

## **Education Issues as They Relate to Integrating ICTs Into Teaching and Learning**

In 1980 I was part of the then newly-established Concurrent Teacher Education Program at the Queens' University Faculty of Education. During my last year of this excellent four-year teaching training program, I had the good fortune of attending a class in educational technology that was being pioneered by Professor William Higginson. Dr. Higginson had just come back from attending sessions with Dr. Seymour Papert, who himself had just published a book called "Mindstorms". This little book and the sessions with Dr. Papert at the now world famous Media Lab at M.I.T., had lit a fire under my own professor about the potential of a programming language called "Logo", that Dr. Papert had created especially for children to help them access the power of the computer. After just one class, I instantly shared his excitement about the potential that this held to teaching and learning and immediately began to explore its potential for myself as a learner. I found myself looking at mathematics and notions about geometry and numeracy in new ways. This was coming from a person who almost did not pass high school math or computer classes!

In 1981 my wife and I went to our very first teaching positions in the tiny Inuit community of (then) Eskimo Point, which is now know as Arviat. Along with our few worldly possessions, we also had unique item in tow, a computer. You see, just a few weeks prior to our departure, we had been advanced \$1,000 on our salaries so that we could buy some dry food stuffs to be sent up on the annual fall sea-life by barge, as the cost of bringing our food into this fly-in only community were, and still are prohibitively expensive. Did we buy food like any sane, young, poor, student loan-owing first year teacher probably should do? No! I convinced my wife that we should buy a computer! So there we were in the fall of 1981 teaching and learning LOGO with our Inuit students on the shores of Hudson Bay, learning alongside of kids who everyone told me, that they could not do math, boy did they prove everyone wrong! As it turns out, this computer was the very first in the Canadian Arctic; there were none in the Government offices, none in business and certainly none, until that Texas Instruments TI-99, in northern schools!

The reasons that I related this simple personal anecdotal story are many. First of all, what excited me was NOT the technology itself, but rather the creative potential that it held for my students and me. This tool was unlocking doors that were previously closed to my students and myself. We begin to see ourselves as writers, as mathematicians, as scientists and artists exploring ideas and concepts through the collaborative creation of these "micro-worlds". This story also bears witness to my nearly twenty-five year personal and professional involvement with ICTs in education. This story also underscores the fact that passionate educators will always find a way to overcome obstacles in pursuit of innovation and excellence in teaching and learning, often despite the obstacles before them. Did I mention that at that time my wife and I owed over \$20,000 I student loans at 22% interest, all of which was paid back in full!

A few years later I had my first Apple computer and a 300-baud modem donated by President Dennis Hayes of the Hayes Corporation, I still have his letter! I used this computer and modem to make the north's first computer-to-computer telecommunications exchange with another Apple computer at a school in the community of Rankin Inlet, 300 km to the north. Our connection lasted for only 42 seconds before it dropped off and during which were wrote something memorable like. "How's the weather over there?" during a region-wide, three-day blizzard!

We later moved to Rankin Inlet, where, I was asked to become Leo Ussak School's first computer program coordinator, with very few computers mind you! I worked together with a large number of community partners to create "Igalaaq", the Rankin Inlet Community Access Centre. The very first CAP site in Canada's north and one of the very first in all of Canada! Some of our many highlights included having Leo Ussak's Web site posted online on October 23<sup>rd</sup>, 1993, thus becoming the first school in the Canadian north to go online and one of the very first schools to do so in all of Canada. The Igalaaq Centre opened on September 10<sup>th</sup>, 1994 in one year later recorded over 3,000 visits to the centre, this in a small Inuit community. At that time, Igalaaq helped one quarter of Rankin Inlet's population get their own e-mail accounts! This project became so successful and well known that then Hon. John Manley, Minister of Industry and the Hon. Prime Minister, Jean Chrétien included the "Igalaaq" story as a major part of their "Connecting Canadians" multimedia presentation that they would share across Canada and around the world that highlighted some of our country's best examples of how ICTs could be used to support learning and community development.

After nearly twenty years teaching, learning and living in the Arctic, I was asked to come and be the "(ICT Project) Facilitating Teacher" in the opening of Alberta's then high-tech showcase school, Banded Peak School, in Bragg Creek Alberta along with the Galileo Educational Centre.

Two years later, I was asked by SchoolNet to become a Senior Educational Advisor and National NIS Coordinator for the Western and Northern regions.

During these many and varied experiences I have come to learn first hand about how determined and passionate educators need to be in the pursuit of innovative uses of ICTs in support of equally innovative teaching and learning. I have learned that the challenges faced by today innovative educators are many, these can include: a lack of administrative support in terms of sharing the vision, or at least the willingness of administrators to "Create optimal environments for innovation and creativity to flourish and then... get out of the way!" –in the words of a principal of an NIS pioneer school. Other challenges are the lack of political will, technical support people having control over pedagogical decisions that should be made by educators, and perhaps the biggest challenge of all: the lack of time. Most teachers do not have enough time to eat their lunch each day or go to the bathroom, let alone have the critically important time needed to investigate, explore, "play" with new ICTs, read, discuss and share and network professionally with fellow educators.

All schools across Canada have been "wired", or in many new instances are now "wireless", but the nagging question remains, "Our school is 'wired', now what?" This NIS can play a HUGE role in addressing this question for educators across Canada and beyond.

Another current issue is that many school districts are now feeling disillusioned about the many benefits that were promised to them about improvements in student learning now seems elusive at best. Innovative educators such as those found in our NIS schools are learning how to do better with less.

In my work and my experiences I have observed that we have given our students real tools in the computer, the Internet and related ICTs, let's challenge them to take on real issues and address real questions with these tools through constructivist, problem/inquiry/project-based learning strategies. We need to engage our students in moving beyond interpretation and understanding to synthesis—the actual construction of new ideas. We need to learn how to focus classroom investigations around decisions and problems drawn from the community and the global neighborhood. We need to engage students in making their own meaning (constructivism) from the vast new information landscape that is made readily and rapidly available thanks to new technologies. We need to consider how the role of the classroom teacher changes in such a program. We need to explore how students can learn to build their own new meanings and solutions upon conventional wisdom, contributing fresh thinking to important social issues or scientific challenges. We need to begin to develop a repertoire of synthesis skills. We need to identify opportunities to teach to curriculum standards by emphasizing decision-making and problem solving.

Increasingly, educators and others are realizing that people were looking to the technology for the answers, when all along, the answers lie with innovative educators such as those found among the NIS member-schools.

The NIS needs to explore creative partnerships and collaborations to share the models and successes of our NIS schools with those who are engaged in new teacher-training as well those who are supporting teachers already in the classroom who are wishing to investigate new teaching and learning strategies and resources.

We need to remember that the real revolution is not in technology; the real revolution is in the information and our understanding and use of it. We need to address new ways of critical thinking with students in order for them to deal more effectively with the sea of information that is around them. They need to know how to differentiate between data, information (data that has become organized), knowledge (applying information to solve a problem) and wisdom (are we asking the correct questions?).