

The Implementation of Jenkins's 21st-Century Skills in the Curriculum:  
A Cross-National Policy Analysis

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## **Abstract**

This meta-analytic study sought to determine if cross-national curricula are aligned with burgeoning digital learning environments in order to help policy makers develop curriculum that incorporates 21st-century skills instruction. The study juxtaposed cross-national curricula in Ontario (Canada), Australia, and Finland against Jenkins's (2009) framework of 11 crucial 21st-century skills that include: play, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, networking, and negotiation. Results from qualitative data collection and analysis revealed that Finland implements all of Jenkins's 21st-century skills. Recommendations are made to implement sound 21st-century skills in other jurisdictions.

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## CHAPTER ONE: INTRODUCTION

The changing context of contemporary teaching practices has been widely recognized. All over the world, educational leaders are adopting different practices that will prepare learners to be critically engaged citizens of the world. The burgeoning space for learning that Web 2.0 affords us is literally taking learning to a new platform. It provides users with a place for social interaction, collaboration, and the strengthening and building of networks (Davies & Merchant, 2009). Essentially, this platform provides new ways for users to communicate. Learners are taking to online spaces to collaborate, share, network, express, and exercise their global citizenship (Buckingham, 2008; Davidson & Goldberg, 2009; Davies & Merchant, 2009; Ivey & Tepper, 2006; Jenkins, 2009; Kingner, Morrison, & Eppolito, 2011; Warschauer & Matuchniak, 2010). As such, leading researchers have been positioning for more contemporary pedagogical practices in order to support global citizens. These more contemporary forms of communication and ways to be literate are developing quickly and assessment protocols have not yet kept pace. Although there is no one-size-fits-all approach, a better understanding of the curriculum for the emerging forms of competencies is crucial for instruction that is effective and accountable. This does not mean that these new literacies and competencies or assessments will supersede their more traditional counterparts. Rather, this exciting time is an opportunity to rethink and strategize towards the development of new critical literacies through sound curricula and assessment practices.

The purpose of this study is to investigate how 21st-century skills are currently implemented in curricula, in order to determine best practices in the development of more contemporary curricula. Building on the work of Jenkins's (2009) framework of 21st-

century skills, this study audited a selection of global curricula frameworks to determine their interpretation of 21st-century skills instruction. The investigation encompasses the following jurisdictions: Ontario (Canada), Australia, and Finland. It provides a brief overview of how 21st-century skills are outlined in each jurisdiction's curriculum, and analyzes how these curricula apply the 21st-century skills. Further, it also presents a comparison model of 21st-century skill alignment in Ontarian, Australian, and Finnish curricula. Lastly, the study's concluding chapter offers recommendations for policy makers for sound 21st-century skill instruction.

### **Research Problem**

Given the emergence of a new learning environment, many instructional practices have been revamped. However, there has been little adjustment to curriculum and assessment that reflects the different literacies technology and digital worlds has brought into classrooms. As such, this paper seeks to bridge the gap between the advancements literacies have made in the classroom and advancements in its assessment. This paper is a comparative analysis of international frameworks for the instruction of 21st-century skills. As technology becomes an increasingly ubiquitous staple in the educational scene worldwide, it is evident that educators have taken heed and much research and practice has been influenced. Assessment needs to guide instruction; however, it appears evident that in this case new literacies have and will continue to influence its assessment.

Some global literacy initiatives have paved the way in the assessment of critical literacies, and a critical meta-analysis of their assessment frameworks will guide other educational districts towards more contemporary assessment that reflects learning in a newer age. Specifically, by juxtaposing international curriculum frameworks of new

critical literacies, it is anticipated that their guiding principles can guide the Ontario Ministry of Education assessment framework.

### **Justification for the Research Problem**

In 2010, the Ontario Ministry of Education (OME) published a policy outlining the assessment, evaluation, and reporting guidelines for students from Grades 1 to 12 for use in the Ontario Curriculum. The OME's *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools* is the first policy of its type in Ontario that amalgamates all assessment practices that take place within the public school system. It encompasses all subjects and grades to create one streamlined assessment, evaluation, and reporting policy for the Ontario curriculum. It supersedes all other curriculum policy documents and it is touted to be consistent across elementary and secondary grades, "clear, consistent, and well aligned across panels and across school boards and schools" (OME, 2010, p. 2). In addition to being fair, transparent, supportive of every student, ongoing, and varied, this assessment policy embodies achievement charts for all subjects and policies and procedures for reporting. The *Growing Success* document also outlines the following as learning skills and work habits that are integral to student learning: responsibility, organization, independent work, collaboration, initiative, and self-regulation. These learning skills are to be assessed separately from subjects and apply to all subjects and grades except for the mathematics and the health and physical education curriculum. These learning skills not only are fostered by teachers but also are regarded with the utmost importance as a means to prepare students for postsecondary education and the workplace. Their significance is further exemplified as they are explicitly reported on in all Ontario elementary and secondary school report cards.

### **Purpose of the Study**

The purpose of this study is to conduct an audit of three international frameworks on new literacies and best practices in 21st-century skills instruction to provide guidance to emerging jurisdictions that are looking to improve their curricula.

### **Research Questions**

The underlying research question that this paper will respond to is simple: How are 21st-century skills addressed in different jurisdictions? Through this investigation, emerging curricula can learn from jurisdictions that have paved a path in sound, dynamic, and informed instructions in our ever-changing society.

### **Outline of the Remainder of the Document**

In chapter 2, I present key findings from the literature related to the 21st-century skills outlined by Jenkins (2009). Specifically, I address the emerging problems in digital literacy instruction and the 21st-century skills, and then speculate about how these topics are relevant to policy makers. Building from this literature base, I then outline the research design and methodology. Chapter 3 includes a full description of all aspects of my research approach, jurisdictions, and documents investigated. A table and an explanation of all documents are summarized and compared against each other.

In chapter 4, I present the outcomes of my research process. Specifically, I articulate the common skills each jurisdiction covers in its respective instruction of 21st-century skills. In addition, I highlight some of the salient features of their curricula. In addition, tables are included to illustrate the differing frameworks of the curricula studied and a final table displays how each jurisdiction aligns with the 21st-century skills.

I conclude in chapter 5 by presenting a summary of this investigation by articulating key learning outcomes, and describing future steps for curriculum development. I draw a series of implications for a curriculum that reflects changes in society, economy, and digital platforms.

## **CHAPTER TWO: LITERATURE REVIEW**

This study's review of related literature includes research underlying the emerging problems facing the educational system without an appreciation of 21st-century skills instruction. Second, the 21st-century skills are then overviewed. The 21st-century skills will serve as points of comparison for the curricula studied in this investigation. Lastly, support and justification for the framework that this study is based on, Jenkins's 21st-century skills, is presented.

### **Emerging Problems in 21st-Century Skills Instruction**

The adoption of digital media in the classroom does not come without any drawbacks. There are certain risks that educators and users can run in to when implementing technologies as an instructional tool. A major consequence of not having sound 21st-century skills instruction in a democratic nation is the participation gap. The participation gap consists of the divide in the participation of accessing and creating content in new platforms (Ivey & Tepper, 2006; Selwyn, 2011; Warschauer & Matuchniak, 2010). At its best, technology and digital platforms allow digital natives to create new opportunities, network with fellow amateurs, find audiences for their work, and network and gain status for personal development, civic engagement, and academic and professional development. At its worst, learners with fewer resources—time, money, knowledge about how to navigate and create in these new digital platforms—will only be able to consume the media (Collins & Halverson, 2009). These less privileged learners will be at a disadvantage amidst advances in digital technology. Seemingly innocuous at first, this participation gap can, if not already, create an upper and lower class in the use of technology and multimedia platforms. However, it is quite clear that if learners lack

time, money, and know-how, there can be dire consequences in their ability to engage in civic duties, expression, and access and create up-to-date data and knowledge. Ivey and Tepper (2006) have purported that this gap in participation will certainly lead to a cultural divide, and consequently a cultural elite. As we recognize the changes in our culture due to these digital platforms, one cannot argue how fundamental technological know-how is crucial in the workforce. Therefore, the responsibility is on the education system, regardless of jurisdiction, to ensure that all learners are given the equal opportunity to participate in new media platforms to ensure that they will be competitive in changes in the workforce.

### **21st-Century Skills: Adopting Jenkins's Framework**

Our society is dealing with exponential increases in the amount of information and learners are immersed in across different learning environments (Collins & Halverson, 2009). As a response to these societal shifts, 21st-century literacy serves as a set of abilities and skills where textual, aural, visual, and digital literacies overlap. Individuals who are 21st-century literate have the ability to understand the power of text, images, and sounds, and they can use these competencies to manipulate and transform media and to distribute them pervasively (New Media Consortium, as cited in Jenkins, 2009, p. 28). Twenty-first century literacy frameworks do not replace current, more 20th-century models, rather they enhance them by acknowledging the role and thinking systems implicit to 21st-century learning and building in the skills needed to read and write print-based, more conventional texts. In order for students to be successful they need to be competent in core literacy (reading and writing) in addition to 21st-century skills (Jenkins, 2009). Another point of clarification of importance is

that 21st-century skills are by no means identified as technical skills, or as information and communications technology skills. Although a level of competence in navigating through hardware and software is necessary, 21st-century skills go far beyond that—similar to how dancers learn the capabilities of their body before creating masterpiece performances.

Jenkins (2009) provides a framework of learning skills that is more attuned to current learning environments. He argues that in addition to the “traditional literacy and research, technical, and critical-analysis skills learned in the classroom” (p. 29), other new cultural and social skills need to be addressed in order for learners to navigate through the new learning environments. Jenkins’s framework includes the following 11 skills: play, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, and networking.

Play is the ability to problem-solve and explore creatively through experimentation in various environments. In play learners are able to take on personas and problem solve in unfamiliar situations with little emotional stakes. In play learners are able to experiment with trial and error with engagement and fun.

Performance is “the ability to adopt alternative identities for the purpose of improvisation and discovery” (Jenkins, 2009, p. 28). Through the development of this skill, students can explore different social spaces, and expression in the real world and the digital world.

Simulation is “the ability to interpret and construct dynamic models of real world processes” (Jenkins, 2009, p. 25). Through simulation, learners can take advantage of technology to work with a larger amount of information by manipulating information into

more complex configurations, experiment with different types of expression, and be immersed in real-world problems within a safe space. A popular example is in computer games. An example is how students can explore physics principles through designing rollercoasters on computer software.

Appropriation is the “ability to meaningfully sample and remix media content” (Jenkins, 2009, p. 32). In a traditional sense, this is an updated version of analysis and synthesis, but with a heavy trace of art. This skill requires learners to express themselves by taking current material and making it their own. It is almost a form of art for young people to produce media that can reach the world. Consider the production of a YouTube video presentation for students to demonstrate their learning. The process of selecting frames, images, music, and script for a video is an amalgamation of their learning process.

Multitasking is the “ability to scan one’s environment and shift focus as needed to salient details” (Jenkins, 2009, p. 34). This ability seems straightforward to those who are already 21st-century skills literate, but it is not necessarily so. Although this comes naturally to digital natives, the process of being able to scan multiple information sources and pinpoint the information usefully and filtering out the rest is quite remarkable, and this skill is not necessary in the classroom.

Distributed cognition is the “ability to interact meaningfully with tools that expand mental capacities” (Jenkins, 2009, p. 37). In this skill, intelligence is seen as an accomplishment rather and something that is processed; this is the case because there is no need to record information in one’s head. Instead, individuals have the capacity to use multimodal ways to organize and plan data; they are even able to use technology to help

keep track of what peers are doing. When exercising their ability to distribute cognition, learners are able to spend more attention or processing power on strategic decision making.

Collective intelligence is “the ability to pool knowledge and compare notes with others towards a common goal (Jenkins, 2009, p. 39). The more traditional form of this would be in-person, collaborative activities; however, in the 21st century, it is so much more than that. Collective intelligence is a skill where you recognize that it is a strength to have team players with different strengths and backgrounds. It is when you all pool knowledge and share a communal platform to share ideas freely, cross-reference each other’s information, and act as one mind, and express yourselves in one voice (Jenkins, 2009, p. 39). In this manner, learners recognize that nobody can know everything, but everybody will know something, so in gathering together, and sharing the same goal, they can achieve their goal easier.

Judgment is “the ability to evaluate the reliability and credibility of different information sources” (Jenkins, 2009, p. 43). Due to the multitude of information and types of information we are exposed to, learners need to develop their skills in judging whether a piece of media content is fiction or non-fiction, marketing or enlightenment, newsworthy or propaganda. It also begs learners to question the authenticity and accuracy of information sources.

Transmedia navigation is “the ability to follow the flow of stories and information across multiple modalities” (Jenkins, 2009, p. 46). This skill challenges learners to follow a flow of information from their real life to their digital life. Are they able to recognize the same story, morals, and themes between a blog, an infographic, and in real life?

Networking is “the ability to search for, synthesize, and disseminate information” (Jenkins, 2009, p. 49). The development of this skill is quite alluring in that students will develop their skills in navigating different social communities since technology allows learners to access a lot more people than before. It challenges learners to transform their information and the way they communicate to suit the digital social arena. For instance, learners express themselves differently when they are on different platforms, such as, email, Twitter, Vine, and YouTube videos.

Negotiation is “the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms” (Jenkins, 2009, p. 52). Through the new forms of communication, different cultures, perspectives, and attitudes are being exchanged and accessed with effortless fluidity. With that in mind, learners will begin to develop skills to reconcile differences in values, events, and experiences from sources of information. They will learn to negotiate or formulate arguments to come to a consensus. This will benefit students because they will learn to listen actively, compromise or agree to disagree, and appreciate differences between individuals. This will prepare students with a larger pool of knowledge to draw from, and it will allow for deep communication.

The aforementioned skills are collectively known as 21st-century skills. Although there are several frameworks of 21st-century skills, Jenkins’s (2009) framework will be used as it is widely accepted and frequently referenced (see also Davidson & Goldberg, 2009; Warschauer & Matuchniak, 2010.) As such, for the purposes of this paper, Jenkins’s framework will be used as a grounding theory in which other nations will be compared across. Table 1 summarizes the 21st-century skills outlined by Jenkins (2009).

Table 1

*Outline of 21st-Century Skills*

Skill	Definition
Play	Ability to problem-solve and explore creatively through experimentation in various environments.
Performance	Ability to adopt alternative identities for the purpose of improvisation and discovery.
Simulation	Ability to explicate and construct dynamic models of real-world processes and systems.
Appropriation	Ability to meaningfully sample and remix media content.
Multitasking	Ability to scan the environment and shift focus onto salient details.
Distributed cognition	Ability to interact meaningfully with tools that expand mental capacities.
Collective intelligence	Ability to problem solve independently and seek out experts in social community when need arises.
Judgment	Ability to evaluate and reliability and credibility of different information sources.
Transmedia navigation	Ability to follow the flow of stories and information across multiple modalities.
Networking	Ability to search for, synthesize, and disseminate information.
Negotiation	Ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.

*Note.* Adapted from Jenkins (2009).

### **Justification for Jenkins's 21st-Century Skills**

Gee (2004, p. 9) posits that 20th-century skills that were taught focused on seeking comprehension; however, 21st-century skills focus on meaning making and creation. Therefore, this section will examine the reasons behind selecting Jenkins's framework as the grounding framework for this study.

Firstly, "educational learning serves multiple ends. These include academic and scholarly ends, civic ends, personal success and fulfillment ends" (Lankshear & Knobel, 2008, p. 8). And due to the advances of our digital lives, our education system needs to adapt to ensure learners' ends are still being met. By ensuring that students are prepared with a set of skills that enable them to be successful in the advancing digital worlds, students are given opportunities to utilize 20th- and 21st-century skills. This in turn allows them to be successful in a traditional schooling system as well as the digital world. This allows for higher engagement, and participation within and beyond the school system (Lankshear & Knobel, 2008).

Secondly, students want and need guidance in the digital world. Gee states that "giving young people access to technologies is not enough. They need-just as they do for books-adult mentoring and rich learning systems built around technologies, otherwise the full potential of these technologies is not realized for these children" (as cited in Lankshear & Knobel, 2008, p. 13). Jenkins's 21st-century skills and this study set out to accomplish such a learning system that mandates educators to provide learners with the opportunities for sound instruction for the 21st-century learner.

### **Summary of Literature Review**

The instruction of sound 21st-century skills is the responsibility of the education

system, which should ensure that all learners can and will become full citizens, regardless of their jurisdiction. With that being said, rigorously researched 21st-century skills need to be incorporated and adopted whole-heartedly in all curricula effectively to avoid having more anachronistic curricula. The 21st-century skills posited by Jenkins (2009) include traditional forms of literacy in addition to the following 11 skills: play, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, and networking. Lastly, Jenkins' framework for 21st-century skill instruction is being used in this investigation as it has strong peer support.

### **CHAPTER THREE: RESEARCH METHODS**

This chapter describes the methodological considerations and the research design of this study. It concludes with the limitations of the study. In order to juxtapose the frameworks of global curricula, a grounding framework was selected to serve as a point of comparison. This investigation utilizes Jenkins's 21st-century skills as a point of comparison for Ontario, Australia, and Finland's curricula. The 21st-century skills are listed as follows: play, performance, simulation, appropriation, multitasking, distributed cognition, collective intelligence, judgment, transmedia navigation, networking, and lastly, negotiation. Further, his explorative study seeks to find the commonalities and differences in different global frameworks' 21st-century skills instruction within their respective curricula with a focus on skills, as opposed to content. The methodology is a meta-analysis of existing curricula juxtaposed against Jenkins's interpretation of 21st-century skills. Using grounded theory, the researcher identifies patterns across these curriculum documents.

#### **Research Design**

The researcher conducted an international review of curricula in pursuit of the commonalities and differences between them. To ensure an accurate comparison, a grounding framework was selected to juxtapose all curricula against. The strongly peer reviewed set of skills is called 21st-century skills, posited by Jenkins (2009). The curricula investigated include those in Ontario, Australia, and Finland. In addition to an analysis of each curriculum's adaptation of 21st-century skills, the skill sets in each curriculum was juxtaposed against Jenkins's 21st-century skills. Further, a comparative framework comparing Jenkins's, Ontario, Australia, and Finland's skills is presented.

### **Data Collection**

Using convenience sampling, the researcher compiled policy documents that were easily accessible and available in English and that allowed the researcher to have a breadth of understanding of 21st-century skills. The criterion for inclusion in this study is a convenience sample of nations with curriculum documents that have been made publicly accessible, are available in English, and exemplify 21st-century skills in their curriculum. In this way, the methodology is a comprehensive audit of the field and a theorizing of 21st-century models based on Jenkins's criteria. To maintain some consistency, only curricula for grade school instruction were used. As it would be unrealistic to study all documents outlining the content of all grades, subjects, and curriculum documents, the investigation focused on content related to learning skills instruction, or information communication technology (ICT).

For the purpose of this study, several curricula were selected to get an understanding of how Generation Z is being educated in the 21st-century skills. Table 2 outlines the countries, the authorities that design the curriculum, and the titles of the curriculums consulted.

### **Data Analysis**

In keeping with grounded theory, the researcher went about this investigation with reflexivity in mind. As the researcher had a strong interest and stake in the Ontario education system, the researcher was first introduced to *Growing Success: Assessment, evaluation, and reporting in Ontario Schools (2010)* and found it quite shocking that aside from subject knowledge, the only other aspects students were assessed on were their learning skills.

Table 2

*Jurisdiction, Authorities, and Documents Consulted*

Jurisdiction	Authority	Documents consulted
Ontario	Ministry of Education	<i>Growing success: Assessment, evaluation, and reporting in Ontario schools</i>
Australia	Australian Curriculum, Assessment, and Reporting Authority (ACARA)	<i>The Australian Curriculum</i> <i>The Australian Curriculum: Technologies</i> <i>The Australian Curriculum: Technologies – Digital Technologies</i>
Finland	Finnish National Board of Education	<i>National Core Curriculum for Basic Education</i>

The learning skills seemed relatively scant, up for interpretation, and at times even shallow, in my opinion (based on my audit). Soon after being introduced to Jenkins's framework, the researcher was introduced to Jenkins' (2009) 21st-century skills and found large discrepancies in the identification of crucial skills for living and working in the 21st century. Having identified the 21st-century skills, the researcher sought out more innovative curricula that can be used as a grounding framework to compare with other jurisdictions' curricula. The jurisdictions' curricula were investigated, and the researcher then identified the skills that the curriculum mandates teachers to teach. Furthermore, the skills were juxtaposed against Jenkins's 21st-century skills to see if the 21st-century skills were exemplified within the curricula. Lastly, the researcher compared the jurisdictions' curricula against each other in the format of a comparison model and I created a table.

### **Limitations**

There are five major limitations within this study, the first being that the researcher is quite adamant in finding ways to improve the curriculum within Ontario. With that being said, this study has a bias to seek solutions for curriculum development in Ontario and places similar to Ontario. Therefore, solutions recommended may not be fitting for all jurisdictions; it may only be fitting for jurisdictions that are similar to Ontario culturally, economically, and demographically.

Secondly, this study is an exploration of only three jurisdictions—Ontario, Australia, and Finland. In theory, this is a small sample, therefore, it needs to be reiterated that the findings in this study are likely to only be fitting in jurisdictions that

are democratic, diverse/multicultural, developed, and with plentiful information-based jobs.

Thirdly, in order to assess how 21st-century skills are implemented in the curriculum, subject knowledge is not considered. Therefore, subject knowledge is neither an asset nor a liability in the context of this study.

Fourth, this study investigates several documents that comprise of values, goals, intentions, learning plans, and assessment protocols. With that in mind, curricula are just as objective as they are subjective, as meaningful as they are meaningless, and as finite as they are unfixed. For instance, all three nations have different frameworks in which they structure their curricula. Ontario's curriculum features a continuum of subject knowledge, without much focus on the delivery of learning skills. On the other hand, Australia segments its entire curriculum into capabilities where subject knowledge, ICT, thinking, interpersonal and intrapersonal, ethical, and intercultural understanding are all as equally valued and expressed within the curriculum. Similarly, Finland has a multidimensional approach whereby the school models real world life and their curriculum is a cross-section where citizen skills, content, and implementation meets. Therefore, it is important to note that the content of these curriculum documents are open to interpretation.

The last limitation that is worth mentioning is that the curriculum belonging to any of these jurisdictions may or may not reflect what happens in the classroom. Changes in the curricula are just the beginning—teacher education and educational (multimodal) texts need to follow in order to ensure sound 21st-century skills instruction. However, keeping with the vein of this study, this study will be able to provide policy makers with a frame of reference to create a curriculum that is reflective of the time that we are in.

## CHAPTER FOUR: FINDINGS

This chapter identifies the learning goals, and objectives for each jurisdiction investigated: Ontario, Australia, and, Finland. It identifies the skills or capabilities that students should develop over the course of their basic education. These findings are then compared against Jenkins's (2009) 21st-century skills. In closing, all three jurisdictions' learning skills and capabilities are juxtaposed against each other and Jenkins's 21st-century skills.

### Ontario

In order to achieve the aforementioned clear, consistent, and aligned assessment of learning skills and work habits, the OME (2010) has outlined the learning skills and work habits with sample behaviours as follows: responsibility, organization, independent work, collaboration, initiative, and self-regulation. (See Table 3.)

Responsibility is demonstrated through “fulfilling responsibilities within the learning environments” in regards to academic work, “agreed-upon timelines and managing the learner’s own behaviour” (OME, 2010, p. 11). Organization is demonstrated by “devising and following plans for completing work” that takes priorities, resources, evaluation, uses of information and technology into account (OME, 2010, p. 11). Independent work includes the learner monitoring, assessing, and revising plans and tasks to meet goals, in addition to following instructions with minimal supervision. Collaboration is the ability of the learner to take on “various roles and an equitable share of work in a group” that involves “contributing and responding positively to ideas, opinions, values, and traditions of others” (OME, 2010, p. 11). This can be mediated through “building peer-to-peer relationships, sharing information, expertise, and

resources, with the help of media-assisted interactions” and critical thinking (OME, 2010, p. 11). Initiative is demonstrated through showing the “capacity for innovation and willingness to take risks, curiosity, and interest in learning” (OME, 2010, p. 11). It also demonstrated through seeking out new opportunities for learning and approaching these opportunities in a positive manner. Additionally, it encompasses a habit of recognizing and advocating appropriately for the rights of self and others. Lastly, self-regulation encompasses learners “setting their own goals and monitoring their own progress towards achieving them” (OME, 2010, p. 11). It is demonstrated when a student identifies learning opportunities, choices, and strategies that suit their needs and “seeks out clarification or assistance as necessary” (OME, 2010, p. 11). It requires that students reflect critically on their strengths, needs, and interests. It is also demonstrated when students exemplify perseverance and persistence when faced with challenges.

According to the OME (2010), these learning skills and work habits are seen to have taken globalization, modernization, and technological advances in consideration. However, I am asserting that, although the mastery of these learning skills are vital to student success, these learning skills will not meet the needs of our ever-changing society.

### **Australia**

The Australian Curriculum, Assessment and Reporting Authority (ACARA) features an “independent authority” in assessing the national curriculum. The Australian curriculum is segmented in seven General Capabilities (GCs) that are reflected in the learning areas that are taught. Teachers are instructed to incorporate the explicit teaching of the GCs and students are encouraged to develop the GCs through personally relevant initiatives of their own design. The GCs are embedded in the subjects to ensure all

graduates are prepared to be confident contributors to their world and effective communicators in order to become leaders in a knowledge-based economy. The GCs and the “natural homes” (or Learning Areas) that they are taught, applied, adapted, strengthened, and extended in are shown in Table 4.

The guiding principal for the Australian curriculum is “that all young people in Australia should be supported to become successful learners, confident and creative individuals, and active and informed citizens” (ACARA, 2013, p. 3) was designed to comply with the Melbourne Declaration on Educational Goals for Young Australians. There is a strong indication that the driving force in this curriculum is to nurture well-adjusted individuals who can adapt to change. They recognize the new demands of the digital age where citizens need to be “highly skilled in in order to participate in a knowledge-based economy and to be empowered within a technologically sophisticated society now and into the future” (ACARA, 2013, p. 49). In addition, Information and Communication Technology (ICT) is recognized as a specific skill set to be taught explicitly since students need to be proficient in its use at school, home, at work, and in their communities (ACARA, 2013).

Of specific importance in Australia’s educational policy is that ICT capability is considered a general capability that is taught explicitly, given the same value and focus as subjects like Literacy and Numeracy. The nature of the scope of ICT capability is purposely unfixed in order for it to be: (a) responsive to technological developments, (b) dynamic to maintain authenticity in the real world, and (c) integrated explicitly into multiple subject areas—English, Mathematics, Science, and History. Figure 1 summarizes the organizing elements for ICT capability.

Table 3

*Ontario's Learning Skills and Work Habits*

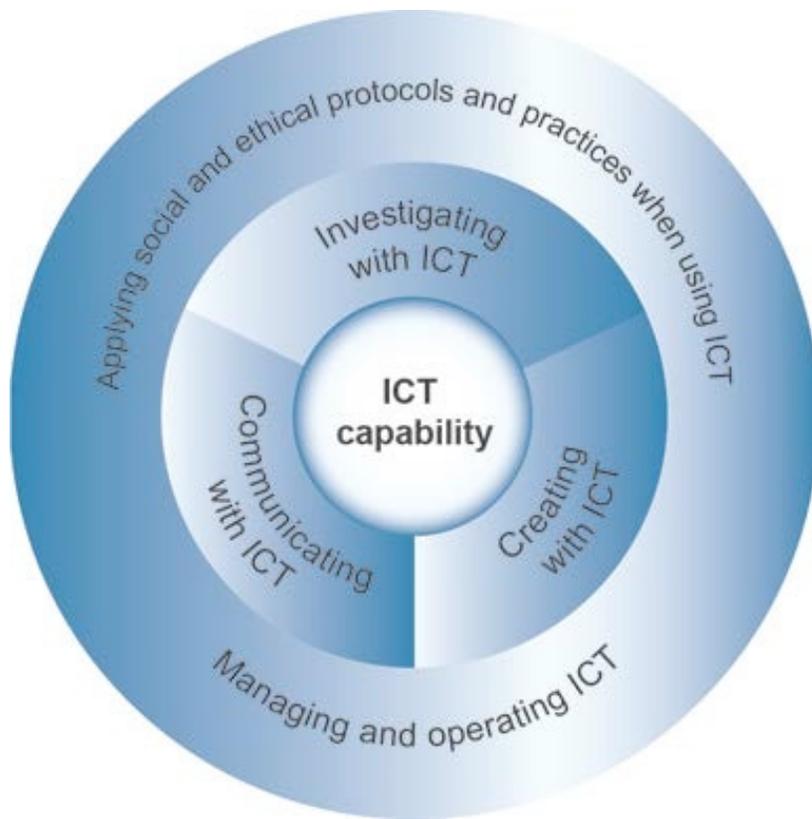
Skill/habit	Definition
Responsibility	The student fulfills responsibilities and commitments within the learning environment in a timely manner in regards to learning, demonstrating learning, and managing behaviour.
Organization	The student devises and follows a plan and process for completing work and tasks with priorities, goals, managing information, technology, and resources in mind.
Independent work	The student demonstrates the ability to work independently to meet goals with minimal supervision.
Collaboration	The student can accept various roles and equitable share of work, shares and accepts ideas, opinions, values, resources, information, expertise, and makes decisions through personal and media-assisted manners.
Initiative	The student looks for and acts on new ideas and opportunities for learning with an openness to innovation and risk-taking.
Self-regulation	The student sets own goals and monitors progress towards achieving them.

*Note.* Adapted from OME (2010, p. 11).

Table 4

*General Capabilities of the Australian Curriculum and Corresponding Learning Areas*

General capabilities	Learning areas
Literacy	English Mathematics Technologies
Numeracy	English Mathematics Technologies
Information and communication technology (ICT) capability	English Mathematics Technologies
Critical and creative thinking	All
Personal and social capability	English Health and Physical Education
Ethical understanding	All
Intercultural understanding	English, Languages



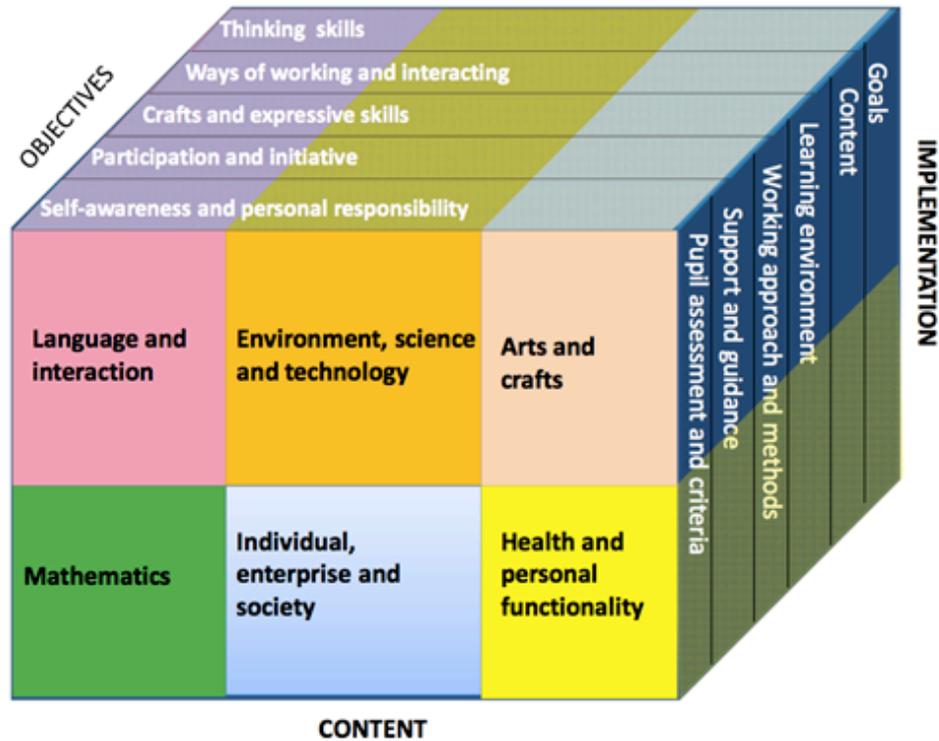
*Figure 1.* Organizing elements for ICT capability in Australia.

Source: ACARA (2013, p. 53).

## Finland

This section provides an overview of Finland's education system: its reasons for success, its pedagogical foundations, and a look at their curriculum. Finland's first national curriculum was enforced in 1970 and it was too broad to meet the needs of learners all over the nation. Over the course of three more educational reforms (1985, 1994, and 2004), Finland's educational system evolved and adapted from one that was too centralized, to one that was two-tiered—national core curriculum, and a municipal curriculum (Lankinen, 2010; Tahka & Vitikka, 2010). The national curriculum is guided by legislation and national strategies and it outlines the core contents, learning objectives, and methods of implementation. Further, the municipal government provides local education providers with a local curriculum. In some schools their curriculum is three-tiered, as those schools may develop their own curriculum, this is especially viable in Finland as all their teachers undergo rigorous teacher education and have master's degrees (Lankinen, 2010). This allows students, teachers, and all levels of administration to use their best judgment and provide an individualized approach to reflect Finland's understanding of humanity, society, and learning (Tahka & Vitikka, 2010).

The reason for Finland's success in their education system is its reflexivity. Their curriculum is recognized as a process and is multidimensional (as illustrated in Figure 2). The Finnish curriculum not only values, but seeks to establish diversification in their learners and citizens and recognizes that higher skills and competencies are the most valuable resource in their nation. In order to achieve this they have a multidimensional strategy with common objectives and a shared purpose.



*Figure 2.* Content, objectives, and implementation of Finland's national curriculum.

Source: Lankinen (2010).

Finland's national strategy is to establish common ground in eight of the following areas in educational policy: leadership; providers of services; finance; monitoring and evaluation; teachers; learning environments rich in ICT; core curriculum; and legislation (Lankinen, 2010). Since well before 1970 the Finnish National Board of Education remained innovative, and constantly sought out areas for improvement. In 1970 when they learned that the first national curriculum was too structured they prioritized individualization in 1985 and gave municipalities and schools autonomy in curriculum and assessment practices in 1994. Simply put, Finland has made it a commitment to meet the needs of their pupils. They have successfully gauged the needs of their nation: fostering civic participation, and being competitive in the market of knowledge and communication in a nurturing and caring environment (Finnish Board of Education, 2004; Lankinen, 2010; Tahka & Vitikka, 2010). These factors have made Finland's education curriculum effective and effective.

The pedagogical foundations that the Finnish national curriculum is based on are multidimensional. They have five succinct objects that are assigned to all content areas in their curriculum, additionally, all learners are supported in their individualized approach through various implementation methods. The objectives for all curriculum content are to foster: thinking skills; ways of working and interacting; crafts and expressive skills; participation and initiative; and self-awareness and personal responsibility. (Thinking skills, ways of working and interacting, participation and initiative, and self-awareness and personal responsibility will be expanded on further in the next section.)

The content of instruction includes: language and interaction; environment, science, and technology; arts and crafts; mathematics; individual, enterprise, and society;

and (health and personal functionality. Despite the fact that Finland's curriculum mandates a more interdisciplinary approach, for the purpose of this paper, the focus will be on (a) environment, science, and technology, and (b) individual, enterprise, and society, as these address the 21st-century skills. Lastly, as instruction is individualized, there are several directions that service providers can take to implement their programming: goals-oriented instruction with specific targets; demanding and rich content; stimulating and nurturing environment; reflexive and innovative approaches and methods; support and guidance through a nurturing staff and environment, and strong home-school connections; and rigorous assessment criteria (Finnish Board of Education, 2004; Lankinen, 2010; Tahka & Vitikka, 2010). The framework of Finland's pedagogical foundations is illustrated in Figure 2.

As demonstrated in Figure 2, in order to fully understand Finland's 21st-century skills instruction, it was important to take a deeper look at its pedagogical foundation. And in doing so, it is made clear that 21st-century skills instruction one of many goals that is legislatively driven, and is a common objective and shared purpose for all stakeholders.

The following is an outline of how Finland's curriculum encompasses all of the 21st-century skills outlined by Jenkins (2009). In Finland, 21st-century skills are recognized as "citizen skills." These citizen skills are evidently the skills required of full citizens that benefit all stakeholders of the education system, and consequently Finland itself. These skills are deemed so important they actually make up the objectives of the entire curriculum. In accordance with the objectives, the content of the teaching material serves the purpose of teaching these skills. In this way, it is actually very fitting for

municipalities, and even schools to have a high level of autonomy in creating their own programming as long as it delivers the skills in the context of subject matter.

Finland's citizen skills consists of five umbrella skills with expectations for each. The following section outlines the five umbrella skills and how they meet Jenkins's (2009) 21st-century skills.

Thinking skills require students to have the ability to mediate complex thinking tasks by being able to problem solve, reason, and argue. They will additionally learn to be critical, analytic, and systemic, yet creative and innovative in their thinking. These thinking skills require the learner to use different higher order thinking skills, and find ways to make the information they are analyzing critically useful in their task at the same time, or multitask. Further, these thinking skills require students to navigate multiple and different information sources to find information useful to them, or navigate transmedia. Appropriation requires learners to take in multiple sources of information and remix them into their own knowledge and express their knowledge through information production.

In the second skill, ways of working and interaction, learners will come to demonstrate mutual respect, and successful cooperation among human groups, express themselves in versatile ways. This citizen skill requires learners to work independently, collaborate, exercise flexibility, express innovation through entrepreneurship, and be receptive to change. In addition, this citizen skill requires learners to understand the importance, and interdependence "of the school community, the public sector, the business world and organization, from the perspective of their functionality of society" (Finnish National Board of Education, 2004, p. 38). These complex understandings will rely on traditional learning skills as well as 21st-century skills. The 21st-century skills

this citizen skill exemplifies include, appropriation, transmedia navigation, networking, multitasking, and negotiating. It exemplifies appropriation, transmedia navigation, networking, and multitasking, because learners will be expected to seek out multiple information sources and critically analyze them to create products of their own knowledge. In addition, it exemplifies negotiation because this skill requires them to formulate knowledge independently, and cooperatively. In the event that students come across conflicting data, they will need to exercise their negotiation to further edit their findings, or find ways to reach a consensus.

The third task of crafts and expressive skills involves students' ability to plan, produce, and express themselves in a manner that allows for innovation, creativity, curiosity, and play in an environment that is safe and nurturing and that is applicable to future living. This citizen skill meets the following 21st-century skills: performance, play, simulation and appropriation. This is the case because it highlights creative expression. It requires students to possibly play and simulate events in order to empathize from a different perspective, or stakeholder.

The next citizen skill, participation and initiative, involves a learner understanding of the community and society, initiative and leadership skills, and active acceptance of diversity and different perspectives. It allows learners to actively find their place in their school, community, and world at the present time and beyond. The achievement of this skill will require students to develop skill in networking, negotiation, distributed cognition, and collective intelligence. They develop networking and negotiation skills upon exercising leadership skills and cooperative skills in working with dynamic tasks and problem solving. Distributed cognition and collective intelligence is a 21st-century

skill that is difficult to adopt and even more difficult to assess as it involves shared knowledge. However, Finland's interpretation of these 21st-century skills in their citizen skills are sound and noteworthy.

Firstly, all teachers are rigorously and highly trained, therefore, although a lot of the assessment is open to interpretation and lacks specificity, it allows teachers to exercise professional judgment. In an individualized approach, this makes the assessment accountable to its curriculum. Secondly, distributed cognition and collective intelligence is the ability to interact meaningfully with tools to expand mental capacities, and the ability to problem solve independently and seek out expertise in the social community when the need arises and these are exemplified when learners “learn to participate appropriately and to take responsibility for the care of shared concerns in their local and school communities” (Finnish National Board of Education, 2004, p. 37). Additionally, students are expected to be critical to distributed cognition and collective intelligence when they are expected to learn how to “take a critical stance towards contents conveyed by the media, and to ponder the related values of ethics and aesthetics in communication” and “the media's role and influence in society, and the relationship between reality and the world depicted by media” (Finnish National Board of Education, 2004, p. 38).

The last citizen skill, self-awareness and personal responsibility, is exemplified by learners when they exercise self-awareness, reflection, empathy, and demonstrate the ability to act in an ethical, responsible way as members of a community. In doing so, learners exemplify the 21st-century skills of multitasking, distributed cognition, and collective intelligence recognizing and acting as a smaller unit of a greater whole when they “learn to confront and deal with changes, uncertainty, and conflicts, and to act with a

sense of enterprise and initiative” (Finnish National Board of Education, 2004, p. 38).

They also exemplify this when they “learn to act innovatively and perseveringly in achieving a goal, and to assess their own personal actions and their impacts” (Finnish National Board of Education, 2004, p. 38). Finland’s citizen skills, their expectations, and how they exemplify 21st-century skills are summarized in Table 5. Granted, curriculum documents are left to the interpretation of educators and service providers, with exceptions of the some minor terminology, it is quite evident that the learning objectives and core contents of education are in clear alignment with Jenkins’s 21st-century skills.

To summarize Finland’s approach in 21st-century skills, it is multidirectional. It has a common goal and objective for all stakeholders and is addressed in three areas of the curriculum: (a) all of the 21st-century skills are wholly addressed in their objectives; (b) all the 21st-century skills are mandated in the National Core Curriculum for Basic Education and mandated to be integrated cross-curricularly; and (c) the achievement of 21st-century skills are assessed explicitly along subject content.

### **Ontario, Australia, and Finland**

To summarize this chapter, Ontario’s identification of learning skills are: responsibility; organization; independent work; collaboration; initiative; and self-regulation. Although these are well-rounded in that they require students to focus on the development of themselves within a greater group, it appears to lack depth and higher thinking. It fails to pay attention to communicating and expressing their skills and does not touch upon the emerging ways of expression students have access to. Nor does it provide real world value in their future lives since focus has not been paid on how to express what they know, or what they have skills to do in context.

Table 5

*Finland's Citizen Skills, Expectations and Alignment With 21st-Century Skills*

Finland's citizen skills	Features of citizen skills	21st-century skills they are reflected in
Thinking skills	<ul style="list-style-type: none"> <li>– Problem solving, reasoning, and argumentation</li> <li>– Critical, analytical, and systemic thinking</li> <li>– Creative and innovative thinking</li> </ul>	<ul style="list-style-type: none"> <li>– Appropriation</li> <li>– Multitasking</li> <li>– Transmedia navigation</li> </ul>
Ways of working and interaction	<ul style="list-style-type: none"> <li>– Acquisition of information, analysis, and use</li> <li>– Skills to communicate, collaborate, negotiate</li> <li>– Ability to work independently</li> <li>– Time management and flexibility</li> <li>– Entrepreneurialship and ability to react to change</li> <li>– ICT and other technology skills</li> <li>– Learning skills</li> </ul>	<ul style="list-style-type: none"> <li>– Appropriation</li> <li>– Transmedia navigation</li> <li>– Networking</li> <li>– Multitasking</li> <li>– Negotiation</li> </ul>
Crafts and expressive skills	<ul style="list-style-type: none"> <li>– Body coordination</li> <li>– Skills and courage of expression</li> <li>– Planning and production skills</li> <li>– Creativity and curiosity</li> </ul>	<ul style="list-style-type: none"> <li>– Performance</li> <li>– Play</li> <li>– Simulation</li> <li>– Appropriation</li> </ul>
Participation and initiative	<ul style="list-style-type: none"> <li>– Perception of community and society</li> <li>– Initiative and leadership skills</li> <li>– Ability to be constructive</li> <li>– Acceptance of diversity and difference in perspectives</li> <li>– Media skills</li> <li>– Ability to think long-term and construct the future</li> </ul>	<ul style="list-style-type: none"> <li>– Networking</li> <li>– Negotiation</li> <li>– Distributed cognition</li> <li>– Collective intelligence</li> </ul>
Self-awareness and personal responsibility	<ul style="list-style-type: none"> <li>– Self-awareness and reflection</li> <li>– Ability to act in an ethical, responsible way and as a member of a community</li> </ul>	<ul style="list-style-type: none"> <li>– Multitasking</li> <li>– Distributed cognition</li> <li>– Collective intelligence</li> </ul>

*Note:* Adapted from Lankinen (2010); Finnish National Board of Education (2004).

Australia's GCs as outlined by the ACARA identify literacy, numeracy, ICT capability, critical and creative thinking, personal and social capability, ethical understanding, and intercultural understanding are well-rounded and easy for educators to follow. It is academically rigorous, and focused on critical thinking, synthesizing, and values the importance of having learners focus on citizenship beyond the schooling years. It has a remarkable set of skills that leave students with confidence that they will be knowledgeable, skillful, effective, and appropriate in changing circumstances (ACARA, 2013). Their capabilities recognize that there is a need for students to have a strong understanding of subject knowledge in order to have a set of integrated and interconnected skills to become the confident citizens they are. It is clear that Australia's GCs are parallel to the 21st-century skills that Jenkins outlines, as the curriculum explicitly states that a successful student is one who can apply social and ethical protocols and practices when using ICT, investigating and problem solving with ICT, creating with ICT, generate ideas, plan, and process with ICT, communicate with ICT, and manage and operate with ICT. However, the Australian curriculum says little about the collective intelligence that is involved with working, communicating, and expressing within ICT (ACARA, 2013).

Finland's multidirectional approach in curriculum development and implementation wholly exemplifies the application of 21st-century skills. The balance between skills instruction, content, and creating an inclusive environment for learning has created a strong curriculum for students' future lives. As demonstrated in Table 5 and the previous section, Finland's concise list of five citizen skills exemplifies all 11 of Jenkins's 21st-century skills. It recognizes the importance of higher order and critical

thinking skills, the importance of plan, create, participate, and communicate across different platforms in creative ways. It also recognizes the importance of creativity, play, and initiative, in order to develop a sense of entrepreneurship and citizenship. A unique feature that Finland has is that it has a strong focus on shared knowledge, or collective intelligence. It impresses upon learners that they are a part of a community that is required to act in an ethical and responsible way with a clear perception of the interconnectedness of institutions and community members. Table 6 identifies how the curriculum of each jurisdiction investigated aligns with the 21st-century skills Jenkins (2009) identifies.

Table 6

*Comparison Model of 21<sup>st</sup> Century Skills Alignment*

21st-century skills (Jenkins)	Ontario	Australia	Finland
Play		✓	✓
Performance		✓	✓
Simulation		✓	✓
Appropriation		✓	✓
Multitasking	✓	✓	✓
Distributed cognition		✓	✓
Collective intelligence			✓
Transmedia navigation		✓	✓
Networking	✓	✓	✓
Negotiation	✓	✓	✓

## CHAPTER FIVE: CONCLUSIONS

The concluding chapter of this critical analysis of global 21st-century initiatives based on Jenkins's (2009) notion of convergence culture offers some recommendations and discusses implications. The purpose of this study was to provide an overview of how selected nations have presented the task of 21st-century skills in their curricula. The nations were selected based on a thorough audit of international frameworks that purport to be 21st century. Also, the selection was made to provide an overview of how these skills can be taught effectively and equitably. Australia and Finland's curricula were reviewed, summarized, and salient aspects were extracted to provide emerging curricula with a starting point for development. This chapter includes a summary of the study, a discussion of findings and implications of this study, and offers recommendations for policy makers.

### Summary of Study

The emergence of technology and multimedia information sources has changed society and education. As such, sound and effective 21st-century skill instruction is crucial for learners to be prepared for the changing workforce and dynamic citizenship. The result of this study reveals that Ontario's learning skills leave little to be desired in this day and age despite its 2010 publication. The learning skills and work habits that are deemed to be a comprehensive list for learners to reach their full potential in a knowledge-based economy, however, the use of technology is only mentioned in one of the learning skills—organization. It does not consider how technology changes the ways in which learners work independently or collaborate, as it exists in the real world. Further, there is an absence of higher-order thinking skills in its outline of the learning

skills and work habits. However, it is important to mention that higher-order thinking skills are assessed in their achievement charts. What this points to is a lacking of follow through and accountability for explicit teaching of these higher order thinking skills, like planning, processing, critical, and creative thinking processes.

Conversely, Australia's commitment to creating confident learners that will be capable of competing in a knowledge-based economy is more comprehensive. It seeks to foster holistic citizens that are lifelong learners, that participate in the Australian community, and who are confident in the seven GCs outlined: literacy, numeracy, ICT capability, critical and creative thinking, ethical behaviour, personal and social competence, and intercultural understanding. This type of curriculum organization fosters and anticipates change in the job market and technological advances. In this curriculum, there is an alignment with planning in its pedagogy, curriculum, and assessment, which makes it accountable for its curriculum. Further, for the most part, Jenkins's (2009) 21st-century skills are reflected within this curriculum in that it includes teaching of play, performance, simulation, appropriation, multitasking, distributed cognition, transmedia navigation, networking, and negotiation within the dissemination of ICT, personal and social, and critical and creative thinking capabilities.

Finland's citizen skills are synonymous with their objectives, and their curriculum is the cross-section where the objectives, content, and implementation meet. Their equal focus on these three components of education reflect a goal-oriented and results driven education system as they are accountable to all stakeholders of the education system: students, citizens, school communities, businesses, service providers, administrators, and law makers. Their curriculum exemplifies all of Jenkins's (2009) 21st-century skills in a

succinct national curriculum, and it allows for municipal liberties as their curriculum is multi-tiered.

### **Discussion**

In order for students to become successful in our ever-changing environment and to navigate a multitude of easily accessible information, students need a set of skills that will enable them to remain competitive in a knowledge-based economy. Jenkins (2009) offers a set of dependable 21st-century skills to prepare learners for their future lives as participatory citizens in a democratic society. This modest study has demonstrated the complexity and the daunting task of curriculum development. All three curricula investigated have shown commitment to their respective pedagogies and have the commonality that curricula should prepare children and youth for the future workforce and to protect the security and longevity of these jurisdictions.

It is no accident that Ontario (Canada), Australia, and Finland are recognized to be amongst the world's highest performing education systems as designated by the Center on International Education Benchmarking (CIEB). Consequently, these nations are also leaders in economic development, and are home to informed citizens that have achieved a high standard of democratic living. However, curriculum is not the only factor that dictates the success of a school system. As a matter of fact, Finland and Canada are consistently rated quite close to each other according to the CIEB; however, in light of this study, it is quite evident that their curriculum, policies, and education system are quite different. But a major similarity amongst all three education systems is that they are competency based, as opposed to subject knowledge-based. Given the availability of a multitude of information, knowing (or more accurately, memorizing) information on any

subject is no longer seen as a measure of intelligence; rather, it is what you do with that information that is the measure of your abilities. Ontario recognizes this in addition to organization, collaboration, and initiative when demonstrating student abilities.

Australia's stance on this matter is what they do with the information is just as important as what information they use, and their ability to use ICT to seek out, plan, organize, produce, and express their understanding is just as important. In addition to ethical understanding and intercultural understanding, it is important that learners are using their capabilities to benefit themselves and their community. Finland's curriculum is similar to Australia's curriculum with Finland having a more innovative edge; they both value ability as much as they value subject knowledge with an added dimension of an ethos of parental support, small class sizes, stakeholder alignment, and plentiful support. Ontario and Australia are not denying their students, but they are not foregrounded as much as they are in Finland's framework.

This study sought out to determine which countries valued Jenkins's (2009) 21st-century skills. This set of 11 skills focuses on higher-order thinking skills that are necessary in a time and age when information is easily accessible and plentiful. It seeks to see how young minds explore creatively and critically in a digital space, problem solve by simulating real world problems through teamwork, mediate real world and digital information sources, make judgments about the validity of an information source, participate in collective intelligence, shared knowledge, and dividing tasks to allow for specialization, and share their knowledge and products of knowledge. Through a meta-analysis of skills that Ontario, Australia, and Finland have incorporated in their curriculum, I conclude that Ontario's learning skill instruction lacks depth and many

21st-century skills. Currently, Canada is rated quite high by the Organisation for Economic Co-operation and Development (OECD), however, the OECD itself is simply an assessor of student performance around the world. A couple of factors to consider when it comes to Canada are that, firstly, Canada does not have a national curriculum, it only has provincial curricula. Secondly, Ontario separates a heavy emphasis on subject content knowledge and manipulating that knowledge, as opposed to capabilities. Similarly, their data is usually limited to subject-based content, instead of skills acquisition. The lack of 21st-century skills instruction in Ontario may affect OECD rankings in the future. Australia was found to have equal focus on subject content knowledge, ICT skills, and citizenship. Additionally, Australia is rated lowest between these three jurisdictions, but still quite high internationally speaking. Finland is known to lead the rankings in education systems (OECD, 2013) and their multidimensional, multidirectional, and balanced curriculum proves it. Their curriculum holds emphasis and prioritizes 21st-century skills as a key component to learning success and future success. All in all, the curriculum that best represents the successful implementation of 21st-century skills is Finland, although the Ontario and Australian curricula both show merit.

### **Recommendations**

The following section will encompass the lessons learned from Ontario, Australia, and Finland's curricula. Just as policy writers want learners to be flexible and appropriate in their environment, policy writers should be more reflective of their surroundings. The following are recommendations for curriculum developers and policy makers:

#### **Commitment, Organization, and Planning**

As demonstrated by all the curricula investigated, they are all grounded on the

good faith of preparing learners for their future lives as mandated by legislation.

However, 21st-century skills instruction, before anything else, needs to be recognized as essential for future life success. In addition, 21st-century skills instruction needs to be a commitment for all stakeholders: lawmakers, policy writers, administrators, teachers, parents, community members, the job market, and learners alike. After consensus and commitment is built, it is important that planning is conducted with the consensus in mind. Curricula encompasses the pedagogical approaches, teaching content, and assessment protocols, therefore 21st-century skills instruction needs to be represented sufficiently in the pedagogy, subject content, and accountability in the form of the assessment of the skills are crucial.

### **Implementation and Support**

Curricula do not exist in a vacuum, how the curricula is enacted upon is just as important. In accordance with the commitment to enforce 21st-century skills in the curriculum, implementation can take the shape and form of renewed practices in teachers' education in addition to, but not necessarily, sufficient funding for hardware. In terms of spending, in 2007 Canada spent US\$8,388, Australia spent US\$6,498, and Finland spent US\$6,234 per student, per year for all student services (OECD, 2013).

### **Reflexivity and Benchmarking**

In reference to Finland's education reform, they recognized their curriculum as a process and enacted large-scale reform whenever, and as many times as needed.

Although it is true that curriculum reform is costly and time consuming, the benefits certainly outweigh the costs of frequent updates and addendums. That being said, policy

writers need to constantly gauge the strengths and weaknesses of the curriculum to implement changes if the situation arises.

### **Subject Content Through Skill Development**

A compelling feature of the Australian and Finland curriculum is that pedagogically, skill development is valued just as much as the subject content itself. This demonstrates the focus is on preparing students for unfamiliar learning situations, as well as current learning situations. When 21st-century skills are explicitly taught to students in the same manner as subject knowledge, learners will be able to use the both in tandem. It will provide learners with opportunities to immerse themselves in the learning environment dynamically, realistically.

### **Conclusion**

Job markets, teaching practices, and curricula have evolved in accordance with technological advances. However, in order for learners to reach their utmost potential in their future lives, the implementation of 21st-century skills as posited by Jenkins (2009) is recommended to be incorporated into curricula as rigorously as subject content material is. This study investigated the implementation of 21st-century skills as outlined by Jenkins in the jurisdictions of Ontario, Australia, and Finland. Through a qualitative meta-analysis, it is concluded that Australia and Finland's curricula provides educators with a balance of 21st-century skills instruction and subject content instruction for learners to remain competitive in a knowledge-driven world. A 21st-century curriculum will include rigorous, explicit instruction, and assessment of subject content and 21st-century skills development.

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