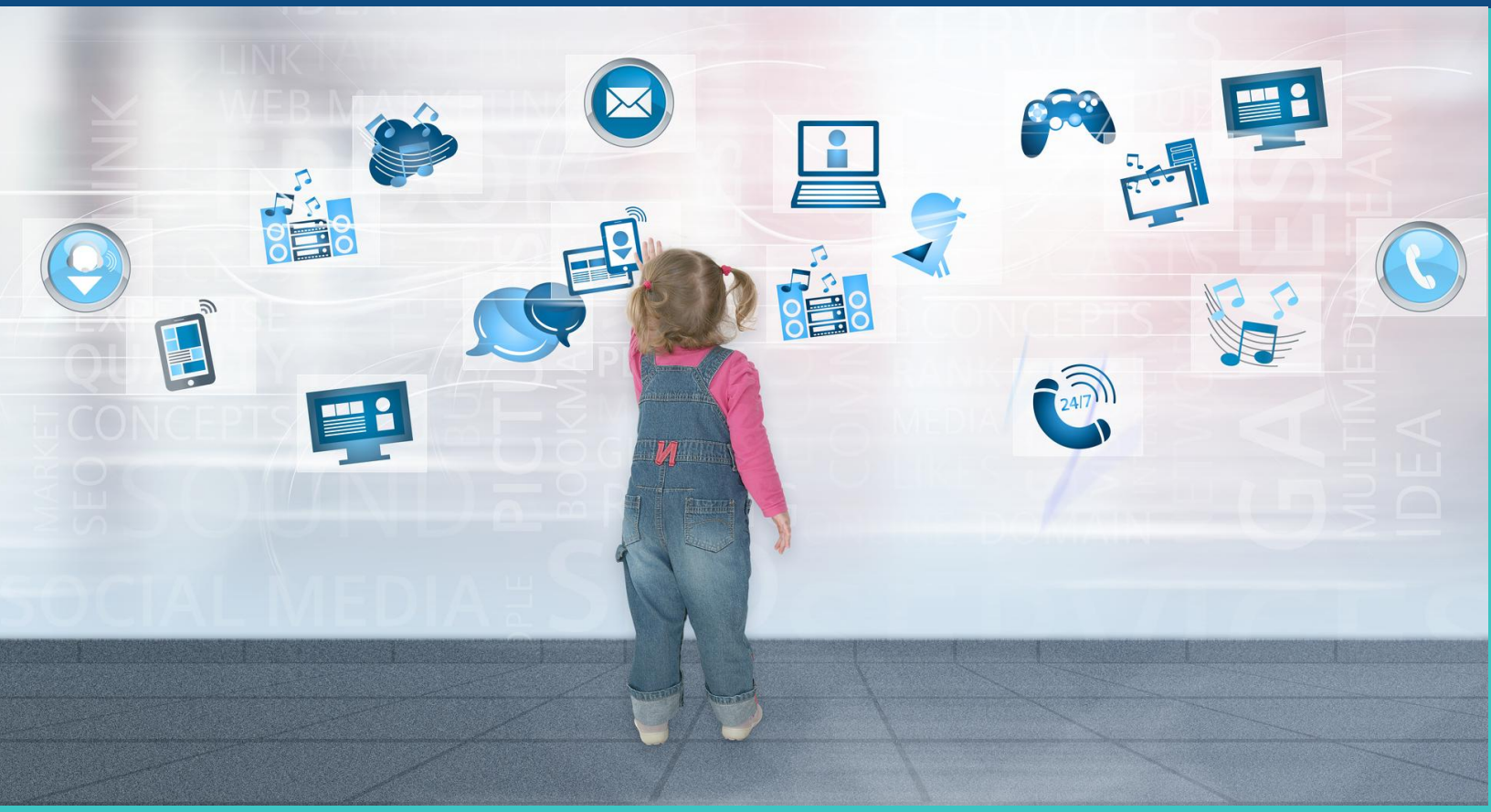
Frontier College
Collège Frontière

Literacy:
Learning for Life.

L'alphabétisation,
Une leçon pour la vie.



Literacy and Technology

DISCUSSION PAPER

2020

About Frontier College

Frontier College is a national charitable literacy organization, founded in 1899 on the belief that literacy is a right. We work collaboratively with community-based agencies and volunteers to provide high-impact literacy and numeracy support for children, youth, and adults. Each year, over 40,000 children, youth, and adults participate in our free programs in more than 160 communities throughout the country.

Canada Life is the Founding Sponsor of the event, and this year Cisco Systems will be providing in-kind technology support, via their WebEx platform.

We know that literacy is key to understanding and engaging with an increasingly digital world. Research shows that tech tools can improve learning outcomes for children from low-income neighbourhoods, learners in remote communities, and learners with special needs. But there are both benefits and risk to increased technology use, and issues with equitable access to technology across the country.

What is the role of technology in literacy and learning?

Literacy and technology: contexts and connections

Technology is an important part of our daily lives. It plays a role in how we learn, work, and connect with one another. Problem-solving in technology-rich environments is an important skill related to individual literacy. This includes a person's ability to use technology to:

- **Access and evaluate information**
- **Communicate with others**
- **Perform practical tasks**

In Canada, 30% of adults who work and learn in digitally or technologically rich environments, can only solve problems that have one explicit goal or a small number of steps. [i]

These individuals can have difficulty purchasing goods online, finding digital health information, and managing finances online. Approximately 17% of Canadian homes do not have access to broadband internet and we know from our own recent experience that about 25% of our learners are difficult to reach via technology.[ii]

Imagine not being able to connect with friends, family, coworkers, and the larger global community as digital forms of participation and communication constantly change. Imagine not being able to find secure employment due to increasing demand in technology focused skills. Imagine not being able to learn, work, and thrive as in-person facilities close.

Canadians with low literacy skills face barriers as they adapt to an increasingly technological world at work, at school, and at home. This has been exacerbated during the COVID-19 pandemic—as programs, services, and relationships move online. It has also compelled us to find new ways to respond to learners' needs, capacities, and interests, when face-to-face learning is not possible.

Literacy is key in understanding and engaging with an increasingly digital world. Technology can provide new avenues to better engage learners.

How can technology strengthen literacy?

Technology can help many different learners address their unique learning needs:

Children from low-income families

- Integrating technology into their learning can increase their likelihood of completing school and improving their social and economic mobility [iii] [iv]

- Learners better connect with literacy when technology is integrated into lessons as computer-assisted learning (software that helps students practice certain skills), behavioural interventions (technology that supports positive academic behaviour such as homework reminder applications), or online courses [v] [vi]

Learners with special needs/disabilities

- Assistive technology such as speech-to-text, virtual classrooms, or interactive whiteboards can strengthen literacy improvement, learning experiences, and learner independence [vii]

Indigenous learners

- Technology can increase access to literacy resources and support for those living in remote or isolated communities

- Technology can strengthen local Indigenous economies and empower Indigenous educators, learners, and innovators [viii]

"Literacy is now understood as a means of identification, understanding, interpretation, creation, and communication in an increasingly digital, text-mediated, information-rich, and fast-changing world." [ix] UNESCO

Risks of technology to literacy development

Technology can also pose many risks, particularly when we spend significant time on our devices. Depending on the learner and the environment, research has shown that some risks may include:

- **Loss of deep reading and critical thinking about text, resulting in superficial skimming** [x]
- **Reduced capacity to grasp and retain the sequence (and location) of information when reading in a digital format** [xi]
- **Increase in hyperactivity and lower grades when technology is incorporated,** [xii] **and reduced attention span and working memory in adults** [xiii]
- **Mood or behavioural disorders during childhood and adolescence due to daily electronic use** [xiv]
- **Further isolating individuals with limited internet and technology access who reside in rural, remote, and low-income communities**
- **Disrupted sleep, hampered brain development, stress, poor eating habits, and fractured attention** [xv] [xvi] [xvii]
- **Educators often compete with devices such as phones, for the attention and interest of learners** [xviii]

"We need to cultivate a new kind ... of reading brain capable of the deepest forms of thought in either digital or traditional mediums. A great deal hangs on it: the ability of citizens in a vibrant democracy to try on other perspectives and discern truth; the capacity of our children and grandchildren to appreciate and create beauty; and the ability in ourselves to go beyond our present glut of information to reach the knowledge and wisdom necessary to sustain a good society." [xix]

Maryanne Wolf, Director of the Center for Dyslexia, Diverse Learners, and Social Justice in the Graduate School of Education and Information Studies at UCLA

Best practices

Knowing these risks, one's instinct might be to avoid devices and applications, but this can actually leave people more vulnerable in a digital world. Researching and applying best practices can avoid some of the risks of technology use, while maintaining the benefits for literacy development. Some best practices proposed by field leaders and researchers include:

- **Emphasize the act of reading and the importance of analyzing texts, images, and media** [xx]
- **Promote the ongoing importance of reading from books, especially for the neurological benefits of deep reading and focus, and to support kinesthetic/tactile learning styles** [xxi]
- **Be familiar with a technology or media before integrating it as part of a lesson or program** [xxii]
- **Help steer learners' desire for electronic interactivity towards learning moments**
- **Before using technology with access to internet, teach learners the importance of responsible, safe internet usage** [xxiii xxiv]
- **Engage learners in educational opportunities involving real-world events or experiences across a variety of media and technologies (e.g., creating a family tree through software)** [xxv xxvi]
- **Provide learners with tools to find information independently, allowing them to recognize technology as a rich source of knowledge, while ensuring they are aware of resources available in other media** [xxvii xviii]

The range of technologies and tools available to enhance literacy, and, more broadly, learning, are only effective when integration begins with an understanding of the unique needs of learners.

Addressing the current gap

The intersection between literacy and technology is more relevant now more than ever. In light of the COVID-19 public health emergency in Canada, people are facing unprecedented disruption to their work, school, and home lives. The consequences of school and work closures include:

- **Interruptions in learning, employment, and socializing;**
- **Unequal access to digital learning portals preventing remote learning, which is particularly pertinent for rural, remote, and Indigenous communities; and,**
- **People deprived of opportunities for growth, connection, and development**[xxix]

These disadvantages are greater for under-resourced learners who tend to have fewer educational opportunities beyond school. Protracted closures can also result in increased rates of school dropout. In any other year, about 40,000 high school students will drop out of studies. This year, we are likely to see higher numbers, as nearly 300,000 are at higher risk of not completing a diploma due to economic insecurity.[xxx]

In response to school closures and the need for learning supports, Frontier College is making innovative strides to pivot our in-person programming to virtual platforms. We are connecting our 2,500 volunteer tutors with learners, offering free online literacy and numeracy tutoring across Canada. This new way of reaching students will become a permanent and popular delivery model for Frontier College and the literacy sector. Learners and their parents have shared the impact these programs have had on their lives:

"I wanted to share my appreciation of Frontier College's programming as it takes some burden off my back because I barely have time. So thank you!" Parent of Frontier College Learner

"Remote learning is working better for [me]. I can concentrate and pace myself better and in the classroom I felt pressured [by other] people." Frontier College Learner

"*Our Book Club class that usually runs in Toronto is almost done our novel; the class now contains a student who is in B.C and a Tutor who is taking their summer holiday in Nova Scotia."* Frontier College Coordinator

Moving forward

Frontier College's National Forum on Literacy and Technology aims to bring together a wide variety of participants to discuss how being literate in today's world requires an understanding of technology. We recommend that governments, community organizations, employers, and researchers work together to create programs, policies, and practices that responsibly integrate technology as part of literacy learning, while also addressing the rates of low literacy that disproportionately limit some groups from enjoying the full benefits and potential of our technology-rich era.

Now is the right time to engage with these pressing questions:

How can organizations and governments use digital tools to empower students, workers, and citizens?

Who might be left behind with increased reliance on technology and digital software to access goods and services, or to interact with governments, health care systems, and schools?

How can we better prepare learners for a technological workforce through literacy?

How can we promote responsible technology use with learners? What does responsible technology use look like?

What learning strategies are effective for those with limited or no access to digital technology and the internet?

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