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LE PROF

**TEACH Magazine
2007 Purchaser's Guide**

**Revelations of a
Canadian Arts Educator
in the Far East**

**Révélations d'un
professeur canadien de
musique en Extrême-Orient**

**CURRICULA
Cold Traps
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Since its inception, TEACH Magazine has positioned itself as a practical resource. Each spring and fall, we compile supplements that present a wide range of products and services to our readership. The format is set up for quick scanning.

In keeping with this tradition, TEACH Magazine presents its first annual Purchaser's Guide—a comprehensive listing of products and services for the classroom. It is designed in a catalogue format. We hope it will provide useful and valuable information. Should you have any suggestions as to what else should be included, please let us know.

Verne Lorway has re-told a compelling account about his teaching experiences in Hong Kong, where he taught music to a multi-culturally diverse classroom. He soon discovered that Western norms and cultural references didn't really apply. Lorway, re-built his curriculum, an arduous process. But it paid off for everyone.

In keeping with the world's concern about global warming, CURRICULA explores issues relating to the polar ice trap. Included in the lesson plan is a hands-on experiment where students may construct a cold trap using dry ice. The lesson was developed by the Yes I Can! Science team and is posted on the government of Canada's science Web site.

Dès sa parution, la revue TEACH/Le Prof s'est définie comme une ressource pratique. Au printemps et à l'automne, la revue comporte un supplément qui présente aux lecteurs une vaste gamme de produits et de services ; un balayage rapide permet d'en extraire facilement les informations désirées.

Pour rester fidèle à la tradition, nous vous proposons le premier guide annuel de l'acheteur, liste exhaustive de choses utilisables en classe. Il se présente sous la forme d'un catalogue qui, nous l'espérons, vous fournira de précieuses informations. Si vous avez des suggestions sur

ce qu'il faudrait y ajouter, n'hésitez pas à nous les envoyer.

Verne Lorway relate son intéressante expérience d'enseignement de la musique à Hong Kong, dans une classe culturellement très diverse. Il ne tarda pas à se rendre compte qu'il était vain de se référer aux normes occidentales. D'une façon originale, il repensa complètement le programme, ce qui n'a pas été sans difficulté, mais finalement, tout le monde y gagna.

Le problème mondial du réchauffement de la planète étant plus que jamais d'actualité, CURRICULA étudie les questions relatives aux pièges à froid dans la région polaire. Le plan de cours propose la construction, par les élèves, d'un de ces pièges avec de la glace sèche. Le cours a été préparé par l'équipe de Yes I Can! Science et se trouve sur le site scientifique du gouvernement du Canada.

French / Français
<http://www.science.gc.ca/default.asp?lang=Fr&n=238E9C0A-1>

English / Anglais
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- Wili Liberman

Next Issue:
Computers, Futures,
CURRICULA and more.

Richard Worzel, C.F.A.

Ten Years Ago – and Ahead



Ten years is both a very long time, and a seemingly short time. For many educators, 10 years encompasses a big chunk of their careers. Yet, at the same time, 1997 doesn't seem all that long ago. I revisited TEACH columns I wrote approximately 10 years ago to see what the concerns were then, and how things have changed. I was both surprised and discouraged.

Just over 10 years ago, in my column “Trapped Between the Neo-Luddites and the Techno-weenies,” I talked about strong resistance from many teachers (and especially teachers' unions) to allowing computers in the classroom. I often felt trapped between two, hostile camps of educators: those who thought computers were wrong and that people who liked them were bad; and those who thought that computers were a panacea, could cure all the education system's ills, and that those opposed to them were knuckle draggers who just didn't “get it.” My position then and now is that (a) used properly, computers can be powerful, useful tools (this is extraordinarily difficult to do); (b) used improperly, computers are destructive black holes, siphoning off resources and giving little in return; (c) computers in the classroom are inevitable; and (d) the biggest barrier to effective computer use is teachers inexperienced in using them. I also remarked that computers would fall from \$3,500 and up to below \$1000, and eventually to a few hundred dollars. (People thought I was dreaming in Technicolor.)

But the surprise is that although the battle ceased on whether computers belong in the classroom (they're here), the debate over their utility continues and will continue to rage. That's because people ask the wrong questions. If you ask “Are computers useful in education?” the answer is ambivalent. If you use computers well (which is difficult to do, but becoming easier), the answer is yes, computers are very useful. If you use them poorly, they produce lousy results, and you suffer more than you would have without them. Better questions are “Who uses computers well in education?” and “How do they use them to produce superior results?” Wise computer

use is not widespread, but should be. Unfortunately, non-classroom educators (such as school boards and ministry of education bureaucrats) often want to reinvent the wheel on every issue rather than study successful examples.

But let's return to my 10-year time frame, and ask, “What can we expect over the next 10 years in education?”

On the surface, little will change for schools. Schools in 2017 will resemble schools today, or 10 years ago. There will still be classes and grades, teachers and students, and so on. Unfortunately, although as a society we need a radically different educational structure, the odds are very much against getting one. I discussed this in my last two columns, so let's put that aside and discuss likely changes.

Students will change most noticeably. There will be fewer students than there are today. The number of children between the ages of 5 and 19 in Canada will decline by almost 7%—or by about 400,000. Numbers of high school students will decline even more radically—by almost 12%, or about a quarter of a million students. Declining numbers will squeeze education budgets nationwide, especially as provincial governments will seek places to reduce spending in order to increase money for aging boomers' health care.

But perhaps the biggest change in students will be in attitude and aptitude. Recently I asked a post-secondary math instructor at a technical institution how her students had changed over the past 10 years. She said there has been an enormous deterioration in the quality of students. Today, students are poorly prepared, many unable to do even routine arithmetic without a calculator. Worse, she said, they didn't seem to get it—they really didn't care whether they could do math or not. They just wanted to pass, even if they left the institution incapable of doing the work for which they were certified. (Fortunately,

“I often felt trapped between two, hostile camps of educators: those who thought computers were wrong and that people who liked them were bad”.

she also told me that her dean made it an ironclad rule that nobody passed unless they could do the work. This means, though, that she routinely fails 20 to 50% of her students.)

Some of this can be ascribed to the ludicrous philosophy of 10 years ago that it was important to pass students to avoid harming their egos. Much of it also has to do with the attitudes of students and parents. Students' attitudes are too often "whatever," accompanied with a shrug. Many students don't care what they learn or can do. If they can scrape by effortlessly, so much the better. School obstructs what they do online and socially. Many parents' attitudes are more complex, a kind of mixture of "You look after my kids—I'm too busy (and important)" on the one hand, combined with a hectoring "How dare you diss my child by failing him!" To summarize, we currently educate spoiled children of spoiled children (the boomers).

In 10 years it will be worse. First, the kids in school, especially at the lower grades, will be third-generation spoiled children—the children of today's high school, college, and university students. Next, society will tolerate kids and parents less. The financial pressures from health care will be enormous, and we boomers, selfish people that we are, will want the best—as long as someone else pays. We will also want those bratty kids out of sight. To many boomers, "Walking while being a teenager" should be a punishable offence. And parents themselves will support educators less and demand more.

Teachers will change too. Many teachers tell me that more of their

colleagues are there purely for the job, rather than the students or the results. Teaching is no longer a profession—it's a union job with big holidays. These factors have always made teaching attractive, but teachers were usually dedicated to educational ideals first. Ten years from now, the "whatever" attitude of today's students will become the "whatever" attitude of many new teachers. "You want me to teach whole language instead of phonics? Sure, whatever." "You want me to pass everyone, or fail a specified percentage? Sure, whatever." "You want me to please the parents, pass the students, and get them out of here? Sure, no problem, dude."

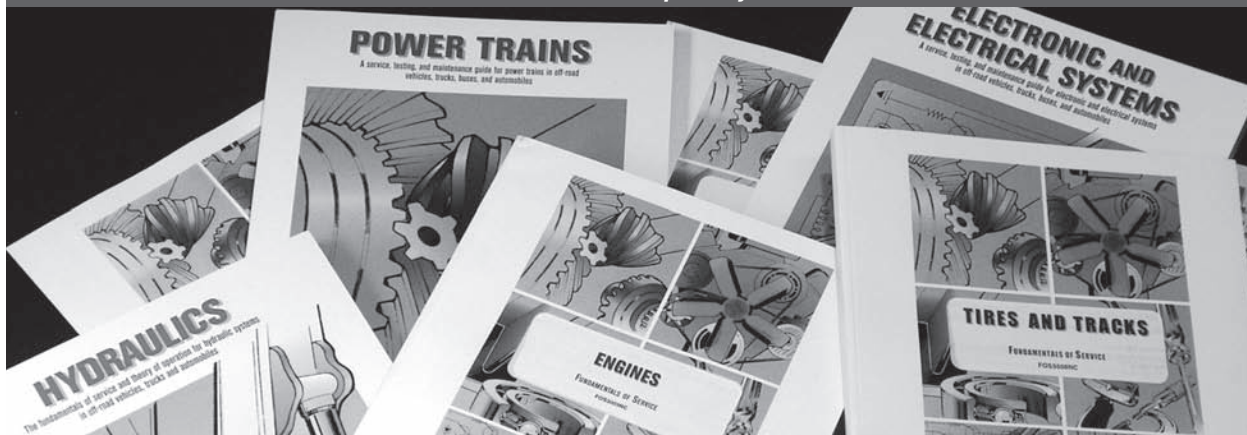
And, of course, technology will change even more radically over the next 10 years than over the last 10, but I'll deal with that in my next column.

This isn't an encouraging view of the future. Perhaps I'm too pessimistic. If I've missed something, or have made a mistake, please tell me—I'm eager to learn. Or just forget the whole thing. Whatever.

Richard Worzel, C.F.A., is Canada's leading futurist, and one of the most highly sought-after professional speakers in the country. He volunteers his time to speak to high school students for free, as his schedule permits. You can reach him at futurist@futuresearch.com.

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par le futurologue Richard Worzel, C.F.A.

Il y a dix ans... dans dix ans



Dix ans, c'est à la fois long et apparemment court. Pour de nombreux éducateurs, cette durée correspond à une bonne partie de leur carrière. Et pourtant, 1997 ne semble pas si loin. J'ai relu les articles de *Teach/Le Prof* que j'ai écrits il y a environ dix ans pour voir quelles étaient les préoccupations du moment et en quoi les choses avaient changé. J'ai été à la fois surpris et découragé.

Il y a tout juste un peu plus de dix ans, dans ma rubrique intitulée « *Trapped Between the Neo-Luddites and the Techno-weenies* », je parlais de la grande réticence de nombreux enseignants (et notamment des syndicats d'enseignants) à permettre les ordinateurs en classe. Je me sentais souvent pris entre deux camps hostiles d'éducateurs. D'un côté, ceux qui jugeaient les ordinateurs mauvais et leurs adeptes, dans l'erreur ; de l'autre, ceux qui estimaient que les ordinateurs étaient une panacée susceptible de guérir tous les maux du système éducatif et leurs détracteurs, des rétros qui n'avaient rien compris. Ma position d'alors – et d'aujourd'hui – c'est que a) s'ils sont utilisés à bon escient, les ordinateurs peuvent être des outils puissants et utiles (ce qui est très difficile à réaliser) ; b) s'ils sont utilisés à mauvais escient, ils peuvent être des trous noirs destructeurs, absorbant les ressources et offrant peu en retour ; c) la présence des ordinateurs dans la classe est inévitable ; et d) le plus gros obstacle à une utilisation efficace des ordinateurs est l'inexpérience des enseignants. Je faisais également remarquer que le prix des ordinateurs allait passer de 3 500 \$ à moins de 1 000 \$, et qu'on pourrait finalement en avoir un pour quelques centaines de dollars (les gens pensaient que je rêvais en Technicolor).

La surprise reste que, même si la bataille sur la présence des ordinateurs en classe est terminée (ils y sont !), le débat sur leur utilité continue et continuera à faire couler beaucoup d'encre. C'est parce qu'on pose les mauvaises questions. Si vous demandez « Les ordinateurs sont-ils utiles en éducation ? », la réponse est ambivalente. Si on en fait une bonne utilisation (ce qui est difficile, mais devient plus facile), la réponse est : oui, les ordinateurs sont très

utiles. Si on en fait une moins bonne utilisation, les résultats sont médiocres et vous souffrez plus que si vous ne les aviez pas eus. Voici de meilleures questions : « En éducation, qui utilise bien les ordinateurs ? » ou « Comment utilise-t-on les ordinateurs pour obtenir de meilleurs résultats ? ». Le bon usage des ordinateurs n'est pas très répandu, mais il devrait l'être. Malheureusement, les éducateurs qui ne travaillent pas dans la classe (tels que les bureaucrates des conseils scolaires et du ministère de l'éducation) veulent souvent réinventer la roue chaque fois qu'un problème se pose plutôt que d'analyser des exemples réussis.

Mais revenons à mon cadre de dix ans et posons-nous la question : « Que pouvons-nous espérer en éducation au cours des dix prochaines années ? ».

En surface, les écoles auront peu changé. En 2017, elles ressembleront à ce qu'elles sont aujourd'hui ou à ce qu'elles étaient il y a dix ans. Il y aura encore des classes et des notes, des enseignants et des élèves, etc. Malheureusement, si en tant que société, nous avons besoin d'une structure pédagogique radicalement différente, les chances d'en avoir une sont très minces. Attendu que j'en ai parlé dans mes deux derniers articles, laissons cela de côté et parlons des changements probables.

Les élèves d'abord : la situation changera très nettement. On en comptera moins qu'aujourd'hui. Le nombre d'enfants entre 5 et 19 ans au Canada baissera de presque 7 p. 100 — soit de 400 000. Le nombre d'élèves du secondaire baissera encore plus radicalement – de presque 12 p. 100, soit d'environ 250 000. Cette baisse des effectifs entraînera, à l'échelle du pays, une réduction des budgets de l'éducation, en particulier à un moment où les gouvernements provinciaux chercheront à réduire les dépenses de certains postes afin de multiplier l'argent disponible pour les soins de santé des baby boomers vieillissant.

« Je me sentais souvent pris entre deux camps hostiles d'éducateurs. D'un côté, ceux qui jugeaient les ordinateurs mauvais et leurs adeptes, dans l'erreur ; de l'autre, ceux qui estimaient que les ordinateurs étaient une panacée susceptible de guérir tous les maux du système éducatif et leurs détracteurs, des rétros qui n'avaient rien compris. »

Mais le plus grand changement touchera probablement l'attitude et les aptitudes des élèves. Je posais récemment à une enseignante de mathématiques dans un établissement technique postsecondaire la question de savoir en quoi ses élèves avaient changé au cours des dix dernières années. Elle me dit avoir noté une énorme détérioration. Aujourd'hui, les élèves sont terriblement mal préparés, et nombre d'entre eux sont incapables de faire de simples opérations arithmétiques sans calculatrice. Pire, ils ne semblent pas comprendre – cela leur est égal de pouvoir ou non faire des maths, dit-elle. Ils veulent simplement réussir leur certificat, même s'ils quittent le collège en n'ayant pas les compétences voulues pour le travail pour lequel ils sont certifiés. (Heureusement, elle m'a aussi appris que son doyen avait instauré une règle stricte selon laquelle personne ne devait obtenir le certificat à moins d'être compétent. Ceci veut donc dire de 20 à 50 p. 100 de ses élèves échouent régulièrement.)

On peut attribuer cette situation à la philosophie ridicule d'il y a dix ans selon laquelle il était important de laisser les élèves obtenir leur diplôme afin de ne pas blesser leur amour-propre. À cet égard, l'attitude des élèves et des parents y est pour beaucoup. Pour les élèves, c'est trop souvent le « ça m'est égal », accompagné d'un haussement d'épaules. Beaucoup d'élèves se fichent de ce qu'ils apprennent ou savent faire. S'ils peuvent s'en tirer de justesse, sans effort, tant mieux. L'école représente un obstacle par rapport à ce qu'ils peuvent faire en ligne et sur le plan social. L'attitude de beaucoup de parents est plus complexe : un mélange de « Chargez-vous de mes enfants – je suis moi-même trop occupé (et important) » d'un côté, et de l'autre un impérieux « Comment osez-vous vous moquer de mon enfant en ne lui permettant pas de réussir ? ». Pour résumer, nous éduquons actuellement les enfants gâtés d'enfants gâtés (ces derniers étant la génération du baby boom).

Dans dix ans, ce sera pire. D'abord, les écoliers, en particulier ceux des petites classes, seront la troisième génération d'enfants gâtés, c'est-à-dire les enfants des jeunes qui sont aujourd'hui dans les écoles secondaires, les collèges et les universités. Ensuite, la société tolérera moins les enfants comme les parents. Les pressions financières dues aux soins de santé seront énormes et nous, baby boomers, égoïstes que nous sommes, voudrions avoir ce qu'il y a de mieux – pourvu que ce soit les autres qui paient. Et ces sales mômes, nous ne voudrions pas en entendre parler. Pour beaucoup de baby boomers, le seul fait d'être adolescent s'apparente à un délit condamnable – ce qui devient le cas au Royaume-Uni. Et les parents eux-mêmes soutiendront moins les éducateurs et exigeront plus d'eux.

Les enseignants changeront aussi. Beaucoup d'entre eux me disent que davantage de leurs collègues sont là simplement parce que c'est un boulot, plutôt que pour les élèves ou les résultats. L'enseignement n'est plus une profession – c'est un travail syndiqué avec de longues vacances. Ces facteurs ont toujours rendu l'enseignement attirant, mais, dans l'ensemble, les enseignants avaient des idéaux pédagogiques. D'ici dix ans, le « ça m'est égal » des élèves d'aujourd'hui deviendra celui de beaucoup de nouveaux enseignants. « Vous voulez que j'enseigne la méthode globale et non pas la phonétique ? » « Comme vous voulez. Ça m'est égal ». « Vous voulez que tout le monde réussisse ou qu'un pourcentage donné échoue ? » « Comme vous voulez. Ça m'est égal ». « Vous voulez que je fasse plaisir aux

parents, que les élèves réussissent et qu'ils s'en aillent ? » « Comme vous voulez. Ça m'est égal, mon vieux. »

Et, bien entendu, la technologie changera d'une façon encore plus radicale au cours des dix prochaines années qu'au cours des dix précédentes, mais je parlerai de cela dans une autre rubrique.

Voilà donc une vision de l'avenir qui n'est guère réjouissante. Peut-être suis-je trop pessimiste ? Si j'ai oublié quelque chose ou si j'ai fait une erreur, faites-le moi savoir car j'ai le souci d'apprendre. Ou laissez tomber tout simplement. C'est égal.

Richard Worzel est le futurologue du Canada. Il fait chaque année des présentations devant plus de 20 000 employés d'entreprises ainsi que, bénévolement, à des élèves du secondaire lorsque ses engagements le lui permettent. Vous pouvez le rejoindre à futurist@futuresearch.com.

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Welcome to TEACH Magazine's first annual Purchaser's Guide. For anyone interested in purchasing educational products and/or services, this is a resource for you. Or if you just want to get a sense of what's out there, the guide will help complete the knowledge gap. We encourage you to peruse the content of this guide and use the contact information to follow up with regard to anything that interests you. In future, we will expand the category offerings. Should you have any questions, please do not hesitate to contact us. You may also access the Purchaser's Guide online and follow the hot links directly to any supplier of interest.



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Apple Professional Development—Apple delivers professional development programs.

Apple Mobile Learning Labs—Classroom sets of notebook computers that roll into a classroom on a trolley.

Pricing: Please see www.apple.com/ca/education

Contact: www.apple.com/ca/education or contact your local dealer or reseller.

CISCO CANADA

Cisco Systems Canada Networking Academy—Content focuses on teaching students how to design, build and maintain computer networks through two certificate programs.

Contact: www.cisco.com/web/CA/networking_academy/index.html

DELL CANADA



Dell Latitude Notebook Computers—Pricing: From \$700-\$1000

Servers—Performance Tower Servers, Rack-dense Servers, Blade Servers.

Back-up—Tape-Backup Storage, Network Storage, Direct Attached Storage.

Monitors—Pricing: From \$189-\$899

Printers—All-in-One-Inkjets, Laser Printers, Colour Laser Printers. Pricing: Inkjets from \$69, Laser Printers from \$99, Colour Laser Printers from \$429.

Projectors—1800 MP Projector (from \$899), 5100MP Projector (from \$3299), 3400 MP Projector (from \$1399), 2400 MP Projector (from \$1399), Dell 1200 MP Projector (\$729).

Contact: www1.ca.dell.com

IBM/LENOVO



ThinkPad R Series—Portability, power and ease of use. Integrated wireless capabilities; embedded security subsystem

automatically encrypts files; rescue and recovery tools protect against viruses and system crashes; long life battery; has Mobile Intel Pentium 4-M and full IBM support features available.

Contact: 1-800-66-LEARN and speak to a K-12 Education Technology Specialist

SMART

Senteo interactive response system—handheld device for each student in a class, teacher has a central receiver for interactive communications; Notebook interactive viewer—cross-platform application that allows users to view, share and interact with content; SMART development network—provides tools and technical support to noncommercial multimedia content and software developers;

SynchronEyes 7.0—classroom management software can be used with any combination of desktop computers, wireless laptops or mobile devices for classroom instruction; SMART Board 9.5—software for Windows, Mac OS and Linux offers teachers more digital resources and features.

Contact: www.smattech.com

SUN MICROSYSTEMS CANADA

Instructional Computing—E-Learning IT Systems and Architecture—Administrative Computing, Infrastructure, Libraries.

Java Enterprise System Software—Pricing: \$70/user/year.

Sun Java Application Platform Suite—Pricing: \$25/\$30/user/year.

Sun Java Identity Management

Suite—Pricing: \$25/\$30/user/year.
 Sun Java Communications Suite—
 Pricing: \$25/\$30/user/year.
 Sun Java Availability Suite—Pricing:
 \$25/\$30/user/year.
 Sun Java Web Infrastructure Suite—
 Pricing: \$25/\$30/user/year.
 Sun Java Composite Application
 Platform Suite—Pricing: /\$50/\$55/user/
 year.

Contact: www.sun.com,
 Ph: 1-800-722-4SUN.

CLASSROOM SUPPLIES



BIC

Brite Liner Grip—#BLG-
 P3Z/BLGZ
 Great Erase Whiteboard
 Marker—#MRGEZ
 Brite Liner XL--#BLGXLZ

Bic Duo--#DUOZ
 Permanent Marker with/Grip—MRPGZ
 Bic Pencil Color Connection--#BPCCZ
 Bic Pencil Neon--#BPNZ
 Best Pencil Value--#BPVZ
 Bic Pencil Foils--#BPFWZ
 Bic Pencil Solids--#BPSZ
 WideBody Message Pen Brites--
 #CSWBMESBZ
 Media Clic Grip--#MCGZ
 Pro Select Office Series Retractable--
 #PSRCLGELZ
 Media Clic Grip Clear--#MCCLGZ
 Pro Select Office Series Mechanical
 Pencil--#PSPMRZ
 Pro Select Office Series Retractable--
 #PSRCLGZ
 Pro Select Office Series Retractable
 Gel--#PSRGELZ
 Pro Select Office Series Stic Gel--
 #PSSCLGELZ
 Pro Select Office Series Stic Solid Gel--
 #PSSGELZ
 Pro Select Office Series Retractable--
 #PSRGZ
 Pro Select Office Series Stic--#PSS-
 CLGZ
 Pro Select Office Series Stic Solid--
 #PSSGZ
 Clic Stic Clear Colors--#CSCLCZX
 Clic Stic--#CSZX

Round Stic Clear Colors--#RSCLCZX
 Clic Stic Ice--#CSIZX
 Round Stic--#RSZX

Contact: <http://www.bicgraphic.ca>



ELMER'S GLUE

SIZE

231 No-Wrinkle
 Rubber Cement
 8 FL OZ

232 No-Wrinkle Rubber Cement
 1 Pint
 233 No-Wrinkle Rubber Cement
 1 Quart
 234 No-Wrinkle Rubber Cement, Gal-
 Ion Container 1 Gal
 836DL Fill 'N Finish® - Light
 Pint tub
 839DL Fill 'N Finish® - Dark
 Pint tub
 98600 Tack Tabs
 Mounting Pads .42oz. (18
 E-77 Water Colors
 8 Colors
 E1217 Jumbo Brushes & Cups
 12 Brushes & 6 Mixing Cup
 E1235 Glue-All®
 Tube 3.25 fl oz
 E1316 Galactic Glue™
 6 oz. Galactic Glue™ Red
 E132 No Wrinkle Glue Pen
 1 fl oz. Glue Pen
 E1500 Washable School Glue
 5 oz.
 E1501 Glue-All®
 Tottle Bottle 5oz
 E1502 Washable School Glue - Fun
 Purple
 5 oz Purple
 E1521 Washable Wide Glue Stick
 Purple .77 oz
 E1525 Wide Glue Stick
 .77 OZ Stick
 E1530 Glue Stick Pen - Acid Free
 0.1 oz Pen
 E1531 Poster Tack - Re-usable
 2 - 29g Package
 E1559 Elmer's School Glue Sticks
 - Purple
 12 pack .21oz ea
 E1560 Washable School Glue Sticks-
 Fun Purple 6 pack

E1641 Paintastics
 5 Pens Classic Colors
 E1642 Paintastics
 10 Pens
 E1643 Paintastics
 18 Pens
 E1646 Paintastics
 5 Pens Tropical Colors
 E1670 Create 'n Play
 \Fun Animals Kit
 E1671 Create 'n Play
 Carnival Kit
 E301 Washable School Glue
 1 1/4 fl oz. Bottle
 E304 Washable School Glue
 4 fl oz. Bottle
 E308 Washable School Glue
 7 5/8 fl oz. Bottle
 E310A Washable School Glue
 5 oz
 E315 Galactic Glue™
 6 oz. Galactic Glue™ Blue
 E330 Washable School Glue
 Quart Bottle
 E340 Washable School Glue
 Gallon Bottle
 E350 No-Run School Glue
 4 oz. bottle white glue
 E363 Washable School Glue Gel
 7 5/8 fl oz. Bottle blue
 E364 Washable School Glue Gel
 4 fl oz. Bottle blue gel
 E371 Glue-All®
 16 fl oz. Bottle
 E372 Glue-All®
 4 fl oz. Bottle
 E375 Glue-All®
 1 1/4 fl oz. Bottle
 E379 Glue-All®
 7 5/8 fl oz. Bottle
 E384 Glue-All®
 Quart Bottle
 E395 Glue-All®
 Gallon Bottle
 E454 Mounting Spray Adhesive
 10 oz Can
 E505A Washable School Paste
 5 fl oz.
 E511 All-Purpose Glue Sticks
 .21 oz. Stick (carded)
 E512 All-Purpose Glue Sticks
 .42 oz. Twin Pack (carded)



- E513 Washable School Glue Sticks-Fun Purple
.21 oz. Stick (carded)
- E515 All-Purpose Glue Sticks
.77 oz. Large Stick (card)
- E517 All-Purpose Glue Sticks
12 pack 0.77 OZ sticks
- E518 Extra Strength Gel School Glue Sticks
.56 oz. Twin Pack (carded)
- E519 Extra Strength Gel School Glue Sticks
.88 oz. Large Stick (card)
- E520 Washable School Glue Sticks-Fun Purple
.63 oz. Triple Pack (card)
- E521 All-Purpose Glue Sticks
.63 oz. Triple Pack (card)
- E522 Washable School Glue Sticks-Fun Purple
.42 oz. Twin Pack (carded)
- E523 Washable School Glue Sticks-Fun Purple
.77 oz. Large Stick (card)
- E526 Extra Strength Office Glue Stick
.56 oz. Twin Pack (carded)
- E527 Extra Strength Office Glue Stick
.88 oz. Large Stick (card)
- E532 Extra Strength Office Glue Stick
12 pack 0.88 OZ Sticks
- E542 Washable School Glue Sticks
4-0.24 OZ sticks
- E543 Washable School Glue Sticks-Fun Purple
4 - 0.24 OZ sticks
- E546 Office Glue Sticks
.77 oz
- E553 All-Purpose Glue Sticks
24 pack 0.21 OZ sticks
- E554 Extra Strength Office Glue Stick
24 pack 0.28 OZ Sticks
- E555 Washable School Glue Sticks-Fun Purple
30 - 0.24 OZ sticks
- E556 Washable School Glue Sticks
30 - 0.24 OZ sticks
- E623 Poster & Picture Glue Stick
Poster & Picture, 25gm
- E625 Tack Removable Adhesive Putty
1 oz. Adhesive Putty
- E7960 Scrapbooking Sticky Dot Stamper
500 Dots

- E7962 Scrapbooking Sticky Dot Roller
Repositionable
42.7 feet of Adhesive
- E7965 Scrapbooking Sticky Tape Roller
35 feet of Adhesive
- E7967 Scrapbooking Sticky Dot Roller
Permanent
42.7 feet of Adhesive
- E904 No-Wrinkle Rubber Cement
4 fl oz. Bottle
- E98620 Tac 'N Stik
pp2 x 1 oz
- X7901 Scrapbooking 12" Trimmer
12" Trimmer
- X7905 Scrapbooking Trimmer with Rail
Trimmer
- X7907 Scrapbooking Magnetic Circle Cutter System
Cutter System
- X7908 Scrapbooking Magnetic Circle Cutter
Magnetic Circle Cutter
- X7909 Scrapbooking Freeform Cutting Tool
Freeform Cutting Tool
- X7912 Scrapbooking Interchangeable Blades

Contact: www.elmers.com, Ph: 1-800-848-9400

FISKARS



- Adjustable Pivot Screw—Lets you adjust blade tension.
- Fiskars Classroom Compass—Compass that holds a pen or marker.
- Fiskars Classroom Protractor—Protractor that knows all the angles.
- Fiskars folding ruler—A 12-in. ruler that folds in half.
- Fiskars Hip Clip line—Sharpeners, pens and erasers that clip to a knapsack.
- Fiskars mess less sharpener—Sharpener that locks shavings inside.
- No. 5 Kids Scissors—Recommended for ages 4+ (blunt) or 5+ (pointed).
- No. 6 Kids Scissors—Recommended for ages 10+.

- No. 7 Student Scissors—Recommended for ages 12+.
- Non-Stick Scissors—Special blade coating allows tape and glue to wipe off easily.
- Softgrip Scissors—Soft rubber materials cushions hands.
- True Left-Handed Scissors—Blades are "flipped" for left-handed users.

Contact: Fiskars Canada, 275 Renfrew Drive, Suite 208, Markham, ON L3R 0C8, www.fiskars.com

CRAYOLA



- Crayons—Erasable, washable, Twistables: twist the end of the barrels and re-seal by twisting them back down.
 - Markers—Erasable, washable (with new flip top), Color Wonder, Color Explosion, Twistables
 - Colored Pencils—Erasable, Twistables
 - Paint—For home and school, Color Wonder, new Mixing Mediums, Side-walk Paint
 - Modeling Compounds—Air Dry Clay, Model Magic, Dough Clay
 - Education—Dry-Erase, Dream-Makers, Classpack Assortments, Trayola Packs
 - Toys & Activities—Crayola Cutter, Silly Putty, Color Wonder Sprayer, Outdoor, Color Explosion Spinner
 - Glue, Scissors, Chalk—Glue, Glitter Glue, Scissors, Anti-Dust Chalk, Side-walk Chalk
- Contact: www.crayola.com

PAPERMATE



- Pens**
- Altitude—integrated comfort grip, 1.2 ball pen, black and blue colors, medium point size
- Eagle—1.2mm Ultra Smooth writing system, translucent barrel, black, blue, red colors
- 1.2—clear barrel, hexagonal design, non-slip grip, 1.2mm Ultra smooth writing system, red, black, blue colors, medium point size

Papermate M—retractable, Lubriguide ink system, soft grip, red, black, blue colors

Pencil

Mega-Lead—pre-filled, 0.5mm holds up to 25 leads, 0.7mm holds up to 20 leads, smudge-resistant eraser, tapered cushion grip, window display, 0.5mm and 0.7mm

Contact: www.papermate.com

Sanford Brands

Sharpie

Sharpie Micro—ultra fine tip, cap clip, permanent on hard-to-mark surfaces, quick drying, non toxic, available in 12 colors

Contact: www.sharpie.com

Uniball

Jetstream RT—quick drying ink, retractable

207 LTD—specially formulated ink helps prevent document fraud, seven metallic colored barrels

207—specially formulated ink helps prevent document fraud, ink contains discrete color particles that become trapped in paper fibers

Contact: www.uniball-na.com

Expo

Dry Erase Markers—low odor ink, built-in eraser that is replaceable, comfort grip, easy grip cap, solid color barrel graphics, available in chisel, bullet and extra fine tip

Replaceable Pad Eraser—distinct shape with designated grip, precision point design, replaceable 8-layer felt pad, docking station for storage, magnets and double sided tape included

Board Doctor—writes over permanent ink, after solution has dried, erase with Expo eraser, certified non-toxic ink

Contact: www.expomarkers.com

Prismacolor

Prismacolor Premier Colored Pencil Blender—non-pigmented, wax-based pencil for softening hard edges and blending and lightening colored pencil artwork, available individually or in sets

Contact: www.primacolor.com

Rolodex

Rolodex Planners—available in a range of formats, Explorer Rolodex Planner, refillable Neo Classic Rolodex Planner or Basic Rolodex Planner

Contact: www.rolodex.com

Staedtler

 Textsurfer classic Highlighter—

large ink reserve, lightfast pigment ink, no smudge, fast drying, washes out of textiles, comes with clip and twist cap, seven fluorescent colors, ultra soft chisel tip

Staedtler Mars Professional—set of three, high quality case with transport lid containing three line widths of 0.25mm, 0.35mm, 0.50mm

Staedtler Liquid Point 5—rollerball with visible ink level, high tech needle tip, suitable for carbon copies, ink feed system, metal clip

Staedtler Liquid Point 7—same as Point 5

Contact: www.staedtler.ca

EDUCATIONAL PUBLISHERS

Captus Press

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

Captus offers Internet learning resources with streaming RealMedia. Check out demos by clicking on Multimedia Internet Learning.

Prentice-Hall

<http://www.phcanada.com>

Prentice Hall has lots of textual resources for sale at their site, division of Pearson Education.

McGraw-Hill

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

McGraw-Hill offers a great deal of textual and multimedia educational resources for sale. Web-linked lesson plans are available.

Scott-Foresman

Division of Pearson Education

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

Nelson

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

CanPix Gallery, Great Canadian Image Base- CanPix is an image base of over 6,500 pictures and audiovisual resources for Canadian Studies. Mostly gif's, but also some anthems in Quicktime.

<http://northernblue.ca/canchan/canpix/gallcats.php>

Allyn and Bacon

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

A huge site with lots of resources mostly aimed at higher education, division of Pearson Education. Interactive Editions- Allyn and Bacon offers interactive publications for sale featuring video, audio, web links, activities, and more. Online samples can be found at

<http://www.abacon.com/interactive/index.html>

Harcourt Brace

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

Lots of textual resources available for purchase, a division of Thomson Nelson.

Macmillan

<http://www.macmillan.co.uk/>

Has primary and secondary resources.

Harper-Collins

Mainstream publisher with a range of titles. <http://www.harpercollins.com/>

Houghton Mifflin

<http://www.hmco.com/trade/>

Lots of textual resources for sale here. At Houghton Mifflin Interactive you

Continued on page 31

POP TEACHERS



POPTEACHERS.COM is an online resource that offers free programs for use in the classroom! Log on today and download print-ready lesson plans built to engage your Grade 4 to 6 students. Plus, enter all the amazing contests, available only to members!

CURRICULUM CONTENT

CURRICULUM LINK: Language, mathematics, health and physical education

Motivate and teach your students through the sport of baseball with the Jays@School program! New to this year's program are new lesson plans featuring Lyle Overbay and Aaron Hill! Enroll today and you could receive four FREE TICKETS to a 2007 regular-season Blue Jays game and a set of Jays pencils for your entire class*!

*Tickets are for the 2007 season and are subject to availability. While quantities last.

CURRICULUM LINK: Science

The "Learning-Zone" is a new educational website, created by Ontario Power Generation for students, parents and teachers. Here, you'll find learning modules, a student workbook, experiments, information on electricity basics, and much more!

CURRICULUM LINK: Language

Help your students remember those that served and continue to serve Canada, not just on Remembrance Day, but every day throughout the year with this language activity. Have them read about the Battle of Vimy Ridge featured in *POP!* magazine and answer comprehension questions. Not only will they learn about the battle and understand how they've inherited their freedom today because of it, but the article will also help them to remember those that have served and continue to serve our country.

This project has been supported in part by the Government of Canada.

CONTESTS

You could win a \$1,000 prize pack from Nintendo's Pokémon Diamond & Pearl!

Have your students put their mapping skills to the test with Nintendo's Great Mapping Game. Tell us how your students navigated through Sinnoh and you could win one of three prizes from Nintendo consisting of \$1,000 in resources for your school!

Your students could win a \$15,000 Classroom Makeover for your school!

Just have your students submit original essays or letters of 100 words or less describing how they would re-design their classroom. The grand prize can include converting your old chalkboard into a new whiteboard, along with new furniture, fresh paint and cool decorations. Plus, we'll stock the winning student's classroom with fun writing and marking instruments from Sanford.

Visit
popteachers.com
for other curriculum-linked
activities and contests for
you and your students!



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The leader in
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>> Visit **WWW.POPTEACHERS.COM** to register today!



Curricula

REPRODUCIBLE INSERT

COLD TRAPS

The Canadian Arctic

Canada is unique in the world because it contains a major fraction of the Earth's polar regions within its borders. While it is true that the polar regions of Canada are sparsely populated, the region is of enormous importance, both nationally and globally.

The Arctic as an Economic Resource

Hidden under shallow seas, tundra, and the glaciers of the Canadian arctic there probably lies a vast storehouse of important resources such as oil, minerals and maybe even valuable sources of gem stones, all waiting to be discovered. How will we locate these important resources? How will we extract them and transport them to their ultimate destinations? Most importantly, how will we protect the fragile ecosystems of the Canadian Arctic under the pressures of exploration and development?

The Arctic as a Laboratory for Climate Change

The Arctic regions of the Earth are very sensitive to small changes in global climate. Daily, weekly and even seasonal average temperatures fluctuate widely from one year to the next which makes the detection of tiny trends in the changing global climate extremely difficult to accomplish.

In the equatorial regions of the Earth, and even the temperate regions, slight changes in the average annual temperature are usually masked by "normal" climatological variations. However, one can't fool the tundra! The slightest increase in the average global temperature can cause the tundra line (the boundary between fully thawed summer soil and permafrost) to shift dramatically Northward.

**Adapted from the
Science.gc.ca Web site.
Written by Yes I Can! Science.**

<http://www.science.gc.ca/default.asp?lang=En&n=238E9C0A-1>

Subjects

**Science, Earth Science, Biology,
Environmental Studies**

**GRADE LEVEL:
Grades 9-12**

Teacher's Notes

This unit is an introduction to the polar ice caps and glaciers.

Things to Emphasize

- In general, the total amount of water on the Earth is fixed.
- * Most arctic regions are considered deserts (less than 10cm of precipitation per year). Yet the arctic regions contain vast amounts of water (in the form of ice).
- * Changes in Arctic conditions can have a large global impact on sea levels and ocean currents.
- * The Arctic regions of the Earth contain fragile ecosystems.
- * Certain areas on the surface of the Earth, Mars, (and possibly the Moon), trap water by freezing it out of the environment. These areas are called cold traps, and are usually characterized as areas having low temperatures such as polar caps, mountain tops and crater valleys.



Consider the following

In a similar vein, the southern limit and thickness of summer pack-ice is extremely sensitive to changes in the average global temperature.

This demonstration helps students understand the process by which huge amounts of water become "trapped" in mountain glaciers and at the Earth's poles.

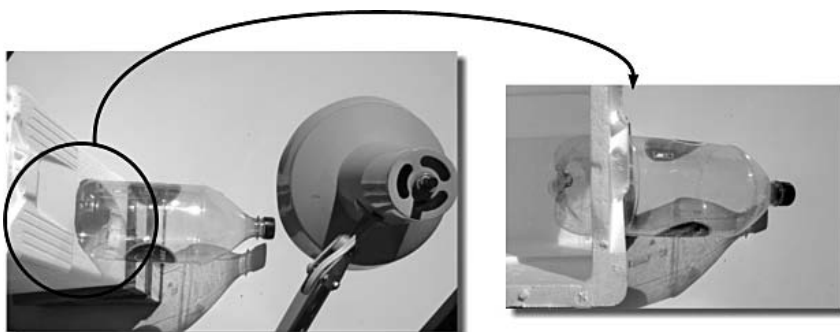
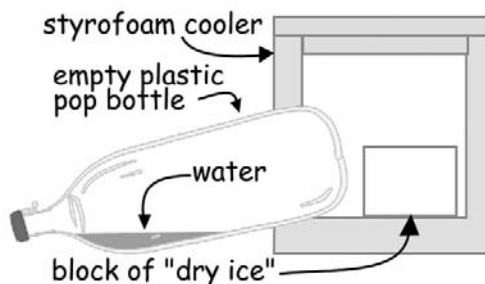
NOTE: Small amounts of dry ice (solid blocks of carbon dioxide) can usually be scrounged from local dairies, breweries, and meat/fish/poultry processing plants.

CAUTION: Always handle dry-ice with tongs or insulated freezer-gloves. Dry ice causes severe frost-bite which resembles a skin burn in its appearance and the pain it causes.

Building a "Cold-trap"

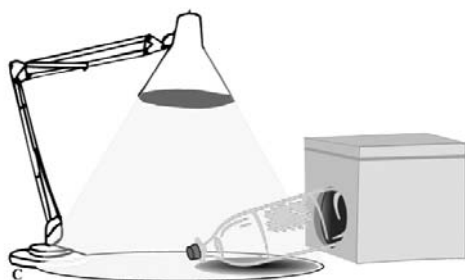
Neatly cut a hole about 3-5cm above the bottom of a small inexpensive Styrofoam cooler (six-pack sized) so that the pop bottle can be inserted snugly into it. The bottle should be at a slight angle as shown in the illustration, allowing the water to form a small pool outside the cooler. If necessary, tape around the hole inside and outside the cooler and the bottle to insure a good, relatively air-tight seal.

Cold Trap





Cold Trap



Running the Simulation

- * This simulation usually takes a day or two. Set up the apparatus as shown in an area where it can be left undisturbed for a few days.
- * Use a desk lamp to simulate the effects of the sun (namely to add heat energy to the water).
- * Dissolve about 5-10g of table salt in 50mL of tap water.
- * Add about 50 mL of clean salty water to a clean empty 2L plastic pop bottle. Replace the lid and secure it tightly.
- * Insert a large (about 500 grams or more) chunk of dry ice into the cooler and secure the lid. CAUTION: Always handle dry-ice with tongs or insulated freezer-gloves. Dry ice causes severe frost-bite which resembles a skin burn in its appearance and the pain it causes.



Aha! Water usually finds its way to the ocean by evaporating into the atmosphere, being transported by the wind, falling as rain, and eventually finding its way back into the oceans.

However, water which is prevented from evaporating is effectively removed from the water cycle.

Turning water into a solid (freezing) is an effective way to remove water from the water cycle by restricting evaporation.

The Earth's poles provide a place where atmospheric water vapour can be extracted from the air and trapped as ice.



- * What if the Earth's atmosphere were to become warmer?
- * How would that affect the Arctic tundra? Is there any evidence that this is occurring?
- * How would that affect the limit of summer pack-ice. Is there any evidence that this is occurring?
- * What techniques and technologies are being used to locate oil and minerals in the Canadian Arctic?
- * When glaciers and snow-ice melt, the run-off - which is fresh water - flows into the ocean.
- * What effect would this have on the salinity of the North Atlantic?
- * How might changes in salinity affect the ocean currents in the North Atlantic? How might this affect global climate?
- * What effect would melting the polar ice caps have on the mean sea-level?
- * The Moon has no atmosphere or oceans (or lakes or rivers or any detectable liquid water for that matter) and yet recent spacecraft observations have detected water (well, ice really) at the poles of the moon. How might this be possible?

Investigate the planet Mars. What can we learn from observing Mars that helps us understand processes that occur on the planet Earth?

Curriculum Expectations

Quebec Curriculum Expectations:

The Physical Science (Physical Environment) course is designed to help the students :

- * gain knowledge of certain physical phenomena in the environment, and consequently, learn about the properties of matter;
- * develop certain skills necessary for scientific experiments;
- * develop certain attitudes regarding the scientific method, such as a critical sense and a taste for research. This will help the students increase their awareness of the impact of modern technology on the physical environment.

Pan-Canadian Curriculum Expectations:

Grade 10

Curriculum Strand - Weather Dynamics

Knowledge Expectations

- * describe and explain heat transfer within the water cycle.
- * describe and explain heat transfer in the hydrosphere and atmosphere and its effects on air and water currents.
- * describe how the hydrosphere and atmosphere act as heat sinks within the water cycle.
- * describe and explain the effects of heat transfer within the hydrosphere and atmosphere on the development, severity, and movement of weather systems.
- * analyse meteorological data for a given time span and predict future weather conditions, using appropriate methodologies and technologies.

Skills Expectations

- * compile and display evidence and information, by hand or computer, in a variety of formats, including diagrams, flow charts, tables, graphs, and scatter plots.
- * identify and explain sources of error and uncertainty

in measurement and express results in a form that acknowledges the degree of uncertainty.

- * provide a statement that addresses the problem or answers the question investigated in light of the link between data and the conclusion.
- * identify new questions or problems that arise from what was learned.
- * identify questions to investigate that arise from practical problems and issues.
- * use library and electronic research tools to collect information on a given topic.
- * select and integrate information from various print and electronic sources or from several parts of the same source.
- * develop, present, and defend a position or course of action, based on findings.

Science, Technology, Society and the Environment Expectations

- * identify examples where scientific understanding was enhanced or revised as a result of the invention of a technology.
- * analyse why scientific and technological activities take place in a variety of individual and group settings.
- * describe examples of Canadian contributions to science and technology.
- * relate personal activities and various scientific and technological endeavours to specific science disciplines and interdisciplinary studies.
- * illustrate how science attempts to explain natural phenomena.
- * explain how scientific knowledge evolves as new evidence comes to light.

Curricula

*CET ENCART PEUT
ÊTRE REPRODUIT*

Les pièges à froid

L'Arctique canadien

Le Canada est unique au monde parce que ses frontières renferment une importante portion des régions polaires de la Terre. Il est vrai que les régions polaires du Canada sont peu peuplées, mais elles ont une importance énorme à l'échelle nationale et mondiale.

L'Arctique : une ressource économique

Sous les mers peu profondes, la toundra et les glaciers de l'arctique canadien, se cachent sans doute de vastes quantités de ressources importantes comme du pétrole, des minéraux et peut-être même des ressources de valeur comme des pierres précieuses, qui n'ont pas encore été découvertes. Comment allons-nous trouver l'emplacement de ces ressources importantes? Comment allons-nous les extraire et les transporter jusqu'à leur destination finale? Encore plus important, comment allons-nous protéger l'écosystème fragile de l'Arctique canadien sous la pression de l'exploration et du développement?

L'Arctique : un laboratoire sur les changements climatiques

Les régions arctiques de la Terre sont très sensibles aux petits changements dans le climat mondial. Les températures quotidiennes, hebdomadaires et même saisonnières fluctuent grandement d'une année à l'autre. Ainsi, il est extrêmement difficile de détecter des tendances à court terme dans le climat mondial changeant.

Dans les régions équatoriales de la Terre, et même dans les régions tempérées, de légers changements dans la température annuelle moyenne sont habituellement dissimulés par des variations climatologiques dites normales. Toutefois, nul ne peut duper la toundra! Une très légère augmentation de la température mondiale moyenne peut déplacer considérablement vers le nord la limite de la toundra (la frontière entre le sol entièrement dégelé l'été et le pergélisol).

De même, la limite sud et l'épaisseur de la glace des banquises en été sont extrêmement sensibles aux changements dans la température mondiale moyenne.

**Adapté du site Internet
Science.gc.ca
Préparé par l'équipe
Yes I Can! Science.**

<http://www.science.gc.ca/default.asp?lang=Fr&n=238E9C0A-1>

Sujets

**Sciences, Sciences de la terre,
Biologie, Études environnemen-
tales**

NIVEAU :
de la 9^e à la 12^e année

Notes pour les enseignants

Ce module sert d'introduction aux calottes polaires et aux glaciers.

Points à souligner

* En général, la quantité totale d'eau sur la Terre est fixe.

* La plupart des régions arctiques sont considérées comme des déserts (leurs précipitations annuelles sont inférieures à 10 cm). Pourtant, les régions arctiques contiennent de vastes quantités d'eau (sous la forme de glace).

* Des changements dans les conditions météorologiques de l'Arctique peuvent avoir un important impact global sur le niveau de la mer et les courants océaniques

* Les écosystèmes des régions arctiques de la Terre sont fragiles.

* Dans certaines régions, à la surface de la Terre et de Mars (et possiblement de la Lune), de l'eau gelée est exclue de son environnement. Ces régions sont des pièges à froid, et se caractérisent en général par des températures très basses comme c'est le cas des calottes polaires, des cimes des montagnes et des vallées des cratères.



Matière de réflexion...

dans les glaciers de montagnes et aux pôles de la Terre.

Cette démonstration aide les élèves à comprendre le processus selon lequel d'énormes quantités d'eau sont piégées

NOTE : Il est habituellement possible d'obtenir de petites quantités de glace sèche (des blocs solides de dioxyde de carbone) des crémeries, des brasseries et des usines de transformation de viande, de poisson ou de volaille locales.

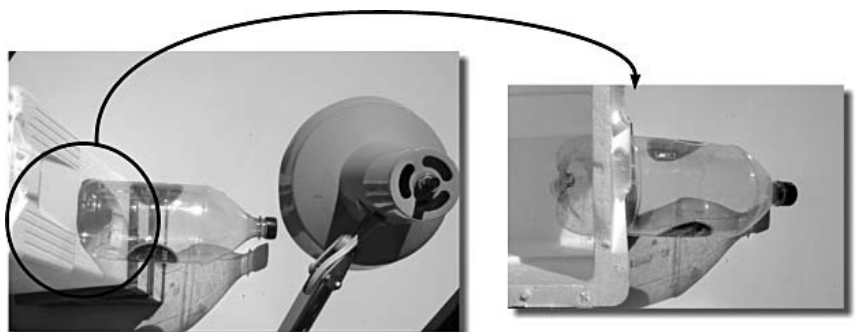
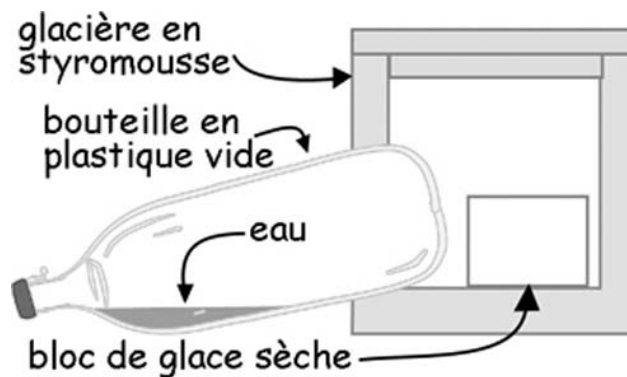
MISE EN GARDE : Toujours manipuler la glace sèche avec des pinces ou des gants isolants. La glace sèche peut entraîner une grave froidure qui ressemble à une brûlure cutanée par son apparence et la douleur qu'elle provoque.

Construire un piège à froid

Découper soigneusement un trou de 3 à 5 cm au fond d'une petite glacière peu coûteuse en styromousse (de la taille d'un «six-pack») de façon à pouvoir y insérer la bouteille à boisson gazeuse. Appliquer à la bouteille un angle léger, comme illustré, pour permettre qu'un peu d'eau s'accumule à l'extérieur du contenant isolant.

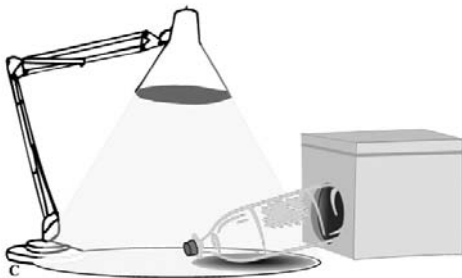
Au besoin, sceller le trou à l'intérieur et à l'extérieur du contenant à l'aide de ruban adhésif. Le joint doit être relativement étanche.

Piège à froid





Piège à froid



Effectuer la simulation

- * Cette simulation prend en général un jour ou deux. Monter le dispositif comme le montre l'illustration dans un endroit où il ne sera pas dérangé pendant quelques jours.
- * À l'aide d'une lampe de bureau, simuler les effets du soleil (notamment pour ajouter de l'énergie thermique à l'eau).
- * Dissoudre de 5 à 10 g de sel de table dans 50 mL d'eau du robinet.
- * Ajouter environ 50 mL d'eau salée propre à une bouteille à boisson gazeuse en plastique de 2 L (propre). Remettre le bouchon et le fermer hermétiquement.
- * Insérer un gros morceau de glace sèche (environ 500 grammes ou plus) dans le contenant isolant et fermer le couvercle. **MISE EN GARDE** : Toujours manipuler la glace sèche avec des pinces ou des gants isolants. La glace sèche peut entraîner une grave froidure qui ressemble à une brûlure cutanée par son apparence et la douleur qu'elle provoque.

En général, pour se rendre à l'océan, l'eau s'évapore dans



l'atmosphère, est transportée par le vent et tombe en pluie dans l'océan. Cependant, l'eau qui ne peut s'évaporer est retirée du cycle de l'eau.

Solidifier l'eau par la congélation constitue un moyen efficace de retirer l'eau du cycle de l'eau en l'empêchant de s'évaporer.

Les pôles de la Terre constituent un endroit où les vapeurs d'eau atmosphériques peuvent être extraites de l'air et piégées comme de la glace.

- * Qu'arriverait-il si l'atmosphère de la Terre se réchauffait?



- * Quel serait l'impact sur la toundra arctique? Y a-t-il des signes indiquant que ce phénomène se produit?
- * Quel serait l'impact sur la limite des banquises en été? Y a-t-il des signes indiquant que ce phénomène se produit?
- * Quelles sont les techniques et les technologies utilisées pour trouver du pétrole et des minéraux dans l'Arctique canadien?
- * Quand les glaciers et la glace-neige fondent, l'écoulement, composé d'eau douce, coule dans l'océan.
- * Quel impact cela peut-il avoir sur la salinité de l'Atlantique Nord?
- * Comment les changements de salinité peuvent-ils avoir un impact sur les courants océaniques dans l'Atlantique Nord? Comment cela peut-il avoir un impact sur le climat mondial?
- * Quel impact la fonte des calottes polaires peut-elle avoir sur le niveau moyen de la mer?
- * La Lune n'a pas d'atmosphère ni d'océan (elle n'a d'ailleurs aucun lac, aucune rivière ni aucune eau liquide perceptible). Pourtant, de récentes observations spatiales ont permis de détecter de l'eau (sous la forme de glace) aux pôles de la Lune. Comment cela est-il possible? Effectue une recherche sur la planète Mars. Que pouvons-nous apprendre de l'observation de la planète Mars pour nous aider à comprendre les phénomènes qui se produisent sur la Terre?

Liens avec le programme d'études

Liens aux objectifs du programme

secondaire au Québec :

Le cours Science physique (milieu physique) est conçu pour aider l'élève à :

- * se familiariser avec certains phénomènes physiques se produisant dans l'environnement et apprendre les propriétés de la matière;
- * acquérir certaines compétences nécessaires aux expériences scientifiques;
- * acquérir certaines attitudes à l'égard de l'approche scientifique telles que le sens critique et le goût de la recherche, de manière à accroître sa prise de conscience des effets de la technologie moderne sur le milieu physique.

Liens aux objectifs du Cadre pancanadien en sciences :

10^e année

Domaine du programme – La dynamique des phénomènes météorologiques

Objectifs d'apprentissage

- * Décrire et expliquer le transfert de chaleur dans le cycle de l'eau.
- * Décrire et expliquer le transfert de chaleur dans l'hydrosphère et l'atmosphère et ses effets sur les courants d'air et d'eau.
- * Décrire comment l'hydrosphère et l'atmosphère servent de puits thermique dans le cycle de l'eau.
- * Décrire et expliquer les effets du transfert de chaleur dans l'hydrosphère et l'atmosphère sur le développement, l'intensité et le mouvement des phénomènes météorologiques.
- * Analyser des données météorologiques d'une période donnée et prévoir les conditions météorologiques à venir à l'aide de méthodologies et de technologies appropriées.

Acquisition d'habiletés

- * Compiler et présenter, à la main ou à l'aide d'un ordinateur, des preuves et des données sous divers

formats (p. ex., diagrammes, organigrammes, tableaux, graphiques et nuages de points).

- * Reconnaître et expliquer les sources d'erreurs et d'incertitude dans la mesure et communiquer ses résultats de façon à reconnaître le degré d'incertitude.
- * Produire un énoncé qui aborde le problème ou répond à la question étudiée à la lumière de la relation entre les données et la conclusion.
- * Reconnaître de nouvelles questions ou de nouveaux problèmes qui découlent des apprentissages.
- * Dégager les questions à examiner qui découlent des problèmes et des enjeux.
- * À l'aide de la bibliothèque et des outils de recherche électroniques, recueillir de l'information sur un sujet donné.
- * Choisir et intégrer des renseignements provenant de diverses sources (p. ex., documents imprimés ou électroniques) ou de diverses parties d'une même source.
- * Élaborer, présenter et défendre une position ou un plan d'action en fonction des constatations.

Objectifs relatifs à la science, à la technologie, à la société et à l'environnement

- * Trouver des exemples d'amélioration ou de révision de la connaissance scientifique à la suite de l'invention d'une technologie.
 - * Analyser les raisons pour lesquelles les activités scientifiques et technologiques peuvent s'exercer par une seule personne ou en groupe.
 - * Décrire des exemples de contributions canadiennes à la science et à la technologie.
 - * Établir un lien entre les activités personnelles et divers efforts scientifiques et technologiques et des disciplines scientifiques et des études interdisciplinaires spécifiques.
 - * Illustrer les efforts de la science pour expliquer les phénomènes naturels.
- Expliquer l'évolution de la connaissance scientifique à mesure que de nouvelles preuves sont apportées.

Marjan Glavac

notable sites for teachers

Geocaching

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

Geocaching, an activity for all ages, involves adventure, mystery, clues, maps, exercise, and an eye for detail. It has elements of a scavenger hunt, orienteering, computer and GPS (Global Positional System). “Geo” stands for geography, a clue to the global nature of this pursuit, and “caching” is a temporary hiding place. More than one million people actively hunt for 320,000 plus caches worldwide.

Start geocaching with a free account from <http://www.geocaching.com/>. For information on resources, FAQ, geocaching events, services, and guides, go to <http://www.geocaching.com/about/>

You will also need a Global Positioning System or GPS device, which costs about \$100 for a basic model at a sporting goods store.

Now you’re ready to start hunting for caches, located perhaps on rocky cliff sides, underwater, inside or outside buildings and above or below ground in cities. Caches are often found in parks, tree trunks, forests, along river banks and on walking paths. Several ways exist to find a cache. Go to the Web site’s database; list a postal code; and enter the coordinates into your GPS.

Once you have information on it, start hunting for the cache. Follow simple rules when you find the treasure: take something from the cache; leave something in the cache; and write about it in the logbook.

The cache itself can be a logbook, containing information from the cache’s founder and visitors’ notes. It may contain facts on nearby attractions, coordinates to other unpublished caches, and even visitors’ jokes. Other items may be maps, books, software, hardware, CD’s, videos, pictures, money, jewellery, tickets, antiques, tools, games, and so on.

Record your thoughts in the logbook and replace anything you take so that others can learn from and enjoy something related to your experience.

Dove Campaign for Beauty

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

How did our ideas of beauty become so distorted? It’s vital for teachers, parents, and students in grades 4 to university to watch the Dove commercial on how advertisers use digital editing to create phony models.

Although this commercial has never been on TV, it’s been named best Canadian ad of the year and has been viewed more than five million times on YouTube.

To watch this riveting film, scroll to the bottom of the Web site and click on the link to the Evolution Film or watch it on YouTube at <http://www.youtube.com/watch?v=iYhCn0jf46U>.

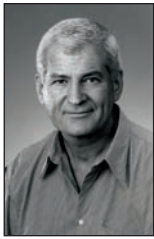
Once you’ve seen the Evolution Film (I’ve viewed it four times, and am always shocked by the ending twist), click on the Dove Self-Esteem Fund link. Dove created this fund to educate and inspire girls about a wider definition of beauty. Check out true you! decoder to decipher mother-daughter language; record and celebrate with the mother-daughter interactive calendar; take the self-esteem quiz; download the true you! workbook; and work on activities designed to raise self-esteem.

Other links take you to body image exercises, ideas for us all, ideas for parents/guardians, ideas for educators, and ideas for raising awareness.

Help students gain a realistic view of human beauty by exploring this site.

Marjan Glavac is a classroom teacher and author of The Busy Educator's Newsletter. For more information, please see www.thebusyeducator.com.

Dan Lang



Zoo Tycoon 2

<http://www.learningvillage.com/html/rZooTycoon.html>

This simulation program is about taking care of animals, as well as designing and managing a zoo. The nurturing aspect of caring for animals holds an appeal for a wide range of students.

The program begins with a big empty lot and all the



building tools required to start construction of the housing areas for the animals. In designing the living areas—there are about 40 varieties of animals from which to choose—each area should be designed to most resemble the natural habitat of the animal(s) selected. The zookeeper acts as a guide. For example, Bengal tigers need rainforest trees and a lot of vegetation while wolves live in a coniferous forest. The user selects the specific trees and vegetation for the purpose of laying out the physical terrain.

Once the exhibits have been built, then concession stands for visitors are constructed, staff are hired to care for the animals, to act as tour guides and maintain the grounds. Once the zoo is open, the guests arrive and the ensuing revenue provides the means for the zoo to operate, to purchase new items

for the exhibits, improve the staff's abilities, make new animals available for adoption, and buy more buildings and structures like a reptile house or petting zoo.

The program allows the user to work with set scenarios with specific objectives that begin at an easy level. As the user progresses, the choices become more challenging. Or the user may work in a "free form" mode where wide open spaces and a fixed budget are presented so the user can

build whatever he/she wants. In contrast to the earlier version of this program, there are now 3D graphics which provide heightened visual appeal. The zookeeper may enter the animal areas that have been constructed. A close-up view of the work and animals is possible. The tools used to



construct the areas and terrains have been enhanced allowing for the creation of more elaborate environments.

This is a relatively simple simulation game in terms of set-up. The interface is easy-to-use and understand making it accessible for younger users. Embedded in the program is the experience of managing a realistic business. The user is both the designer and manager and is required to make realistic business decisions that will affect the zoo's success. Extensive background detail on each animal is also provided which delivers a broader range of interest for those who want more information. This is an excellent introduction to simulation programs.

Dan Lang is the founder of Learning Village (www.learningvillage.com), an independent review and advisory centre for parents and teachers looking for information on educational software. You may contact Dan by email at dan@lang.com.

Publisher: Microsoft

Learning areas: Exposure to and learning about what is involved in caring for animals, designing, building and managing a zoo.

Grades: Four and up.

Age Range: Nine and up.

System Requirements: Windows 98SE/200/ME/XP, Mac OS X or higher

Ordering info: The CD-ROM Store:
1-800-250-9229 or www.cdromstore.com



Revelations of a Canadian Arts Educator in the Far East

By Verne Lorway

Seeking a new experience teaching music, I decided to cross an ocean and arrived in Hong Kong in August 2004. In the process, I discovered that teaching the arts is really learning the arts when instructing in a cultural tradition very different from one's own.

The school itself was a semi-subsidized secondary government school from forms one to seven. Following the British system, students worked towards writing their Hong Kong Certificate of Education Examination at the end of form five. Two years before my arrival, the school consisted primarily of students from mainland China. Since then, school administrators had decided to follow the English Medium of Instruction. This meant 10 percent or fewer students entering form one would be accepted from mainland China. The rest would come from India, Pakistan, Nepal, and the Philippines

On my first day of classes, I was given a textbook to teach the music curriculum to students ages thirteen to fifteen in lower secondary, forms one to three. As music classes were mandatory for these students, my teaching schedule included 11 classes of 45 students each. According to textbook guidelines, I was to teach a mix of Western music theory, history, and recorder.

Although the textbook included some study of Chinese traditional operas and instruments from the traditional Chinese orchestra, it was written almost entirely from a Western perspective. Many of the listening examples and structural analysis questions were based upon some of the "great" works of Western classical music. From the beginning, I wondered if this curriculum truly applied to students from south Asian and southeast Asian countries? And, if not, what could I do differently to address my students' needs with my resources?

As general music classes began, I realized that the music program did not allow for the greater student body at the lower form level to participate. Many students did not want to learn about classical Western music. At home, for example, most students from India listened to their country's traditional ragas or Hindi pop songs. While in the East, how could I facilitate students learning music when the methods I had developed over the years seemed more suited to students in the West? I felt students were not really responding to the music I taught, due largely to cultural differences between them and me. There were no relevant teaching materials for students of these cultures. How could I reach my students?

After really probing this question, things happened which led me down a completely different path. By travelling this unknown path and by experiencing the music of other cultures, I understood more about both teaching and learning. In particular, a series of events helped me see that I had been teaching the students from my Western, rather than their Eastern, outlook. These same events enabled me to teach music from a more Eastern perspective.

With my administration's support, I decided to throw the Hong Kong music textbook out the window (so to



speak). I found that in sharing my cultural music, Maritime folk and rock, for example, I sparked students' interest. I began teaching Canadian songs to students. I thought the songs were animated and enjoyable for these students. As I accompanied the students on piano, however, I noticed their difficulty matching the pitches when singing.

One day, a student brought me a popular Hindi song from a well-liked movie. As I listened to the song, which was full of vocal shaking, quarter tones, and which was based on scales largely unknown to my Western ears, I finally started understanding why many students struggled with the music I gave them. At the same time, the students' own music was beautiful; I began thinking about how to bring this music into class, enabling students to share their songs with one another.

In the meantime, a student from the Philippines gave a thorough, voluntary presentation on music from her country, including a brief history of the Philippines and the impact of national changes on its music. Her presentation included a song in Tagalog, which she taught to the class. Meanwhile, I learned something fundamental about Philippine culture: due to Spanish and American influences, Philippine music was full of Western nuances. As I had started teaching harmonies in music class, I observed that many students from the Philippines could sing the harmonies and add harmonies of their own.

Shortly after the presentation, a student from Nepal asked me to teach him to play a Nepalese song on the guitar. He had with him a fairly modern Nepalese song on tape, sung in a folk style by a contemporary Nepalese band. I wrote out and taught him the chords on the guitar. A few days later, he reappeared with friends, who asked me to teach them the vocal, bass, and drum parts, too. I agreed to help them, and arranged the song for their group.

For hours, I worked with these students, helping them develop a version they liked of the song. I gained valuable experience from teaching these students. To guide them to create the sound they sought, helping them remain true to their style of music, I had to abandon my own understanding of certain Western musical concepts. I learned that pitch, meter, and rhythm are culturally constructed ideas. For example, there were changing meters that were foreign to me, as well as phrases different in length from many Western pop songs. My challenge was to listen carefully for changes that emerged when the students played. As they improvised, they would occasionally make shifts in meter in the music in places not written in the music I had helped them arrange. Yet, somehow, they made these shifts together. As they had asked me to play the keyboard with them, I learned to shift with them during these times.

Students began emerging from various classes, giving me traditional songs from their countries, and asking me to teach these songs to the class. I believe many students felt a need to have their own cultural



ideas validated within the curriculum. As I had gained their trust, music class seemed the place for this to occur. I began to teach Urdu, Tagalog, and Nepalese songs to the students. We added vocal harmonies, guitar, bass, and drum parts to many of the songs. I compiled a student text of songs from the East and West, with instrumental arrangements.

General music classes became more meaningful for the students (and me).

Students played and sang in class and were more open to learning music theory and notation. They were also more interested in learning music from their classmates' countries. I felt the class had truly succeeded when students from the Philippines requested a song from India, or when a student from Nepal asked to sing a song from the Philippines. Once, three students from Nepal taught rock drumming to a classmate from China. Experienced in playing traditional Chinese drums, their friend learned rapidly.

I think the students and I felt most successful when I started the school choir. During rehearsals, a student from Pakistan was the first to learn a solo in a Western choral number, a soprano solo quite different from the traditional Pakistan music she knew best. Nonetheless, she sang the solo in a high, clear voice. Students from all the countries represented in the school joined the choir. Male and female students from India, Nepal, Pakistan, the Philippines, Egypt, and China participated in rehearsals and a final 30-minute performance during graduation. Everybody worked together extremely well.

I faced several challenges in teaching the Hong Kong curriculum within the multicultural context of the school: the music curriculum was full of largely Western materials and approaches; yet, the students came from rich, primarily Eastern, musical traditions, which were not validated in the curriculum. I, therefore, had to restructure the curriculum and provide supporting materials to suit my students' needs. Another challenge: I was not, at first, keenly aware of the students' Eastern musical traditions; specifically, the elements in the music which they listened to every day and participated in with their families. However, after I listened to and studied these musical traditions, the music program really progressed.

In many ways, teaching in Asia parallels teaching in Canada. In an increasingly pluralistic society, I am constantly blessed with a more diverse student population. By maintaining an open mind and the willingness to reflect the multiple perspectives of my students, I hope to help my students experience sharing as a form of learning within the classroom. I believe sharing forms the basis of a thriving and healthy multicultural classroom in Canada, an insight which helped me and my students during our journey in the Far East.



Verne Lorway is a certified music teacher and freelance writer. He can be reached at vernelorway@hotmail.com



Révélations d'un professeur canadien de musique en Extrême-Orient

Verne Lorway

Souhaitant élargir mon expérience dans l'enseignement de la musique, j'avais décidé de traverser un océan ; je suis donc arrivé à Hong Kong en août 2004. Ce faisant, j'ai découvert qu'enseigner une discipline artistique c'est en réalité l'apprendre lorsqu'on l'enseigne dans un milieu culturel très différent du sien.

L'école était un établissement secondaire en partie subventionné par le gouvernement, allant de la première à la septième année. Comme dans le système britannique, les élèves y préparaient leur certificat d'études de Hong Kong dont l'examen se passait à la fin de la cinquième. Deux ans avant mon arrivée, l'école comptait essentiellement des élèves de la Chine continentale. Depuis, les administrateurs scolaires avaient décidé de suivre le *English Medium of Instruction*. Cela voulait dire qu'un maximum de 10 p. 100 des élèves acceptés en première venait de la Chine continentale. Le reste venait de l'Inde, du Pakistan, du Népal et des Philippines

Dès mon premier jour de classe, on me remit un manuel précisant le programme de musique à enseigner aux élèves de 13 à 15 ans dans les petites classes du secondaire (de la première à la troisième). La musique étant obligatoire pour ces élèves, ma charge d'enseignement comportait onze classes de quarante-cinq élèves chacune. Selon les directives du manuel, je devais enseigner à la fois la théorie et l'histoire de la musique occidentale, ainsi que la flûte à bec.

Si le manuel prévoyait l'étude d'opéras chinois traditionnels et d'instruments de l'orchestre chinois classique, il était rédigé presque entièrement selon une perspective occidentale. De nombreux exemples d'écoute et de questions d'analyse structurelle s'appuyaient sur certaines « grandes » œuvres de la musique classique de l'Ouest. Dès le début, je me suis demandé si ce programme s'appliquait vraiment à des élèves venant de pays de l'Asie du sud et du sud-est. Et, si non, que pouvais-je faire de différent pour répondre aux besoins de mes élèves, avec les ressources dont je disposais ?

Au début des cours généraux de musique, je me suis rendu compte que le programme ne permettait pas au plus grand nombre d'élèves de la plus petite classe de participer. Beaucoup d'entre eux ne souhaitaient pas étudier la musique classique occidentale. Chez eux, la plupart des élèves d'Inde, par exemple, écoutaient les traditionnels ragas de leur pays ou les chansons pop hindi. Attendu que j'étais en Orient, comment pouvais-je faciliter pour mes élèves l'apprentissage de la musique, alors que les méthodes que j'avais acquises avec les années semblaient plus adaptées à des élèves occidentaux ? J'avais l'impression qu'ils ne répondaient pas vraiment à la musique que j'enseignais, principalement en raison de nos différences culturelles. Or, il n'existait pas de documents pédagogiques pour les élèves de ces cultures. Alors, comment pouvais-je rejoindre mes élèves ? Il n'y avait pas non plus de documents pédagogiques pertinents pour les élèves de ces cultures.

Après avoir approfondi la question, certaines choses m'ont conduite sur un chemin tout à fait différent. Cette voie inconnue, ainsi que la découverte de la musique d'autres cultures, m'a beaucoup appris sur l'enseignement et l'apprentissage. Une série d'activités, notamment, m'ont aidée à voir que, jusque là, j'enseignais de mon point de vue d'Occidental et non de leur point de vue d'Orientaux. Ces mêmes activités m'ont permis d'enseigner la musique selon une perspective plus orientale.

Avec l'appui de l'administration, j'ai décidé de jeter



par la fenêtre (façon de parler) le manuel de musique de Hong Kong. J'ai découvert qu'en transmettant l'aspect culturel de ma musique, le folklore et le rock des Maritimes, par exemple, je piquais l'intérêt des élèves. J'ai donc commencé à leur apprendre des chansons canadiennes. Je me disais que, pour eux, ces chansons étaient animées et agréables. Je les accompagnais au piano, mais je remarquais leurs difficultés à rester dans le ton lorsqu'ils chantaient.

Un jour, un élève apporta une chanson hindi bien connue, tirée d'un film populaire. En écoutant la chanson, dans laquelle abondaient trémolos et quarts de tons et qui était basée sur des gammes largement inconnues pour mes oreilles occidentales, je commençais à comprendre pourquoi de nombreux élèves avaient du mal avec la musique que je leur présentais. Cette musique-là était d'ailleurs belle, et je me demandais comment l'utiliser en classe afin de permettre aux élèves d'échanger leurs chansons.

Entre-temps, une élève des Philippines avait fait, de son propre chef, une très bonne présentation sur la musique de chez elle avec une courte histoire de son pays et les effets des changements nationaux sur sa musique. Sa présentation s'accompagnait d'une chanson en tagalog qu'elle a apprise à la classe. De mon côté, je découvrais certains éléments de base de la culture philippine : en raison des influences espagnoles et américaines, la musique de ce pays comptait force nuances occidentales. Alors que je commençais à enseigner les harmonies en classe de musique, j'observais que de nombreux élèves des Philippines parvenaient à changer les harmonies et à en ajouter de nouvelles.

Peu après la présentation, un élève du Népal m'a demandé de lui apprendre à jouer une chanson népalaise à la guitare. Il avait avec lui, enregistré sur bande, un air plutôt moderne, chanté dans un style folklorique par un orchestre népalais contemporain. J'ai noté les accords et les lui ai appris. Quelques jours plus tard, il est revenu avec des amis qui m'ont demandé de leur apprendre la partie voix, la basse et la batterie. J'ai accepté de les aider et de faire l'adaptation de la chanson pour leur groupe.

J'ai travaillé pendant des heures avec ces élèves, les aidant à mettre au point une version qui leur plaise. Cet enseignement m'a permis d'acquérir une expérience précieuse. Le fait de les guider dans la recherche du son qui leur convenait, de chercher à respecter leur style de musique, m'a obligée à abandonner certaines de mes propres notions musicales occidentales. J'ai découvert que la hauteur, le mètre et le rythme sont des idées qui construisent la culture. Par exemple, certains mètres variables m'étaient étrangers, ainsi que des phrases de différentes longueurs qui provenaient de nombreuses chansons pop de l'Occident. Le plus difficile pour moi était d'écouter avec suffisamment d'attention pour percevoir les changements qui émergeaient lorsque les élèves jouaient. Lorsqu'ils improvisaient, ils changeaient de temps en temps le mètre dans la musique à des endroits non écrits sur la musique dont j'avais fait l'adaptation avec eux. Et pourtant, ils faisaient ces changements ensemble. Et comme ils m'avaient demandé de jouer au clavier, j'apprenais à modifier avec eux à ces moments-là.

C'est ainsi que les élèves ont commencé à venir de plusieurs cours, apportant des chansons traditionnelles de leur pays en me demandant de les apprendre à la classe. Je crois que beaucoup d'entre eux ressentaient le besoin de voir valider leurs propres idées culturelles

dans le programme d'études. A mesure que je gagnais leur confiance, le cours de musique semblait le lieu où cela devenait possible. J'ai alors commencé à apprendre aux élèves des chansons en ourdou, en tagalog et en népalais. Nous avons ajouté des harmonies vocales, de la guitare, une basse et la batterie pour nombre d'entre elles. J'ai compilé, à leur intention, un manuel des chansons de l'Est et de l'Ouest, avec les adaptations instrumentales.

Les cours généraux de musique sont devenus plus intéressants pour les élèves (et pour moi) qui, maintenant, jouaient et chantaient en classe et étaient plus ouverts à la théorie et à la notation musicale. Ils étaient plus désireux d'apprendre la musique des pays de leurs camarades. J'avais l'impression d'avoir vraiment réussi lorsque des élèves des Philippines demandaient une chanson de l'Inde, ou lorsqu'un élève du Népal demandait à chanter une chanson des Philippines. Une fois, trois élèves du Népal ont appris à un camarade de Chine à faire du rock drumming. Adeptes du tambour traditionnel chinois, leur ami apprit rapidement.

Je crois que la plus grande réussite, tant pour les élèves que pour moi, a été la création d'une chorale à l'école. Pendant les répétitions, une jeune pakistanaise a été la première à apprendre un solo dans une pièce chorale occidentale, un solo pour soprano tout à fait différent de la musique pakistanaise traditionnelle qu'elle connaissait mieux. Néanmoins, elle a chanté le solo d'une voix haute et claire. Puis des élèves de tous les pays représentés à l'école ont rejoint les rangs de la chorale. Des garçons et des filles d'Inde, du Népal, du Pakistan, des Philippines, d'Égypte et de Chine sont venus aux répétitions et ont chanté lors d'un spectacle final d'une demi-heure à l'occasion de la collation des grades. Tout le monde travailla extrêmement bien ensemble.

En enseignant le programme de Hong Kong dans le contexte multiculturel de l'école, j'ai rencontré plusieurs difficultés : le programme de musique comportait bien des démarches et du matériel dont l'empreinte était tout à fait occidentale ; et pourtant, les élèves venaient de traditions musicales riches, principalement orientales, laissées de côté. J'ai donc eu à réorganiser ce programme et à fournir des documents d'accompagnement pour répondre aux besoins de mes élèves. L'autre difficulté, c'est que je ne connaissais pas vraiment, au départ, leurs traditions musicales, en particulier la musique qu'ils écoutaient tous les jours et dont ils parlaient en famille. Cependant, après avoir écouté et étudié ces traditions, le programme de musique a véritablement progressé.

À bien des égards, l'enseignement en Asie est analogue à l'enseignement au Canada. Dans une société de plus en plus pluraliste, j'ai la chance de rencontrer constamment une population étudiante plus diversifiée. En conservant un esprit ouvert et le désir de refléter les multiples perspectives de mes élèves, j'espère les aider à découvrir que l'échange est une forme d'apprentissage au sein de la classe. Je crois en effet qu'au Canada, l'échange est le fondement d'une classe multiculturelle saine et épanouie, conviction qui m'a aidé, ainsi que mes élèves, durant notre cheminement en Extrême-Orient.

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