



The Conference Board  
of Canada

### CASE STUDY 38

*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*

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

# BACKYARD BIRD FEEDING IN NEWFOUNDLAND

*Using Peer and Cross-Tutoring to Help  
Primary Students Acquire Information and  
Communications Technology Skills*

A SHOWCASE GRASSROOTS PROJECT

BY KURTIS KITAGAWA

January 2001

Backyard Bird Feeding in Newfoundland used peer and cross-tutoring to help primary students acquire information and communications technology (ICT) skills through learning about the habits of local birds, their environments and their eating habits in an innovative Internet-based learning project. The project was supported by Industry Canada's GrassRoots program.

#### Overview

In the past 12 months, teachers and students at St. Anne's Academy in Dunville, Newfoundland, have completed 10 GrassRoots projects. One of the school's first projects was Backyard Bird Feeding in Newfoundland, which four classes of Grades 3, 8 and 9 students designed and completed in April 2000. The project involved 110 students and four educators in intensive, curriculum-related activities that built students' and teachers' ICT skills and enhanced students' communications, problem-solving and teamwork skills.

Backyard Bird Feeding in Newfoundland grew out of a Grade 3 science lesson relating to animals and their habitats. It made sense to do a GrassRoots project on a subject with which the students were very familiar from their own observation and experience, namely, backyard birds.

Other GrassRoots projects undertaken by students and teachers at St. Anne's Academy have included:

- ✓ Animal Adaptations—a series of Web pages created by Grade 9 students as an information resource focusing on how familiar animals such as beavers adapt to increase their chances of survival and reproduction;
- ✓ Environment & the Weather—a series of Web pages created by Grades 5, 8 and 9 students that tackle weather-related issues, from the effects of global warming to the particulars of a detailed Newfoundland weather forecast;
- ✓ Remembrance Day—a competition that called on participating Grades 6 to 9 students to work alone or in teams of two or three to create Web pages using

**National Business and Education Centre (NBEC)**

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Associate Director, Project Development: Michael Bloom

Senior Research Associate: Kurtis Kitagawa

Research Associates:  
Alison Campbell  
Debbie Murray  
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Netscape Composer, FrontPage Express or HTML; the pages had to contain information appropriate to Remembrance Day and incorporate several internal and external links. Web pages were judged according to three main criteria: technical aspects (including correct links to external and internal sites, effective tables/titles/forms, effective use of animated Graphics Interchange Formats); design (including creativity and innovation, effective use of photographs/images, effective use of fonts/sizes/colours, effective use of text); and functionality (i.e., correct spelling, effective communication of information, ease of locating information);

- ✓ Off to the Zoo—a series of Web pages created by teams of Grade 2 and some Grades 8 and 9 students working together; the teams described and posted photographs of their favourite zoo animals;
- ✓ The Alphabet Zoo—a series of Web pages researched and illustrated by kindergarten and Grade 8 students; and
- ✓ Hydroponics as an Alternative to Traditional Farming—an Internet project created by Grades 8 and 9 students.

**Program Details**

- Grade levels: 3, 8 and 9
- Number of schools: one
- Number of classes: four
- Number of participants: 110 students and four educators
- Initial program development: March–April 2000
- GrassRoots funding: networking project
- Project scope: regional
- Language: English
- ICT resources: HTML, graphics software, digital camera, scanner, audio resources
- Project Web site: <http://www.k12.nf.ca/stannesacademy/birds/BackyardBirds.htm>

**Groups Served**

- ✓ Students (Grades 3, 8, 9)
- ✓ Teachers

**Objectives**

- ✓ To meet subject-specific curriculum outcomes in a way that is relevant to, and engaging for, Newfoundland students, including through investigating how wild birds adapt to seasonal change and observing and recording data relating to the impact of seasonal changes on wild birds in Newfoundland; drawing conclusions from recorded data to understand the dependence of wild birds on their environment; identifying and observing the characteristics and behaviours of juncos, pine grosbeaks, purple finches, evening grosbeaks, etc.; and developing an awareness of bird habitats and the importance of feeding and caring for birds
- ✓ To give students a taste for learning on their own terms and motivate them to continue to learn
- ✓ To use the Internet to do research
- ✓ To enhance students' ICT skills, including keyboarding, using a mouse and constructing and interpreting graphs, charts and tables
- ✓ To develop students' writing skills, from pre-writing to drafting, revising/editing and publishing
- ✓ To build students' presentation skills, including the ability to make oral presentations using displays and to produce written reports
- ✓ To develop teamwork and effective peer learning skills

**Activities**

Students were involved in the planning, implementation and evaluation stages of the project. These included:

- ✓ Doing research at home on different wild birds native to Newfoundland using library books and encyclopedias and bringing that completed homework to class
- ✓ Downloading information about birds from the Internet with the assistance

Teachers link classroom theory with immediate realities to enhance their teaching and make it more explicitly relevant.

Teachers can choose to use computers in their courses if this will better facilitate learning (e.g., in science, language arts).

Students develop ICT skills as well as “softer” skills, including communication, research and teamwork skills.

Students learn problem-solving and troubleshooting techniques.

- of a teacher, fellow students and/or students from Grades 8 or 9
- ✓ Using an outline to research specific questions by focusing on the information they needed and eliminating the rest—teachers, fellow students and/or students from Grades 8 or 9, or parents worked with teams of Grade 3 students, asking them questions related to the outline and helping them determine whether the selected information was relevant for their reports
- ✓ Designing Web pages
- ✓ Downloading images and audio clips of call notes or birdsong from the Internet
- ✓ Presenting their reports to other Grade 3 students

#### **Benefits for Education**

- ✓ Makes the connection between ICT and the curriculum
- ✓ Exploits the engaging power of Web-based materials in a curriculum-based learning context
- ✓ Lets students do research the “old-fashioned way” (i.e., with print media) at home and complements that with guided on-line research activities in the classroom to provide an integrated, seamless learning experience
- ✓ Takes education to students by making learning real for them and creating opportunities for them to get involved
- ✓ Engages students on their own ground—students do not know the world without technology
- ✓ Enables students to cross-tutor and learn from their peers
- ✓ Engages the community and showcases students’ and teachers’ achievements through a school newsletter

#### **Benefits for Teachers**

- Use the Backyard Bird Feeding in Newfoundland project as a starting point for using the Internet in the classroom
- 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 and get results—especially when the expectant (or at least hopeful) eyes of Grade 3 students are on them
- Co-operate with other teachers across disciplinary lines to connect their courses and enrich student learning
- Are able to link classroom theory with immediate realities to enhance their teaching and make it more explicitly relevant
- Add pictures and sounds downloaded from the Web to enrich traditional “chalk and talk” teaching and learning
- Can choose to use computers in their courses if this will better facilitate learning (e.g., in science, language arts)
- Deal more with students on their own level to see what they want to do, for example, learn with technology
- Use an evaluation template (created to assess student submissions to a GrassRoots project) to support evaluation on students’ report cards

#### **Benefits for Students**

- Develop ICT skills as well as “softer” skills, including communication, research and teamwork skills
- Learn how to use HTML, graphics software, digital cameras, scanners and audio resources
- Learn problem-solving and troubleshooting techniques related to inserting audio clips and find alternative means of getting audio clips (e.g., by using a video camera)
- See that they can use the computer for much more than playing games—learning to download audio files was particularly challenging and was a valuable tool in showing students how to go to a higher level with computers
- Use computers to do research
- See the Internet as a powerful tool for gathering and storing information
- Initiate and drive their own learning on a topic that has immediate relevance—

Students find learning more interesting and make the connection between what the curriculum requires them to do, what they would like to do and how they would like to do it.

Students become motivated to use editing skills.

Students are keen to do more challenging Web-based projects in later grades.

the birds they were studying can be attracted to their own backyards

- Work in pairs within clearly defined parameters and, with coaching and appropriate supervision, build their teamwork skills
- Take pride in their accomplishments at school and visit their Web sites with their parents to show what they have done
- Find learning more interesting and make the connection between what the curriculum requires them to do, what they would like to do and how they would like to do it—for example, some students found chemistry dull, but when they used the Internet to explore the periodic table of the elements they became more motivated to understand chemistry and get more out of it. Another class wanted to “jazz up” their social studies course by doing a GrassRoots project relating to artifacts and local culture
- Develop a sense of responsibility by completing their Web pages
- Gain a sense of purpose by making presentations and sharing their learning
- Become motivated to use editing skills—their work is posted on the Internet and available to the world
- Have parents (usually their fathers) who know about birds and like to share their knowledge participate in schoolwork—in this locale, it is usually the mothers who help with homework
- Are keen to do more challenging Web-based projects in later grades

#### Benefits for Parents

- ✓ Become involved in their children’s learning experiences through the project’s Web site, a newsletter and hands-on learning experiences they can relate to and participate in
- ✓ See their efforts to support learning at home extended at school and vice versa
- ✓ Find the interactive projects engaging

## Keys to Success

### People

- Having teachers who are motivated to use technology
- Having a school administration that makes the opportunities available through GrassRoots clear to all teachers
- Having a teacher champion who has done similar projects at other schools, understands the GrassRoots application process, and has the appropriate technical skills
- Having teachers know what they are committing to in terms of time and the expertise they may need to supply—teachers have to look at their overall workload in the classroom to see if they can take on a GrassRoots project
- Having teachers explore how technology can be used to research, learn, build skills, communicate and present information as they become more familiar with it—delivering curriculum requires a human connection, that is, teachers who are sensitive to the particular needs of students and can achieve curriculum outcomes in creative ways
- Having teachers use a “buddy” system—collaborating and sharing the workload makes things go more smoothly when they run into a glitch (other teachers can help sort out a problem and move the project along)

### Process

- Allotting part of a professional development day to informing teachers about GrassRoots—teachers can take the idea back to their classrooms to see whether students are interested in participating
- Having an interesting project topic that students can own and will be motivated to work on
- Getting a group of teachers to meet after school to talk about what their focus and objectives should be and to write a proposal—it may take a month or so to finalize a proposal

Challenges include getting computers in classrooms upgraded to support Internet connections. ►

Challenges include getting Grade 3 students to understand and assimilate printed and on-line material. ►

Challenges include coping with the heavy time demands on participating teachers. ►

- Embedding the project in the curriculum
- Assembling teams of children who can work together and will all have input within their teams—often this means putting a brighter student with one who may be struggling with the language
- Dividing Grades 8 and 9 students into functional teams depending on their abilities and inclinations (e.g., one working on graphics, another on audio clips, and a third helping Grade 3 students input text and put it all together)
- Pairing a team of Grade 3 students with a Grade 8 or 9 student, who acts as a referee—younger students tend to like the idea and look up to the older student for guidance and support
- Investing time and energy to help children simplify a project so they can manage it themselves
- Investing time and energy to help children simplify information (e.g., text, pictures, audio clips) so they can use it
- Actively building on the momentum generated when one student team completes its part of the project to encourage other student teams to get their bits done
- Communicating successes to the school board and school council
- Holding an open house to showcase achievements
- Supporting completed projects as a learning resource for other teachers and students—Grade 5 teachers took their students to the Grade 3 Web site to show them what the Grade 3 students had done

#### **Infrastructure**

- Receiving GrassRoots funding for developing and carrying out ICT projects—this funding is both an incentive and a necessity—it motivates teachers to use technology in the classroom and enables them to upgrade and acquire new technology

(e.g., computers were upgraded to support Web connections, printers and scanners were upgraded and a digital camera was purchased)

- Having technology that is available and reliable—technical infrastructure in the schools has to be at a certain level, and someone has to have adequate understanding of how the technology can be used and applied

#### **Challenges**

- Getting computers in classrooms upgraded to support Internet connections—this enables students to access the Internet from their own classrooms instead of having to book time in the computer lab, which is constantly in use
- Finding and using audio files presented in different formats—material found on the Web can be great, but students need to be able to find it first (one particular audio clip took a week to find) and then harness it to their own specific purposes
- Getting a powerful Web page editor such as Front Page—Netscape Composer cannot put text and pictures side by side
- Getting Grade 3 students to understand and assimilate printed and on-line material—a teacher, parent or student from a higher grade needed to read through the information gathered by students and to prompt them with questions regarding its relevance to their Web page
- Coping with the heavy time demands on participating teachers
- Depending on a technical champion, who has to spend more and more time in the computer lab (fixing computers) while fulfilling his regular classroom teaching responsibilities in mathematics and science
- Making telephone calls and going in person to the school board offices to get technical support for using on-line audio and video technology to complete projects

*Integrating ICT skills into the delivery of curricula is most efficiently and effectively achieved when such an initiative is coupled with a communications plan and designed to be supported as a permanent learning resource.*

### **Innovative Approaches to GrassRoots' Projects**

- ✓ Drawing on the expertise of a teacher who has participated in GrassRoots projects before to engage other teachers and students in using technology in the classroom as a vehicle for, and as a driver of, learning
- ✓ Communicating successes to the school board and school council
- ✓ Holding an open house to showcase achievements
- ✓ Supporting completed projects as a learning resource for other teachers and students

### **Achievements**

- The school has completed 10 GrassRoots projects in less than a year, which shows that once students and teachers successfully achieve curriculum outcomes using computer technology in the classroom (as in the Backyard Bird Feeding in Newfoundland project), the technology tends to “stick”
- A student-developed Web site was written up in the school newsletter, which reaches 450 families
- An open house was planned to demonstrate and showcase the Web site to the general public

### **Conclusion**

Backyard Bird Feeding in Newfoundland showed how important it is for

teachers to collaborate with each other in integrating ICT skills into classroom activities across a school. It also underscored how integrating ICT skills into the delivery of curricula is most efficiently and effectively achieved when such an initiative is:

- ✓ coupled with a communications plan designed to showcase successes to school councils and school boards and celebrate achievements with students and their parents; and
- ✓ designed to be supported through time as a permanent learning resource for other teachers and students.

The project also underlined how developing young people's skills is a shared endeavour in which students and parents as well as teachers play a crucial role. Backyard Bird Feeding in Newfoundland shows the value of older students helping to facilitate the learning of younger students while building marketable skills of their own.

Canada's competitiveness and the innovation skills that support it hinge in significant respects on the entry into the workforce of young people who have developed their ICT and employability skills. GrassRoots projects help make that connection for students, empowering them and helping them understand their potential to contribute to the well-being and sustained quality of life of all Canadians.

#### ***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>

**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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