

A Handbook on Student Involvement in the Field of Language and Literacy

Canadian Language and Literacy Research Network

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“The Network has been a key player in my personal development of connections between my experience as a practitioner in elementary classes and my training as a researcher in the field of literacy. These connections are integral to my identity as an ‘inquiring educator’.”

Julie Mueller, Professor, Faculty of Education, Sir Wilfrid Laurier University, Past SNE Chair

Dear Student members,

Over the course of the past eight years the Canadian Language and Literacy Research Network has developed a healthy and vital relationship with researchers, students and literacy practitioners across the country. These relationships have enabled us to work together to move forward in the search for answers to questions regarding language and literacy.

The Network has strongly pursued its' objective to facilitate training, education and knowledge dissemination relating to language and literacy development. We strive to increase Canada's capacity to do world-class language and literacy research. It is you, the students, who are the future of language and literacy research in Canada, and you who will be responsible for producing, communicating — and putting to use — evidence-based research in the years to come. I have no doubt that you are up to the challenge.

It is important when looking forward to also look back and recognize the importance of those who have come before us. The Network has been lucky to benefit from a large group of researchers who have been enthusiastic supporters of our training, education and knowledge dissemination objectives. We thank in particular the members (both past and present) of our Highly Qualified Personnel Committee and Student Network Executive.

The Student Network Executive members have put much time and effort into the production of this manual. The 'big picture' of language and literacy requires a broad view into the domains that language and literacy impacts, overlaps and is informed by research. The manual looks at the knowledge generated within the fields of language and literacy in the last seven years, and the key opportunities available to students considering or pursuing a career in this important domain. I hope you will find this resource beneficial and encourage you to explore the opportunities available to students in the field of language and literacy.

With best wishes,

Donald G. Jamieson, PhD
CEO & Scientific Director

Did You Know...

Babies begin learning the moment they're born. Rapid learning takes place during the early months after birth, more than any other time in a person's life. By age 3, a baby's brain has grown to about 80% of its adult size.

<http://www.readtogrow.org/DidYouKnowFact/default.asp>

Did You Know...

Although the history of literacy goes back several thousand years to the invention of writing, what constitutes literacy has changed throughout history. At one time, a literate person was one who could sign his or her name.

<http://en.wikipedia.org/wiki/Literacy>



Introduction

The rationale for a student manual based on research in language and literacy can be connected directly to the continued need to explore the many facets associated with these domains. A review of completed research, ongoing studies and research question trajectories is necessary to comprehend the intricate and interrelated goals of language and literacy. Furthermore, this information is needed to capture the current issues, to explore research questions, to identify effective practices and assessments and to further our collective knowledge of language and literacy needs. The full investigation into the world of Canadian language and literacy is relatively recent and quite unfinished. It requires the input, insight and interest of the next generation – you, the student. This manual is an unabashed attempt to retain and lure students into the world of language and literacy development research as well as the pragmatic real-world application of the research findings.

The first goal of this manual is to provide students who are currently engaged in language and literacy work with a broad overview of the domains that literacy impacts, that overlaps with other discipline knowledge, and suggests how it is informed through research findings. It is anticipated that this overview will also pique the interest of students who are not presently engaged in these domains but can see the relevance and application of these research areas to their own lives. Language and literacy development have a considerable influence on individuals' lives, modern society and economic growth. Yet the disciplines (e.g., education, speech and language, psychology, neuroscience) that investigate these areas of profound impact typically do not have the opportunity to forge their research initiatives or findings in a collective manner in order to achieve a “big picture” view of how to support language and literacy development.

The second goal is to ensure that students involved in language and literacy research comprehend the interconnectedness and complexity of this type of work; requiring a deep level of collaboration, networking and clear communication among all involved parties. Indeed, the diverse and overlapping research promotes a clear understanding of the complex issues and barriers involved in language and literacy attainment. For current and future investigations, it is essential to focus on the myriad of connections within all literacy domains. The associations between these domains must be kept at the forefront despite the fact that attention ought to be paid simultaneously to the individual aspects of language and literacy (e.g., visual acuity, phonological awareness, technology advancements) as a means to advance knowledge in each particular area. These discrete pieces of information must be brought back together in a seamless, connected fashion to strategically advance knowledge in language and literacy. A coordinated effort to view literacy from multiple perspectives through collaborative research initiatives may elucidate and underscore how literacy or language influences and affects all aspects of our daily lives, our society, our economic output and our future roles within a knowledge-based culture.

The third goal is to create a framework outlining the CLLRNet language and literacy initiatives and research conducted in Canada over the past eight years. The CLLRNet model, promoting coordinated and collaborative relationships, is one that must be emulated in the future in order to continue working toward the “big picture” view of language and literacy. Future researchers are encouraged to follow this type of model and to involve students in a meaningful manner in all areas of literature review, research and application projects as students are the individuals who will continue our work and shape the landscape of language and literacy.

As you read through the collective research investigating language and literacy domains over the past few years, perhaps you can ask yourself questions about how these findings or directions can inform your own understanding of both language and literacy. Some of the relevant queries may include: *Why is this area important within the literacy domain? What information is necessary to understand this research topic? What information is still missing in this language and literacy area in order to comprehend how to support learners? What information must be aggregated in order to understand how all of the language and literacy pieces can fit together? Who are the current researchers in this field and could I collaborate with them? Where can I make a difference in the dissemination of language and literacy initiatives? Perhaps an underlying focus lays in the final question “How does language and literacy impact our society?”*

“No skill is more crucial to the future of a child, or to a democratic and prosperous society, than literacy.”

- Los Angeles Times, “A Child Literacy Initiative for the Greater Los Angeles Area”



Section I - Importance of Language and Literacy

As young researchers, students are exploring their interests, finding out what theoretical or methodological questions exist and how these questions can “light a fire” of interest within their educational and career pursuits. For those interested in this specific field, understanding how language and literacy impacts the many facets of their lives is a critical step in integrating themselves into the field of language and literacy research and application. As a student involved in language and literacy it is critical to understand why this work is so important and how it can make a difference in varying aspects of one’s life – home, school, community, national and worldwide. As you read through the following section, consider the ways that language and literacy impact your life and how this research is relevant and important.

This section will provide you, future students and researchers, with some information about language, literacy and the history of the Canadian Language and Literacy Research Network (CLLRNet) in order to inspire you, interest you and ignite discussion and questions about the future. You will be left pondering your role in the field, and asking perhaps “how do we continue to improve language and literacy for children across the nation?”

Language and Literacy

Literacy is defined as the ability to gain information through the printed word, while language refers to the set of symbols used for communication and the system of their use. Together, language and literacy skills are the foundation for the economic, academic and social success of individuals and societies. Low language and literacy skills are associated with higher unemployment, increased health costs, increased crime, reduced ability to learn and develop skills and reduced social engagement.

Communication and literacy skills provide the foundation for effective social functioning and for academic, occupational/economic and life success. When children fail to develop good language and reading skills there are a range of profound and enduring consequences, including academic failure, higher school dropout rates, poor psycho-social development and reduced self esteem and sense of well-being. All of these consequences reduce the opportunities for lifelong success while simultaneously decreasing an individual’s quality of life. Employers state that literacy is one of the top three requirements they look for in employees, yet more than seven million Canadian adults struggle with language and literacy problems. Statistics Canada reports that more than 42% of Canadians lack the basic literacy skills required to function in today’s society. Improving language and literacy skills seems to show promise for clear economic and social benefits. Research has found that a 1% increase in the average literacy rate would result in an eventual 2.5% increase in labour productivity and a 1.5% rise in the gross domestic product (GDP) per person.

Oral dialogue provides a foundation for the development of literacy, or written language skills. However, approximately 5-10% of preschool children have language disorders, which can seriously affect children’s ability to communicate. Oral language skills are essential to a child’s social, academic and economic success across the lifespan. The importance of evidence-based practice to improve outcomes for children who have difficulty communicating orally is widely recognized.

In today's information age, increasing levels of literacy and multi-literacies are required to fully participate in society. A satisfactory level of literacy in 1960 does not hold up to today's standards for literacy. It is increasingly important to understand how children use technology, how it can be beneficial to literacy development within the context of oral language and the implications of technology for children with exceptional needs. It is also critical to recognize that Canada is increasingly multilingual, with children in some school districts speaking one of as many as 150 different languages in their home. It is therefore increasingly important that we better understand how children learn to read and write, the strategies they use to become better readers and writers, their use of acquired skills in learning math, science and other disciplines and the context(s) that impact and draw upon literacy skills.

It is also critical to examine numeracy – number literacy – as it is an essential skill required in the workplace and in many other activities. Yet as many as 55% of Canadian adults do not have the numeracy skills required to perform mathematical and problem-solving tasks in their day-to-day life. There are strong links between numeracy and language and literacy – it has been reported that almost half of the percentage of children with math difficulties also have difficulties with reading, and children with specific language impairments also have difficulty with certain aspects of numeracy. Numeracy research has only recently begun to establish basic findings that can guide applied work, policies and future practice.

Addressing the Language and Literacy Needs of Canadians: CLLRNet

The previous section demonstrates the powerful impact proficient language and literacy skills have on individuals functioning within society. The next goal of the manual is to introduce the Canadian Language and Literacy Research Network and how the goals and visions of the network are implemented to address the language and literacy needs of all Canadians. In order to achieve a global or comprehensive understanding of language and literacy in Canada, it is essential to provide an idea of the rationale for initiatives, rigorous research and knowledge exchange. In this section, CLLRNet's vision and goals will be explained, and its priority areas will be briefly explored.

In order to address the issues related to language and literacy – with a concerted goal of improving the lives of all Canadians – the Canadian Language and Literacy Research Network (CLLRNet; The Network) was formed in 2001 through Industry Canada's Networks of Centres of Excellence Program. CLLRNet's formation was spearheaded by a group of leading Canadian researchers who held a long-standing scientific interest in language and literacy. The Network believes that Canada's future competitiveness and economic prosperity depends on our children being able to communicate effectively. All aspects of The Network's activities have been connected to their initial overall Vision and Goals, as follows:

Vision

- The Canadian Language and Literacy Research Network will improve the language and literacy skills of Canadian children, enabling them to contribute more effectively to the social and economic life of their communities.
- The Canadian Language and Literacy Research Network will create an integrated network of researchers, practitioners and government policy makers in early childhood literacy and learning in Canada. This Network will continue its work after the Networks of Centres of Excellence support ends.

Goals

- Create knowledge and combine this with existing knowledge to improve the language and literacy skills of Canadian children.
- Establish networks of selected groups of practitioners to facilitate the application of research to practice.
- Measure the efficacy of conventional practices in the field and apply available knowledge to create improved educational and treatment plans and protocols.
- Establish permanent networks with federal and provincial governments. These networks would work to ensure that relevant policies reflect the best knowledge of ways to improve language and literacy skills in early childhood. The networks would also work to ensure that programs are systematically evaluated and refined within a new culture of commitment to accountability, rooted in the principles of evidence-based practice.

The foundation for language and literacy skills is established in early childhood, so what children experience in the family context, in early learning situations and in elementary schools is critical to lifelong development. CLLRNet has generated, evaluated and organized knowledge relevant to improving language, literacy and numeracy skills for early childhood, and has made this knowledge public as a means to improve policy and practice. Since its formation in 2001, CLLRNet has engaged scientists and students at 37 Canadian universities and policymakers and practitioners at more than 100 government and non-governmental organization (NGO) partners. The Network combines scientific research with focused, innovative knowledge exchange programs to provide the evidence needed to improve literacy skills across Canada. The Network has covered the full spectrum of literacy, numeracy and language research through more than 50 projects integrating contributions from the many sectors involved in children's language and literacy development. In fact, The Network has supported more than half of all language and literacy research conducted in Canada over the past eight years, by granting approximately 13 million dollars to research projects and programs across the nation.

The activities undertaken by CLLRNet support the language, literacy, numeracy and basic skills/productivity priorities defined by key partners, including the Council of Ministers of Education, Canada (CMEC) and provincial Ministries of Education and Child Development. CLLRNet's research efforts have focused on the following priority areas:

Aboriginal children. Between 40% and 50% of aboriginal children fail to meet the requirements of Grades 4, 7 and 10 literacy and numeracy tests. Furthermore, 75% fail to graduate from high school. It is critical to understand the nature of literacy and numeracy issues so effective methods of instruction can be provided. Aboriginal children do not always have the same opportunities as non-aboriginal children, but focusing on language and literacy acquisition and development in the early years will make a difference by providing families with the knowledge and skills needed to succeed.

Children from immigrant families. Today, 60% of Canada's population growth is comprised of new immigrants. Most do not speak English or French as a first language - most are young, with young families or are planning new families. A Statistics Canada study found that the children of new immigrant families take seven to eight years to achieve average levels on Canadian literacy tests. If literacy skills continue to be deficient, these children will show a 20% wage earnings gap as compared to native-born Canadians.

French-language children living in minority settings. Children residing in French-speaking communities encounter unique challenges in that they encounter and acquire the language and literacy of a minority population. Two key issues resulting from reading and writing a non-dominant language are the lack of reading resources throughout all grade levels and the lack of assessment materials to determine whether there are any literacy concerns. The numeracy and literacy skills of 55% of Canadian francophone adults are too limited to allow them to deal with the majority of written materials encountered in everyday life. This is especially evident outside of Quebec, where French language resources are increasingly scarce.

Children with special needs. Children with special needs (e.g. language impairment, Down Syndrome or speech sound production disorders) have unique learning challenges and require unique solutions to their literacy challenges. Students of exceptional needs may require adapted reading materials (e.g. high interest content and simplified word choice), assistive technology and augmentative equipment in order to assist them in acquiring both language and literacy success.

Children who require improved instruction to acquire good literacy skills. Even children with typical developmental patterns can experience challenges in acquiring their language, literacy and numeracy skills. Understanding what instructional methods are effective, why they are effective and how they can benefit learners, can help improve how we teach and support these core skills to help all learners achieve lifelong success.

CLLRNet - Meeting Goals and Vision

CLLRNet encapsulates a unique and vibrant model of national networking and collaboration, and can be viewed by students as a model for how research can be conducted and applied in various manners. The conception and creation of the CLLRNet collaborative research program enabled Canadian researchers to investigate unique questions that could best be investigated by collaborative and pan-Canadian research initiatives. In turn, this valuable knowledge was used to raise awareness of individuals and communities in need of support, and the culturally relevant or developmentally appropriate methods to assess and improve the language and literacy skills. CLLRNet has provided the building blocks for future researchers and practitioners – you, the student – to follow in the footsteps of today’s researchers.

Over the past eight years, CLLRNet has built a vibrant, well-functioning Network of outstanding researchers and influential partners, focused on improving fundamental language and literacy skills (including numeracy) in Canadian children. The Network has developed a significant and unique knowledge mobilization and exchange program, ensuring that the wide range of partners and stakeholders who influence children’s language and literacy development can access scientifically valid knowledge relevant to their organization’s programs. Key examples of these CLLRNet initiatives can be viewed by visiting www.cllrnet.ca/knowledge. These include: the *Encyclopedia of Language and Literacy Development*, the *National Strategy for Early Literacy* initiative, the *Handbook of Language and Literacy Development: A Roadmap from 0 to 60 Months* and language, reading and writing and numeracy resource kits geared towards practitioners, parents and educators.

Network programs have increased Canada’s capacity to generate and apply knowledge to improve language and literacy outcomes for children. The Network has organized and supported a comprehensive program of applied research focused on groups identified as being the highest priority. Both primary (experimental) and secondary (systematic review) research has been supported. The research program has had a significant impact on children and network partners by improving language and literacy outcomes for preschool and school-aged children and developing and evaluating improved intervention programs for children with specific sensory, reading and language disorders.

Examples include:

- New language and reading assessment instruments that permit, for the first time, reliable measurement of key skills for previously un-served populations (e.g. francophone children, English-as-a-second language children)
- Effective school-based interventions for children who are at-risk of reading failure, with a particular focus on populations having the greatest relevance for Canada
- Effective programs for the early identification and treatment for children who are at-risk for poor language/literacy development
- Effective programs for facilitating early language development and early literacy skills for children in preschool and daycare programs
- Effective family-centered language- and literacy-enhancing programs to improve outcomes for children entering and in the first years of school

The training of highly qualified researchers and practitioners in the field of language and literacy is central to the Network's mandate. Priorities of the highly qualified personnel program, led by a committee of researchers include: recruitment of outstanding students, enrichment of their learning experience through increased funding and unique academic and networking opportunities and building capacity in language and literacy practitioners to access and apply evidence. Over the years, the Student Network – a group made up of all network students and led by the Student Network Executive Committee (SNE) – has involved more than 600 trainees from a wide variety of disciplines, regions and programs. See Section III for a more detailed overview of trainee programs.

Literacy is an important building block in helping Canadians overcome personal or financial hurdles. CLLRNet has helped to give children the best possible start in their language and literacy development - a contribution that will last a lifetime. The conception and creation of the CLLRNet collaborative research program enabled Canadian researchers to investigate unique questions that could best be investigated by collaborative and pan-Canadian research initiatives. In turn, this valuable knowledge was used to raise awareness of individuals and communities in need of support, and the culturally relevant or developmentally appropriate methods to assess and improve language and literacy skills.

As you read the next sections outlining the specific achievements of the research programs and student initiatives, consider what impact language and literacy has on families, individuals and communities within Canada and internationally. *How have students contributed to these achievements? How can you ensure that this success continues in the future? What areas of concern related to language and literacy must still be addressed and how can this be accomplished?*

Did you know...

What many people don't know is that German is the language most similar to English - more than any other language. This is due to the fact that English and German both belong to the same family of languages: the Germanic languages. In Europe three language families dominate: Germanic, Romanic and Slavic.

[www.learn-german-links.net/
Facts_about_German_Language.html](http://www.learn-german-links.net/Facts_about_German_Language.html)

Did you know...

There are nearly 540,000 words in the English language ... about five times as many as during Shakespeare's time?

[http://www.hcesc.org/wwd/sta/Literacy%20Newsletter/
Literacy%20Matters%20October%202008.pdf](http://www.hcesc.org/wwd/sta/Literacy%20Newsletter/Literacy%20Matters%20October%202008.pdf)



Section II - Summary of CLLRNet's Research & Programs

The following section provides an overview of the specific initiatives and achievements supported through CLLRNet research. The goal of this section is to introduce students to the multilayered and different areas of research in language and literacy. Our intentions are to spark interest in particular topics, help in the development of research questions that extend existing research and outline sources to find further research on areas of interest.

Encouraging Future Student Involvement

If you are reading this manual, you are likely a student now and contemplating a career or graduate research that involves language and literacy. Perhaps you believe that research is complicated, difficult and time consuming? Perhaps you are interested in becoming increasingly informed or inspired about your role in the language and literacy field? While you are reading this manual, you are encouraged to pose questions and think about your own interests or experiences and what you might like to do to make a difference. Are there projects that interest you or make you wonder about your future and your career path? There have been many advances made but there is still much to accomplish and you could be a part of this! Please contact CLLRNet if there are specific projects or researchers that you would like to gain more knowledge about – perhaps ask questions about “what next”? This is one of the real strengths of CLLRNet - the networking, collaboration and openness of researchers to share their work and their program information.

Research Projects and Knowledge Building

When CLLRNet began in 2001, Canada had limited capacity to undertake research on language and literacy development. However, since the conception of CLLRNet, all this has changed. CLLRNet organized and supported a comprehensive program of basic and applied research surrounding language and literacy acquisition and development. CLLRNet's highest priority is to improve the language and literacy skills of all Canadians.

CLLRNet's support for research projects allows researchers across Canada to collaborate with each other and with independent partners to address critical questions, to fill knowledge gaps and train the next generation of researchers through the completion of small and large-scale projects. Another component of CLLRNet's research program is to conduct systematic reviews (e.g., large-scale review, meta-analyses) to accumulate and analyze the collective evidence on a topic. Systematic reviews are fundamental in the improvement of programs, policies and practice. Funding from CLLRNet established Canadian Core Facilities; specialized facilities and labs that require distinctive expertise or equipment to undertake specific types of research. They support advanced and methodologically specific research and act as excellent facilities to train researchers in advanced techniques.

In order to address the diverse language and literacy needs of a dynamic multicultural population, CLLRNet focuses upon projects by themes and focus areas, with the current emphasis on four themes of research: (1) language, (2) literacy, (3) numeracy, and (4) policy and service. In the past, a separate theme of biological processes existed, however, this has since been further classified into the above themes. As CLLRNet evolved, concentration of research was focused on priority areas or populations at-risk of disadvantaged language and literacy.

The following were considered at-risk groups in need of additional research and educational support: (i) Minority language children (e.g., French speakers outside of Quebec, English speakers in Quebec), (ii) Aboriginal children, (iii) Children in immigrant families, (iv) Children with special needs due to language disorder, and (v) Children who require improved instruction to acquire good literacy skills.

Research conducted by CLLRNet investigators has aimed to strengthen the linkages among research projects by developing clusters of projects that address common challenges or that use similar methods and approaches. CLLRNet also aims to connect research with some of the best international research programs through international initiatives. As you read through the following research briefs, you will see that the projects are loosely arranged by theme, cluster and focus. Although projects are typically classified into themes, our goal is to review the Network's funded research and emphasize the interconnected nature of basic and applied research within the field of language and literacy. The research generally begins with broad categories, its contribution to the field, and then continues into more specific categories including collaboration between different themes, clusters and foci. For a comprehensive listing of CLLRNet funded research projects and researchers, please visit the CLLRNet website at www.cllrnet.ca.

Collaborative Research Achievements

Contributions to Basic Science & Understanding: Biological & Sensory

The field of basic research has advanced our understanding of cognitive and developmental processes underlying language and literacy skills in children with and without developmental concerns. Specifically, these studies examined children with hearing loss, difficulty with auditory processing and dyslexia¹. Many innovative studies also used cutting-edge genetic and neuroimaging tests to investigate rapid automatized naming of letters, numbers and colours – a skill that is highly predictive of reading ability².

Research in this area has also employed state-of-the-art brain imaging technology to study changes in the brain that are linked with language and literacy development. Researchers examined if children who are poor readers show significantly slower development in their “wiring” within certain regions of the brain compared to children with normal reading development³.

Contributions to Basic Science & Understanding: Oral Language Skills

Research in the theme of oral language explored the impact of bilingualism on typically developing preschool children, examining if bilinguals develop control over executive processing earlier than their monolingual peers⁴. Other research in the field used MRI techniques to study language in two groups of children: one with autism spectrum disorders (ASD) and another with fetal alcohol spectrum disorder (FASD). This specific technique was used to examine the range of brain abnormalities that exist in white matter tracts of the brain and to examine correlates with executive functioning and language in young children (5-12 years old) with either FASD or ASD⁵.

Contributions to Basic Science & Understanding: Text Literacy

Literacy researchers increased the understanding of factors that affect biliterate children's mastery of two orthographies, as well as the development of morphological awareness in each language⁶. Another study evaluated how parents' use of alphabet book reading facilitates the acquisition and development of alphabetic knowledge, and how children learn to read alphabetic books independently⁷. This research examined the perceptual and cognitive correlates of language skills. More specifically, they studied how auditory temporal processing skills develop over the life course in normal readers.

Auditory temporal processing refers to the ability to discriminate fine sound intervals, and deficits in this domain have been linked to language and reading impairments. Overall, the results suggest that perceptual processing at an early age shapes the development of later language and reading performance⁸.

Evidence-based Instruments and Interventions

Developed assessment instruments for diverse populations

To achieve specific goals within the field, research was undertaken in a collaborative manner. The following research combined the themes of oral language, literacy and several different subgroups involving at-risk populations. One project developed validated assessment tools for language skills in preschool children from 8 months to 4.5 years for Canadian French speakers. The results revealed that this version of the MacArthur Communicative Development Inventories (MCDI) had good reliability and validity. This study provided norms to gauge the performance of children, assisting in early identification of at-risk children, allowing for early intervention to take place. In addition, the project described the normal developmental language sequence in French, assisting in setting intervention goals. This project ensured that assessment and treatment of French-speaking children relies on developmental data that are appropriate to their linguistic and cultural community⁹.

Another project examined the reading skills in children 5-13 years old and provided a sophisticated multi-component test battery to practitioners (e.g., in the areas of education, language and communication pathology, neuropsychology). This filled an important gap in the battery of assessment tools intended for Canadian readers of French. This assessment development was also designed to assist researchers who are interested in the analysis of basic reading processes or in the evaluation of reading education programs (e.g., in public schools or in French-Immersion programs)¹⁰.

Developed and evaluated school-based interventions for children at-risk

To improve the reading and writing of Aboriginal students, a culturally appropriate and developmentally-based instruction program was created to target Aboriginal children's narrative competence in the early school years. Selection of the narrative genre was motivated by considering cultural factors of children who had demonstrated knowledge of story schema earlier than knowledge of expository text structure and the traditional use of stories as teaching tools¹¹.

Another group of researchers developed a program that used electronic portfolios (EPs), which encourage students to take an active role in their learning. The EP is a digital container capable of storing visual and auditory content (e.g., text, images, video and sound) from various assignments and projects. This project aimed to enhance teaching processes through targeted professional development and to impact a learner's ability to self-regulate and increase their scores specifically in the area of language arts¹².

CLLRNet favours a preventative approach that recognizes the necessity of intervening early, before students experience failure. Accordingly, development and testing of instructional approaches have centred on young beginning readers. ABRACADABRA, A Balanced Reading Approach for CANadians Designed to Achieve Best Results for All, is a large-scale reading intervention project. It implements a scientifically-based reading curriculum in a digital environment. Under continual refinement, there are numerous activities that allow the student to progress from sound and letter identification to more complex tasks such as spelling and personal responses to stories, ultimately helping children acquire good literacy skills.³³

Developed and evaluated effective clinic-based interventions for children at-risk

A research focus for many years has been to assist at-risk children who have a speech or language disorder and thus have suffered in their development of both language and literacy. CLLRNet funded research in this area has developed speech perception intervention software programs that increase the likelihood that children will enter Grade 1 with normalized speech, making children less likely to experience reading difficulties and academic challenges¹³. Other innovative projects have developed and investigated:

- Computer programs to address and assess difficulties in phonological processing (SAILS®-Canadian French Version and Monsters and Rhymes)¹⁴.
- Intervention programs to increase the intelligibility of children with speech delays and suspected motor speech disorders, along with a set of standardized tools to measure speech intelligibility against age norms (TOCS+ and Lets Start Talking)¹⁵.

Developed and evaluated family-centered, language and literacy enhancing programs

These programs have been developed, evaluated and publicized in several provinces and regions across Canada. In Ontario, for example, an early family literacy program used individualized, personally relevant, family alphabet books (including photos from family life corresponding with letters of the alphabet) to model, extend and teach literacy activities to families. Results showed explicit benefits in children's concepts of print and alphabet knowledge due to the use of these books.¹⁶ A second model included the development of a literacy curriculum, based on a strong research foundation and intended to make literacy research accessible to parents. Each evening of the program provided a research rationale and engaged families in enjoyable activities shown to have positive effects on children's literacy development. The program was then modified for use with at-risk groups (Chinese-Canadian community, Newfoundland parents with low-literacy levels, families in low school attendance areas)¹⁷. Other programs include the following:

In **British Columbia**: Successful intervention in North Vancouver School District was adapted for use with groups at-risk for reading failure (Prince George: Aboriginal and ESL students)¹⁸.

In **Quebec**: A project in disadvantaged neighbourhoods of French-speaking schools in Montreal led to significant improvements in reading comprehension with Grade 2 students, using class-wide peer-mediated strategies¹⁹.

In **Prince Edward Island**: The *Families Learning Together for Mi'kmaq Communities* program. Ten comprehensive, theme-based, culturally appropriate literacy modules were developed in consultation with *Mi'kmaq* partners and their respected Elders. The programs effectively assisted children and their families who were struggling with low literacy²⁰.

In **Alberta and Nova Scotia**: The *Families Learning Together* program. This program was adapted for use within two distinct settings; urban Calgary and a rural First Nations Community on Cape Breton Island. Children who participated in the program from both settings demonstrated increased basic reading scores, reading comprehension and listening comprehension, with an overall mean grade level improvement of 2.0²¹.

In **Western Canada**: *Learning Together: Read and Write with Your Child*. A family literacy program was developed, monitored and evaluated in various locales throughout Western Canada. The *Learning Together* program was found to positively affect children's literacy levels generally but had the most significant effects for those children who scored in the lowest percentiles (70-80%) during the pretest phase²².

In **Central Canada**: Researchers developed formal interventions to facilitate language and literacy development for preschoolers who exhibited language delays/disorders and whose lowered home literacy exposure caused their literacy attainment to be considered at-risk. In-service training focused on language-modeling techniques; interactive storybook reading and modeling print concepts were found to be successful interventions. The results demonstrated that educators who participated in in-service training versus those who did not attend created more opportunities for conversation, used more interactive reading strategies and modeled more print concepts.²³

Developed family and home literacy strategies

Research in this area studied how shared reading influences the development of print knowledge and reading skills for children at risk for reading failure and encourages engagement of young children as active participants in print activities²⁴. Other projects also focused on these relationships between parents and their children, as they: (1) developed and evaluated an intervention strategy that successfully taught parents to talk with their children in ways that fostered narrative skill development²⁵, and (2) studied the extent to which early oral language influences phonological awareness and subsequent emergent literacy development and reading acquisition. A research project studied how early articulation difficulties affect the development of phoneme awareness in normally developing children and how these phonological problems may linger after articulation has normalized²⁶.

Developed and evaluated effective programs for early identification and treatment

This subcategory of research really highlights both the diversity and collaboration within such an important focus area—early identification. Some of this research developed novel vision screening techniques to define thresholds of hyperopia (farsightedness), and established links between vision problems and literacy skills (research conducted in Ontario & British Columbia)²⁷. Researchers have also developed and evaluated an evidence-based, software-driven protocol for prescribing, fitting and evaluating hearing aids for infants with permanent hearing loss. The goal of the new techniques is to provide effective intervention by six months of age in order to maximize the infant's natural potential to develop language and literacy skills²⁸.

Developed classroom learning and environment interventions

Research made possible through CLLRNet's support and collaboration examined the impact of classroom noise on children's communication with their teachers, learning ability and academic achievement. This study showed that noise had a very small effect on children's performance of several academic tasks, suggesting that general learning deficits are unlikely to arise from the acute exposure to noise in the test setting. The mechanisms responsible for learning difficulties in noisy environments more likely included poor encoding of auditory information as a result of reduced speech intelligibility and/or reduced attention from the masking and distracting effects of the noise²⁹.

Policy and Services projects aimed to address challenges

Combining quantitative and qualitative research methods, this policy project: (1) examined the processes families use to decide whether to seek outside resources for their child, (2) identified factors that enhance, or discourage, families' ability to obtain community assistance, and (3) explored how parents allocate resources within the family and how these distribution decisions affected outcomes for children with communication delays and their siblings. This research characterized the mismatch between parents' and professionals' expectations and identified opportunities to better engage families in order to increase benefits for children and to increase treatment efficiency³⁰.

A project based on an early literacy intervention program, *Read to Me!* examined the cost effectiveness of providing literacy materials for newborn children. The researchers piloted a new intervention, *Read to Me! Plus*, which aimed to strengthen the basic program. The short-term objective was to achieve clinically significant improvement in reading readiness of children by the time of school entry. This program is currently being adopted across Canada, which once again highlights the importance of CLLRNet and its ability to connect researchers across the nation³¹.

Policy projects also addressed priority areas and different research foci. One of these projects examined the impact of interventions for children living in low-income neighbourhoods through the collaboration of schools, homes and researchers. The intervention program consisted of supplementing and modifying reading instruction, increasing home reading practices by 15-20 minutes each week and through supporting parent education about the importance of home reading. Results indicated that children with the lowest reading scores at pretest benefited most from the intervention.³²

Meeting the Goals and Vision

Due to CLLRNet, Canada's capacity to undertake high-quality, applied language and literacy research has increased to the point where Canada now leads the world in key research areas. The Network's research program has had a profound impact on parents and children by improving language and literacy outcomes for preschool and school-aged children. CLLRNet developed and evaluated improved intervention programs for children with specific sensory, reading and language disorders. CLLRNet also developed the first valid assessment of the measurement of language and reading skills in diverse groups of Canadian children. This research provides evidence that is essential for informed policy and practice, and for improving literacy outcomes.

CLLRNet has contributed greatly to research knowledge through empirically published research and has generated knowledge accessible to researchers, practitioners, parents and general members of the public through its various publications and knowledge mobilization resources. Although major developments have taken place over the last eight years, researchers have just begun to thrive upon their efforts made in pan-Canadian research projects.

It is with much anticipation that this generation of students can look forward to continued growth and success based on this collaborative research. It is exciting to contemplate future developments via the ever-growing cache of expert Canadian researchers in the field of language and literacy. The growth and success of the language and literacy domains are areas that students can contribute much to, both through their own areas of interest within the broad topics of language and literacy, and through the introduction of novel research or discipline fields that can provide a deeper understanding of issues and barriers in the development and execution of language. Unexplored and unanswered questions still exist in this field that may be best explored through multi-disciplinary research efforts. New ideas and new perspectives developed by students are welcome in order to shape the direction and create innovation that may have far-reaching consequences in our society. Time and time again, researchers have discovered intimate (and unexpected) connections between language, literacy and all aspects of the human condition.

The efforts of the Network to create a comprehensive research program are complemented by two committees which aimed at helping future researchers become leaders in the field of language and literacy: the Highly Qualified Personnel Committee (HQPC) and the Student Network Executive (SNE). An outline of these committees and their functions follows in the next section. While reading this next portion, an individual interested in language and literacy might reflect upon the following questions. *What are some potential future directions for students to become involved in a collaborative research network? What potential career paths are available for those interested in the different domains of language and literacy?*

Did you know...

Eighty percent of the words in the English language dictionary do not accurately indicate how they should be pronounced.

www.espindle.org/literacy_facts.html

Source: The American Literacy Council.

<http://americanliteracy.com/>

Did you know...

The National Literacy Act of 1991 defines literacy as “an individual’s ability to read, write, and speak in English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one’s goals, and to develop one’s knowledge and potential.”

www.asha.org/about/news/tipsheets/facts-on-literacy.htm

“I did not realize the value of the opportunities afforded to me by CLLRNet until I began my doctoral studies. I quickly realized the advantage of being mentored by CLLRNet researchers, being introduced to innovative projects, and gaining experience in various methodologies. The CLLRNet Postgraduate Scholarship Supplement allowed me to acquire diverse experiences, and gain confidence towards becoming an independent researcher.”

Maryam Wagner, 2007 PSS award winner

“Working with Dr. Sutton at the Centre de recherche de l’Hôpital Sainte-Justine was an experience that I will never forget. Not only did this experience help strengthen my research skills, I had the opportunity to work with and learn from other students and experts in the field of audiology and speech-language pathology.”

Kim Nguyen, UGRA winner

“The Summer Assistantship provided by [The Network] allowed Kim [Nguyen] to acquire new skills, to be part of a team and to interact with students in other disciplines, and to gain valuable research experience by participating actively in an ongoing project. Kim’s presence in our laboratory was highly appreciated by all members of our team, in terms of her work as well as on a personal level.”

Dr. Ann Sutton, UGRA supervisor

Section III - Student Involvement

“The Network played a vital role in my personal development as a junior researcher, teacher and professional. I look forward to the next generation of CLLRNet and the knowledge transfer and research uptake based on the past five years. I would encourage students to get involved, and take every opportunity that they can to connect to this wonderful network of people dedicated to sharing the science and opening minds around language and literacy”

Alaina Roach O’Keefe

There are many opportunities for student involvement and future employment in the field of language and literacy. The purpose of this section is to understand how students can get involved in a network of research and the possible career paths that language and literacy can lead to. In addition, student involvement in CLLRNet initiatives provides a framework for how an organization can successfully support the next generation of researchers and practitioners.

CLLRNet has positioned student involvement and knowledge building as an integral part of The Network, supporting undergraduate and graduate students in their development as language and literacy researchers and practitioners. Through the creation of the Student Network Executive (SNE) a link between students and Network researchers was formed. The SNE has been responsible for planning conference and symposia events, publishing SNEws (student newsletter) and liaising with Network researchers and the Administrative Centre on behalf of students across Canada. The SNE offers opportunities and materials for students, professionals and trainees in a variety of areas within language and literacy. Students who are actively involved with a CLLRNet research project or who have received a CLLRNet award can join the SNE.

In addition to the SNE, The Network makes many opportunities available to students by supporting their involvement in language and literacy research and providing them with financial support for their own research initiatives. The Network has engaged more than 600 students from 25 disciplines in its projects and programs.

Network Committees for Students

The Highly Qualified Personnel Committee (HQPC) supports the training and development of new scholars who are then able to conduct leading-edge research in early language and literacy, and practitioners who can foster evidence-based treatment programs. The HQPC’s objectives are to increase the pool of highly qualified personnel in language and literacy, provide interdisciplinary training and bring university, community and industry partners together in support of training new scholars to address the needs within policy, practice and research.

In order to increase the number of outstanding researchers able to conduct research critical to solving problems of language and literacy deficiencies in Canada, the HQPC has developed and supported various programs. One of the HQPC's priorities included forming an efficient communication pool between researchers from The Network, thus allowing multi-disciplinary research collaborations and laboratory rotations. One program that met this purpose was the creation of five Core facilities, which were funded by CLLRNet and were available to all Network members: (1) the Functional Magnetic Resonance Imaging Facility, (2) the Bilingual Literacy Research Facility, (3) the Computational Modeling Facility, (4) the Software Development and Information Technology Utilization Facility, and (5) the Knowledge Translation and Database Initiative Facility. In sum, these facilities all provided, in a unique way, more efficient use of resources through the sharing of equipment, research, facilities, databases and personnel (including student research assistants).

Another goal of the HQPC is to provide training to future researchers in the field. Therefore, funding was allocated to CLLRNet researchers for the hiring of student research assistants; this in turn promoted early recruitment and effective mentorship of undergraduate and graduate students.

A Model of Mentorship

The **Student Network Executive (SNE)** serves as a link between students and researchers in The Network and provides a liaison with Network researchers and the Administrative Centre on behalf of students. The SNE also supports students in their development as language and literacy researchers and practitioners. Thus, the committee tries to ensure that student members of the Network have opportunities to learn and develop into future researchers and learn within the field of language and literacy, assisting HQPC in the training of highly qualified personnel. Two extremely successful endeavours of the SNE are:

Student symposia. The Student Network Executive has been involved in the development of conference and symposia events and content at The Network's annual conference. In order to provide active CLLRNet students networking opportunities, an annual student symposium was added to the Annual Network Conference. Approximately 60 students from across the country have exchanged research ideas and contact information, meeting researchers, practitioners and professors, very early on in their academic careers. The Student Network Executive in particular have been extremely influential in aiding in the development and planning of conference events and providing networking opportunities for students.

SNEws. Another Student Network initiative for informing and connecting students is the Network's student newsletter, entitled SNEws. SNEws is published semi-annually and copies are distributed electronically to CLLRNet members. In SNEws, students are able to attain information on important events and news, such as student involvement in research being carried out across the country, networking opportunities, events related to the annual conference, student conference possibilities and stories regarding former students who are experiencing success in their career area.

Financial Support

The Network has created supportive opportunities for student members to excel in the research field of language and literacy. Network funding for students includes: the **Peter Gzowski Scholarship** to support PhD research, **Student Network Travel Grants** to assist in attending academic conferences, the **3rd Year Undergraduate Summer Research Assistantship Award** to work with a network researcher and the **Postgraduate Scholarship Supplements** to support collaborative research activities across laboratories. The ultimate goal of these programs ties into part of The Network's mandate, which is to increase the number of highly qualified personnel in language and literacy research and practice by providing funding and training opportunities.

Financial awards and training opportunities offer students the chance to get a head start on future success in research at the undergraduate and graduate school level. This support provides students with an opportunity to explore their interests in speech and language, audiology, psychology, neuroscience, education, early education, child development, linguistics and other fields of research related to language and literacy. Students and researchers alike have found the graduate and undergraduate research assistance support experience extremely positive.

Future Directions for Students

Students play a vital role in CLLRNet and can continue to contribute to the field of language and literacy in various capacities. A number of previous student network members have moved on to accept faculty positions at universities providing training, support and guidance to students and future researchers. In addition to academic careers, students have pursued careers in industry, government, schools boards, hospitals, health districts and private practice.

Beyond employment opportunities, research in the field of language and literacy is a great endeavour with an endless number of questions to be explored. Continued research is essential to the development of language and literacy. With each piece of knowledge we learn, an entire host of new questions are then created to initiate the next set of research or application questions. The use of evidence-based programs and treatments are highly valued by thousands of Canadians across the country. Validated language and literacy programs, assessments and intervention options must continue to be not only used but adapted to meet the requirements of all Canadians, including those with unique needs and in diverse settings.

Career Paths in Language and Literacy.

A career in the field of language and literacy can be quite diverse. Typically, students pursue a bachelor's degree in any number of areas including arts, biology, psychology, speech or neuroscience. Although there are no general standards for a career specifically in language and literacy, a number of standards often regulate specific professions in the field. For example, some students choose to pursue careers in many facets of education and psychology. The areas of speech and language (linguistics, language acquisition, psycholinguistics, neurolinguistics, discourse analysis), audiology (screening and measurement, assistive technology, education for hearing impairments), school psychology (inclusive education, English as a Second Language, foreign language acquisition, assessment), rehabilitation (auditory system response, auditory balancing and electrocochlocography) and literacy specialists (supporting school and health districts with assessments, interventions and resources) are examples of career paths that one can follow as a graduate student, as a Masters degree is typically required. The following list is a reference for various employment positions that an individual who is interested in language and literacy could hold. Please note that this is not intended to be a complete and comprehensive career list, but rather an example of the employment variance in this field.

Research/ Teaching Positions

ABE Instructor

ASL Instructor

Assistant Director, Peer Services

Assistant Education Center Coordinator

Bilingual/ESL Coordinator

Director of Childhood Education

ESOL Program Coordinator/Teacher

Executive Director, Multilingual Programs

LINC (Language Instruction for
Newcomers to Canada) Teacher

Professor/ Open Rank – Tenure Track

- Education
- Reading & Literacy

Research Positions

Teacher

- Adult Education Teacher
- Basic Literacy Instructors
- English instructor
- ESL Instructor
- French Language Instructors
- GED Instructor
- Instructor at a Language School
- Instructional Specialist for English
- Language Tutor
- Language Arts/Literacy Coach
- Life Skills
- Reading Instructor
- Senior Curriculum Associate
- Sign Language Instructor
- Spanish Immersion Elementary
- Young Adult Basic Literacy Instructor

Applied/Practitioner Positions

Aboriginal Literacy Summer Camp Counsellor

Assistants

- Hearing
- Occupational Therapist
- Physical Therapist
- Speech-language Pathologist

Audiologist

Communicative Disorders

- Assistant
- Therapist

French Language Services Directorate

Occupational Therapist

Reading Recovery Training Specialist

Sign Language Interpreter

Social Worker

Speech and Language Therapy

- Assistant
- Therapist

Physiotherapist

- Research Associate
- Project Manager/Assistant

Language & Literacy Careers: Positions

The field of language and literacy offers a number of exciting and rewarding career opportunities. Employment options in this discipline range in educational requirements, services provided and populations served. A number of language and literacy related career opportunities can be found at specific service provider websites, including universities and colleges, school boards, hospitals, health clinics and government offices.

The diversity within the field of language and literacy can be noted from the vast array of academic, teaching and applied positions found above. Basic searches can be carried out through the Internet, however, there are various websites listed below to serve as a starting point for research on career paths and the education necessary to obtain employment in these paths. Other valuable resources are typically attained from university websites, specifically those offering graduate study in particular areas of interest. If you have specific career interests, international and Canadian organizations (e.g., International Dyslexia Association, Learning Disabilities Association of Canada) are additional points through which to gain information on possible job openings or career paths in your field of interest.

Canadian Internet Resources for Language and Literacy .

The following list is a reference of various websites that can be consulted for further information on training and career paths in language and literacy.

CANADIAN

ABC Canada	www.abc-canada.org
Action for Family Literacy Ontario	www.aflo.on.literacy.ca
Association for Adult Education	www.nald.ca/nlaae.htm
Canadian Association of Speech Language Pathologists	www.caslpa.ca
Canadian Psychological Association	www.cpa.ca/careers
Centre for Research on Language, Mind and Brain	www.crlmb.ca/latlang/2009/01/index.html
Espace alpha (French only)	http://espacealpha.cdeacf.ca
Human Resources and Skills Development Canada	www.hrsdc.gc.ca/eng/hip/lld/nls/Resources/10_fact.shtml
Literacy Alberta	www.literacyalberta.ca
Literacy and Basic Skills – Government of Ontario	www.edu.gov.on.ca
Literacy BC	www2.literacy.bc.ca
Literacy Coalition of New Brunswick	www.nb.literacy.ca
Literacy Newfoundland and Labrador	www.literacynl.com
Literacy Nova Scotia	www.ns.literacy.ca
Literacy Partners of Manitoba	www.mb.literacy.ca
National Adult Literacy Database	www.nald.ca
National Literacy Program	www.hrsdc.gc.ca

CANADIAN cont'd

Northwest Territories Literacy Council	www.nwt.literacy.ca
Nunavut Literacy	www.nunavutliteracy.ca
Ontario Literacy Coalition	www.on.literacy.ca
Ontario Psychological Associates	www.oapa.on.ca
PEI Literacy Alliance	www.pei.literacy.ca
Quebec English Literacy Alliance (QELA)	www.qela.qc.ca
Regroupement des groupes populaires en alphabétisation du Québec (French only)	www.rgpaq.qc.ca
Saskatchewan Literacy Network	www.sk.literacy.ca
Statistics Canada	www.statcan.gc.ca/pub/89f0100x/4151174-eng.htm
TRÉAQ-FP (French only)	http://treaqfp.qc.ca
Yukon Learn	www.yukonweb.com/education/yukon-learn.htm
Yukon Literacy Coalition	www.yukonliteracy.ca

INTERNATIONAL

Harvard School of Education	www.gse.harvard.edu/about/administration/careers/programs/langlit/profiles/index.html
International Language Job Centre	www.europa-pages.com/jobs
Literacy Assistance Center	http://lacnyc.org/about/jobs.htm
PsycCareers	http://psyccareers.apa.org/
The National Strategies	http://nationalstrategies.standards.dcsf.gov.uk/

Student Networking: Continued Involvement in the Field

Language and literacy directly affects each one of us. Despite the lack of a central regulating body for language and literacy, individuals can continue to stay involved through continued communication and networking with previous members and other individuals interested in this type of research. By sharing ideas, disseminating research and working collaboratively, great strides can continue to be made in the field. *Have you thought of new ways to look at language and literacy? Have you considered how language and literacy overlaps in every part of our lives? What part of language and literacy will you stress in your future career path?*



Summary

The Canadian Language and Literacy Research Network has built a vibrant and well functioning network of outstanding researchers, students and influential partners who have singularly focused on improving the fundamental language and literacy skills of Canadian individuals. Prior to CLLRNet's creation, Canada lacked a strong research infrastructure in this area, having neither a broad base of research programs, nor a history of interdisciplinary collaboration needed to undertake work relevant to research users. Since conception, CLLRNet has engaged 166 researchers from 22 disciplines at 37 partner universities along with over 600 trainees and more than 100 government and non-governmental organization (NGO) partners, doing meaningful work in every Canadian province. Dialogue among these researchers, partners and other stakeholders is key to all programs and facilitating knowledge exchange, research and training activities.

CLLRNet has developed a significant research partnership that influences individuals' language and literacy development with relevant, scientifically valid knowledge. CLLRNet has organized and supported a comprehensive program of applied research, focused on groups and issues identified as being the highest priority to improve language and literacy skills across Canada. There are four themes and five research clusters that facilitate communication about common challenges and issues, promoting the sharing of methods and approaches. The research programs have had a significant impact on Canadians by improving language and literacy outcomes for pre-school children, evaluating and developing better intervention programs for children with sensory, reading and language disorders and developing valid assessment instruments to allow measurement of language and reading skills in key groups of Canadian students. Furthermore, resource development and dissemination of research findings through the *Encyclopedia of Language and Literacy Development*, the *Handbook of Language and Literacy Development: A Roadmap from 0 to 60 Months*, the *National Strategy for Early Literacy*, numerous journal articles, specialized workshops and practical applications under practitioners and language, reading and writing and numeracy resource kits geared for practitioners, parents and educators has made an impact across our nation.

Most importantly for the students involved in CLLRNet, the research programs increased Canada's capacity to generate and apply knowledge to improve language and literacy outcomes for all individuals. A conservative estimate related to student involvement finds more than 600 students from 25 disciplines engaged in CLLRNet research projects, our Student Network and other programs. As a student who may be considering a future position or research involving the world of language and literacy there are numerous questions that you can consider. A few include: *How could you use the research questions and initiatives undertaken by these Canadian researchers? How can the collaborative efforts of researchers and you – the future researcher or user of this information – create policy to fully support language and literacy efforts? How can you benefit from the Network's commitment to supporting students? An important next step for all students involved in various disciplines related to communication, language, literacy and science is to examine how their interests and expertise areas can contribute to the essential question of "How can we support language and literacy development in Canada?"*

Did you know...

The National Literacy Act of 1991 defines literacy as “an individual’s ability to read, write, and speak in English and compute and solve problems at levels of proficiency necessary to function on the job and in society, to achieve one’s goals, and to develop one’s knowledge and potential.”

www.asha.org/about/news/tipsheets/facts-on-literacy.htm

Did you know...

Of the 380 English spelling rules, only ONE has no exceptions – no English word ends with the letter “v”.

www.espinde.org/literacy_facts.html

Source: The American Literacy Council,

<http://americanliteracy.com/>

Appendix

Footnote #	Principal Investigators	Project Title
1	Eggermont, J.	Effects of Noise Trauma in Early Age on Cortical Coding of Speech
1	Allen, P.	Individual Differences in Auditory Processing: Implications for Assessment and Treatment of Disorders
1	Durieux-Smith, A.	The Impact of Screening and Case Finding on the Functional Status of Children with a Hearing Impairment
1	Connolly, J.	Using Neuroimaging Methods to Elucidate Mechanisms of Speech Processing and Reading in Healthy and Dyslexic Populations
2	Klein, R.	Rapid Naming and its Contribution to Reading Ability: Cognitive Neuroscience and Genetics
3	Beaulieu, C.	Magnetic Resonance Imaging Investigation of Neurodevelopment in Children
4	Poulin-Dubois, D.	The Cognitive Impact of Bilingualism: How Early? How General?
5	Beaulieu, C.	Magnetic Resonance Imaging of Fetal Alcohol Spectrum Disorder and Autism
6	Deacon, H.	The Canadian Challenge: How Do Biliterate Children Master Two Orthographies?
7	Evans, M.A.	Alphabet Books in Childrens' Emergent Literacy Development
8	Trainor, L.	A Longitudinal Study of the Relation Between Temporal Processing and Language Ability
9	Trudeau, N.	Normalization and Validation of the Quebecois Version of MacArthur Communicative Development Inventory (MCDI)
10	Desrochers, A.	Development of a Multi-Component Test Battery for the Assessment of French Reading Skills
10	Saint-Aubin, J.	Core Facility to Support Bilingual Literacy Research
11	McKeough, A.	Supporting First Nations Students' Reading and Writing: Considering Culture, Development and Evidence
12	Abrami, P.	Improving Literacy Skills Through Electronic Portfolios
13	Senechal, M.	Factors Affecting Language Development and Reading Difficulties
14	Rvachew, S.	Maximizing the Effectiveness of Phonological Therapy
15	Hodge, M.	Measuring, Modeling and Maximizing the Spoken Language Intelligibility and Spelling Strategies of Children with Dysarthria: the TOCS+ Project

Footnote #	Principal Investigators	Project Title
16, 17	Pelletier, J.	Promoting Family Literacy in Diverse Canadian Contexts
18	Siegel, L.	Early Identification and Intervention for Reading Difficulties using a Teacher and Classroom Based Model
19	Dion, E.	Enhancing At-Risk Second-Graders' Reading Comprehension Using Classwide Peer-Mediated Activities
20	Timmons, V.	Family Literacy Program for the Mi'kmaq Communities in Atlantic Canada
21	Timmons, V.	A Family Literacy Approach to Improving Children's Literacy Levels
22	Phillips, L.	Customizing Family Literacy Development
23	Girolametto, L.	Language Stimulation and Intervention in the Home and in Day Care Centres
24	Evans, M.A.	Variations in Shared Book Reading
25	Peterson, C.	Fostering Pre-Literacy Skills Through Parent Interaction
26	Senechal, M.	Factors Affecting Language Development and Reading Difficulties
27	Bobier, W.	Vision Screening in Preschool Children
28	Seewald, R.	Effective Intervention through Amplification for Hearing Loss in Early Infancy
29	Bradley, J.	Speech Recognition in Classrooms
29	Allen, P.	Impact of Noise on Academic Skills and Learning
30	Rose-Krasnor, L.	A Systems View of Resources Access and Allocation Decisions in Families with Children who have Communication Delays
31	McGrath, P.	Read to Me! Plus: Evaluating and Improving a Population-Wide Method of Increasing Reading Readiness in Young Children
32	Dyson, L.	Enhancing the Reading Skills of Elementary School Children from Low-Income Homes through the Collaboration of Teachers, Researchers and the Home
33	Savage, R.	ABRACADABRA: A Study in the Development, Implementation, and Effectiveness of a Web-based Literacy Resource

