life often do not have concrete examples—they're abstract after all. In such cases, learning is heavily dependent on the relationship between the mentor and the student. It is the relationship that supplies the necessary tangible experiences to illustrate abstract concepts. As students advance deeper into learning, relationships with others may be one of the only concrete elements of their learning. We know that rules delivered without relationships often lead to rebellion; the same could be applied to learning and life. That old precept may need some adjustment, but the message does not, relationships are crucial to learning and to life.

Craig L. Bouvier is the Head of School at Shannon Forest Christian School in Greenville, SC.

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CURRICULA

FOR GRADES
9 TO 12

The following is a lesson plan excerpt from *80 DEGREES NORTH*, a graphic novel and digital literacy title. To see the full lesson plan or to learn more, please visit ***www.80degreesnorth.com***.

LESSON TWO
The Arctic Environment

80 Degrees North tells the remarkable story of Canada's first Arctic Expedition that began over 100 years ago. Led by the noted and controversial Arctic explorer, Vilhjalmur Stefansson, the expedition members experienced extreme conditions and staggering challenges. The flagship of the expedition, the Karluk, became caught in the ice and was lost early on. Twenty-two individuals and the ship's mascot, a cat, survived. The ship's captain, Robert Bartlett, trekked hundreds of miles over the ice in harsh conditions to effect the rescue. Divided into two parties, North and South, each had a separate mandate. The Southern Party, led by Dr. R.M. Anderson, noted zoologist and Stefansson's partner on a previous expedition, examined flora and fauna and mapped the Mackenzie River Delta. The Northern Party, led by Stefansson, explored the Western Arctic searching for new lands to be claimed for Canada and Britain in a bid to maintain sovereignty over the north. Despite setbacks and even, tragedy, both parties managed to fulfill their objectives. In particular, the findings of the Southern Party provided the basis of knowledge for Canadian scientists and researchers of the Arctic and Inuit peoples for decades to come.

SUBJECTS

Arctic Climate, Vegetation, Landforms, Ice, Weather

DURATION

3 to 4 classes

TERMINOLOGY

Aboriginal: refers to all indigenous peoples in Canada, including First Nations, Métis, and Inuit

First Nation: refers to all the Aboriginal nations of North America (formerly tribes and includes over 65 different languages) except the Métis and Inuit

Métis: refers to Aboriginal people who are of First Nations and French descent

Inuit: refers to Aboriginal people who speak Inuktitut and live in Arctic Canada

Copper Inuit: refers to a specific group of Canadian Inuit people who relied on the use of native copper of the region

Inupiat: refers to a specific group of Alaska Native people

INTRODUCTION

Students will examine diverse environmental factors influencing the Arctic and outline characteristics of Earth's major biomes, including the tundra, and/or outline the criteria used to define selected Canadian ecozones and describe the processes and interactions that shape those ecozones, and/or describe and compare the natural characteristics of the equatorial, mid-latitude and polar regions of the Americas. Students will investigate and communicate their findings about interrelationships within the Arctic ecosystem and between it and other ecosystems. In an extension activity, they have the opportunity to reflect on the impact of tourism on a fragile environment.

MATERIALS REQUIRED

Graphic novel, *80 Degrees North*
Topographic map of Canada/climate map of Canada
Computers with Internet access
Writing paper and utensils
Poster board, poster cards, tape, and markers or presentation programs on a computer or device

EXPECTATIONS/OUTCOMES

The overall expectations listed below serve as an entry point for teachers. Teachers are encouraged to make connections to specific expectations in their region and grade.

Students will:

- Explain how various characteristics of Canada's natural environment can be used to divide the country into different physical regions
- Describe the natural characteristics of the polar region/ecosystem of North America and/or describe the patterns of natural characteristics in the Americas
- Review the geographic concept of interrelationship and analyze the interrelationships within the Arctic ecosystem and between it and other ecosystems

STEP ONE

TEACHER-DIRECTED DISCUSSION

Ask students whether any of them have visited the North and if any have, ask them to share what it was like. If none have, discuss what students think the physical environment might be like for example, what they might see, feel, hear, and so on. Have them tell what landforms they would expect to see and what the weather might be like.

Remind them of the way of life of the Inuit in the past (Lesson One) and what opportunities and challenges they experienced living on the land. Refer the students to the graphic novel *80 Degrees North*. Discuss what difficulties they think Stefansson and his crew would have anticipated as they set out to explore Canada's North and how they might have prepared for these difficulties. Have them discuss what geographical challenges the men and women faced on the actual explorations, providing examples from the graphic novel.

Tell students that they will be learning more about the geography of the Arctic throughout this lesson, including exploring answers to these questions, which you can write or display on the board:

- In what ways do Earth's natural processes (geological, climatic, hydrological), phenomena, and events influence Canada's natural landscape?
- What are the interrelationships between the Arctic ecosystems and why do we care?
- How do the natural characteristics of Canada influence human activity, and how might human activity influence Canada's natural characteristics?

STEP TWO

Have students consider the first question: ***"In what ways do Earth's natural processes (geological, climatic, hydrological), phenomena, and events influence Canada's natural landscape?"*** Have students define the words ***geological***, ***climatic***, and ***hydrological***. Clarify the terms processes, phenomena, and events, and if helpful, give examples. For example, a "phenomena" could be weather, plate tectonics, or volcanic eruption. An "event" could be an earthquake, flood, or ice storm.

Remind students that Canada is a vast territory with a range of climates, landforms, and so on. One way to learn about different parts of the country is to categorize it into geologic or landform regions. Have students list the various characteristics of Canada's natural environment, for example, landforms, such as mountains and hills, plains, drainage basins, and bodies of water. Ask: ***How are these characteristics used to divide the country into different physical regions?***

Have students examine a topographic map of Canada alongside. They may recall from previous coursework that, according to many sources, such as educational student books, Canada's physical characteristics help us divide it into basic regions from as few as six to as many as 11. An example is the Atlantic region, the Interior Plains, the Canadian Shield, Great Lakes-St. Lawrence, the Cordillera, and the North; or, the Appalachian region, the Great
6 80 Degrees North | Lesson Two: The Arctic Environment
Lake/St. Lawrence Lowlands, the Canadian Shield, the Hudson Bay Lowlands, Interior Plains, the Cordillera, the Arctic Coastal Plain, the Arctic Lowland, and the Innuitian region. With the students' assistance, add the locations of the regions to the map, noting the topography.
Using what they recall, create a chart showing the geologic and landform characteristics of each region, for example (using the six-region format):

Cordillera
Landforms: mountains, deep valleys, plateaus, and coastal island
Arctic
Landforms: lowlands, plateaus, mountains, and ice caps; land is frozen most of year
Canadian Shield
Geologic region: made up of rocks that were once base of ancient mountains
Interior Plains
...

Ask students to describe what types of factors generally differentiate the physical regions (same major surface areas). Remind them that it is possible to consider Canada in terms of climate regions (precipitation).
Overlay the topographic map of Canada with a climate map of Canada (Example: *www.canadiangeographic.ca/atlas/Images/weather_climatePrecipEn.jpg*). Have them add climate information to the chart.

Cordillera
Landforms: mountains, deep valleys, plateaus, and coastal island
Climate: variable because of the mountains; temperatures warmer on coast than inland; temperature cooler in north region than in south; winters may be eight months long in northern part of the region
Arctic
Landforms: lowlands, plateaus, mountains, and ice caps; land is frozen most of year
Climate: dry, desert climate; too cold for trees to grow
Two main climate regions: • in tundra areas, winter is cold; summers are cool and short • in ice cap areas, temperature stays below 0 Degrees Celsius almost all year round
...

Tell students that another way is to think of Canada as made up of ecozones, which are ecological systems.
Ask students what an ecozone is (a broad geographical area that groups parts of the environment with similar geography, vegetation, and animal life, including people).
Mention that the boundaries of climate regions, vegetation regions, and soil regions in Canada are usually the same. These three factors are interconnected and affect one

another; for example, a specific climate region will usually create a specific vegetation region, which in turn will usually create a specific soil region.

Share with students a map that shows Canada's 15 terrestrial ecozones and five aquatic zones. Point out that the Arctic is made up of several ecozones, commonly divided into the Arctic Cordillera, the Northern Arctic, and the Southern Arctic. It also includes two marine ecosystems, which are the Arctic Archipelago and the Arctic Basin. Show these to students on a map, for example: *http://canadianbiodiversity.mcgill.ca/english/ecozones*. Ask: ***Why do you think ecozones are divided into terrestrial ecozones and aquatic zones? Why do you think regions are only made up of terrestrial zones?***

Explain that we can also discuss the Earth as being made of major biomes, which are tropical rainforest, tropical grasslands/savanna, Mediterranean/sclerophyll, desert, temperate grasslands/prairie/steppe, deciduous/mixed forest, temperate rainforest, coniferous forest/boreal/taiga, and tundra. Have them look at a global biome map and identify that the Arctic is tundra.

STEP THREE

According to the curriculum in your province, have students gather in small groups and assign each one, or let each group choose, a region/ecozone/biome within Canada/the Americas/or the world to research. (Be sure the Arctic is studied, either as a single region or several.) They will note the particular features of the region, as well as find answers to the big question ***"In what ways do Earth's natural processes (geological, climatic, hydrological), phenomena, and events influence Canada's natural landscape?"*** as it relates to their particular region. Provide students with a set and fairly brief time for research, for example 45 minutes. Tell them they will create a poster, brochure, PowerPoint, Prezi presentation, or the like, that they will present to the class.

Suggest that they meet briefly as a group to create research questions and decide how to organize and divide their time. Provide them with research materials in the classroom, as well as the opportunity to go to the library and/or use the Internet. You may also wish to provide the group studying the Arctic with a list of useful websites, such as:

- *http://atlas.gc.ca/site/english/maps/thenorth.html*
- *www.canadiangeographic.ca/wildlife-nature/?path=english/ecozones/arctic*
- *www.arctic.uoguelph.ca/cpe/environments/land/land_frame.htm*
- *www.arctic.uoguelph.ca/cpe/environments/marine_water/marine_frame.htm*

At the end of the research session, provide students with 15 minutes to prepare their poster or brochure. Each group will do a mini-presentation, highlighting the key characteristics of their ecozone/region/biome. Tell students they are required to learn about, and engage in, a comparison of, all these geographic categories. Before listening to the presentations, encourage students to think of ways to be efficient in note-taking, for example, they can prepare recording charts which list the names of the ecozones/regions/biomes and have main categories of landforms, vegetation, soil, climate, and wildlife.

After the presentations, have the students display their charts and brochures so interested students can circulate around the room, continuing to add to their notes or ask questions, if they wish.

♦♦♦♦♦♦♦♦♦♦♦♦

To see the full lesson plan or to learn more, please visit ***www.80degreesnorth.com***.

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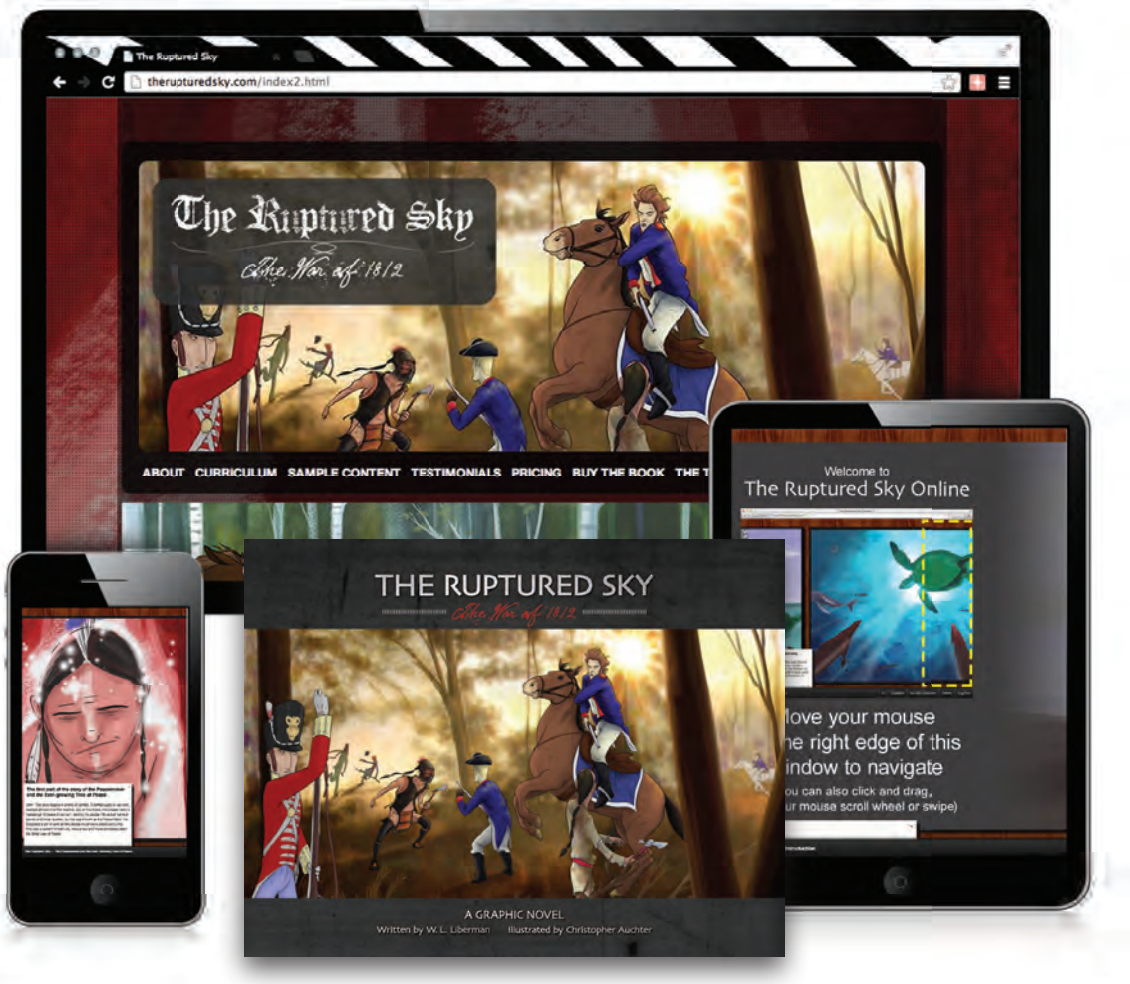

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EVERY DROP COUNTS

by Meagan Gillmore

Keeping Water Education Fresh

This round of hopscotch is for life.

It appears typical at first—students jumping down the course, but they are all holding empty cups in their hands and fill them with water from a large jug at the end of the course. But the water's dirty, definitely unfit for drinking. It might have some use for agriculture. Students will have to determine how to use it and they need to decide quickly because soon, these Grade 5 and 6 students will be elsewhere, perhaps learning about hydroelectricity or measuring acidity in water.

It's all part of the H_20 Zone, an activity station at the Kids' World of Energy Festival, run by TREC Education, a national organization that offers education about renewable energy. While the festival began in 2008, this area, devoted entirely to water, was new for 2016. Students are meant to enjoy the games, but having fun isn't the main goal. The hopscotch course represents the political and economic barriers many communities must overcome to access water. When they do reach it, they find it's undrinkable.

Water scarcity is something these students likely won't experience. They attend school in Toronto, after all, a city where rivers in five different watersheds drain into Lake Ontario. They're playing the game at Evergreen Brick Works, a former brick factory-turned community environmental education centre. For children in some communities, even some in Canada, this game is a reality. That disparity is one of the more murky topics in water education.

"When students look at the globe and see so much blue, it seems as though there's this abundance of water," says Cailin Hillier, municipal consortium program coordinator at the Canadian Water Network. Not true. During classroom presentations, she sometimes shows students a litre of water to represent the worldwide water supply. Then, she removes the water humans can't drink, perhaps because it's in oceans, frozen, or too far underground to access. When she's finished, only one drop remains. That scarcity could cause someone to drown in despair.

Perhaps the effectiveness of the H_2O Zone, or festivals devoted to water, is how organizers make a topic often bogged down in scientific jargon and apocalyptic predictions fun. Hillier counts attending a children's water festival in elementary school as something that sparked her interest in the subject. Such festivals occur in several regions, although, according to TREC Education, not in Toronto, one reason for the H_20 Zone's inclusion. Patti Birk, an elementary teacher at St. Joseph Catholic Elementary School in Acton, ON, has taken her class to the Halton Region Children's Water Festival for the past three years. Approximately 4,000 Grades 4 through 6 students attend the festival each September. Students may not have formed classroom cohesion yet, but it's never difficult to plan a follow-up lesson, says Birk. Students are "always totally

excited" when it's done. There's much to discuss: the microscopes that allows them to examine water in ways not possible at school, the birds they encounter close-up, the pioneer games they played to see how water's been used throughout history or, the most popular in Birk's experience, the rubber duck race that reminds them about velocity. The festival allows students to see water "through so many different lenses," she says.

In environmental education, seeing may be the most important thing.

"I think the only thing that really works is getting (students) out there repeatedly," says Mike Klassen, principal at Rivers Collegiate Institute in Rivers, MB, a high school that prioritizes environmental education. "What we try to do at our school is develop a sense of place, and a sense of belonging. When you can do that for kids in that nature setting, then they start to care. … They learn to love it, and then they care about it, and then they'll protect it without guilt."

Granted, his students may have some advantages—and not just because the school's small size of 150 pupils, may make schoolwide involvement easier. The school maintains its own wetland, The Rivers Wetland of Excellence, within walking distance from the school. It's a reclamation project: the site used to be a railroad gravel pit, but when it was no longer needed, it was bulldozed and became a marsh. The wetland is now in its third year. The school originally had a five-year plan for the site, but Klassen said the project is likely going to last much longer.

So far, it's living up to its name—the wetland recently won a Youth Conservation Award from the Canadian Wildlife Federation. The benefits are numerous, not just for water, plants or animals, but also for the school and community. The wetland is a classroom and lab; biology students take water samples and make inventories of the plants and animals; woodworking students have made docks and bird boxes for the wetland. The school has created entire courses based on the wetland, like Wetlands Management, that are approved by the province. Students also give local elementary classes tours that align with their curriculum. The wetland is part of a larger park that includes a soccer field, and the town is thinking of making it part of an eco-tourism strategy, says Klassen.

In environmental education, seeing may be the most important thing.

Most schools aren't able to create a wetland, but students still should know where the water they drink and use comes from and how it gets to them. A lot of people don't understand how different water systems are connected, says Hillier. But even young students can have sophisticated conversations about the topic. She once explained how water treatment works to a Grade 1 class in a groundwater-dependent town. She told them about water wells, and how chlorine is used to fight the bacteria in the water. One student asked how people know if the chlorine has won the fight. Hillier then explained about chlorine residuals—about how if there's some chlorine in the water, it means the chlorine has won. It was "such a random question for him to ask," she remembers.

Teachers should harness students' curiosity—there's an abundance of ways to encourage water education and conservation within their schools. Many students already find it interesting and it applies across multiple subjects. "They understand that they are responsible for the world around them," says Birk, who teaches at an EcoSchool. (In Ontario, EcoSchools are those formally registered with the Ontario EcoSchools program that helps educate schools about how to have more environmentally sustainable practices and monitors their progress.) "(Students) understand that (the environment is) part of their future, and they're connected to it." That can be seen in little ways. Birk recalls a moment during her lunch duty when students frantically asked her to remove a plastic bag that had gotten stuck in a tree. They were concerned the bag would pollute nearby water sources, she says.

Photo: Jennifer Paige

Rivers Collegiate Institute in Rivers, MB maintains it's own wetland.

Cultivating care for water may mean encouraging something that may seem counter-intuitive: turning on the tap. Tap water is more heavily regulated than bottled water, explains Hillier, which means it's safer for people to drink. It's also less expensive. But often, people prefer drinking bottled water, even though it comes in single-use plastic bottles destined for landfills. Many schools are counteracting this trend by replacing porcelain water fountains with water bottle filling stations, and encouraging students to drink from reusable water bottles.

Sometimes, water conservation takes teachers to locations they wouldn't first expect. Shannon Boyle has loved water her whole life, and it's a passion she brings to students weekly as the teacher in charge of the Water Warriors club, a group dedicated to educating their school about water conservation. She teaches social studies at St. Michael School, an elementary school in Calgary, so she's aware of global issues. Her time training teachers in Ghana exposed her to living with water scarcity.

But one year, her students led her to a place unfamiliar to her: the boys' washroom. Only boys joined the club that year, and they decided to retrofit the urinals with motion sensors. Before, water would flow in the stalls every 20 minutes. These sensors meant water only flowed when activated. "I never would have thought of the urinals," Boyle admits. Boyle is decidedly conscious of how she wants her students to think about water. "So many people want to teach environmental education, but they take the wrong approach," she says. "They take the approach of the problem." It's not fair to lay the burdens of pollution and climate change on children, says Boyle. Instead, teachers should show students how to find solutions to what can seem like overwhelming problems.

That doesn't mean avoiding struggle and pain. For the past two years, Boyle has led students on a Water Walk to help them understand the distance some people travel to obtain water. They take four-litre milk jugs and walk half-an-hour from the school to the Bow River. The kids fill the jugs with water, and then head back to the school. The return route is uphill.

"Some of them complain," says Boyle, "and I like that they complain because they realize that this is a task. It's not an outing, a fun event, (nor) a field trip. It is a task to collect water." It's a hard task that creates opportunities for growth. Students take their milk jugs to fill rain barrels the elementary students use to water the plants. Everyone gets involved. That's important, because students are worth more than the water they conserve.

"(Children are) lost souls in many ways," says Klassen. "They don't know what their direction is. When you have a connection, at the very least to the environment, you have something that you're connected to, and something that you can go back to. … If we can get kids to love their community, or get them to love their environment locally, we'll see a change in our world down the road."

Meagan Gillmore is a freelance writer and editor in Toronto. You can contact her at meagan.gillmore@hotmail.com.

Language Arts: Reading Comprehension

Without comprehension, reading is simply sounding out words from left to right. It is important for students to begin interacting with words to learn to identify them, find main ideas, compare and contrast, recognize cause and effect relationships, and sequence. With the development of these skills, children can begin to derive meaning from the words they read. Here are some apps that can help children during this process.

Seamus Heaney - Five Fables

Aimed at students in Grades 3-5, this app delivers original fables and animations along with modernized, adapted fables. When analyzing the language of the original and modern fable, students can compare and contrast variations of storytelling across time. They can also discover and explore medieval literature in the translations of fables written by 15th Century Scottish poet, Robert Henryson. They include *The Fox, the Wolf and the Carter*; *The Lion and the Mouse*; among others. This app can be purchased for iPad for $16.99 CAD in the App Store.

Storia

Storia is a free Scholastic e-reader app that allows children to read in a fun, interactive way. The app comes with five free books. Other books, covering a wide variety of topics and reading levels, may also be purchased and added to the bookshelf. Comprehension is tested as these books are supplemented with embedded questions, learning activities, and dictionary definitions for students. Additionally, enriched eBooks can be purchased that use word games, story interactions, and animation to engage readers, further developing comprehension and critical thinking skills.

Story Builder

Story Builder is an iPad app designed to help children produce and understand stories and narrative sequence. Story Builder targets all aspects of creating an effective story from picture description, word order, sentence formation, vocabulary, making predictions, cause/effect, pronouns, verb tense, and sequencing. Also included with this app is extensive use of audio clips that promote improved auditory processing for special needs children. This app can be purchased for $10.99 CAD in the app store.

Aesop's Quest

Aesop's Quest is a learning game that helps children in Grades 2+ with story recall and comprehension in a fun and engaging game. In the game, students must remember elements of a story, like the well-known fable *The Tortoise and the Hare*, in order to pass a level. At the end of each story segment, the student is rewarded with puzzle pieces. After solving the puzzle, the story is complete and the child can continue to the next story. The level of difficulty increases as students progress in the game. This app can be purchased for $1.39 CAD and is compatible with all iOs devices.

Reading Comprehension Camp

Reading Comprehension Camp is an iPad app specifically designed to encourage language growth and reading comprehension for children in Grades 2-8. With multiple levels, 50 engaging stories, and the ability to create personal stories, this comprehensive app is helpful for students struggling with comprehension. When a story is selected, the screen opens with a customizable picture and text. There is also a record button that allows students to record themselves and help with fluency and self-awareness. Each story has an associated quiz to check for comprehension. Questions include: who, what, where, when, why, how, inferences, cause and effect, compare and contrast, sequencing, and vocabulary and context. This can be purchased for $27.99 CAD in the app store.

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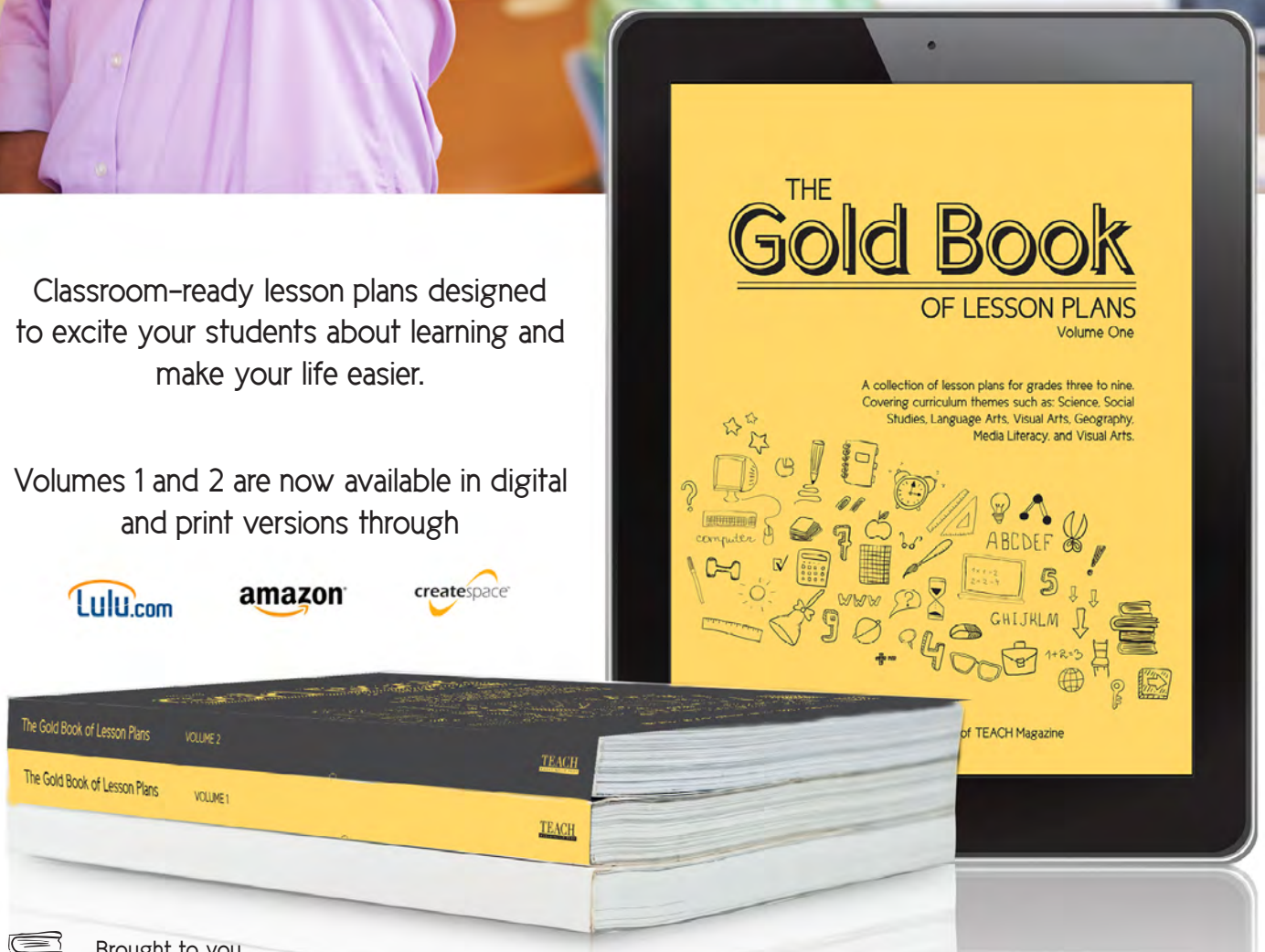

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