



The Conference Board  
of Canada

#### CASE STUDY 34

*Building a Global  
Community Through  
the Use of Technology  
in the Classroom*

#### Contact

Industry Canada's  
GrassRoots Program  
[http://  
www.schoolnet.ca/  
grassroots/](http://www.schoolnet.ca/grassroots/)

#### Name of Program

*GrassRoots*

#### Skills Developed

ICT  
*Employability*

Prepared for  
Industry Canada by  
The Conference  
Board of Canada

Effective practices in developing and supporting teachers' and students' information and communications technology skills

# IMAGINE THE CHALLENGE

## *Building Community Capacity Through Developing Teachers' and Students' Information and Communications Technology Skills*

A SHOWCASE GRASSROOTS PROJECT

BY KURTIS KITAGAWA AND DOUGLAS WATT

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Teachers and students who participate in Imagine the Challenge design and complete learning projects that build their information and communications technology (ICT) skills. But participation has done far more than merely develop community capacity. It has also helped to empower individuals and build a global community. The project is supported by Industry Canada's GrassRoots Program.

#### Overview

Between September 1999 and January 2000, and as part of the internationally recognized Steps 2 Peace project, a Canadian runner, David Adie, ran over 5,000 km between the east and the west coasts of Australia. His run provided the inspiration for the Imagine the Challenge project carried out at four Calgary schools (Fish Creek, Hawkwood, Riverbend and Sam Livingston). Students and teachers from these schools collaborated on a number of activities, researching information on Australian political and physical geography,

society and culture and posting the results on their project Web site. And Canadian and Australian students corresponded with David Adie via e-mail as he travelled across Australia. Children's hospitals were the beneficiary of this fund-raising event.

#### Program Details

- Grade levels: K-3, 4-6, 7-9
- Number of schools: four
- Number of classes: 15 (approx.)
- Number of participants: 400 students (approx.) and 15 educators
- Initial development: June 1999-June 2000
- GrassRoots funding: optional block project
- Project scope: global
- Language: English
- ICT resources: e-mail accounts, Internet access, bandwidth, digital cameras, video cameras/scanners, PCs, supporting software, conference-call-capable telephones
- Project Web site: [http://  
projects.cbe.ab.ca/hawkwood/  
HTML/index2.html](http://projects.cbe.ab.ca/hawkwood/HTML/index2.html)

## National Business and Education Centre (NBEC)

Director: MaryAnn McLaughlin

Associate Director, Project Development:  
Michael Bloom

Senior Research Associate:  
Kurtis Kitagawa

Research Associates:  
Alison Campbell  
Debbie Murray  
Douglas Watt

Awards Program Manager:  
Linda Scott

Senior Administrator and  
Symposium Manager:  
Jean Smith

Program Assistants:  
Camille Beaufort  
Anne-Marie Brown  
Heather Currie  
Rachel Hayward

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## Groups Served

- ✓ Students (K–3, 4–6, 7–9)
- ✓ Teachers
- ✓ Business
- ✓ Community (including parents, community institutions and business)

## Objectives

- ✓ To impart the concept of challenge to students through multiple curriculum areas and experiential, real world, real time, authentic learning activities
- ✓ To instill in children the idea that they can make a difference
- ✓ To develop children's awareness of the global community and their role within it
- ✓ To develop and enhance ICT skills in students, teachers and the community beyond the schools, including parents and siblings

## Activities

Cross-curricular activities (social studies, science, mathematics, technology, fine arts, language arts, physical education, mathematics) for Canadian students have included:

- ✓ Taking a closer look at Australia, its people, Aboriginal art, climate, weather, ecosystems, flora and fauna, and cultures
- ✓ E-mailing messages and corresponding with David Adie and Australian schools
- ✓ Conducting conference telephone calls
- ✓ Building Web pages for every topic covered in social studies and science
- ✓ Using spreadsheets and graphs to plot David Adie's and their own progress in their different walk/run activities
- ✓ Scanning digital photographs and editing David Adie's video using Avid Cinema software to produce a documentary; this was shared with the school at assembly, as well as with other schools and with David Adie
- ✓ Using video clips and audio clips from telephone calls to produce a short video (using Avid Cinema software), which was placed on the Web site
- ✓ Animating dramatic writing, inspired

- by David Adie's run, through the use of clay animation facilitated by Quick Time Virtual Reality Software
- ✓ Drawing pictures and writing responses for David Adie
- ✓ Scripting and dramatizing a play
- ✓ Holding 5,000-km walk/run events on the school track to simulate David Adie's journey and raise money for Alberta Children's Hospital ("The Great TWOnie Challenge")
- ✓ Preparing their own personal challenge journals, in which they interpret quotations dealing with challenges in their own terms and write up their own personal challenges
- ✓ Attending a talk about living with disability by paraplegic athlete Christian Bagg and trying out his modified sports equipment
- ✓ Attending a talk about living with disability by a blind, brain-injured person
- ✓ Studying the novel *The Quay*, which included people versus nature and people versus people challenges (e.g., racism)
- ✓ Building connections to Terry Fox and other "heroic" Canadians by examining the qualities of a hero
- ✓ Designing a bridge out of food, punning on the idea of "I can" (students had to work co-operatively to construct a bridge from over 900 non-perishable food items, including many canned goods, which weighed over 1,100 lbs. and were worth approximately \$2,200)
- ✓ Visiting the Food Bank to see how some members of our community face the challenge of not having enough to eat
- ✓ Building nets in geometry to cover the geometrical solid of the food bridge
- ✓ Holding a nickel carnival

## Benefits for Education

- Shows how information and communications technology can be applied
- Builds experience in technology beyond what is normally possible through the curriculum

*This project helps teachers and students make the connection between Web skills and other subjects and projects.*



- Extends the use of technology beyond the initial cohort of teachers and students who are working on a particular technology-related project
- Makes the connection between ICT and the curriculum
- Exploits the attraction of Web-based materials in a curriculum-based learning context
- Entails the use of technology that might not otherwise be used in the classroom
- Transfers Web skills to other subjects and projects
- Extends the curriculum beyond the walls of the schools involved
- Creates engaging and exciting projects around technology by emphasizing the personal contacts made possible by the technology
- Develops meaningful learning experiences for students and incorporates a single theme, Imagine the Challenge, into everything from physical education to English, mathematics and science
- Develops collaborative, problem-based learning skills—students understand the choices they are making (and how they are treating other students) in a concrete situation in which they want to succeed; this reduces drop-out rates and discipline problems
- Leads to more collaborative learning, with teachers and students sitting at the same table
- Gets teachers to talk to one another across disciplines and between schools about what they are doing and how they are doing it
- Expands students' learning through the logic of electronic communication—students no longer limit themselves to the traditional emphasis on answering the immediate question to the exclusion of all else that is going on
- Encourages students to look for information on the Internet and bring it to school to enrich their learning experience
- Makes learning feel “real” for students and creates opportunities for them to

*Students and teachers develop collaborative, problem-based learning skills.*



- get involved; this encourages students to take education home and into the community as well as back to the classroom (students surf the Internet at home and post materials they would like to share at school on a Web site dedicated to the project)
- Engages students on their own ground—students do not know the world without technology
- Focuses teaching and learning
- Interweaves teachers' learning, development and preparation with students' learning experience; teachers are less afraid to learn from a student than from another teacher
- Helps teachers and students learn how to take a part in education and depend on each other in what they do; students cross-tutor and learn from their peers
- Encourages students to research on the Internet questions that teachers cannot answer
- Engages students in meaningful dialogue with one another and with adults
- Builds positive attitudes in the classroom
- Engages the community through a school newsletter

#### **Benefits for Teachers**

- Use the Imagine the Challenge project as a starting point, then build it into the curriculum through other activities
- Are motivated to get involved with technology—they have to use technology to work with their students on the project
- Learn to think outside the box—there is more than one way to solve problems
- Broaden their knowledge horizons and think beyond their subject disciplines
- Co-operate with other teachers across disciplinary lines to connect their courses and enrich student learning
- Open their minds and see how “cool” things can fit into the curriculum
- Are able to link classroom theory with real world situations to enhance their teaching and make it more explicitly relevant

*Teachers think beyond their subject disciplines and co-operate with one another.*



*Teachers make team-building connections within the learning community.*



- Develop project-based strategies to assist in lesson development
- Gain experience of practical or current applications of theories that they understand and teach
- Can add pictures and reality to chalk and talk
- Can develop their own classroom activities, which support their curriculum objectives
- Gain a sense of fun and adventure
- Encourage students to identify their challenges and take step-by-step actions to overcome them
- Identify resources available in their local communities
- Make team-building connections within the learning community and between schools
- Can choose to use computers in their courses if this will better facilitate learning
- Connect with students on their own level to see what students like, starting with learning with technology

#### **Benefits for Students**

- Develop ICT skills as well as “softer” skills including communication, research, teamwork and innovation skills
- Learn how to use digital cameras, e-mail and computers
- Learn how to evaluate Web sites
- Make more use of computers to do research
- Initiate and drive their own learning through the use of e-mail, the Internet, telephone and video technology; at times, the project becomes a very personal experience for learners
- Actively research and think about how to incorporate results into their school life—realize that the Internet gives access to extensive information on learning topics provided they are willing to dig deeper (previously students used the Internet to find simple answers to questions and did not explore)
- Teach parents technology and other skills

*Teachers connect with students on their own level.*



- Initiate and participate in numerous fundraising activities for Alberta Children’s Hospital (“The Great TWOnie Challenge”)
- Accept people for what they are instead of trying to change them
- Incorporate other students’ ideas as well as their own
- Brainstorm and rely on one another to work as a team (peer learning)
- Find learning more interesting
- Gain a sense of personal effectiveness; students are empowered technologically and improve their self-confidence
- Learn to believe in themselves and in their capacity to overcome their own challenges—see real-life examples of what people facing challenges can accomplish and are encouraged to realize their own positive potential
- Feel important while they are learning
- Enhance their poise and social skills
- Write down their dreams and reflect on other people’s dreams
- Learn empathy—realize what others feel as they struggle with various challenges
- Learn how to hope; an underlying part of David Adie’s activities is to help prevent youth suicide by opening up possibilities for young people and tapping into their positive potential
- Expand respect for people who work on Web sites; students initially think this work is easy, but after trying it themselves they realize the skill required
- Learn about other cultures (such as the Australian Aboriginal culture) on their own terms and make friends around the globe
- Develop a sense of responsibility and do what they say they are going to do; learn the power of delivering on promises and completing words-and-paper plans with concrete actions
- Gain the sense of accomplishment that goes with following through on their plans—honouring commitments without having to make up excuses about why they cannot do what they said they would do

*Students initiate and drive their own learning.*



*Students learn to study in partnership with other students.*



- Build their leadership skills; learn how to set goals and overcome challenges
- Seek knowledge and find resource people for themselves based on their own interests and needs
- Take active ownership of the curriculum outcomes they are supposed to achieve and mark their own development and progress
- Become the owners/authors of their own lives and take responsibility for being true to themselves
- Learn to study in partnership with other students rather than independently (take turns looking up information and writing it down)
- Gain awareness of other parts of the world and how they fit into the world
- Gain a greater sense of self by reaching out to others
- Gain purpose by sharing their learning—making formal and informal presentations and bringing their sense of self-worth to further learning
- Build better relationships with themselves, with one another, with things (computers) and with concepts and ideas; build bridges between making and knowing
- Learn to take care of one another, of the planet and of themselves; become part of a global family
- Learn interviewing and presentation skills by developing questions for telephone interviews with David Adie, recording the conversation and reporting back to their classes
- Become motivated to use editing skills because there is a purpose to it (posting their work to the world on the Internet)
- Develop visual literacy; understand the significance of Aboriginal symbols and techniques
- See and hear for themselves, thanks to technology, David Adie's and their own progress
- Take chances in a variety of subjects such as mathematics; they attempt answers even when they are not sure they are right

*Students become motivated to use editing skills.*



*Students take chances in a variety of subjects.*



- Feel motivated and challenged (high-achieving students in particular)
- Have an adult from the community validate their ideas and thoughts and stand up for them in a safe, non-threatening way

#### **Benefits for Parents**

- Become involved in their children's learning experiences through the project's Web site, newsletter and hands-on learning experiences
- Expound on family ideals in a more meaningful fashion, drawing on the correlation between home life and school life and learning
- Learn applications for PowerPoint (slide/overhead presentation software) from their children's knowledge of Hyper Studio

#### **Benefits for Business**

- See that people are the best resource for making connections and making things happen
- See students gain an understanding of "stretch goals"—pushing themselves to go beyond set objectives
- Recognize opportunities to partner with education in real world learning activities that make a difference globally and locally

#### **Keys to Success for Teachers**

- ✓ Having an interest in and being committed to the project, being flexible, being able to take risks and being able to see beyond what the curriculum says to what it could encompass
- ✓ Having time to meet as a group to talk about what their focus is and to build an integrated learning framework
- ✓ Having access to other teachers who are compatible in terms of planning and working together and have a very strong understanding of the curriculum and how to integrate the project theme and technologies into different subjects
- ✓ Embedding the project in the curriculum

Using technology as a tool requires a human connection; that is where teachers come in. ►

Teachers need mechanisms in place that foster innovation. ►

Teachers need to have time to reflect. ►

- ✓ Integrating activities among subjects to achieve project goals
- ✓ Helping students mark out manageable steps to achieve their own goals; this is important given the example set by David Adie with his monumental goal
- ✓ Having students do primary source research alongside a real time event

### Keys to Success for the Project

- ✓ Using technology as a tool and exploring ways it can be used to research, learn, build skills, communicate and present information as people become more familiar with it; delivering curriculum and being sensitive to students' needs requires a human connection
- ✓ Having technology that is available and reliable; technical infrastructure in the schools has to be at a certain level and someone has to have a basic understanding of how the technology can be used and applied
- ✓ Walking the talk at every stage: an important part of helping students develop confidence in their ability to overcome their challenges lies in demonstrating credible behaviour—to be credible, David Adie had to finish his run across Australia and teachers and students had to follow through on their commitments
- ✓ Having a school champion, who inspires other teachers and students
- ✓ Having the technical expertise to design Web pages within the schools and encouraging collaboration between schools to provide appropriate support
- ✓ Having mechanisms in place that foster innovation, for example, a cash resource to free up time to do the project and develop skills—GrassRoots funding helped the Imagine the Challenge project to happen and ultimately enriched it
- ✓ Using GrassRoots money to pay for substitute teachers (for teacher release time) instead of trying to squeeze the project into lunch hours

- ✓ Using GrassRoots funding to buy technical equipment (digital cameras, scanners, software)
- ✓ Creating a live Web page that can be updated every two or three days
- ✓ Getting parental support
- ✓ Having a definite life span for the project
- ✓ Taking a collaborative (teamwork) approach to learning experiences
- ✓ Having everyone (teachers, students, parents, community) bring their own sense of identity and self-worth into the project—project ownership is communal, not individual

### Challenges for Teachers

- Having time to reflect, make connections and see the meaning of what they are doing
- Having time to develop new activities and adapt technology
- Overcoming fears of Web-based teaching and learning—getting time and help to get up to speed with their technical skills
- Finding and making time for the project (the project took over their lives for a few months)
- Supporting students heavily in the early days until they improve their skills enough to be more self-sufficient
- Being motivated and not seeing the project as onerous or threatening
- Feeling bound by the Alberta curriculum and not seeing project's connection to the curriculum—taking a broader view of the curriculum
- Listening carefully to the needs of the children
- Keeping up with students' learning capacity and learning expectations

### Challenges for Students

- Being active participants in their own learning and skills development—seeing themselves as responsible for mastering the content instructors provide
- Making the connection for themselves between the courses they are taking and the skills they are developing

Teachers need to be skilful at managing student expectations.



- Actively transferring and extending their skills in new home, school, work or community contexts

### Challenges for the Project

- Getting David Adie to start running in the middle of September so that his run would coincide with the school year and the students who would be his virtual road crew could see him off (he had been planning to start at the end of July)
- Keeping the learning alive and going when David Adie's run was over
- Breaking down borders between school boards, schools and classes to ensure maximum participation
- Managing students' expectations around limited technological resources; it is hard to plan so that every student can build a Web page, and ideas fade when students do not have access right away to implement their ideas

### Innovation

- ✓ Exploiting technology as a vehicle for, and as a driver of, learning
- ✓ Connecting people with technology to underline the different kinds of connectedness in the knowledge economy (connections between physically present and long-distance project team members, connections between information sources [which can be downloaded and/or uploaded to make the connections more palpable and immediate], and connections between real life events and the electronic recording of those events)
- ✓ Getting entire school communities involved in a technologically linked learning activity—bridging learning activities between many schools, classes and grade levels
- ✓ Providing an educational reason to use technology and giving students who have very little or a high degree of skill a chance to practise or hone their skills to accomplish specific tasks
- ✓ Having students demonstrate their learnings to their classes based on their telephone interviews with David

Imagine the Challenge is innovative because it gives an educational reason to use technology.



Adie (e.g., what did they learn about time zone changes? what did they ask him? what did he say?) and act as technological resources for other classes (e.g., showing entire classes how to scan and upload images)

- ✓ Having each school handle the project differently, basing their involvement on their own technical savvy, areas of expertise, time commitments, school resources and interests
- ✓ Opening up cross-class, cross-grade, cross-school, cross-curriculum and cross-country learning opportunities
- ✓ Opening up possibilities for new teaching methods and new ways of sharing information

### Achievements

- Grades 5 and 6 students used the ICT skills they developed during the Imagine the Challenge project to develop their own Web page
- Grade 5 students produced a 30-minute documentary through the use of presentation software by editing eight hours of video from David Adie in Australia
- Grades 3 and 4 students produced their own Web pages related to Imagine the Challenge (focus on Aboriginal Art) using ICT skills
- Students raised over \$1,500 for Alberta Children's Hospital and presented a cheque during the Children's Miracle Network Telethon
- Students and teachers developed an opportunity to give service (and continue to do so)
- Students developed a wider sense of audience; instead of writing for their teacher they now write for the world, because the real power of the Web is that it goes beyond paper and pen and allows for near instantaneous communication
- Students are better at setting goals and are more aware of the "edges" of their abilities, where targeted growth can happen
- Students see history as something in which they can participate and help

**The Conference Board of Canada**

255 Smyth Road  
Ottawa, Ontario K1H 8M7  
Canada  
Tel: (613) 526-3280  
Fax: (613) 526-4857  
Internet:  
<http://www.conferenceboard.ca>

**The Conference Board, Inc.**

845 Third Avenue  
New York, N.Y. 10022 U.S.A.  
Tel: (212) 759-0900  
Fax: (212) 980-7014  
Internet:  
<http://www.conference-board.org>

**The Conference Board Europe**

Chaussée de La Hulpe 130, bte 11  
B-1000 Brussels, Belgium  
Tel: (32) 2.675 54 05  
Fax: (32) 2.675 03 95

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- make and not as “something in the past” to be studied forensically
- Students may not be totally proficient in certain ICT skills, but they know that things can be done if only they take the trouble to find out how—they realize they have a choice
- Teachers know what is technologically feasible when they want to go into more detail
- Students appreciate the benefits of hearing and working with other people’s ideas, which opens them up to new insights and ways of doing things
- Students and teachers significantly improve their ability to apply and learn through real-life experiences
- Teachers and students learn more from one another

**Conclusion**

Imagine the Challenge shows the connection between empowering individuals and developing community capacity. It

further demonstrates that integrating the use of ICT with the delivery of curriculum can be a powerful tool for opening up lines of communication between teachers across subject and disciplinary lines. Opening these kinds of channels between teachers is important not only to support and reinforce learning done in one classroom situation in other courses, but also to leverage teaching strengths to better identify and capitalize on learning opportunities that make the most sense when viewed across the curriculum and the planned activities of a community of teachers. This allows teachers to build students’ skills and knowledge using a team approach that maximizes their collective capabilities and avoids any unnecessary duplication of effort. Finally, Imagine the Challenge underlines the importance of engaging students with ICT so that they are motivated to drive their own learning and benefit from the support offered by teachers acting in a facilitating role.

**SchoolNet’s GrassRoots Program**

GrassRoots projects are initiated, designed and implemented by teachers and students and are curriculum-relevant. The GrassRoots Program, in collaboration with provincial, territorial and corporate partners, offers funding to schools for the creation of innovative, Internet-based interactive learning projects that:

- foster the acquisition of academic, employability and computer skills in Canadian youth;
- integrate information and communications technology into learning;
- build unique and relevant Canadian content on the Internet; and
- facilitate increased connectivity and training opportunities.

For more information on GrassRoots, visit <http://www.schoolnet.ca/grassroots>

**NBEC Publications Relating to Employability Skills Development and Assessment**

*Employability Skills 2000+*

*Employability Skills Toolkit for the Self-Managing Learner*

*Science Literacy for the World of Work*

*Understanding Employability Skills (Apr. 99)*

*The Economic Benefits of Improving Literacy in the Workplace, 206-97 Report.*

*Enhancing Employability Skills: Innovative Partnerships, Projects and Programs, 118-94 Report.*

*Linking Teachers, Science, Technology and Research: Business and Education Collaborations That Work, 144-95 Report.*

*1999–2000 Business and Education Ideabook*

*1998 100 Best Partnerships IdeaBook*

*1997 100 Best Partnerships IdeaBook*

*1996 100 Best Partnerships IdeaBook*

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