The Need For

Increased Integration of Technology and Digital Skills in the Literacy Field

in Canada

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Acronyms and Abbreviations

app	application: a program often used on a mobile device such as a cell phone or a tablet.
b-learning	blended learning (methodology that combines f2f and e-learning)
BLE	blended learning environment
BLL	blended language learning
CALL	computer-assisted language learning
CMC	computer-mediated communication
e-learning	electronic learning
f2f	face-to-face (i.e. traditional classroom instruction)
ICT	information and communication technology
m-learning	mobile learning (e.g. learning with mobile phones, iPads, etc.)
MALL	mobile-assisted language learning
PLN	Professional Learning Network (sometimes also called Personal Learning Network)

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Introduction

There is a greater need than ever before to integrate technology into the literacy profession in Canada.

In 2001, researcher Debbie Murray stated that "E-learning, especially through graphically based multimedia, may be a way to improve literacy levels [in Canada]." The rate at which learning technologies have been integrated into literacy instruction in Canada has not kept pace with the rate at which technology has been integrated into public and private education and training in Canada, including in the workplace. Literacy organizations and practitioners in Canada need viable ways to integrate technology into their professional practice on a day-to-day basis.

Technology does not need to be adopted because it is fashionable, but because the face of learning worldwide has changed dramatically over the past several decades at all levels, from early childhood education to workforce training. When literacy professionals integrate technology in meaningful ways, they ultimately help learners prepare for long-term success.

This report highlights the changing landscape of Canadian education and training. It offers recommendations for literacy organizations, managers, coordinators, staff, volunteer tutors and other practitioners to incorporate technology into professional practice in an easily accessible manner that focuses on building professional competencies.

The Changing Nature of Education and Training

The use of technology has become increasingly prevalent in education in recent decades. In the 1980s, the field of computer-mediated communication (CMC) emerged. During that time, researchers and language teaching professionals began investigating what it would mean to integrate technology with communication. This applied both to first language (L1) acquisition and literacy skills such as reading and writing and also to second language (L2) and additional language (L3) skills. Since then, researchers have been investigating the role technology plays in helping children and adults learn and acquire language.

Today, the terms **e-learning** and **online learning** are used broadly across a variety of disciplines. Researchers and practitioners have developed learning models and theories to make learning in an electronic environment most effective. E-learning generally refers to learning that incorporates information and communication technologies (ICTs) to build skills and knowledge. Twenty-first century E-learning usually incorporates Internet-based and wireless technology including:

- apps
- blogs
- podcasts
- Internet-based gaming technologies
- Moodle
- social media (such as Facebook, Twitter and many others)
- web-based learning portfolios
- wikis

Technology integration in primary, secondary and post-secondary education in Canada

E-learning has become prevalent in schools across the country. The Canadian Council on Learning reported that in 2003-04, more than one million computers were available in elementary and secondary schools across Canada, allowing 5.3 million students access to technology in school. That meant that there was one computer for every five students (a ratio of 1:5) in Canada, which was better than the average ratio among OECD countries, where the ratio was one to thirteen (1:13).

There has been a dramatic increase in the use of "virtual classrooms" for learning in Canada. These are digital spaces where learners:

- gather to take classes in real time, which is known as **synchronous learning.** This type of learning usually involves having a teacher or facilitator present to guide the learning process, engage students in online discussions using tools such as voice chat or text chat and answer questions;

- engage in "learning on demand" or self-paced e-learning which is known as **asynchronous learning.** This type of learning is generally more self-directed, though learners often communicate with teachers using e-mail or other communication where there is typically some delay between the time one person initiates communication and the other party responds.

CCL reported that in 2003–2004, more than one-third (36%) of secondary schools across Canada had students participating in e-learning courses. Since that time, the increase in the use of technology in the Canadian secondary school system has continued to increase.

During the 2011-2012 school year alone, students in grades nine through twelve in Ontario could access no less than 120 e-learning courses to help them earn their high school diploma. A sampling of some courses students could take includes:

Course name	**Grade(s)**
English (Applied, Academic or Workplace Preparation)	9 - 12
Geography of Canada (Applied)	9
Geography of Canada (Academic)	9
Discovering the Workplace (Open)	10
Foundations of Mathematics (Applied)	9 & 10
Principles of Mathematics (Academic)	9 & 10
Biology for College Preparation	11
Managing Personal Resources - Workplace Preparation	11
Leadership and Peer Support (Open)	11
Ontario Secondary School Literacy Course (Open)	12
Information and Communication Technology in the Workplace (Workplace preparation)	12

These examples demonstrate what is happening just in the province of Ontario alone, but the trend of incorporating an increasing number of e-learning offerings at the high school level is a growing trend across Canada.

Technology is no longer just a way to *enhance* learning; it is a driving force in twenty-first century education across the nation.

In 2011, ABC news reported that school districts 41 states in the U.S.A. have dropped cursive writing from the curriculum, with the intention of focusing on keyboarding skills instead (Braiker, 2011). School districts in Canada are following suit.

Technology-driven and e-learning workforce training in Canada

Technology is not limited to the K-12 school system. It pervades all aspects of life including work and home. Human Resources and Skills Development Canada (HRSDC) notes "computer use" among the nine essential skills needed by adults in Canada.

The expansion of traditional notions of literacy being reading and writing to include workplace essential skills represents a significant leap in understanding what literacy means in the twenty-first century. Yet, a recent study has recommended that HRSDC replace the term "computer use" with "digital skills" to more accurately reflect the complexity of skills required in society today (Chinien and Boutin, 2011).

Digital skills extend beyond knowing how to turn on a computer, type with a keyboard, use a mouse or manipulate a touch-screen. These skills involve higher level cognitive skills and problem-solving skills such as knowing how to enter, search for, access, organize and apply information found using electronic sources such as the Internet.

The Canadian Council on Learning reported in 2009 that an increasing number of organizations are implementing and using "virtual classrooms" for workforce training. The skills required for workers today to take part in mandatory compliance training or professional development requires them to have not only basic digital skills, but also more complex skills such as accessing organizational learning management systems (LMS) or human resources training systems to access content and information that is critical for their jobs.

E-learning is changing how employers train administrative, technical and managerial staff.

Beyond e-learning

E-learning has transformed how learners interact with teachers, tutors, materials and each other. It has changed how workers access important information about the work force and mandatory training courses that they need to access just to stay employed.

Recent history has demonstrated a significant increase in the adoption and integration of e-learning at all levels. The rate at which technology is being used for education, learning and workforce training continues to accelerate.

Trends in education point towards an increase, rather than a decrease, in the use of technology for learning (Eaton, 2010). However, there are indications that e-learning as we know it today is not a direction that we can expect to continue. Currently, most online learning requires the learner to sit in front of a desktop or laptop computer in order to learn. This is changing. The use of cell phones, personal digital assistants (PDAs), iPods, tablets and other mobile technologies is increasing in general. This translates into a rise in the use of mobile technologies for learning. Research shows an increased demand among students for learning apps and content to facilitate learning and language acquisition (Chinnery, 2006; Godwin-Jones, 2011; Kukulska-Hulme, 2009).

The invention and adoption of new, cloud-based technologies allows learners to access material anywhere and anytime through a wireless connection. The information is not stored on local servers that require a learner to sit in front of the computer. Instead, the information is housed on "cloud-based" systems that can be accessed from a variety of devices, including laptops, iPads, tablets and mobile phones.

Evidence points towards another significant shift in how technology is used for learning within the next five to fifteen years. By 2020, it is likely that **mobile learning**, also known as **m-learning,** will replace current e-learning models at the primary, secondary and post-secondary levels, as well as in the workplace.

The Current State of Literacy Instruction

The literacy field remains largely paper-based. Many literacy organizations rely on books, workbooks, pens and paper in order to help learners build reading, writing, document use, numeracy and problem solving skills.

For example, an adult literacy learner may work with a volunteer tutor who uses a traditional bus schedule, in the form of a paper fold-out brochure, to teach the document use skills of reading and interpreting information in a schedule. The tutor may use an actual bus-schedule as a form of "authentic materials" in order to demonstrate the real-life application of document use skills.

The separation between digital skills
and other types of skills such as
reading, writing, numeracy and document use
is not only blurring,
it is disappearing.

The problem is that many of the tasks required of individuals in today's society are moving - or have already moved - into a digital space. Much of this is driven by changing economics, which challenges organizations to find

new and less-expensive ways to transfer information to citizens and consumers. For example, it is less expensive for a public transportation company to update a website with changes to bus times than it is to reprint thousands of brochures for passengers. Passengers access buses schedules online in real time using their mobile devices. People without the digital skills to access information using technology may find themselves left behind.

20th Century Methods in a 21st Century World

Similarly, the majority of literacy programs that teach reading to children and adults continue to focus on print-based media such as books, pamphlets, brochures and other paper-based resources.

In 2010 the Smithsonian published compelling research indicating that reading from a computer screen has revolutionized reading in a way that no technology has since Guttenberg's invention of the printing press in 1440. Reading from a digital screen, and in particular, from mobile devices, involves different skills than traditional reading. Digital reading involves the use of engaging the body through a mouse or a touch screen to access information. (Kelly, 2010).

In July 2010, Amazon reported that sales of e-books surpassed hardcover book sales. Less than a year later the company reported that it is now selling more e-books than both hardcover and paperbacks combined, and that sales for e-books readable through its Kindle device tripled between 2010 and 2011 (Kincaid, 2011).

Literacy instruction remains solidly planted in twentieth-century technologies and those invented even prior to that. The separation between digital skills and other types of skills such as reading, writing, numeracy and document use is not only blurring, it is disappearing.

The evidence compels us to ask: **How can we best serve our learners today, to ensure their success tomorrow?** In a world where technology continues to transform education and the workplace, the answer is clear: Integrate digital skills into literacy instruction for all ages.

In order to effectively integrate digital skill-building into literacy instruction, it is necessary to build technology capacity in literacy organizations among leadership, staff and volunteers.

Emerging Models of Technology Integration in the Literacy Field

The use of technology in the literacy field is growing. Some examples of programs and models that are effectively integrating technology include:

Ontario Literacy Coalition (OLC) Webinar Series

http://www.spotlightonlearning.ca/webinars - As part of the OLC's Spotlight on Learning initiative to build professional capacity among literacy practitioners, this project offers a webinar series for professionals in the literacy field on current topics of interest.

Global Conversations in Literacy Research

http://globalconversationsinliteracy.wordpress.com/ - This initiative began in 2009, under the direction Dr. Peggy Albers, a professor of literacy and language education at Georgia State University. A series of free, interactive webinars on literacy research, the project seeks to highlight current research being conducted by literacy researchers globally.

iCCAN

http://www.iccan.ca/ - Innovative Communities Connecting & Networking (iCCAN) creates learning opportunities to community adult learning councils and literacy organizations across Alberta using video-conferencing technology.

Common Characteristics of Cutting Edge Technology Projects in the Literacy Field

These examples of technology-driven initiatives in the literacy field share a number of characteristics in common:

Technology drives knowledge transfer	In each case, technology not only enhances the learning it is the principal mode of knowledge transfer.
Incorporate sophisticated hardware and software	Each project integrates technologies such as learning management systems, webinar platforms or videoconferencing hardware.
Engage participants in real time	Projects may have content archived, but they also offer participants the opportunity to engage in real time.
Developed to reach an audience at a distance	Each project was conceptualized and developed with a view to reaching participants over a large geographical distance.
Require facilitators and staff with high levels of technology competence and digital skills	Each project requires at least one person, though likely more, who is proficient in technology to implement learning sessions or deliver content.

The OLC's webinar series and the Global Conversations in Literacy Research, in particular, demonstrate the use of Internet e-learning technologies to bring professional development and capacity-building opportunities to users right at their desktop - or possibly even via a mobile device.

While the iCCAN project aims to use technology to bring programming to learners, it still uses a traditional model of having an expert facilitator deliver content to recipients who are essentially consumers of the material. The learners themselves do not have hands-on, interactive contact with the technology.

Each of these projects represents a tremendous leap forward in terms of using technology for professional development of literacy practitioners. While each is cutting edge, they represent only the first steps in the integration of technology into knowledge building. The next step is to get equally sophisticated technologies into the hands of the learners and get the learners actively engaged themselves with e-learning technology in a hands-on manner.

What is required is more technology capacity building for literacy practitioners for those who are "on the ground" teaching reading, writing and numeracy. Ultimately, the idea is to have **learners** interact with the technology that requires them to ***experience*** it in a personal, hands-on and interactive way as an integral part of the knowledge transfer process.

While there are many adult literacy and return-to-work programs that teach computer skills to learners, this remains largely based on learning office administrative programs to build resumes. An expansion of the use of e-learning and mobile technologies in all aspects of literacy instruction is the next step in the advancement of literacy to build skills across the nation.

The Need for Continuing Professional Development

Research has uncovered a startling myth when it comes to technology and learning. It is commonly believed that people who use technology for entertainment or personal reasons such as social media or gaming, intuitively make the leap to using technology for learning, but this is not necessarily the case (Snookes and Barker, 2009; Zhao, 2005). This is true even of "digital natives" who have grown up using technology all their lives.

Researchers point out that the link between technology and learning is not obvious to all learners. Both younger and older learners may require guidance from teachers on how to make the shift from using technology for play to using it to learn. In other words, the teacher or tutor plays a key role in learners' success when it comes to using technology effectively to learn new skills.

MYTH:

People who use technology for gaming, social media and fun do not automatically understand how to use technology for learning.

FACT:

Teachers play a critical role in helping learners use technology in meaningful ways for learning.

This means that technology is not about to replace a teacher or tutor any time soon. However, in order for learners to use technology in a meaningful way for learning, their teachers must first understand, and then be able to teach, using technology.

For instructors with a successful track record built over many years of teaching, the thought of changing what has worked for them for many years seems meaningless. The point is not to integrate technology for the sake of it, but rather to help learners build their skills. The most effective way to develop and integrate digital instructional skills, is not to tell a committed professional or volunteer that his or her skill set is outdated and needs to be replaced, but rather to build on what he or she is already doing successfully. Then, integrate new methods and practices slowly, at a pace that is comfortable for the practitioner.

Traditional notions of the professional identity are changing. No longer is an individual a student *or* a teacher, with the former being a consumer of knowledge and the latter being a purveyor of it. In today's world, an individual can be both a teacher *and* a learner. A person can have both roles simultaneously and maintain them throughout much of his or her life.

Teachers and tutors of the twenty-first century are expected to demonstrate their own commitment to lifelong learning by acquiring new skills throughout their own career. This means moving in and out of internal spaces of comfort on a continuous basis, embracing the challenge of learning and growing, just as they ask their learners to do.

The following section offers recommendations for literacy professionals and tutors to build their technology capacity with a view to helping learners gain twenty-first century literacy and essential skills.

Recommendations

While it is easy to identify *what* needs to change, figuring out *how* to implement change is a different matter entirely. This section outlines strategies to implement professional development and capacity-building training over the long term.

Recognize the importance of organizational champions

Learning new technologies can be overwhelming for many people. Having one or more people within an organization who are comfortable with technology to champion the cause can help contribute to participants' success.

Ideally, the champion will also have the ability to speak in plain language, have patience while others learn and maintain a lighthearted approach to technology. These characteristics are likely to inspire others to try new technologies.

This does not mean that the champion will take charge of technology or of others learning, but instead will help to facilitate others' professional growth.

Address the the Issue of Infrastructure

It is difficult, if not impossible, to build technology capacity with outdated equipment. Literacy programs remain deplorably underfunded, which means their computers and IT infrastructure are old and slow. This makes it difficult for staff and volunteers to build their technology skills, and frustrating for them to even try.

Strategic discussions among management, staff, boards and stake holders focussed on acquiring updated hardware, networks and technology infrastructure may be part of the process towards building technology capacity. In fact, integrating technology vocabulary may in itself be an important first step in helping individuals in the organization understand what is necessary to build digital skills.

Use a Strength-Based, Individualized Approach

Strength-based approaches, also known as values-based approaches, to leadership and development focus first on identifying what is working. This means identifying a practitioner's strengths and building on them. A literacy tutor who is particularly good at teaching beginning reading skills may respond better to learning to read themselves using an iPad than to jumping into a real-time live webinar.

A practitioner with a natural ability to create engaging visuals may benefit from learning how to use PowerPoint or Keynote to create slides for a presentation before diving into the world of blogging. Let users determine what interests them, based on what they are already good at.

Focus on – and celebrate - small steps

It is important to recognize the negative impact that information overload can have on a person who is trying a new technology. It takes time to absorb new information, to try, to make mistakes and to try again.

An all-day workshop on how to integrate social media into an organization's communication and marketing strategy may overwhelm some practitioners. A series of professional webinars, for example, each focussing on a specific and narrow topic, allows users to learn and then apply smaller amounts of new knowledge on an ongoing basis. Possible topics might include: How to open a Twitter account; Twitter Basics; How to set up a Facebook page. By dividing learning into manageable chunks, participants are less likely to get overwhelmed. When it come to technology, small steps matter.

Allow a nonlinear approach

Traditional learning stresses a linear approach. It is not uncommon in the world of technology for "dabbling" to occur. Trying a variety of technologies, delving deeper into some and abandoning others is a typical path for a self-directed technology learner.

The developmental continuum of technology knowledge is a nonlinear one. Allow users the freedom to explore different technologies and ultimately adopt those which interest them most deeply. It is these technologies that they are likely to excel in and ultimately, be able to share with others.

Encourage regular practice

Learning a new technology once is not enough to internalize the knowledge and apply it consistently in a methodical and effective way. Research indicates that the more exposure a person has to a new technology and the more they interact with it, the more comfortable they become (Snookes & Barker, 2009; Hare & Eaton, 2010). Regular practice helps to reinforce learning and build new skills.

The more a person interacts with new technology,
the more comfortable and confident
they become with it.
Regular practice helps to build skills
and belief in oneself.

Adopt Collaborative Models

Just as notions of education and literacy have changed in recent decades, so too, has professional development evolved. Twenty-first century approaches to professional learning incorporate collaborative models of development that involve peers learning from peers. This is particularly useful when it comes to technology.

Adopting a collective mindset that we are all both teachers and learners simultaneously allows for a collaborative, participatory learning environment to develop.

Charge everyone with the responsibility of being a digital steward

There is simply too much technology in existence for any one individual to know, understand deeply and apply on a consistent basis. Even educational technology experts confess to not being able to keep up with all the new tech in existence.

One person in an organization cannot be expected to be the lone tech expert. While it may give the individual a sense of being needed and indispensable in an organization, it is also a tremendous burden. In terms of long-term organizational growth, it is also risky for one person to be the keeper and steward of all the technology knowledge for an organization. Cultivate an organizational value system that charges everyone in the organization with building their own technology skills. Create a network of collaboration with many people, not a dependency one one expert.

Experiential learning is critical

When learning new technologies, it is essential for users to **interact** with the technology. It is not enough for a person to watch someone else show them how to use a new piece of technology.

This is an acceptable initial step, but immediately after that, the user benefits most from trying it for themselves, learning how to navigate menu systems, user interfaces and uncover the various layers of what the technology can do.

Cultivate an organizational value system that charges everyone in the organization with building their own technology skills.

Create a network of collaboration with many people, not a dependency one one expert.

Acknowledge, the move past, emotional responses

Technology can cause the most patient person to become instantaneously frustrated or anxious. It is important to acknowledge the emotional response and learn how to move past it in order to keep the experience positive and productive. Taking breaks, asking others for help and exploring online resources such as discussion forums and chat rooms can be helpful. It is important for users to overcome negative emotional responses which are not uncommon when learning new technologies or experiencing malfunctions beyond their own control.

Reassure users that nothing is wrong with them and that everyone experiences frustrations with technology from time to time. Support users through negative emotional episodes so they can move forward with their learning.

Create sharing opportunities

A collaborative approach goes hand-in-hand with giving participants and users the opportunity to share what they know. While traditional conferences remain an important aspect of professional development, less formal events are equally, if not more important, for creating learning and sharing opportunities.

The notion of the "un-conference", also known as "teach meets" are quickly gaining popularity. These events are generally less expensive and can often be organized much more quickly. The philosophy behind the "un-conference" is that the wisdom and expertise in the audience is greater than the expertise on stage (Craig, 2006). When you tap into the audience, the opportunities for learning skyrocket.

As opposed to a conference, where presenters are selected based up on their expertise and presentation skills and participants are largely recipients of the information, the "un-conference" is participant-driven and often more interactive. Attendees may write topics they are interested in on boards, or vote before the event. The topics are consolidated and participants break into sharing groups. A facilitator is selected in an ad hoc manner to lead

participants through a session and everyone shares what they know, asks questions and offers tips.

Another format is to have presenters give "micro-presentations" of 10 minutes or less, or select presenters randomly from a group of willing participants.

Such events do not have to be large scale. Creating opportunities within your own organization or by partnering with one or two other organizations can allow ideas to flow and learning to happen. The critical idea is to have participants share what they know in a collaborative, participatory and interactive way.

Conclusion

Technology is not longer being used to enhance teaching and learning. It has become an integral part of the learning experience, as well as everyday life. From using a mobile device to check when the next bus is coming, to using an mp3 player to listen to music to accessing an app to look up the translation of a word into English, people are accessing more technology more often to do more things than ever before. Individuals interacting with technology has become an integral aspect of everyday life.

There is an immediate and pressing need to build technology capacity among literacy practitioners so that they can better help learners. Traditional literacy activities such as reading and writing are moving into digital spaces. "Computer classes" that teach users how to use word processing or spreadsheet programs are no longer sufficient. A deliberate commitment to integrate technology into literacy instruction is needed on a large scale. The first step is to build the digital skills of those who dedicate their lives to this worthy profession. Doing so will only benefit the learners over the long term.

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