



# Clar(!)ty

SHARING THE SCIENCE. OPENING MINDS. SHARING THE SCIENCE. OPENING MINDS. SHARING THE SCIENCE. OPENING MINDS.

SHARING THE SCIENCE. OPENING MINDS.

## 'A'

### is for "Ali's Deli"

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Donald G. Jamieson



## Progress

depends  
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individuals  
who do

extraordinary deeds.

# Heroes IN OUR MIDST

By Dr. Donald G. Jamieson, CEO and Scientific Director,  
Canadian Language and Literacy Research Network

Canadians are not often good at recognizing the achievements of other Canadians. Marshall McLuhan once described us as “the people who learned to live without the bold accents of the national ego-trippers of other lands.” That may be true enough, but the fact is that Canada needs heroes.

**So what is a hero?** Wikipedia defines a hero as “a person performing an extraordinary and praiseworthy deed.” Our heroes need not be icons of glitz or superhuman strength – more important are the individuals whose deeds and discoveries have the potential to make a real difference in the lives of Canadians. Progress depends on the collective efforts of these individuals who do extraordinary deeds. By this definition, the Canadian Language and Literacy Research Network is home to many such heroes.

Here, we focus on the deeds of some of the quiet heroes of The Network – women and men whose research in the field, in labs and in libraries extends our understanding of language and literacy development and guides the application of that knowledge for the benefit of our nation’s children.

These are extraordinary stories indeed, deserving of being recognized in this, our first printed issue of *Clarity* magazine. We hope that you will join us in celebrating the achievements of a few Canadian heroes. (!)

PHOTOGRAPHY BY: MARIE-LOUISE DERUAZ

# Putting literacy in the picture

Colourful ABC picture books have been a childhood staple in Canadian homes for more than 100 years. But for children growing up across this country in families where English is not the first language, these simple books don't have the same resonance. Now an innovative and award-winning project has made English words more meaningful to children by linking the letters to family traditions and objects from their own cultural backgrounds. *By Laura Hendrick*

For children who speak English as a second language, it may not seem obvious to link the letter 'A' with 'apple'. Learning to read and write in English can be especially difficult for a child that has grown up speaking Hindi or Russian for example.

A recent project entitled *Promoting Family Literacy in a Diverse Canadian Context* has been winning awards for tackling this issue head on. It has helped make English words feel more familiar to these children by developing literacy exercises that give families the chance to celebrate their own culture.

A central learning tool in the project is Kodak's Personal Creations book called *My ABCs*. Parents and children who took part in the 12-week literacy program created personalized alphabet books by taking pictures of people and objects that correlated with each letter. Kodak then collected these pictures and printed the customized books on a commercial press.

"I think the parents and the children really loved the challenge of going around their own environment and taking pictures of things that were meaningful to them," says Dr. Janette Pelletier, an associate professor with the Institute of Child Study at the University of Toronto. "There were so many instances where they took photos that captured their own customs then used the English word for them."

The partnership between Pelletier and Kodak began when the company asked her to assess the educational value of their new photo book. The product was designed to help children learn the alphabet, but it needed the insight of an early learning specialist like Pelletier. By modifying the book so that each letter came with its own photo slot, she was convinced it had the potential to help children.

"Here we had a perfect opportunity to collaborate. If Kodak would provide the disposable cameras and books, I could use them in my family literacy project," says Pelletier. "They were very receptive to this idea because they wanted to know if the books were pedagogically sound. I said that I wouldn't know unless I carried out research on it. So they were fully on board."



PHOTOGRAPHY BY: JAE FREW

Janette Pelletier

"We teach parents the importance of fostering a strong home language so kids can map a new language like English onto that. We are really trying to build up their first language vocabulary. So we encourage parents to pay attention to rare words and read books in their own language."

With the help of a grant from the Canadian Language and Literacy Research Network, Pelletier kicked off the program in October 2005. She recruited families in the Peel Region in Ontario through flyers and posters aimed at parents with preschoolers.

In designing the program, Pelletier had to keep in mind that she was dealing with an exceptionally diverse group of people. About 70 per cent of the participants spoke English as a second language. Some spoke Tamil, others spoke Chinese or Arabic, while many spoke eastern European dialects. Pelletier was careful to ensure that teaching these families literacy skills in English was not perceived as an infringement on their home language.

"We teach parents the importance of fostering a strong home language so kids can map a new language like English onto that. We are really trying to build up their first language vocabulary. So we encourage parents to pay attention to rare words and read books in their own language."

Watching each family receive their customized *My ABCs* book, Pelletier knew she had formed a bridge between cultural tradition and literacy. "Families would share their books with other families, so it wasn't just literacy learning; it was also social learning. These families were sharing stories with each other. They were learning about each others' cultures through the books. It was just great."

Pelletier was also happy to see that hunting for objects that correlated with each letter

taught the children letter-sound correspondence. As they sifted through the pages of their books, the children learned word recognition by looking at the word below each picture. Even holding the books taught important book-handling skills. “We were making very enjoyable activities part of literacy learning,” she says.

Sarah Kutulakos, a commercialization manager for Kodak, says the company was equally pleased with the partnership. “Taking part in the study helped us change the books from the way they were being designed for the market place,” she says.

Kutulakos found that watching the way children used the product helped her to understand its promise. “The page with the letter ‘Z’ might have originally had a zebra, but if the child had a friend named Zoë, they could substitute that picture,” she says. “It really made that letter real to the child.”

Looking back on the project, Pelletier says that working with Kodak’s *My ABCs* books allowed her to see the educational value of such tools. Yet when passing on lessons from her research to parents and teachers, she still prefers to emphasize one central message.

“It’s the **small things** that you do on a **moment to moment** basis that really matter. It’s the way that you talk to your children, the kinds of **conversations** you have at the dinner table, the **little games** that you can play around the house. Strong literacy skills are the accumulation of all the **little things**.” (!)

## • Making award-winning c-o-n-n-e-c-t-i-o-n-s

Forming partnerships within the community is a fundamental part of Janette Pelletier’s research. Building ties with businesses and schools ensures that her work is integrated into society for the greatest benefit to Canadian children. Through the development of family literacy programs, Pelletier has built strong relationships with Kodak Eastman, TVOntario, the City of Toronto, and the Peel District, Peel Catholic and Dufferin-Peel School Boards. In turn, these partnerships have allowed Pelletier’s programs to grow from 24 to 72 schools and to include hundreds of children and families.

Pelletier’s ability to bring businesses and community groups on board with her research recently earned her a national award. The 2006 President’s Medal that she earned is awarded by the Canadian Language and Literacy Research Network in recognition of excellence in research and innovation.

# A Canadian first

School boards, researchers, education specialists and others are lining up at Network investigator Alain Desrochers’ door eagerly awaiting the tools he and Pierre Cormier have developed to assess the reading skills of French-speaking children. Why are they so hotly anticipated? There are no other comparable tools for French in Canada!

By Sylviane Duval

Assessment tools are not new within English language and literacy circles, but that is not the case with every language. “In the French-speaking world, we don’t know the percentage of children who have trouble reading,” says Dr. Alain Desrochers of the University of Ottawa. “We can only extrapolate from the English data that 5 to 7 per cent may have severe difficulties.” That is why Desrochers and his team, including Dr. Pierre Cormier of the Université de Moncton, have worked with several school boards in Quebec and New Brunswick since 2001.

During that time, the schools have benefited from Desrochers’ and Cormier’s knowledge and the researchers have welcomed their input. Desrochers hopes that the assessment tools that they are developing will help identify

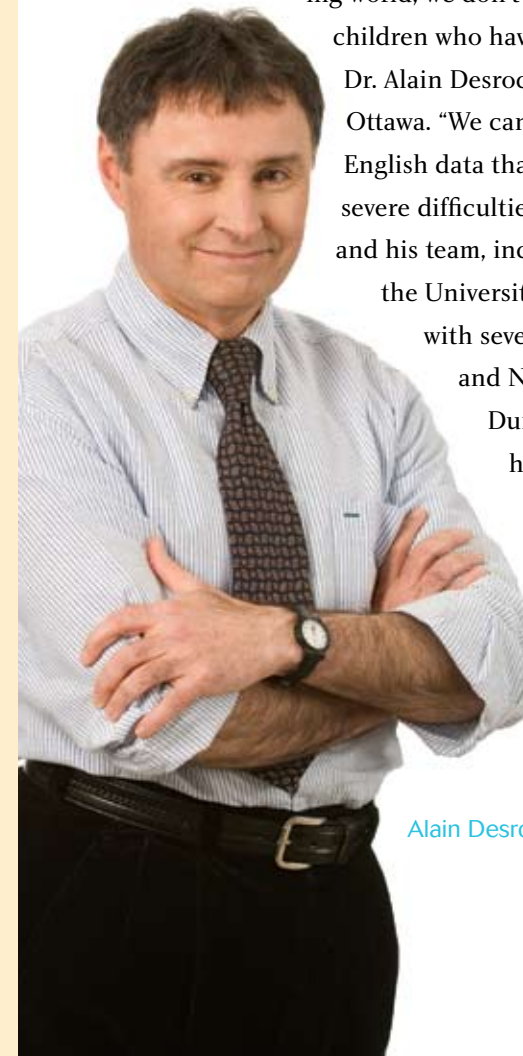
children at risk before these young people get into difficulty and caught in the spiral that leads to dropping out of school, poor employment prospects and low self-esteem.

“When parents encourage reading at home, their children tend to become good readers.”

“One school board official suggested a complementary test to assess the literacy environment in the home,” he says. “I hadn’t thought of that but it makes perfect sense. When parents encourage reading at home, their children tend to become good readers.”

Already, special education teachers and speech-language pathologists in test schools are using the assessment tools to help children who speak French. They are returning invaluable feedback to Desrochers. Their comments have led him to complement the tool with new tests and make it easier to use in a school environment.

PHOTOGRAPHY BY: MARC FOWLER



Alain Desrochers

Desrochers believes the research can guide changes to curriculum or policy development. In fact, his findings are drawing a great deal of attention from education officials, teachers and parents. To date, he has served as a consultant with the Regional Council of the Quebec Ministry of Education and the school boards, and he has presented training workshops to principals, counsellors, assessment specialists and core instruction teachers. He sees a real motivation for improving the current practice of reading instruction in Canada.

One of the curriculum changes he would like to see is more time spent on learning vocabulary and reading aloud. Some French letter combinations are difficult to learn and may not be mastered by the time children start studying French grammar. As more complicated tasks are added to the curriculum, reading aloud (which is linked to comprehension) is often set aside. Fewer opportunities to practise will reduce how well most children understand the meaning of what they read.

The Canadian Language and Literacy Research Network's approach to research has given Desrochers the opportunity to pass his knowledge to those who can apply it within their own context. At the Ministry level, he can affect policy and guide the direction of research projects. The school boards ask him to help them understand where reading difficulties lie so they can allocate appropriate resources (for instance, the number of speech-language pathologists spending time in a given school and the kinds of challenges they may encounter) and tailor the content of information sessions for parents.

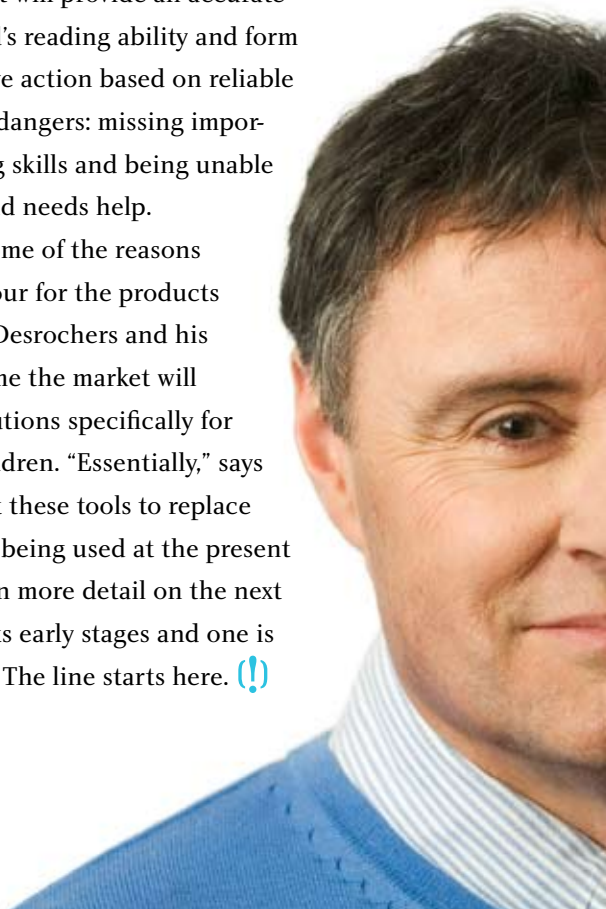
He meets regularly with teachers and principals to discuss corrective action, and with pedagogical counsellors involved in curriculum development.

But there are other benefits. The assessment tools have also been designed as research tools. Other Network investigators are using them in their own projects regarding French reading skills. Desrochers is using another facet of his expertise to collaborate on a project led by Dr. Marcia Barnes of the University of Guelph to assess reading comprehension in English and French.

The tools used in Canada to date – which were developed in a different cultural and linguistic environment, and generally without Canadian norms of reference – carry a risk that assessments may be inaccurate or misleading. On the other hand, a tool that is adapted to the Canadian context will provide an accurate assessment of a child's reading ability and form the basis of corrective action based on reliable scores. It avoids two dangers: missing important facets of reading skills and being unable to determine if a child needs help.

These are just some of the reasons there is such a clamour for the products being developed by Desrochers and his team. For the first time the market will have customized solutions specifically for French-speaking children. "Essentially," says Desrochers, "I expect these tools to replace the inadequate ones being used at the present time." As described in more detail on the next page, one tool is in its early stages and one is just about complete. The line starts here. (!)

PHOTOGRAPHY BY: MARC FOWLER



PHOTOGRAPHY BY: BRIAN HILLIER

## The right tools for the right children

Dr. Alain Desrochers of the University of Ottawa is leading the development of two related assessment tools designed for children from kindergarten to Grade 6.

The first, developed in collaboration with Dr. John Kirby of Queen's University, is a French language screening tool to identify children at risk of reading disabilities. It will be used before reading is formally introduced in school to detect children who have trouble processing speech sounds and naming objects quickly and who have poor letter knowledge – these being the main precursors to reading disabilities known today. This tool is in the early stages of development.

The second, developed in collaboration with Dr. Pierre Cormier at the Université de Moncton, is a diagnostic tool to assess French reading skills. It measures children's ability to play with speech sounds in their heads, read aloud, and derive meaning from what they read, as well as their mastery of the alphabet and French grammar. The tool allows specialists to draw a profile of the child's skills and custom-design corrective action. Most commonly, children at risk of reading difficulties have problems linking speech sounds to letters and words. This tool is nearly ready – hence the line-up at Desrochers' and Cormier's door.

## The right tools for the right language

One reading assessment tool does not fit all languages. Here's why. An assessment tool designed for English measures what is important or essential in English. When translated into French or any other language, that is still what it does. It will miss all the elements of French – such as gender agreement of adjectives and intricacies of verbs and syntax – that are not relevant to English.

Some aspects of reading may be easier to master in English than French or vice versa. For instance, young readers of French typically learn to decode words faster than young readers of English because print-to-sound relations are more regular in French. Conversely, English grammar is considerably easier to learn than French grammar, which involves a more extended agreement system for number, gender and verb tense.



# Writing the book on language & literacy.

Finding up-to-date and reliable knowledge in a sea of information is not easy.

But for those concerned with children's language and literacy, this task has become much less complicated, thanks to a new Web-based resource. The *Encyclopedia of Language and Literacy Development* is a comprehensive source of evidence-based knowledge about children's language and literacy development from the world's leading experts. The initiative is led by the Canadian Language and Literacy Research Network (The Network) and will officially be launched in summer 2007. *By Sarah Vanderwolf*

The *Encyclopedia of Language and Literacy Development* distinguishes itself as the world's first online reference that is devoted solely to early language and literacy development. As such, it gives service providers, educators and policy-makers a new and powerful tool to help them find the best and most relevant information, making it easier to put knowledge to use for the benefit of Canadian children.

The *Encyclopedia's* content is broken down into five broad sections with numerous subsections on specific related topics. Current section heads are language development, reading acquisition, writing acquisition, policy, and knowledge exchange. "This is the most comprehensive

knowledge exchange initiative The Network has yet undertaken and it draws on expertise from across The Network, from international experts and from practitioners who work directly with children," says Dr. Donald G. Jamieson, CEO and Scientific Director of the Canadian Language and Literacy Research Network.

Each topic allows a synthesis of information from research and practice – research articles in the *Encyclopedia* will be accompanied by commentaries from practitioners in the field. Contributions have been invited from leading Canadian and international experts on children's language and literacy development. A number of these contributions have already been prepared, reviewed,

and edited and others are now being developed.

"Our goal is to make the vast body of research on language and literacy development more accessible to those outside the research community," says Jamieson. "Our development process includes facilitation with stakeholder groups, such as Canada's federal, provincial and territorial ministries, through the Federal/Provincial/Territorial Early Childhood Knowledge Committee." Other stakeholders include organizations representing educators, early childhood practitioners, clinicians and service providers.

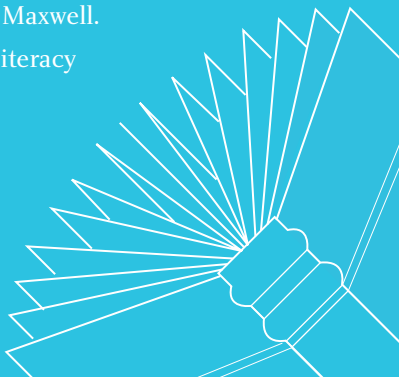
"People in government need valid and reliable summaries of the primary research literature on policy-relevant topics," says Richard Franz, Manager, Policy Information & Research Unit at the Ontario Ministry of Education. "The *Encyclopedia of Language and Literacy Development* provides such a synthesis, and offers valuable guidance for program planners and policy-makers."

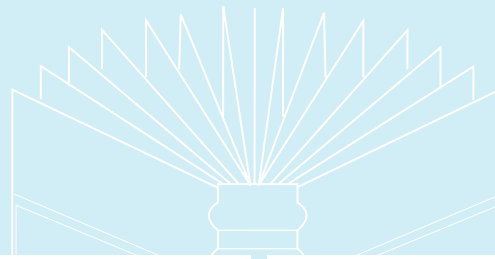
The *Encyclopedia* approaches topics from

three perspectives: development, service and policy. In this way, it addresses the broad range of knowledge needs, such as a topic's importance and what can be done to upgrade research, service and policy. "This approach will be very appealing to early childhood educators and teachers; it will enable them to make more informed decisions in support of children's language and literacy development," says Anne Maxwell, Senior Director at the Canadian Child Care Federation.

The collaborative nature of the project, and its ability to be updated quickly, when important new findings are available, ensures that a broad range of topics and perspectives can be provided and shared, and that the information presented can be kept up to date. "For child care and other professionals who have little time to conduct comprehensive searches, this represents a convenient way to access the latest research to enhance their practice," says Maxwell.

Previously, information regarding literacy





development has been spread out across a wide range of disjointed sources throughout the country, whereas the *Encyclopedia* will provide a single unified source specifically designed for those whose decisions and activities affect children directly.

This new online resource has its origins with a collaboration between The Network and Health Canada's Centre of Excellence for Early Childhood Development (CEECD), in which The Network prepared a section on language development for CEECD's *Encyclopedia of Early Childhood Development*. The Network is basing its *Encyclopedia of Language and Literacy Development* on the CEECD's model because it is a proven way to summarize knowledge, one that is valued by policy-makers and also satisfactory to researchers.

Authors for the *Encyclopedia* entries are selected through a process that begins with a review of the scientific literature on a particular topic and includes careful consideration of the recommendations from experts in the field, including members of The Network's Knowledge Management Committee. Members of the Knowledge Management Committee include early language and literacy development specialists with a range of expertise in both research and clinical settings. Their input and guidance is essential in ensuring credibility and integrity.

Dr. Monique Sénéchal, a psychologist

and expert in children's language acquisition at Carleton University, is overseeing the section on acquisition of early literacy in English. She says that the *Encyclopedia* is a good way for researchers and practitioners to share their knowledge and hopes the *Encyclopedia* will confirm the importance of early childhood intervention, which she feels is a key to success in literacy. "If we succeed," says Sénéchal, "then truly we may have an impact on how practitioners and policy-makers work with children."



Although the *Encyclopedia* is still in its early stages, it has already attracted several renowned language and literacy scholars from around the world. As the project continues to develop, a number of methods will help speed access and uptake of the information, including an international symposium for policymakers and practitioners, scheduled for March 2008. This symposium, a collaboration between The Network and the Early Childhood Learning Knowledge Centre (part of the Canadian Council on Learning), will highlight topics in the *Encyclopedia*.

The project has currently identified approximately 125 articles to be prepared by experts and more than 50 commentaries from practitioners in the field. The first entries are now available at [www.literacyencyclopedia.ca](http://www.literacyencyclopedia.ca). The official launch is scheduled for June 10, 2007 in Calgary, Alberta as part of The Network's 6<sup>th</sup> Annual Conference ([www.cllrnet.ca/anc2007](http://www.cllrnet.ca/anc2007)). (!)

# Education and learning across the digital divide

It all started with an interest in new toys and technologies. Now, with 16 years of collaborative research behind them, Eileen Wood and Teena Willoughby are publishing a book entitled *Children's Learning in a Digital World*. It examines how technology has changed the way children learn, and looks at the need for educators and parents to fully integrate technology in order to enhance children's learning. *By Laura Melnyk*

Developmental psychologists Dr. Eileen Wood of Wilfrid Laurier University and Dr. Teena Willoughby of Brock University both have an insatiable interest in how children acquire and retain information. Over the years, their focus has honed in on the role of technology as an important learning tool for children, both in the home and at school. Now they're using their collective knowledge and extensive research in editing a new book called *Children's Learning in a Digital World*.

It was through visiting elementary schools and daycares some 16 years ago that these two psychologists first realized the need for research in this area. "We noticed there were computers there and kids were migrating to them but the computers were really a stand-alone activity and not an integral part of ongoing instruction," recalls Wood. "We realized this was a tool that was appearing everywhere but we really had limited research on the impact of computers on learning, or the best ways to use them for different learners. So

that was our inspiration." Since those first days, they say they have witnessed a huge change in the availability of computers in classrooms. Although there are more computers in classrooms today, these researchers believe that in most cases,



Eileen Wood

**"In order for computers to become fully integrated, they need to be a seamless instructional tool blending naturally with other instructional methods."**

they are not being used to their full potential.

"In order for computers to become fully integrated, they need to be a seamless instructional tool blending naturally with other instructional methods," says Wood.

Wood and Willoughby say many teachers still don't feel comfortable using computers as a learning tool because of limited experience and access. They believe that teachers need more support so that they are able to use the

PHOTOGRAPHY BY: ALEX WELLS



computers effectively. In some cases, this means training an on-staff person within each school.

“If experts are available when teachers need assistance, then their skills will keep improving,” says Wood. “For teachers, our expectations are very high. The learning curve on technology is large and very fast and teachers need support to gain mastery so that they are comfortable and confident with the technology as part of their instruction.”

Wood and Willoughby also say that although teachers are excited about implementing technology, many of them are frustrated because they don't know how to use it effectively in the classroom. Willoughby says children's computer use at home is a good indicator of how well they will adapt to technology in the classroom. “Learning with the Internet provides extensive opportunities. If children have limited domain knowledge, the Internet can be very overwhelm-

ing. So we are trying to figure out what educators can do for students in these situations.”

In August 2005, Wood and Willoughby were inspired to co-edit a book after organizing a conference on children's learning and the digital world. The conference attracted a diverse array of internationally renowned speakers who introduced cutting edge ideas involving technology in traditional classrooms and students' homes. Due to the success of this conference, a second one is being planned for summer 2008.

The book focuses on the importance of merging technology use in the classroom and at home. Although the book addresses issues that are pertinent to both educators and parents, the target audience is students and researchers. *Children's Learning in a Digital World* will be available in 2007 from Blackwell Publishing. (!)

PHOTOGRAPHY BY: BRIAN HILLIER

# Children's Wired World

## GEOGRAPHIC, DEMOGRAPHIC AND GENDER FACTORS

- Youth are the fastest growing segment of Internet users in Canada.<sup>1</sup>
- Those from rural or low-income homes tend to have fewer opportunities to access computers and the Internet and are less likely to have computers with Internet access in the home.<sup>2</sup>
- Children from families with low levels of parental education are less likely to have a computer in the home.<sup>3</sup>
- 60% of female and 39% of male youth first used a computer for school or study purposes.<sup>4</sup>

## COMPUTERS IN THE HOME

- In a study of over 5,200 children and youth from grades 4 to 11 across Canada:
  - 37% of school-aged children indicated they have their own computer with Internet access,
  - 23% have their own phone, and
  - 22% have their own Webcam.<sup>5</sup>
- Students who have their own wired computer spend twice as much time online than those students who share a computer and access with other members of the family.<sup>6</sup>

## COMPUTERS IN THE SCHOOL

- Elementary schools in Canada have 1 computer for every 5.5 students, while secondary schools have 1 computer for every 4.3 students.<sup>7</sup>
- 31% of the computers in Canadian secondary schools were equipped with the most recent operating systems, compared with only 18% in elementary schools.<sup>8</sup>
- 45% of the computers in Canadian elementary and secondary schools are located in computer labs; 41% in classrooms; and 14% are in libraries or other locations.<sup>9</sup>
- 21% of young males and 15% of young females report using a computer at school “almost every day”.<sup>10</sup>

### NOTES:

- <sup>1</sup> Statistics Canada (2000). Canadian Social Trends, Cycle 14: Access to and Use of Information Communication Technology.
- <sup>2</sup> Looker, D. and Thiessen, V. (2005). *The digital divide in Canadian schools: factors affecting student access and use of information technology*. Statistics Canada. Catalogue no.81-597-XIE.
- <sup>3</sup> Looker, D. and Thiessen, V. (2005). *The digital divide in Canadian schools: factors affecting student access and use of information technology*. Statistics Canada. Catalogue no.81-597-XIE.
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- <sup>5</sup> Media Awareness Network (2005). Young Canadians in a Wired World – Phase II. Retrieved November 16, 2006 from <http://www.media-awareness.ca/english/research/YCWindex.cfm>
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- <sup>10</sup> Looker, D. and Thiessen, V. (2005). *The digital divide in Canadian schools: factors affecting student access and use of information technology*. Statistics Canada. Catalogue no.81-597-XIE.



# Twenty minutes to a *Smart* solution

Statistics indicate that if you're a child born to a low-income family, odds are you'll have a harder time meeting even the basic levels of literacy. As a result, you'll have fewer employment opportunities, your health and self-esteem will suffer, and statistics show, you'll be more likely to serve a prison sentence. It's a pretty dire scenario but Lily Dyson in Victoria has been working to improve those odds – and she is succeeding. *By Sarah Vanderwolf*

In 2000, Statistics Canada revealed that 26.7 per cent of Canadian children under 18 years of age lived in low-income families. Studies show that these children – more than one quarter of our children – are at increased risk of failure. Dr. Lily Dyson, a professor of Special Education and Educational Psychology at the University of Victoria, has been working to change these odds. Her research is helping children from lower-income households become better readers through a literacy intervention program at elementary schools in Victoria, British Columbia.

With funding from the Canadian Language and Literacy Research Network and the Social Sciences and Humanities Research Council (SSHRC), Dyson has been investigating the impact of low-income environments on children's development and reading skills.

One of her projects specifically includes direct involvement with the literacy learning of lower-income primary school students by providing intervention to these children.

"It's been an absolutely positive experience," says Mary Anne Trufimuk, who is vice principal of one of the participating schools in Victoria. Many of the students in this inner-city school are from lower-income or single-parent households and have little or no exposure to reading or learning at home, says Trufimuk.

In fact, Dyson's research has shown that children from lower-income homes have less sophisticated vocabulary, reading comprehension, and sentence structure when compared to their counterparts who are growing up in families with higher income levels. Moreover, the gaps between literacy levels of lower-income and higher-income students widen with each passing school year.

But a simple strategy, involving 20-minute tutoring sessions held with small groups of students three times a week, combined with regular home-reading sessions, has begun to yield some impressive results. In Dyson's analysis of the group who were initially reading at below average levels, there was a gain in three skill areas: word recognition, reading comprehension, and total reading.

Trufimuk points to one student who was positively influenced by the extra instruction given to him. This Grade 5 student was very apathetic about school, says Trufimuk. He was also categorized as having "intensive behaviour," meaning that he persistently displayed disruptive and antisocial behaviours. His home situation also provided no exposure to literacy. "He had all things against him," she says. But the boy's reading skills jumped two grade levels after receiving instruction from the research assis-

ants. "He's a success story that makes me really believe in [the literacy program]," says Trufimuk.

The research project divides participating students into two groups: the experimental group, who receive extra instruction or tutoring from university students to improve their literacy skills, and the control group, who only receive regular classroom instruction.

Research assistants involved in the project go directly into the elementary school and take children out of the classroom for the tutoring session. With direction from the teachers, the assistants incorporate the teachers' methods. One result of this teacher-researcher collaboration is an instructional strategy to improve students' reading skills.

The strategy, known as *Smart* for its intention to make children smarter as a result of increased reading ability, is a framework that helps students take greater control over their own learning and encourages more active participation by clearly identifying the goals they are striving towards. Within this framework, the tutoring emphasizes the enhancement of vocabulary, comprehension and fluency, which constitute the main elements of the project protocol for tutoring. As part of the *Smart* framework, the research assistants focus on learning strategies before, during, and after reading, so that students remain aware of their goals at all times. After a reading session, students are encouraged to reflect upon what they learned, whether it be fluency, vocabulary, or comprehension. "Reflection about learning is what solidifies learning,"

says Trufimuk.

The response to the program's implementation has been invariably positive, says Trufimuk, with support from both teachers and parents. While funding for the literacy intervention project will be concluding in one year, Dyson's research into children's literacy will continue as she studies the lasting effects of early intervention to enhance the literacy skills of these children.

"I have been recently funded for another project to chart the developmental pattern of literacy in low-income children. This project began this year and will be in part a follow-up of children who have received the intervention and who have not," says Dyson. "After the preschool and kindergarten years, it is difficult to improve children's literacy which is not at the level of more privileged children. But I think we have made some progress," says Dyson. "The results thus far show many children have gained in certain literacy skills. We can say then that the program has benefited a substantial number of children, especially those who are struggling readers at the beginning and who attend schools in low-income neighbourhoods." (!)

PHOTOGRAPHY BY: MICHAEL P. TOURNIGNY



Lily Dyson

## An ounce of

## PREVENTION



Linda Siegel

...it is possible to develop an effective system for identifying children at risk **before** the problems become severe.

Would you rather pay for an ounce of prevention or a pound of cure? Network researcher Linda Siegel looked this question square in the eye and opted for prevention. For seven years, she put her theory to the test and sure enough, she proved it worked. Her research showed that with the appropriate intervention, kindergarten children in North Vancouver schools, who were at risk of reading disabilities, showed remarkable improvement and were able to catch up with their peers by Grade 6. Here's how they did it.

By Sylviane Duval

When she started out on the project, Dr. Linda Siegel of the University of British Columbia was dealing with a kindergarten-age study group where almost 25 per cent of English first language (EFL) children and 50 per cent of English second language (ESL) children were at risk for reading difficulties. By the time they reached Grade 6, those numbers had improved to a mere 1.5 per cent of children with reading problems – even for the ESL group!

Siegel's research project, entitled *Early Identification and Intervention for Reading Difficulties using a Teacher and Classroom Based Model*, received funding from the Canadian Language and Literacy Research Network. What this study

showed is that it is possible to develop an effective system for identifying children at risk before the problems become severe, and to put in place classroom-based interventions that close the gaps over time.

Improving those numbers definitely has important consequences, not only for the children but for society in general. From previous work, Siegel knew that many homeless people, adolescents who commit suicide and prison inmates have learning disabilities.

Her solution was based on teaching children the way they learn. Rather than taking the "whole language" approach to reading, where children read sentences and guess the individu-

al words from the context, the North Vancouver School District favoured phonics, where children are taught to associate sounds with letters, and they embraced Siegel's ideas.

As Robin Brayne, superintendent of schools at the time, says, "We were very pleased to be part of this study and to benefit from the results. Teachers learned to identify children at risk, to use a variety of corrective tools and to assess progress, all of which improved their diagnostic and teaching skills. And, of course, the number of children at risk fell dramatically."

Siegel set out to develop a screening tool based on five variables that are indicators of reading difficulties in kindergarten: reading;

PHOTOGRAPHY BY: ROGER BROOKS

“We asked children to find rhymes for objects or the missing word in a sentence. Whatever we did, we made sure it felt like a game.”



ability to recognize sounds; ability to understand the meaning conveyed by English grammar; memory; and spelling.

“We used a series of tasks to identify deficiencies,” says Siegel. “For instance, we asked children to find rhymes for objects or the missing word in a sentence. Whatever we did, we made sure it felt like a game.”

Based on principles of cognitive development, the school district prepared a corrective program that included repeated exposure to books through discussion, acting out and reading stories, building vocabulary, sound/letter connections, breaking words into sounds, and literacy activities such as rhymes, letter games and songs. Teachers worked with small groups of ESL speakers with a similar level of language and based their exercises on proven literacy programs such as *Firm Foundations* (more details provided on page 23).

Siegel and the school officials were impressed and delighted at the rate of improvement in ESL speakers, although this is somewhat to be expected. “We have evidence that bilingualism is very good for children,” explains Siegel. “Take

English spelling. ESL children tend to do better than unilingual English speakers for two reasons. Languages such as Spanish or Russian have a more regular relationship between letters and sounds so children have a higher level of skill earlier. And those whose mother tongue has a visual script, such as Chinese, have already developed the visual memory that helps them with the quirks of English spelling.”

Reading is the foundation for all the other work that children do. Those who experience difficulties tend to suffer from low self-esteem and find the whole learning process frustrating. They can become targets for teasing and bullying.

Although Siegel did not measure the secondary effects of the program, anecdotal evidence suggests that referrals to the school psychologist for behaviour issues did decrease because children felt more in command of their learning skills. As Siegel sums up the program, “Now we know that with the right approach, we can make a difference in the life of almost every child.” (!)

PHOTOGRAPHY BY: ROGER BROOKS

PHOTOGRAPHY BY: BRIAN HILLIER

# Reading is the foundation for all the other work that children do.



The *Firm Foundations* program teaches children phonological awareness – the ability to hear individual sounds and syllables in words – through classroom activities. The program was very well received and it proved to be effective within the period that Siegel studied and tested the approach.

The program involves acquiring skills through play, performance assessments and extra help through guided play at school and at home. It is based on these concepts: the teacher is the program; children need a foundation of sounds on which to base letter combinations; children at risk must be identified early; and play-based intervention must begin early.

*Firm Foundations* is used in the classroom in the context of literacy activities such as reading stories, writing journals, finding and generating rhymes (an important aspect of the English language) and learning to discriminate between sounds like F and V by placing a finger on the neck and listening to the vibration.

*Firm Foundations* is available at minimal cost from the North Vancouver School District at:

[www.nvsc44.bc.ca/FirmFoundations/main.html](http://www.nvsc44.bc.ca/FirmFoundations/main.html)

## Do you HEAR what I HEAR?

Research and common sense tell us hearing is critical for children when developing speech and language skills, especially from birth to two years of age. Without early identification and intervention, a child's cognitive and social development can be profoundly affected. This is the challenge that Network researcher Marlene Bagatto and her colleagues in London, Ontario are tackling as they work to refine the fitting process for infant hearing aids. *By Rob Aldred*

Marlene Bagatto



PHOTOGRAPHY BY: BRIAN HILLIER

At the Child Amplification Laboratory, which is part of the National Centre for Audiology at The University of Western Ontario, Dr. Marlene Bagatto and her research colleagues are focused on finding the best way to fit infants with hearing aids and amplification devices. Working in partnership with the Canadian Language and Literacy Research Network, Bagatto says there are several complex issues involved.

“We wanted to figure out what is the best way to refine the hearing assessment information we get from babies in order to make the hearing aid fitting procedures better,” says Bagatto. “With babies, you can’t ask them to sit still while you measure the hearing aid in their ear.”

“The other issue is that they have ear sizes that are a lot smaller than ours and a lot of audiology equipment is calibrated with an average adult ear size in mind, so we have to account for the differences in ear canal acoustics for babies.” Because a baby’s ear canal is smaller, it is much more sensitive to sound pressure levels.

A hearing aid adjusted for an adult could create up to 20dB higher sound pressure level if worn by an infant.

Childhood hearing loss is more prevalent than most people might think. In Ontario for example, the *Infant Hearing Program* screens approximately 130,000 newborns each year and provides about 1,200 children with hearing aid services annually. This is an investment that Bagatto agrees with. “Early identification and early intervention saves society money because children with hearing loss can have the appropriate audibility and the optimal chance for learning speech and language,” she explains.

The first focus for Bagatto and her team has been to refine a measurement which determines the individual acoustics of a child’s ear, called the “Real Ear-to-Coupler Difference” (RECD). This kind of measurement is used for older children, but a different strategy was needed when dealing with a young infant’s ear and trying to determine the best microphone placement.

“We redefined the RECD normative values that clinicians can use for babies when the measurement cannot be made,” says Bagatto. “The age ranges were not very discrete as they went in twelve-month age ranges. So a two-

### Taking tiny measurements for tiny ears

One of the key parts of Bagatto’s research is working out the “Real Ear-to-Coupler Difference” (RECD) for babies and infants. Measuring RECD is a two-step process. First, an earphone delivers a signal into a coupler meant to represent the size of an average adult ear canal, and the sound pressure level (SPL) is measured. Next, a microphone is placed in the baby’s ear and the same earphone is

coupled to the child’s earmold and delivers the signal to the baby’s ear. The difference between the real-ear and coupler response is the RECD. The result can then be used to program the proper settings for the child’s hearing aid. The measurement has been used on older children for many years, but a different strategy was developed to ensure proper microphone placement in a young infant’s ear.



month-old would get the same RECD value as a ten-month-old." As a result of her team's work, Bagatto says the age ranges are now to the nearest month.

A second project involved refining some aspects of the "Desired Sensation Level" (DSL) method. This is a formula that calculates amplification that will best provide an infant or child with comfortable and clear sound levels in real-life conditions such as quiet conversations or in classrooms.

The DSL algorithm was developed in the mid-1980s by Dr. Richard Seewald of the Child Amplification Laboratory. DSL software is now used worldwide and has been licensed to major hearing aid and hearing aid test equipment manufacturers. The challenge facing DSL software today is keeping up with the rapid advances in hearing aid technology.

research, Bagatto has helped establish hands-on testing and treatment protocols for audiology clinicians across Ontario.

Weber says Bagatto's work has done much to build the *Infant Hearing Program's* stellar international reputation, and Bagatto has trained audiology clinicians in infant hearing prescription protocols worldwide. "We have pediatric-specific clinical procedures that we offer and teach to clinicians around the world so they can better fit the children they identify."

Bagatto is continuing her quest to further refine the clinical tools used to fit infants and young children with hearing devices. "We're hoping to validate the changes that we made to DSL so that the people who have hearing aids set to the DSL targets are still able to perform speech recognition tasks and speech detection tasks at a high performance levels." (!)

"We have pediatric specific clinical procedures that we offer and teach to clinicians around the world so they can better fit the children they identify."

Stacey Weber, Program Consultant in Audiology and Speech Language Pathology for the Early Years Programs Branch at the Ministry of Children and Youth Services, says Bagatto and the Child Amplification Laboratory have been a tremendous resource for Ontario's *Infant Hearing Program*.

"We've been able to tap into their expertise," Weber says, adding that in addition to her



## Young *Innovator* Award

Bagatto's work has earned her the Young Innovator Award from the federal government's Networks of Centres of Excellence. The award honours Canadian researchers who, with the help of their network, have been successful in translating their innovative research to a business, process, or service to benefit society at large.

The award was presented to Bagatto by Maxime Bernier, the federal Minister of Industry on December 5, 2006. "The Government of Canada is proud to recognize and support our best and brightest scientists who are at the foundation of Canada's innovative economy," says Minister Bernier. "It is a great privilege to honour the work of researchers who are contributing to Canada's role as a world science and technology leader."

Nancy Cohen



Children participating  
in their cognitive and

in the programs were experiencing improvements  
language development.

## Identifying risk factors in young children

When a national literacy initiative called TLC<sup>3</sup> jumpstarted a number of parent-focused literacy programs in communities from coast to coast, it was an important part of a research direction that continues to keep Nancy Cohen occupied and engaged. Follow-up assessments done in later years with the TLC<sup>3</sup> children showed the initiatives met their mark and now a systematic literature review is underway to continue to look at how best to identify risk factors for language and literacy in very young children. *By Laura Hendrick*

It was an ambitious undertaking, involving literacy programs at seven different community-based sites across the country. Within a small management team at the Hincks-Dellcrest Institute, Dr. Nancy Cohen, Director of Research took leadership in overseeing the operation and evaluation of the TLC<sup>3</sup> project. TLC<sup>3</sup> stands for Thinking, Listening, Communicating; Tender Loving Care; and The Learning Centres. The TLC<sup>3</sup> sites ranged from urban neighborhoods to rural communities and included both high and low risk groups representing multicultural, First Nations, French-speaking and English-speaking Canadians. Each site offered its own special mix of early childhood activities. Along with child-focused services there were opportunities for children and parents together, and for parent groups. Funding from the Lawson Foundation allowed TLC<sup>3</sup> to provide \$100,000 a year to each of the seven sites, which gave the sites the ability to implement or improve upon a program tailored to their demographics and to carry out an evaluation. Since then, Cohen has continued

her interest in the children of this program and the research directions that first developed from the TLC<sup>3</sup> program. For example, with financial assistance from the Canadian Language and Literacy Research Network, Cohen did a comparative assessment of the children at the end of their kindergarten year. With a team from the Hincks-Dellcrest Centre and the Canadian Council on Learning, Cohen is now working on a systematic review of literature surrounding the identification of risk factors affecting oral language and reading comprehension development in early childhood. The literature review, which is also supported by The Network, is entitled *How early can risk factors for language and literacy problems be identified?*

As with all systematic reviews, Cohen's method is to assess and bring the best research together into a single document that can confidently be used within policy and practice. The aim is to enhance prevention efforts, allowing children at risk for developing various language and literacy comprehension problems to be

identified earlier and to receive the right intervention to allow them greater lifelong success.

Her current research focus is very much a continuation of her earlier work. The goal of the original TLC<sup>3</sup> project was to promote language and cognitive development within the context of important relationships in the years leading up to kindergarten. "The Lawson Foundation wanted to do something national to make sure that different groups were represented," says Cohen. "They wanted it to be urban and rural. We had not only groups at risk but middle class groups too. All these parents have needs and are unsure about things."

So when Cohen was asked to oversee the TLC<sup>3</sup> project in 1996, she adapted the focus to include early relationships. "So much is learned through interaction," she says. "If you give parents tools, then the kids get something out of it. You don't sit a two-year-old down at a desk and say 'Let me tell you about nouns and verbs.' It's all in talking, interacting and playing."

In total, TLC<sup>3</sup> developed programs in seven locations: Vancouver; Calgary; Regina; Meadow Lake, Saskatchewan; Toronto; Saint-Rémi, Quebec and Dartmouth, Nova Scotia. Some sites like Toronto put the injection of money towards a family drop-in centre. Others developed programs like *Baby Talk* in Dartmouth, which encouraged a parent's sensitivity and responsiveness to their baby's cues.

To accommodate such variation between programs, TLC<sup>3</sup> was directed at a broad scope of children, ranging in age from infants to

preschoolers. With so few controls, it was nearly impossible to perform a comparative assessment of each site. But the Lawson Foundation let Cohen know that they were looking beyond the constraints of a research project.

"It was really a slice of Canada, but from a researcher's point of view, it was a nightmare," laughs Cohen, who admits that keeping an eye on seven separate projects seemed daunting at first. But she found one measure that could be used to mark the success of each separate venture: program sustainability.

TLC<sup>3</sup> helped foster sustainability by providing funding for five consecutive years. During this time period, the sites were expected to get on their feet by forming links with schools and community groups in order to build support for the project in the future.

Each site found different ways to achieve program longevity. In Regina, organizers were able to sustain programs through fundraising techniques. They also integrated themselves with public school systems and language therapists in the community. Most importantly, the site in Regina gained the support of participating families through programs that brought specialists into the home to work directly with the parents.

In responding to a parent survey, one Regina mother noted her appreciation: "When I

PHOTOGRAPHY BY: ALEX WELLS

PHOTOGRAPHY BY: BRIAN HILLIER



came to the Early Learning Centre, I was at the end of my rope. I didn't know how to be with my children or play with them. I don't have these skills from my own background. People helped me. I learned how to enjoy my children more."

While positive feedback from parents assured Cohen that TLC<sup>3</sup> was working, she still wished she could develop an evaluation process with scientific credibility. She wanted to prove that children participating in the programs were experiencing improvements in their cognitive and language development. Through the support of The Network, this goal was made possible.

Beginning in 2002, when TLC<sup>3</sup> wrapped up, The Network funded a comparative assessment of the children at the end of their kindergarten

year. Tests revealed that children who had taken part in the TLC<sup>3</sup> program had stronger language skills than comparison groups from the same communities. Cohen was enthused to see the program's success drawn out in research terms. "I was very grateful to The Network for letting us have this one time point where we could collect data on these children."

Today, her work extends this same research direction even further. Her literature review wraps up in 2008 and will draw conclusions on ideas that began through TLC<sup>3</sup>. Cohen hopes the review will determine how early a child at risk can be identified for a reading disability and that this information will give families and child-care specialists in every community a head start when helping children with literacy difficulties. (!)

## Parent-Child Mother Goose

Over the five-year period that Cohen worked on the TLC<sup>3</sup> project, she was surprised to find that certain programs resonated with parents across the country. While TLC<sup>3</sup> gave children's centres the chance to develop unique programming, demographic differences sometimes took a backseat to the common concerns of new mothers. For example, the program *Parent-Child Mother Goose*, which was designed by Cecilia Lottridge, was chosen by four of the seven sites.

"A lot of sites really liked the *Mother Goose* program," says Cohen, describing how it centred on action-based rhymes. "For parents of children with delays, it's really helpful that they see they can get a response from their child. They also have the support of other parents, so there's a social aspect."

Ruth Danziger, Director of the *Parent-Child Mother Goose* program in Toronto, said the program works because it gives parents concrete tools for connecting with their children. "Some parents don't really know specifically how to build that attachment," she says. "But after taking part in the program, a parent might think: 'Well, I can do this rhyme while waiting in the bank line,' instead of hushing their baby."

One mother who took part in the program in Calgary described *Parent-Child Mother Goose* as a great opportunity. "I found it interesting to observe how the children went from disinterest at the start to active participation – joining in with clapping and doing the bouncing up and down in some of the songs. It gave us more quality time together, more structure to our week, we learned more songs and we had more fun together."

BACK COVER PHOTOGRAPHY BY: BRIAN HILLIER

# Mobilizing Research Excellence, Creating Value

Canada has 23 Networks of Centres of Excellence (NCE). Each network builds partnerships between academia, industry and government to put new knowledge, research and technology to work to create a better Canada. Their work in the natural, social and health sciences involves everything from improving children's literacy skills, to the quality of the food we eat and the water we drink. NCE are helping to keep our forests flourishing and ease the impacts of climate change. By involving thousands of talented young Canadians in their work, they are training tomorrow's scientific leaders and ensuring Canada's continued role as a world science and technology leader.

Currently the NCE Program supports more than 6,000 researchers and highly qualified persons in 71 Canadian universities. The program partners include 756 Canadian companies, 329 provincial and federal government departments, and 525 agencies from Canada, along with 430 international partners – making it a truly national and international program.

In 2006, the networks stimulated outside cash and in-kind investments totaling almost \$70 million, including more than \$27 million by the participating private sector companies. With the program's own investment, the total dedicated to research, commercialization and knowledge transfer was more than \$149 million.

**NCE PERSONNEL**

Province	Personnel
Alberta	2
British Columbia	694
Manitoba	868
Ontario	79
Quebec	159
Saskatchewan	1,337
Atlantic Provinces	2,408
Prince Edward Island	192
New Brunswick	54
Newfoundland & Labrador	56
Nova Scotia	231

**NCE EXPENDITURES**

Province	Percentage
Ontario	42.2%
Quebec	23.9%
British Columbia	11.5%
Alberta	10.8%
Manitoba	5.0%
Newfoundland & Labrador	2.8%
Nova Scotia	2.4%
New Brunswick	1.2%
Saskatchewan	1.0%
Prince Edward Island	0.6%

[www.nce.gc.ca](http://www.nce.gc.ca)

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