Empowering Educators: Perspectives and Confidence Levels of Teacher Candidates in Digital Media Literacy

by

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

Masters of Education

In

EDUCATION FOR CHANGE

Lakehead University, Orillia

06/21/2024

Abstract

In today's rapidly evolving digital landscape, digital media literacy emerges as an indispensable skill that extends beyond the confines of formal education and permeates everyday life. There is a significant gap in current research regarding the state of digital media literacy in Ontario, particularly focusing on the perspectives and confidence levels of teacher candidates in teaching this competency. Digital media literacy in education is crucial as it equips students with the critical skills needed to navigate and participate in the digital landscape, fostering informed and responsible digital citizenship in a democratic society. This thesis analyzes the current landscape of digital media literacy education in Ontario by drawing conclusions from two distinct datasets. First, it examines research data generated for a report for the Privacy Commissioner of Canada, focusing on the integration of online privacy education within the K-12 curriculum in Ontario. This analysis establishes current expectations and benchmarks for DML in the province. The second dataset comprises responses from Lakehead University teacher candidates to the end-of-year survey titled "Operation Happy To Be Here" (OH2BH). This survey, to which I contributed questions and organized data as a research assistant, evaluates candidates' self-reported comfort levels in imparting essential media literacy competencies, with a specialized focus on data privacy awareness and AI use. By synthesizing findings from both the Privacy Commissioner's report and the OH2BH survey, this thesis offers a comprehensive overview of how digital media literacy is currently being taught in Teacher Education programs in Ontario. It demonstrates that teacher candidates are not always emerging from these programs with the confidence and preparedness necessary to teach this critical competency. This comparative analysis aims to highlight gaps and propose actionable strategies for enhancing digital media literacy education, ensuring that future educators are well-equipped to foster digital literacy and responsible digital citizenship among their students.

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Introduction

Increasingly, our lives are intertwined with "the greased algorithmic rails of powerful social media platforms and [we travel] at velocities and in volumes that make it nearly impossible to stop" (Warzel, 2021). We now live in a society where we are exposed to media and internet use practically from birth, and our reliance on it has become deeply ingrained in our daily lives, influencing how we communicate, learn, and perceive the world around us. Despite the boons it provides, the internet comes with new challenges and risks that we have yet to fully comprehend. Media is not just a place that we visit; it's a culture that we live in where we are connected to each other and the world, yet also stuck inside our own personal information space (Deuze, 2023). Children also live in media, and teacher education programs are supposed to prepare new educators to guide their students as democratic citizens within this digital landscape. *My research question is this:* How are we preparing teacher candidates for the challenges of ever-evolving digital media, and are existing digital media literacy models and pedagogies sufficient to meet these challenges?

Despite most teacher's understanding the value of digital media literacy, those who feel uncertain about their own ability to analyze media will be hesitant to teach about it (Stein & Prewett, 2009). As such, they will be unable to adapt their teaching practices as technology evolves around them beyond the scope of their abilities. This inadaptability leaves them unprepared for the way their students will inevitably use this technology, with or without their guidance. Despite youths being immersed in a world in which media and technology have entered all aspects of their lives and society, it is unclear whether teacher education programs are preparing teachers to help their students to critically understand the potential and limitations of these changes. It is crucial that new teachers learn *how* to teach K-12 students to critically read and write everything from academic texts to social media (Kellner & Share, 2019). We

want to educate new teachers to be resilient, and for them to empower their students to navigate through life with a strong foundational understanding of the media around them.

In the era of education that exists in the shadow of ever-evolving technologies, digital media literacy emerges as an area that transcends our traditional understanding of learning competencies. It compels us to take an adaptive approach to navigate this complex landscape and harness its potential to equip our students with the skills to participate in a democratic society. But what is the state of Digital Media Literacy in Ontario and how confident are our aspiring new teachers in instructing their students on this topic? As stated by a peer in the field, the current research of open educational practices has yet to explicitly examine the critical role played by media and digital literacies (DeWaard, 2023).

I became interested in this topic while assisting in teaching a mathematics course to teacher candidates. As we explored methods of teaching probability, it occurred to me that students are often exposed to gambling mechanics in video games and social media without being aware of it (King, 2018). This initial interest expanded into a broader curiosity about digital media literacy—its definition, how it was taught from K-12, and how it was being introduced to teacher candidates even before they began their practice. During the pandemic, I had the unique opportunity to complete my own teacher education program at Lakehead University remotely, where we were exposed to many new forms of online resources and media out of necessity. When I became a graduate student after the pandemic and began helping to teach new teacher candidates in person, I realized that many of the digital media aspects I had taken for granted were no longer part of the courses for these new candidates.

After these experiences, I became involved two research projects where I analyzed digital media literacy from parallel perspectives: the experiences of teacher candidates with

digital media literacy in an Ontario education program, and the current guidance for digital media literacy in Ontario curriculum documents.

The first dataset for this thesis comes from research conducted for the Privacy Commissioner of Canada (Hoechsmann et al., 2024). In this report, I collaborated with another graduate student and my supervisor to retrieve and highlight how online privacy is currently integrated into the K-12 curriculum across Ontario's educational institutions. This report was designed to provide a comprehensive analysis of privacy rights and privacy protection in relation to digital literacies, and 2,343 curriculum documents were retrieved from the current provincial online databases to achieve this goal. The full report explores the state of privacy education in relation to digital media literacy in all provinces and territories across Canada. However, I will be focusing on the data pertaining to Ontario in this thesis. The report, although focusing on “privacy”, explores a variety of related data and offers insight into how digital media literacy is currently being taught based on the Ontario curriculum, and which will be integrated into our review.

The second dataset delves into the preparedness of future educators completing their teacher education program at Lakehead University. By analyzing responses from the "Operation Happy To Be Here" end-of-year survey, this study examines the self-reported comfort levels of teacher candidates in teaching and modeling digital media literacy for their students. The questionnaire is part of an ongoing project headed by Dr. Gary Pluim, and as a research assistant, I developed several questions and analyzed the data from student responses. Both quantitative and qualitative data were examined and conclusions were restructured into a variety of observations and visuals. Of those questions, three were found to be relevant to this thesis, and will be explored here in relation to the scope of this paper.

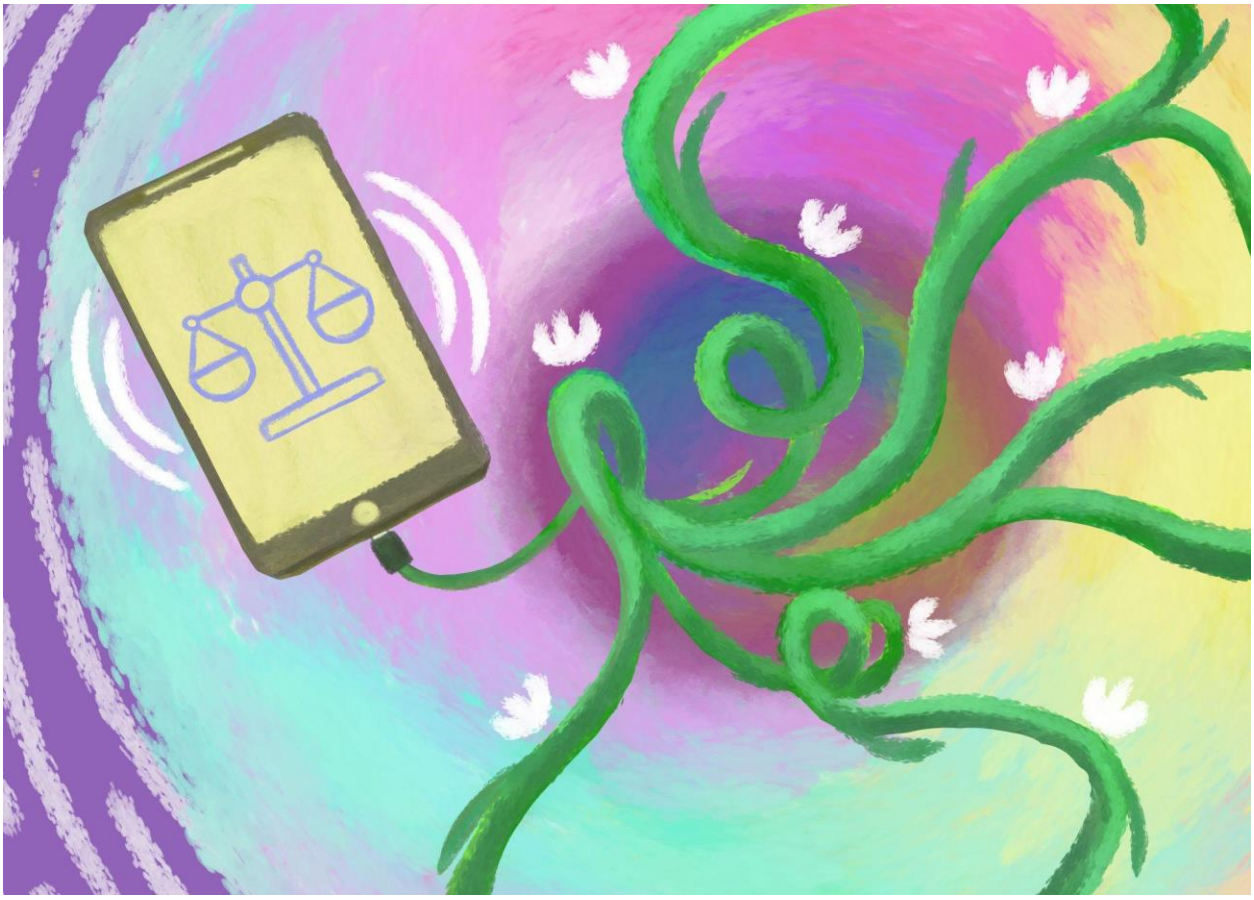
Though they may appear unrelated at first glance, the insights gleaned from these two distinct datasets offer a comprehensive overview of the state of digital media literacy in Ontario. This thesis aims to provide an overview of recent data, with the goal of informing further study into an area of teacher education that requires development. I hope to navigate the intricacies between digital citizenship and how to equip new teachers in Ontario to take on this complex topic in the classroom.

These insights may serve as a foundation for the ongoing evaluation and refinement of teacher education programs, providing a starting point to identify the specific needs and requirements of teacher candidates as they work towards becoming confident, digitally literate educators. By continuously integrating these insights into curriculum development and pedagogical approaches, teacher education programs can adapt to the evolving landscape of digital media literacy, ensuring that graduates are equipped with the necessary skills and competencies to effectively navigate and leverage technology in their future teaching practices.

Chapter 1: What is the Current State of Digital Media Literacy in Ontario?

Figure 1.1

Fiannaca, N. (2023). Harmonious Flow: Balancing Media and Mindfulness. Digital painting.



What is Digital Media Literacy?

Digital media literacy, a learned skill that is crucial to successfully navigate modern society, is a complex and evolving subject that is challenging to teach. It is defined as "*the ability to critically, effectively and responsibly access, use, understand and engage with media of all kinds*" (MediaSmarts, 2024). It is a set of skills, knowledge, and critical capacity that combines media literacy and digital literacy into a single competency. But because of the multifaceted nature of

media and popular culture, critical media literacy educators need to use a variety of theories and perspectives to engage meaningfully in the politics of representation (Kellner & Share, 2019).

This form of literacy is separate from the traditional concept. For many teachers, digital writing seems the same as writing with pencil and paper because it uses many of the same elements, but digital texts gain new potential to be multimodal (combining different formats), hyperlinked (connecting with other media and building new relationships), and interactive (allowing for sharing, remixing and participation) (Kellner & Share, 2019). Digital reading and writing are embedded in mediated environments and networked publics that have unique qualities. Ultimately, digital media literacy is about equipping individuals with the skills to navigate an increasingly digital world effectively and ethically. It empowers users to critically assess information, participate in digital culture, and make informed decisions.

Definitions: Digital Literacy, Media Literacy, and Digital Media Literacy

Digital literacy and media literacy have traditionally been viewed as distinct but complementary concepts within the realm of education. Digital literacy encompasses a wide array of competencies, including technical skills, critical thinking, and the understanding of digital environments (Belshaw, 2011). In short, it focuses on the skills needed to use digital tools and platforms. Media literacy is defined as the ability to access, analyze, evaluate, and create messages across a variety of contexts (Livingstone, 2004). It is rooted in the study of traditional forms of media such as print, radio, and television, and focuses on helping people harness the critical skills necessary to analyze and interpret media messages effectively. This includes understanding media ownership, bias, representation, and the socio-cultural implications of media consumption. In contrast, digital media literacy combines the two; it involves not only the ability to access digital media but also to understand and critically evaluate different aspects of these media and their contents (Buckingham, 2007).

By combining elements of both digital and media literacy, digital media literacy offers a holistic approach to navigating the complexities of today's media landscape. It emphasizes critical thinking skills while also empowering individuals to engage with digital media in wise, safe, and ethical ways. Rather than allow the focus of media literacies to remove us from the human elements associated with caring, we should prioritize critical distance in our deconstruction of social, civic, and political representations through media texts helps us to care about issues and events (Mihailidis, 2018). Recognizing that digital technology has reshaped the role of media creation and consumption, digital media literacy equips learners with the knowledge and skills needed to participate meaningfully in the digital world while fostering a deeper understanding of the social, cultural, and ethical dimensions of digital media.

Digital Citizenship

Digital literacy encompasses the ability to use digital technologies effectively for various purposes, including communication, information retrieval, and problem-solving. The four main categories associated with digital citizenship are: Empathy and Community, Positive Technology Use, Sharing Information and Ethics and Privacy (Media Smarts, 2024). It involves responsible behavior and active participation in online communities to promote a positive and healthy digital culture, demonstrating empathy towards others, fostering a sense of community, and using technology in constructive ways. This includes being mindful of the information we share online and ensuring its accuracy before dissemination. These skills are necessary for fostering informed digital citizenship at any age (Hobbs, 2017).

To be a responsible digital citizen, it is also essential to exercise critical thinking and skepticism when encountering online content. Actions include pausing to verify the accuracy of information, avoiding sharing content impulsively, and being vigilant against manipulation or misinformation. Trusted sources and expert knowledge play crucial roles in shaping our

understanding of online information, and it's important to rely on credible sources and expertise to discern fact from fiction. Fake news and alternative facts are often devastating to issues in which understanding observable facts and knowing scientific evidence is essential (Kellner & Share, 2019). For instance, though commercial media accessed on TV, radio, cell phones and the internet may seem free, we must recognize that they are economically dependent on advertising. We should also be aware that advertising creates a set of cultural conditions that manipulates behaviour. This has been amplified in an era when the convenience of using ubiquitous, always-on mobile media has weaponized obsession for users (Alter, 2018). By upholding ethical principles, respecting privacy, and contributing positively to online discourse, digital citizens can help cultivate a safer and more trustworthy digital environment for themselves and others.

Digital Media Literacy Pedagogies

Digital media literacy pedagogies are the various approaches and strategies aimed at teaching individuals how to critically engage with digital media, navigate online environments responsibly, and create meaningful content. These pedagogies are designed to foster essential skills and competencies necessary for effectively interacting with digital media in today's society.

Core Competencies

Instead of looking at traditional aspects of literacy such as reading and writing, competencies for digital media literacy focus on the interconnected nature of media and our relation to it. These competencies have been refined many times over before arriving at the current widely accepted terms. In 2010, Hobbes referred to “The Essential Competencies of Digital and Media Literacy" as a cycle: *Access*, *Analyze & Evaluate*, *Create*, *Reflect* and *Act*. In recent years this has been simplified to **Access, Use, Understand** and **Engage**. *Access* has generally remained the same, whereas *Analyze & Evaluate* and *Reflect* have been merged into **Understand**, *Create* was

replaced by **Use**, and *Act* was replaced by **Engage**. Despite the change in terminology, their definitions remain more or less the same.

Access serves as the foundational skill, focusing on the technical abilities required to connect with online content. Research has shown that boys, older children, and middle-class children tend to have more and better quality access to the internet and media compared to girls, younger children, and working-class children (Livingstone & Helsper, 2007). In contrast, the higher internet usage among middle-class children is primarily due to their greater home access. This competency involves not only basic technical skills for navigating online platforms but also a critical awareness of other factors such as algorithms and copyright regulations, the lack of which creates barriers for future success.

Use, the second competency in digital media literacy, focuses on developing the technical understanding necessary for safe and effective engagement with digital media tools. This includes skills such as using cameras and word processors, managing online distractions, and composing messages using various forms of media, including language, graphic design, images, and sound. These are essential skills and competencies for engaging in civic life and should be nurtured in both formal educational settings such as K–12 and higher education and informal environments. Developing these competencies not only helps individuals make responsible choices and mitigate risks associated with digital technologies but also enables them to bridge digital divides and cultural enclaves, energize learners, and create connections across subject areas. Mastery of these skills allows individuals to fully participate in a media-saturated, information-rich society, analyze and create content, reflect on their communication behaviors, and collaboratively solve problems within their communities (Hobbs, 2010).

Understanding digital media equips students with the critical thinking skills needed to navigate and evaluate online content effectively. This competency involves recognizing the

influence of networked technology on behavior while improving information management skills essential for the knowledge economy. These can fall under a few key concepts: *production*, *language*, *representation*, and *audiences*. Production involves recognizing that media texts are deliberately created, often for commercial profit, by global media companies. Language refers to understanding the codes, genres, and combinations used to construct media texts. Representation emphasizes that media texts do not simply reflect reality but selectively portray ideas, values, and ideologies. The concept of audiences examines how media messages are targeted at specific groups and how these groups interpret and use the media they consume. Together, these foundational concepts provide a systematic structure for educators to deepen students' abilities in media analysis and media production, fostering a comprehensive understanding of the media landscape (Buckingham & Hobbs, 2005).

Engage emphasizes the active participation in digital and offline communities, encouraging individuals to create and share media content, reflect on its social and political implications, and contribute to community engagement and social activism. A participatory culture which embodies this principle is characterized by relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one's creations, informal mentorship, and a sense of social connection among members (Jenkins, 2007). In this way, individuals feel that their contributions matter, even if not every member actively contributes. In this way, we nurture the development of skills, knowledge, ethical frameworks, and self-confidence necessary for full participation in contemporary culture. Engaging in these communities—through activities like digital sampling, blogging, and collaborative problem-solving—can help students develop critical skills for navigating information landscapes and collaborating across diverse cultural backgrounds. By embracing these competencies, individuals can not only navigate digital society with confidence but also actively shape it through informed and responsible participation.

A Closer Look at Key Concepts

To understand the goal of digital media literacy and the scope of knowledge it covers, we need to understand what the key concepts of its pedagogy are. Researchers have constructed the following list of five key concepts to serve as a guide for DML pedagogies which will be expanded on below:

1. All Messages Are Constructions

Media are not natural phenomenon. They are made by people, who designed them to shape and direct our attention. Every element within a media work, from the content included to the presentation style employed, is a deliberate choice made by its creators. These choices are not made in a vacuum; they are influenced by the creators' own perspectives, biases, and experiences, as well as by broader societal influences and constraints. As a result, even seemingly objective media works are subjective interpretations of reality, reflecting the viewpoints and agendas of their creators. Despite our instinct to perceive media as accurate representations of truth, it is crucial to approach them with critical inquiry, asking questions about the motives behind their creation, the assumptions embedded within them, and the factors that may have shaped their production. Awareness of the choices involved in the making of media messages sensitizes readers and viewers to the subtle shaping forces at work (Hobbs, 2017). Only by recognizing media as constructs can we begin to unpack their complexities and understand the realities they portray.

2. Messages Are Representations Of The World

This concept is heavily grounded in semiotics, the study of signs and symbols and their meanings. According to semiotic theory, signs possess dual meanings: denotation (the literal reference to content) and connotation (the associative, subjective meanings based on cultural and ideological codes) (Hall, 1980). When connotation and denotation converge, media

representations can seem natural, thereby obscuring their historical and social construction. A crucial aspect of media literacy is teaching students to distinguish between these meanings, helping them separate what they see or hear from what they think or feel. This differentiation is particularly effective when students engage in media creation, which allows them to explore and understand the codes and conventions at play.

Analyzing media representations of class, gender, and race requires examining the stereotypes and codes through which different social groups are depicted. For instance, the media often contrasts the portrayal of subordinate groups, such as workers, women, and people of color, with that of dominant groups, like bosses, men, and white individuals. By analyzing these portrayals, students can understand the constructed nature of media representations and how negative stereotypes further subordination by making them appear natural (Kellner & Share, 2005).

Media production is inherently intertwined with commercial interests, as the majority of media content is created within a business framework and aimed at generating profit. This reality is underscored by the influence exerted by powerful corporate networks that control both the production and distribution of media. Ownership and control of media outlets are concentrated in the hands of a select few corporations, primarily Meta and Google, who have achieved critical mass and protect their positions by habituating users to their services and embedding them into their networks, shaping the landscape of what we consume in terms of news, entertainment, and information (Tambini & Moore, 2018) . Platforms that seemingly operate outside of traditional profit-driven models, such as social media and user-generated content platforms, are designed with commercial objectives in mind, prioritizing user engagement and data collection to drive advertising revenue. That is why it’s crucial for media consumers to critically analyze the business models behind media works, recognizing who profits from the content, distribution, and audience engagement strategies.

3. Messages have economic and political purposes and contexts

Media are powerful tools for shaping social and political discourse, often functioning as platforms for conveying ideological messages and influencing public opinion. Media creators wield significant influence over societal norms and values, akin to legislators shaping laws. As stated previously, media are not a reflection of reality but a deliberate construction shaped by the biases, assumptions, and intentions of their creator. However, the meaning derived from media works is not fixed but rather subject to interpretation and negotiation by audiences. Drawing from personal experiences and identities, individuals engage in a dynamic process of decoding and assigning meaning to media content.

The extent to which audiences negotiate meaning is constrained by factors such as media literacy, access, and representation within media industries. It's important for students to see how diverse people can interpret the same message differently when promoting multicultural education (Kellner & Share 2005), as we want to foster a spirit of understanding instead of just tolerance.

4. Messages use languages and conventions

There is variety across media that involves understanding the unique conventions of each medium, such as understanding the structure of a post on X compared to Meta. Different media demand varying levels of literacy and familiarity to decode their messages effectively. Whether it is television, film, comics, or video games, each medium utilizes distinct techniques to direct audience attention and convey meaning. Learning the conventions of a medium not only enhances our ability to interpret content but also equips us with essential skills for critically assessing the reliability and authenticity of information, particularly in the digital landscape where misinformation proliferates. Moreover, as media experiences transition from traditional linear formats to dynamic, networked platforms like YouTube and TikTok, our analysis of form,

codes, and conventions must adapt to encompass the entire medium's structure and flow. The belief that “theory, facts, and inquiry can be objectively determined and used falls prey to a set of values that are both conservative and mystifying in their political orientation” (Giroux, 1997). Understanding how content is disseminated, consumed, and reshared within digital networks is fundamental to navigating the complexities of contemporary media environments and exercising informed agency as both creators and consumers.

5. People interpret messages differently

The networked nature of this communication fundamentally alters the dynamics of content distribution and audience engagement. Unlike traditional media, where consumption was largely passive and linear, digital platforms facilitate multidirectional interactions and collaborative dialogue among users. Participation in digital networks lets people share, create, and curate content, blurring the boundaries between producers and consumers. In a way, this democratizes access to information and amplifies diverse voices and perspectives. However, the decentralized nature of digital networks also introduces challenges related to credibility, algorithmic biases, and privacy concerns. Navigating digital media landscapes requires critical awareness of power dynamics within networks, including the influence of recommendation algorithms, gatekeepers, and informal communities. We must emphasize that the meaning of a media message is not a property of the message, but results from the interaction between the viewer or reader, the 'text,' and the 'context’ (Hobbs, 2017). In any literacy, understanding derives from the ability to ascertain context from the medium. To extend this to digital media literacy is building upon that convention.

The permanence and shareability of digital media introduce even more complexities regarding audience engagement and content control. Because digital content persists and can be easily copied and disseminated, creators and users alike must grapple with the challenge of managing audiences and controlling the reach of their messages. What begins as a private

communication or a targeted post can quickly become visible to unintended or unexpected audiences, leading to missed context and misinterpretation. The design of media platforms, including recommendation algorithms and sharing features, further complicates this by influencing how content is delivered and consumed. Recommendation algorithms and personalized feeds contribute to the proliferation of content consumption based on users' online behaviors and preferences, exposing individuals to diverse perspectives and potentially misleading material.

These branches of media weave into our social behavior, blurring the lines between virtual and real-world interactions. Despite the absence of physical presence in digital communication, our engagements online carry significant weight, shaping perceptions, attitudes, and behaviours. This can create challenges, such as empathy traps and ambiguity regarding intent and meaning. More than that, digital platforms influence not only how we engage with content but also how we perceive and interact with the digital world. Affordances and defaults inherent in digital tools dictate the range of actions available to users and guide their behavior within online spaces, such as ‘like’ buttons and how someone can choose to respond to a post. While users may occasionally challenge or modify these defaults to suit their needs, the majority tend to adhere to the norms that the platform lays out.

Now more than ever, we must prioritize teaching digital media literacy in schools. The complexity of the interconnected components of media are here to stay. It is part of us. Understanding the real-world impact of online actions and recognizing the influence of digital platform design is a critical part of digital media literacy that must be imparted to students.

Artificial Intelligence (AI), Education 4.0 and the Challenges Ahead

Artificial Intelligence (AI) has upended various sectors, including (and perhaps especially) education. The presence of AI use has shifted the roles and expectations of both educators and

students, from elementary school all the way to post-secondary institutions. In this section, we will provide an overview of common terms and provide definitions and context.

The University of Illinois Chicago (UIC) defines AI as representing “a branch of computer science that aims to create machines capable of performing tasks that typically require human intelligence. These tasks include learning from experience (**machine learning**), understanding natural language, recognizing patterns, solving problems, and making decisions” (University of Illinois Chicago, 2024).

Machine Learning is categorized into three types (Duggan, 2020):

1. Supervised learning: predictions are made based on labeled data
2. Unsupervised learning: the algorithm organizes and labels data on its own
3. Reinforcement learning: algorithms learn from human feedback after making decisions

Through one or multiple forms of machine learning, AI models are trained to complete specific tasks such as writing text, creating images, and explaining or rephrasing complex information, as demonstrated by popular models such as ChatGPT, Synthesia and Dall-E2 (World Economic Forum, 2024).

There are many benefits to AI models in education, including streamlining tasks, enhancing student engagement, and fostering collaboration (Duggan, 2020). Some educators are taking the initiative and embracing AI technology in their classrooms, hoping to teach their students to work alongside AI and prepare them for future employment and success (World Economic Forum, 2024).

Conversely, the challenges of AI models to education are remain extensive, raising questions of equity, ethical considerations, and the need for continuous professional development (Duggan, 2020). For many educators, it is more practical to remove AI from their

classrooms due to concerns over student dishonesty and data privacy (World Economic Forum, 2024).

To address these challenges, a new framework called **Education 4.0** was developed to outline the changes needed to transform education for the future ahead. It consists on four sets of skills: global citizenship, innovation and creativity, technology, and interpersonal skills, as well as four sets of learning experiences: personalized and self-paced, accessible, problem-based and collaborative, and lifelong and student-driven learning (World Economic Forum, 2024). Building on this, an article in Forbes magazine describes Education 4.0 as “changing with the changes” and outlines the following recommendations in the context of post-secondary education : automating basic administrative tasks, offering personalized education, providing constructive criticism, and offering access to all pupils (Joshi, 2023).

As AI technology use becomes increasingly commonplace and valued by society, it becomes clear that the integration of this facet of digital media literacy into Ontario curriculum should be prioritized.

Why Does it Matter?

Changes are taking place in the world in which we live, our core democratic virtues are being called into consideration, and human rights can no longer be taken for granted as the international guide to democratic order (Frau-Meigs et al., 2020). Now more than ever, digital media literacy holds paramount importance in schools. The definition of literacy has evolved beyond traditional reading and writing skills to encompass the ability to critically engage with the media that inundates our daily lives. In the history of literacy, no other technology for reading, writing or communicating has been adopted so rapidly, by so many people and in so many places (Leu et al., 2008). With children and young people accessing networked digital technology from an early age, often before they can even read, media literacy education

becomes imperative to equip them with the necessary skills to navigate and interpret the plethora of media content they encounter. These tools offer immense potential to empower youth, enabling them to express themselves, connect with others, and access information. Learning through production emboldens students to crack the codes of representation of their social world through producing media (Kellner & Share, 2019).

Teaching digital media literacy in schools offers a multitude of benefits and opportunities for students. Not only does it prepare them to thrive in a technology-driven world, but it also enhances their critical thinking skills, fosters active engagement with media content, and promotes creativity and self-expression (Hobbs, 2017). It helps students to become discerning consumers and creators of media, equipping them with the skills to evaluate online information critically, recognize bias and misinformation, and navigate ethical considerations such as plagiarism and copyright.

This isn’t to suggest there aren’t challenges for comprehensive media literacy education. Even for adults, intrusive tech has made shopping, work, and other addictive media harder to escape. It was once almost impossible to shop and work between the late evening and early morning, but now consumers can access both at any time (Alter, 2018). But in order to build a future that avoids corporate manipulation, we must acknowledge the preciousness of our attention and resolve not to part with it as cheaply and unthinkingly as we so often have. And then we must act, individually and collectively, to make our attention our own again (Wu, 2016).

Ultimately, digital media literacy education is essential for empowering students to become informed, responsible, and active participants in today's media-rich society.

Effects on Education

How Digital Media Impacts Mental Health

Mental health is a complex topic that cannot ignore the connection with digital media. In his recent book “The Anxious Generation”, Haidt delivers an unapologetic review of the state of youth mental health and their relationship with technology. Through a thorough analysis of recent studies and literature, he proposes the Four Fundamental Harms of digital media: social deprivation, sleep deprivation, attention fragmentation and addiction (Haidt, 2024).

Social Deprivation occurs as teens who spend more time on social media are more likely to experience depression, anxiety, and other disorders compared to their peers who engage more in face-to-face interactions. This lack of direct social engagement can deteriorate their mental health. For instance, in a 2017 study, it was found that among young adults, social media use was strongly associated with the perception of social isolation (Primack et al., 2017). Additionally, as screen-based technologies become more integrated into daily life through devices like smartwatches and VR headsets, an individual's ability to pay full attention to others diminishes further, exacerbating social isolation and its negative effects on mental health.

Sleep Deprivation is a critical issue among Gen Z, exacerbated by social media and other engaging smartphone activities like mobile gaming and video streaming. These activities disrupt sleep patterns, which are crucial for healthy brain development, maintaining good attention spans, and ensuring positive moods in children and adolescents. This has been supported by a recent study of the associations between screen time and sleep duration, demonstrating that children and adolescents who spent more time on screens slept fewer hours overall (Twenge et al., 2019).

Attention Fragmentation is another significant harm, as the immature frontal cortices of children and adolescents struggle to resist the constant sensorial stimuli provided by digital

media. This has been described as shallow learning, where quick scans of information reduce deep processing, allowing the technology to become an external memory source (Loh & Kanai, 2016). This unending stream of interruptions impairs their ability to focus and think critically, potentially leaving lasting marks on their cognitive development.

Lastly, **Addiction** to digital media is fueled by dopamine-driven mechanisms similar to those used in slot machines, which make activities like video games and social media highly engaging and hard to resist. For instance, unique motivating factors in social media use that extend to controlling relationships, impressions of peers, presentation of self and content creation can drive youths to compulsive use (Throuvala et al., 2019). Even if not all youths are fully addicted, their desires are being manipulated through persuasive technology, leading to compulsive usage patterns that can negatively impact their overall well-being (Haidt, 2024).

Despite being known by various names, Internet Addiction is a significant concern for our students. Though still a matter of debate, it is often considered to be a behavioral addiction, which occurs when the immediate rewards of a behavior are eventually outweighed by its harmful consequences. This type of addiction arises when an individual cannot resist a behavior that satisfies a deep psychological need in the short term but causes substantial harm in the long term (Alter, 2018).

Without that structure, heavy media use often results in chronic sleep deprivation and other cognitive control issues. It’s been well-established that smartphones and social media do create distress, and its effects appear to be higher among girls, where it impacts youth self-view and relationships (Abi-Jaoude, 2020). This isn’t surprising, as most teens also believe it’s an addiction, although they consider people older and younger than them to be just as addicted to technology. Rather than an addiction to technology, the strongest influence seems to be the social aspect of potentially missing out if they aren’t constantly connected (Adorjan, 2021).

Rather than cause a moral panic, the technology should not be viewed as inherently positive or negative. The focus should remain on the social factors that create the compulsive behaviour associated with media use.

Many obstacles impede research into addressing the issue of compulsive online activity impeding students. There are a variety of names attributed to this behaviour: internet addiction, internet dependency, pathological internet use, and dysfunctional internet use, but they all refer to the same general issue from different angles. It is theorized that due to this lack of cohesion, studies often contradict one another without an established method of study (Wallace, 2014). Other challenges include research questions becoming outdated by the time they reach participants and determining whether the behaviour causes mental health issues or is a symptom of existing ones.

For example, one of the major consequences of a lack of digital media awareness in youth is the normalization of the insidious use of predatory monetization schemes in video games. These are purchasing systems that disguise or withhold the long-term cost of the activity until players are already financially and psychologically committed (King, 2018). An example of this would be Loot Boxes, a gambling mechanic that requires no skill from the player and offers a random outcome as a prize. The legal loophole being exploited to allow them to exist is that virtual items are not currently defined as having financial value. Unlike regular gambling, video games have the added advantage of having user data at their disposal to entice the player to spend money. Although some countries are beginning to update their gambling laws to include virtual valuables, more studies need to be done to push governments globally to recognize it and take the appropriate steps. There are also many efforts being made to create safer online environments through legal action, such as the UK's Online Safety Bill (Department for Science, Innovation and Technology, 2023) and the European Commission's Digital Services Act (European Commission, 2024).

The secret to compel people of any age to participate in these predatory schemes in any form of media are also to reduce overwhelming goals and high prices into smaller goals or microtransactions that are easier to manage and accept (Alter, 2018). Pair this with psychological motivators such as feedback, the illusion of progress, escalation of goals, cliffhangers, and an aspect of social interaction, and you've developed a piece of media that will entice the user to return again and again. To compound this, studies suggest that for youths engaging with digital media, their main concern regarding corporate access is how they are seen by the public, and it's unclear if they even see the platforms as corporate entities rather than tools (Johnson, Steeves & Shade, 2017).

Gamification can be a powerful education tool when applying it to lessons in the classroom, as it infuses mundane or unpleasant experiences with a measure of joy, motivating students intrinsically, even when they aren't capable of earning extrinsic rewards (Alter, 2018). But the darker side of this tactic exploits human motivation for financial gain, which is why digital media literacy is so crucial in our classrooms to begin with.

A Scan of Key Concerns in Ontario

In contemporary educational settings, various strategies and policies are employed to manage media use and digital devices effectively. One approach involves the implementation of comprehensive digital citizenship programs, which educate students about responsible online behavior, critical thinking skills, and digital rights and responsibilities (Media Smarts, 2024). Additionally, schools utilize device management software to monitor and control student access to digital devices and online content, ensuring a focused learning environment (Toronto District School Board, 2024). Personalized learning plans are also increasingly adopted, tailoring technology integration to each student's learning style and needs (Lee et al., 2021). Moreover, digital detox days are designated to limit or prohibit digital device usage, allowing for alternative

learning activities and fostering mindfulness (Schmitt, 2021). These strategies, among others, aim to promote responsible digital citizenship and facilitate a positive digital learning environment.

Recently in Ontario, school boards have been making headlines in their efforts to curb social media use in particular. In March of 2024, four public district school boards announced their intentions to sue Meta Platforms Inc., Snap Inc. and ByteDance Ltd., which operate the platforms Facebook and Instagram, Snapchat and TikTok, for $4.5 billion in damages (Balintec, 2024). Referring to themselves as the coalition of Schools for Social Media Change, they allege that “students are experiencing an "attention, learning, and mental health crisis" because of ‘prolific and compulsive use of social media products,’ in a news release” (Balintec, 2024). With events unfolding as our teacher candidates complete their program, the potential to prepare them for this reality is critical.

Meanwhile, at the end of April 2024, the Provincial government announced a crackdown on cell phone use in schools. In their news release, they state that “students in kindergarten to Grade 6 will be required to keep phones on silent and out of sight for the entire school day, unless explicitly permitted by an educator. For students in Grades 7 to 12, cellphones will not be permitted during class time unless explicitly directed by the educator. Moreover, social media websites will be removed from all school networks and devices, and report cards will include comments on students’ distraction levels in class” (Ontario Newsroom, 2024). The Ontario Ministry of Education assures us that the government will provide mandatory training for teachers and new supports for students and parents, but only time will tell if this is an effective strategy. In the meantime it will fall to front line teachers to navigate these new guidelines with their own discretion.

The ban is set to begin with the 2024-2025 academic year to address the widespread concern that cell phones and social media are distracting students from learning, as expressed by both parents and teachers (Sandstrom, 2024). The government intends this move to restore focus and discipline in classrooms, encouraging students to engage more fully with their studies without the distraction of their devices (Callan & D'Mello, 2024).

The responsibility for enforcing the cellphone ban will fall primarily on teachers and school administrators, who will be empowered to confiscate devices from students who do not comply with the rules, and there will be a system in place to notify parents about their child's cellphone usage via report cards. The enforcement of this policy is intended to be a collaborative effort between schools and parents to ensure a consistent approach to managing distractions in the classroom. However, the specifics of how this enforcement will be carried out remain somewhat unclear, leading to concerns among educators about the additional burden this may place on them (Callan & D'Mello, 2024).

Reactions to the ban have been mixed. Supporters, including some parents and educational analysts, believe that the policy is a necessary step to improve student focus and overall classroom dynamics. The Women's Brain Health Initiative viewed it as an "opportunity to educate teachers, parents, and children on ways in which they can mitigate the risk of overusing technology and why it is harmful to their mental health" (DeClerq, 2024). On the other hand, critics, including teachers' unions, argue that the ban is an oversimplification of the issue and fails to address the underlying problems in the education system, such as the need for more comprehensive digital literacy education. They express concerns that the ban may hinder opportunities to teach students how to use technology responsibly, and some fear that the ban will add to the already significant demands placed on teachers, who are expected to enforce the new policy on top of their existing responsibilities. According to David Mastin, First VP of the Elementary Teachers Federation of Ontario, students need to "properly learn how to use their

devices” and claims that denying access will exacerbate the problem (DeClerq, 2024). As September approaches, we will have to wait and see how the implementation of this policy unfolds and what its impact will be on Ontario's classrooms.

With school boards pursuing legal action against social media giants and the provincial government implementing stricter regulations on cell phone use, the debate over technology's role in education continues to intensify. As educators navigate these new guidelines, it becomes increasingly important to consider how prepared new teachers are for teaching media literacy. This aspect adds another layer of complexity to the discussion, as educators must not only adhere to regulatory measures but also ensure that they are adequately equipped to guide students in navigating the digital landscape responsibly. A holistic approach to media literacy education may provide a better balance between protection and empowerment, one that not only addresses policy and regulation but also supports educators in fostering digital literacy skills among their students.

Chapter 2: Comfort Levels of Teacher Candidates at Lakehead University

Operation Happy to Be Here

The yearly Lakehead Teacher Candidate survey Operation Happy to Be Here (OH2BH), started in 2018 when a number of students, staff, instructors and faculty advisors that came together to discuss ways to improve the Professional Program. Since 2019, it has offered its student questionnaire at the end of each academic year to gather data and insight from teacher candidates as they make their way through the 2-year program at the Orillia and Thunder Bay campuses. Methodologies also include follow-up focus groups, targeted focus groups, straw polls, faculty working groups, and student class projects. Questions have been added and refined over the years, guided by Dr. Gary Pluim with many contributions from faculty and students in the Bachelor of Education undergraduate and graduate programs. As a contributor to this project, I generated and revised a handful of questions intended for my thesis contribution, and out of those I have selected three to present in this chapter. The ones that have been excluded were deemed no longer relevant to my thesis topic as it was refined over consecutive months.

The questions, response data and insights will be presented in the following pages, highlighting the current impressions of Lakehead teacher candidates on their experiences in terms of comfort using technology and teaching digital media literacy.

Methodology

Every year since 2019, this survey has been made available to students in the education program through Google Forms for approximately one month at the end of Winter term. This year the survey was accessible to Year 1 and Year 2 students from February 5th to February

25th, 2024. A total of 149 teacher candidates responded, 112 from the Orillia campus (100 from the Primary/Junior division and 12 from the Intermediate/Senior division) and 37 from the Thunder Bay campus (17 from the Primary/Junior division and 20 from the Intermediate/Senior division). Students were informed about the survey through various means such as announcements by instructors and Graduate Assistants, student-run organizations such as ESTA-O (the Education Student Teacher Association of Orillia) boosting publicity on social media, direct emails to all students from program coordinators, posters, and a TV screen promo at the Thunder Bay campus. As an additional incentive, student names were drawn at random for gift card prizes for completing the questionnaire.

Question 1 is single response, whereas Question 2 and Question 3 were combined with follow-up questions. In this way, quantitative and qualitative data could be collected for the same string of questions, providing a deeper understanding of the teacher candidate's reasoning. Coding was utilized to ascertain key words to be used in figures. All questions were designed to establish student comfort with technology and digital media, including the use of physical technology, online programs and Artificial Intelligence (AI) by both teachers and their future students.

Summary of Findings and Analytical Comments

The following section will explore the synthesized findings derived from each of the three questions from the survey. Our observations reveal that many respondents believe that the information crisis is the greatest issue in the world today, and that an understanding of AI could enhance both their learning and teaching experience. In addition, only half of the respondents reported feeling comfortable incorporating technology, including AI, into their own lessons. The tabulated data below offers an overview of the exact percentages for each response.

For each question, respondents were asked to use a Likert scale, a psychometric tool used in questionnaires to measure attitudes, opinions, or behaviors. Respondents indicate their level of agreement or disagreement with a series of statements on a symmetric scale, typically ranging from "Strongly Disagree" to "Strongly Agree." This scale provides ordinal data, showing the order of preferences but not the magnitude of differences. Each question's corresponding table breaks down the percentage of student responses, followed by a pie chart to provide a visual representation for further context.

Question 1: Analysis

Table 1.1

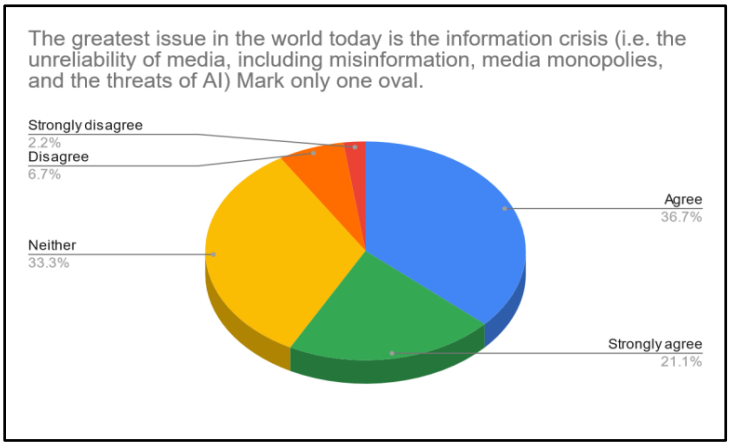
Question 1 Percentage Breakdown of LIKERT Scale Responses

Strongly Agree	21.1%
Agree	36.7%
Neither Agree nor Disagree	33.3%
Disagree	6.7%
Strongly Disagree	2.2%

Question 1: The greatest issue in the world today is the information crisis (i.e. the unreliability of media, including misinformation, media monopolies, and the threats of AI). Mark only one oval.

Figure 1.2

Question 1 Percentage Breakdown of LIKERT Scale Responses



Note: Results from 90 respondents across both Thunder Bay and Orillia campuses in both P/J and I/S programs.

The data from **Question 1** reveals that a significant portion of respondents perceive the information crisis as a pressing issue in the world today. Specifically, 21.1% of participants strongly agree with this statement, while a larger proportion, 36.7%, agree, for a total of 57.8%. A considerable portion of respondents, comprising 33.3%, neither agree nor disagree, indicating a level of ambiguity or uncertainty regarding the severity of the information crisis. In contrast, only a small minority of respondents disagree (6.7%) or strongly disagree (2.2%) with the notion that the information crisis is the greatest issue in the world today, for a total of 8.9%. Overall, the data suggests that most participants acknowledge the existence and significance of challenges related to the unreliability of media, misinformation, media monopolies, and the perceived threats posed by artificial intelligence.

Question 2: Analysis

Table 1.2

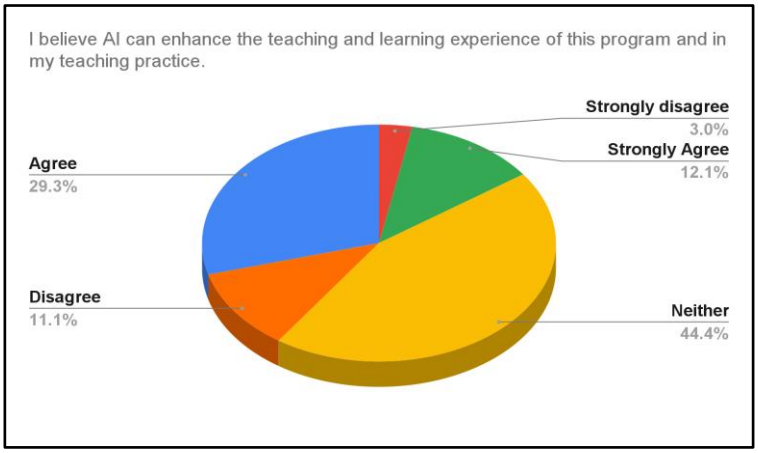
Question 2 Percentage Breakdown of LIKERT Scale Responses

Strongly Agree	12.1%
Agree	29.3%
Neither Agree nor Disagree	44.4%
Disagree	11.1%
Strongly Disagree	3.0%

Question 2: I believe that AI can enhance the teaching and learning experience of this program and in my teaching practice.

Figure 1.3

Question 2 Percentage Breakdown of LIKERT Scale Responses



Note: Results from 90 respondents across both Thunder Bay and Orillia campuses in both P/J and I/S programs. Values visualized above reflect the responses from students to question 2a.

The responses to **Question 2** indicate a diverse range of perspectives regarding the potential of artificial intelligence (AI) to enhance the teaching and learning experience within the program and in respondents' teaching practices. A sizable number of participants strongly agree (12.1%) or agree (29.3%) with the statement, totaling 41.4%, indicating some optimism about integrating AI in education. A larger proportion (44.4%) neither agree nor disagree, reflecting significant uncertainty or ambivalence. Meanwhile, 11.1% disagree and 3.0% strongly disagree, totaling 14.1%, showing some skepticism or apprehension about AI's role in education. suggesting skepticism or apprehension towards the role of AI in educational settings. Overall, the data highlights the varied perspectives among respondents regarding the potential benefits and challenges associated with the integration of AI in teaching and learning practices.

When invited to elaborate on their position, some participants chose to respond. Those responses were input into ChatGPT to help select the most representative quote for each type of response (when available). In this way, the AI scans through dozens of comments and select a complete quote that is the most representative. Here is the sampling it provided:

> **[Agree]** *"I wouldn't say this program has trained me to incorporate technology, I just feel comfortable on my own and I can navigate online portals with ease."*

This quote captures the common theme that comfort with technology and AI is derived from personal experience rather than formal training provided by the program (ChatGPT, 2024). Although they claim a level of comfort, we should question their ability to understand and critically evaluate different aspects of these media and their contents, which is a necessary aspect of teaching it to their future students (Buckingham, 2007.)

> **[Neither]** *"I can use technology, but I have no idea how to incorporate 'AI' into my lesson plans. Maybe this should be its own course. Teach students how to effectively use AI as a building tool."*

This quote reflects the overall sentiment of uncertainty and lack of confidence in using AI in teaching, as well as a desire for more structured education on the topic, which aligns with the other responses' themes of mixed messages, lack of confidence, and the need for guidance (ChatGPT, 2024). This quote highlights a crucial point: digital media literacy has attained unprecedented sophistication and critical importance. Developing a course to build foundational knowledge for teacher candidates, grounded in established core competencies and key concepts (Hobbs, 2017), would create a standardized baseline for all new teachers and, consequently, the students they educate.

> **[Disagree]** *“So far, I have not learned anything about incorporating technology into my future lessons. I hope that I will learn about this in my second year.”*

This quote encapsulates the overall sentiment of the responses, highlighting a lack of education and guidance on using technology and AI in lessons, and expressing a hope for future instruction on the topic (ChatGPT, 2024). New teachers seem aware of the gap between their

current understanding and the knowledge necessary to teach their students this new form of literacy, which is no longer limited to essays in school (Kellner & Share, 2019).

Question 3: Analysis

Table 1.3

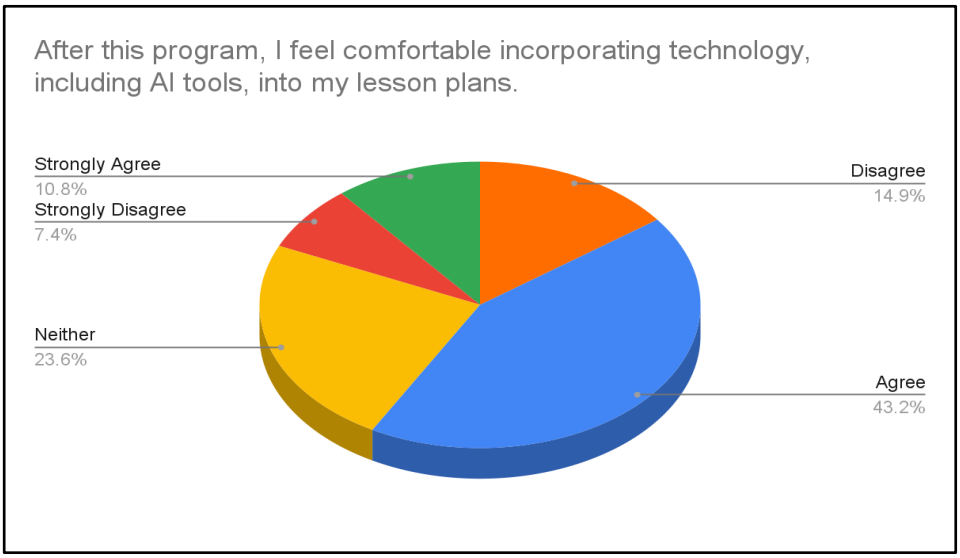
Question 3 Percentage Breakdown of LIKERT Scale Responses

Strongly Agree	10.8%
Agree	43.2%
Neither Agree nor Disagree	23.6%
Disagree	14.9%
Strongly Disagree	7.4%

Question 3 (A): After this program, I feel comfortable incorporating technology, including AI tools, into my lesson plans.

Figure 1.4

Question 3 Percentage Breakdown of LIKERT Scale Responses



Note: Results from 90 respondents across both Thunder Bay and Orillia campuses in both P/J and I/S programs. Values visualized above reflect the responses from students to question 3A. When separated, both campuses scored similarly.

The responses to **Question 3** illustrate a spectrum of comfort levels among participants regarding incorporating technology, including AI tools, into their lesson plans after completing the program. A majority of respondents strongly agree (10.8%) or agree (43.2%) that they feel

comfortable integrating technology into their lesson plans, a total of 54%, indicating a level of confidence in their ability to utilize technological tools effectively. However, a substantial portion of participants (23.6%) neither agree nor disagree with the statement, suggesting a degree of uncertainty or ambivalence regarding their comfort level with technology integration. Furthermore, a notable proportion of respondents disagree (14.9%) or strongly disagree (7.4%) with the statement, a total of 22.3%, indicating a lack of comfort or confidence in incorporating technology, including AI tools, into their lesson plans post-program completion. Overall, the data reveals variability in participants' readiness to incorporate technology into their teaching practices, highlighting the need for further exploration and support in this area.

For this question, participants were asked to elaborate on their position with three subsequent sections, to which some participants chose to respond. Those responses were input into ChatGPT, and asked to select the most representative quote for each type of response (when available). In this way, the AI scans through dozens of comments and select a complete quote that is the most representative. Here is the sampling it provided:

(B) In your opinion, what specific opportunities does AI present for teaching and education?

> **[Strongly Agree]** *"It can assist with making rubrics, changing the wording of your work especially assisting changing the reading difficulty level for students. It can help with lesson planning, finding resources, etc."*

This quote encapsulates the main points of the positive impact of AI on various aspects of teaching, including lesson planning, resource finding, and adapting materials for different student needs (ChatGPT, 2024). In the past, many of these aspects could only be achieved through critical deliberation with a mentor or peer (Nolan & Molla, 2017), but teacher candidates can now begin to develop these skills sooner.

[Agree] *"Assists teachers in planning and explaining activities to students."*

This quote effectively captures the general sentiment of agreement, highlighting the practical benefits of AI in aiding teachers with lesson planning and student engagement, which is a common theme throughout the responses (ChatGPT, 2024). The current teacher deficit in Ontario comes from a combination of factors, but equipping new teachers with the ability to simplify their planning time after they graduate from the program may offer relief from at least some of the initial stress (Gardesten & Herrlin, 2024).

[Neither Agree nor Disagree] *"I don't have enough experience/practice with AI."*

This quote captures the prevalent sentiment among those who neither agree nor disagree, reflecting a general uncertainty and lack of familiarity with AI, which is a common theme throughout the responses (ChatGPT, 2024). As media continues to evolve, it is essential for teachers to feel confident in imparting new methods for processing culture and interacting with the world (Jenkins, 2007).

[Disagree] *"Removes authenticity and creativity and resorts students to short cuts that negatively impact their learning."*

This quote encapsulates the concerns about AI undermining genuine learning and creativity, which aligns with the overall sentiment of the disagree responses (ChatGPT, 2024). Though beyond the scope of this thesis, the coming years will demonstrate whether these fears are realized.

[Strongly Disagree] *"AI makes people stop thinking and removes the need for them to critically think or use their intelligence."*

This quote encapsulates the main concern of respondents who strongly disagree with the use of AI in education, highlighting the fear that AI might diminish critical thinking and reliance on human intelligence (ChatGPT, 2024). This concern is valid and yet feels reminiscent of Plato's quoting of Socrates in his response to the popularization of written text: "for this discovery of yours will create forgetfulness in the learners' souls, because they will not use their memories, they will trust to the external written characters and not remember of themselves. The specific which you have discovered is an aid not to memory, but to reminiscence, and you give your disciples not truth, but only the semblance of truth; they will be hearers of many things and will have learned nothing; they will appear to be omniscient and will generally know nothing; they will be tiresome company, having the show of wisdom without the reality" (Plato, Phaedrus, 275). This suggests that new technology has always generated concerns about the potential loss of critical thinking.

(C) What would you say are the greatest threats of AI to teaching and education?

[Strongly Agree] *"Students relying on AI to complete tasks."*

This quote encapsulates a primary concern regarding over-reliance on AI by students, which resonates strongly with the agreed sentiment (ChatGPT, 2024).

[Agree] *"Plagiarism within assignments."*

This quote highlights a common concern across multiple responses, emphasizing the risk of plagiarism facilitated by AI tools, which aligns with the agreed sentiment (ChatGPT, 2024).

[Neither Agree nor Disagree] *"Plagiarism and decrease in thinking for ourselves."*

This quote encapsulates the concerns expressed by many respondents, touching upon issues such as plagiarism, decreased critical thinking, and reliance on AI, which reflects the mixed

sentiment of neither agreeing nor disagreeing with the potential threats of AI to teaching and education (ChatGPT, 2024).

> **[Disagree]** *"Plagiarism and not learning how to properly complete the required work if AI is constantly doing it for you."*

This quote succinctly expresses concerns about plagiarism, decreased creativity, and the potential negative impact on learning outcomes, reflecting a strong disagreement with the use of AI in education (ChatGPT, 2024).

> **[Strongly Disagree]** *"That people think it can replace teachers and thinking."*

This quote captures a fundamental concern about AI potentially supplanting the human elements of teaching and critical thinking, which aligns with the strongly disagree sentiment (ChatGPT, 2024). Indeed, there are many tasks and areas of employment being taken over by AI, and we will explore specific instances of AI in the classroom in another chapter.

<u>(D) Further comment(s) or suggestion(s) on the above:</u>

> **[Strongly Agree]** *“Teach us how to use it to benefit us, not to run away from it.”*

This quote is representative because it reflects a proactive and positive attitude towards AI integration in education. It suggests that the respondent acknowledges the importance of understanding and utilizing AI technology for their benefit rather than avoiding or ignoring it (ChatGPT, 2024). This topic will be revisited in later chapters, but to prepare the next generation for active participation in a democratic society, rather than shield ourselves and our students from new technology, we must equip them with the skills to participate in it (Kellner & Share, 2019).

> **[Agree]** *"Even though some may look down on AI, if teachers can use it to help generate lesson plans, it would allow more time to focus on how we deliver and teach the content rather than the stress of trying to plan something the night before. This stress causes a lack of sleep, which in turn causes a negative mood, which will not improve teaching practice."*

This quote reflects an agreement with the potential benefits of using AI to assist in lesson planning, highlighting the desire for more efficient and effective teaching practices (ChatGPT, 2024).

> **[Neither Agree nor Disagree]** *"Have not been introduced to AI by Lakehead."*

This quote suggests that the respondent has not been introduced to AI by Lakehead University, indicating a lack of exposure or education on the topic within their academic program (ChatGPT, 2024).

The Hopes and Fears of Teacher Candidates

Question 3's substantial qualitative data, collected from follow-up questions B, C and D, provided an opportunity for further analysis of teacher-candidate perceptions. Based on this data, word clouds have been generated to create an overview of respondents' impressions of AI technology in particular.

The Four Hopes

Figure 1.5

Word Cloud Representation of Coding Words Associated with Opportunities with AI in Teaching

Note: This word cloud was generated using the keywords coded from all the student responses to answer question 3B.

Common words and phrases provided by respondents who answered Question 3B: “In your opinion, what specific opportunities does AI present for teaching and education?” were coded and clustered to develop the following categories:

1. **It is not well understood and training would be beneficial.**

   A number of respondents expressed their lack of knowledge when it comes to AI, and many expressed a strong interest in having this taught to them in order to become fully aware of this developing technology and its potential benefits.

2. **It will help generate ideas.**

   The respondents who agree with question 18a seem to overwhelmingly perceive the use of AI as being a valuable tool for generating ideas and helping users become “unstuck” in their work. Some applied this to themselves as teachers for planning purposes, while others saw this as a useful strategy for their students.

3. **It will assist with teaching.**

Beyond simple idea generation, many respondents highlighted the perceived value of AI specifically within their teaching practice. It was suggested that AI could simplify lesson planning, making teaching easier as it would allow the teacher to offload planning time and focus more on teaching and attending to students.

4. **It will improve efficiency.**

   It was proposed that AI use could make marking and planning more efficient by allowing the teacher to work faster, personalize comments and plans to each student or class, all without taking time away from their actual practice.

At a glance, these categories suggest that there is a clear need for training to address the knowledge gap among educators regarding AI's potential and functionalities. Respondents recognize that understanding AI is essential for leveraging its benefits effectively. Additionally, AI is seen as a powerful tool for idea generation, helping both teachers and students to overcome creative blocks and develop innovative solutions. Many respondents believe that AI can significantly assist with teaching by streamlining lesson planning and allowing educators to focus more on student engagement. Overall, AI is perceived to enhance efficiency in administrative tasks such as marking and personalizing student feedback, thereby optimizing the overall teaching process. Collectively, these insights underscore a strong interest and optimism towards AI's role in enhancing educational practices, provided that adequate training and resources are made available.

The Four Fears

Figure 1.6

Word Cloud Representation of Coding Words Associated with Threats of AI in Teaching

Note: This word cloud was generated using the keywords coded from all the student responses to answer question 3C.

Common words and phrases provided by respondents who answered Question 3C: "What would you say are the greatest threats of AI to teaching and education?" were coded and clustered to develop the following categories:

1. **It will enable student plagiarism.**

   The biggest concern by far for respondents was the potential for plagiarism. Without a simple way to verify whether AI or their student-generated text, many educators are concerned about how to evaluate student work without their students cheating.

2. **It will replace teachers.**

   A main concern is that teaching as a profession may become obsolete as AI becomes more accessible and sophisticated. (add global concerns here).

3. **It will propagate inaccurate information.**

   There is already a large margin of error that users should expect when using AI programs such as ChatGPT. Many respondents were concerned that AI may not

only provide inaccurate information but then share it with other AI and propagate this misunderstanding as fact.

4. **It will become a crutch for students and teachers.**

   Many respondents highlighted that there was a risk for both teachers and their students to become so accustomed to using AI that they risk over-relying on it for every task, generating lazy and inauthentic work that is a threat to literacy and critical thinking skills.

The Four Fears section sheds light on the significant concerns educators have about the integration of AI in teaching and education. Foremost among these is the fear that AI will enable student plagiarism, making it challenging to assess the authenticity of student work and ensuring academic integrity. Another major apprehension is that AI could eventually replace teachers, threatening the profession as AI technologies become more sophisticated and widespread. There is also a worry that AI will propagate inaccurate information, as these systems can sometimes produce erroneous outputs and reinforce misinformation, leading to widespread misconceptions. Lastly, educators are concerned that AI might become a crutch for both students and teachers, fostering a dependency that could undermine essential skills such as literacy and critical thinking. These fears highlight the need for cautious and well-considered implementation of AI in educational settings, ensuring that its benefits are maximized while mitigating potential risks.

Discussion

The findings from the responses to Questions 3B: “In your opinion, what specific opportunities does AI present for teaching and education?” and 3C: “What would you say are the greatest threats of AI to teaching and education?”, reveal several common themes. Many respondents to 3B expressed a lack of understanding of AI software and emphasized the need for training to fully grasp its potential benefits. This finding highlights an awareness among teacher candidates

of the importance of staying informed about emerging technologies in education. They also recognized AI's potential to assist them in their teaching practice as a valuable tool for themselves and their future students in order to streamline administrative tasks and enhance instructional effectiveness.

However, the findings from responses to Question 3C reveal notable concerns among educators. There is apprehension about the potential for AI to facilitate student plagiarism, as educators struggle to verify the authenticity of student-generated work produced with AI assistance. This finding raises important questions about how teachers can maintain academic integrity. There is also a fear that AI may replace teachers altogether, posing a threat to the profession and raising broader global concerns about the future of education and employment. Indeed, some countries have already begun experimenting with AI running asynchronous courses. Vietnam, for instance, is making use of an AI robot called Tri Nhan, designed by the tech startup Open Classroom as a teaching assistant based on a Google search engine (Alexander, 2023). Meanwhile, India has recently unveiled IRIS, their first AI teaching assistant robot based on generative AI, designed by Maker Labs (Javaid, 2024). Even South Korea’s government has announced its intention to develop robots with a private company and roll out to primary and secondary schools as tutors for students (Kholodnova, 2023). It should be noted that despite their alarming headlines, all of the AI robots mentioned above are designed as tools to support teachers rather than replace them.

Another valid concern perceived by teacher candidates is AI's potential to propagate inaccurate information, paired with the concern that AI data scraping will discourage creativity as new content is stolen by media giants, is a growing concern echoed in other articles, and it will be some time before these concerns are effectively addressed by legislation.

Overall, while respondents recognize the opportunities presented by AI for enhancing teaching and education, they also accurately flag significant threats that must be addressed to ensure its responsible and effective integration into educational practices. These findings underscore the importance of ongoing dialogue and critical reflection on the role of AI in education, as well as the need for proactive measures to mitigate potential risks and maximize its benefits, which can begin in teacher education programs.

The State of Technology and AI in the Teacher Education Program

Figure 1.7

Word Cloud Representation of Coding Words Expressing Emotional Language

Note: This word cloud was generated using the keywords coded from all the student responses to answer question 3A: “After this program, I feel comfortable incorporating technology, including AI tools, into my lesson plans.”

Student responses suggest mixed messages from instructors about technology use and AI during the program, as well as strong resistance or interest in learning and using these new technologies. Above is a word cloud using coding words from student comments to capture the general feelings expressed in their qualitative responses.

The mood being expressed is generally negative, with many students expressing frustration with the program’s handling of technology education, as well as the direction they

were given for the newly accessible media of artificial intelligence. According to student responses, the integration and modeling of using technology in the classroom by Lakehead instructors was considered to be insufficient with the exception of one or two instructors who went above and beyond. Though some students were receptive to the prospect of using AI to help them develop lesson plans more quickly by offloading simple and repetitive tasks, they mainly attributed this to their own self-directed learning outside of the teacher education program. Within the program, many noted they had not touched the technology, and in some cases were discouraged from using it by instructors. It was reported that there were mixed messages within the program of the validity of AI tools, and in most classes, students were advised to avoid it.

However, among these responses there was a substantial number of students who stated that because they didn't know how to use media tools like AI and they weren't about it taught in the program, they found themselves uncertain about whether it would be helpful or not. Faculties of Education should take note of this sentiment. Integrating technology and AI training into the fundamentals of a teacher education program is the kind of cutting edge innovation that could create a new generation of skilled educators.

Ethical Considerations and Limitations

Potential limitations of this study include sampling biases, self-reporting biases in surveys, and the generalizability of findings beyond the studied context. Only Lakehead teacher candidates were asked to complete this survey, limiting the scope of our findings to the structure and content of Lakehead's teacher education program. The survey responses may not represent the entire population of teacher candidates at Lakehead University. Certain groups or perspectives may be overrepresented or underrepresented, leading to a biased interpretation of the results.

The response rate at the Orillia campus was higher than the Thunder Bay campus. Data is self-reported and based on the perceptions and truthfulness of individual students.

This study has adhered to ethical guidelines for research involving human participants, including obtaining informed consent, ensuring confidentiality and anonymity, and addressing any potential conflicts of interest. Adequate measures have been implemented to secure the survey data and protect it from unauthorized access or disclosure.

Chapter 3: The Integration of Online Privacy Education in Ontario's K-12 Curriculum

Media education can mean different things to different people, organizations and groups. As we saw from teacher candidate concerns in the previous chapter, consolidating the concepts is difficult given the piecemeal nature of digital media literacy interventions in schools and elsewhere. Media continually change and curriculum and teaching practice are typically several steps behind and unevenly applied. David Buckingham, a well-known scholar in the field, argued that approaches to media education can be divided into protectionist or empowerment models (2003). As can be surmised, Buckingham advocates for a model where young people (or all people for that matter) can develop a sufficient understanding of media institutions, texts, and practices to be empowered to use and understand media adequately enough to navigate any future challenges. This empowerment model contrasts to a protectionist one, where teachers and trusted adults direct learners to avoid certain media sites and practices.

Curriculum scan: Privacy and digital literacy elements in curricula across Canada

Data privacy has always been an important issue, but it has become a growing concern in the general public's mind in recent years. With increasing reports of hacks and data breaches, as well as corporate use of personal data to generate targeted advertising, we have reached a point where youths, who are socialized to share every aspect of their lives online, deserve an education that includes basic data protection knowledge. Without the condition of privacy, an individual cannot enjoy self-exploration and self-determination (Hillman, 2022). However, unless Ontario's elementary and secondary school teachers fully understand the critical aspects of

digital media literacy and the expectations set by the curriculum, it is unrealistic to expect them to teach it effectively.

In spring 2024, the Privacy Commissioner of Ontario commissioned a report to identify and analyze curriculum elements that address privacy rights, personal information protection, and digital literacy, relevant to teaching and learning privacy competencies. Through a systematic examination of educational materials, including course outlines and learning objectives, the report aimed to provide a referral document to support the ongoing efforts of the Privacy Commissioner of Canada to foster a culture of privacy awareness and responsibility among young Canadians.

The report narrowed its focus from all Media Literacy and Personal Data Protection Competence (PDPC) in curricula to specific references to “privacy,” in order to analyze each province's approach to addressing privacy rights, personal information protection, and digital literacy guidance related to privacy within their education systems. The goal was to provide specific, timely, and contextual recommendations that take into consideration the state of current curriculum documents on this topic.

As a contributor to this report, I was tasked with data collection and analysis for the provinces of Ontario and Quebec. Although the report itself covers all curriculum documents in Canada, the scope of this paper requires that we focus our analysis on findings for the province of Ontario. In the following sections, we will review this report's methodology and the research data relevant to new teachers in Ontario. We will then focus our analysis on the level of guidance that curriculum documents provide for digital media literacy.

Methodology

In an effort to quantify what new teachers have to work with in terms of guidance from the Ontario curriculum, a report such as this distills the information into precise statistics, providing a simple overview that is accessible even to the layman.

In order to complete the report, 2,343 curriculum documents were retrieved from the current provincial online databases and then analyzed with NVIVO, a data analysis software which provides support for qualitative and mixed-method analysis. Following the categorization by province or territory, a systematic word search for the terms 'privacy' and 'private,' including their stem words, was conducted. Instances where either term was used in a manner which could reasonably apply to a digital context were coded, whereas instances where the word private was used in unrelated contexts, such as references to private institutions, private guitar lessons, or private land ownership, were excluded. Manual coding was supplemented by NVIVO's word search function. Each coded instance was recorded within NVIVO and documented in a tabular format, detailing the full sentence containing the term, the corresponding subsection, the area of learning or course addressed by the document, and when available, the publication year of the document.

While the majority of occurrences of the term ‘privacy’ were pertinent to the scope of the study, instances featuring the term ‘private’ presented a more varied spectrum of relevance. In certain contexts, "private" served as an adjective modifying nouns such as business, sector, building, interior zone, citizen, or lesson, rendering these instances irrelevant to the study's focus. However, instances where ‘private’ was used to denote journal entries or written reflections by students were considered relevant, as they underscored the importance of students comprehending the types of information pertinent to their education that should remain private, particularly within digital platforms. Furthermore, references to 'privacy' or 'private' within bibliographies or works cited sections were excluded from the analysis, as they would already

be documented within the curriculum materials where they were referenced in the body text.

While conducting data analysis, word clouds were generated for each province using WordArt.com to generate a frequency visualization based on the text from all of the sentences within which the words “private’ or ‘privacy’ were coded. These word clouds, which exclude common words and remove numbers, visually represent the frequency of occurrence of different terms, with larger font sizes indicating higher frequencies. By comparing these word clouds across provinces, differences in approach can be discerned. Additionally, pie charts were created for each province to illustrate the distribution of privacy instances across different areas of learning. Larger pie slices indicate a more substantial representation of privacy instances within the curriculum documents for specific learning areas. The researchers utilized these visualizations, in conjunction with the observed data, to synthesize their findings comprehensively.

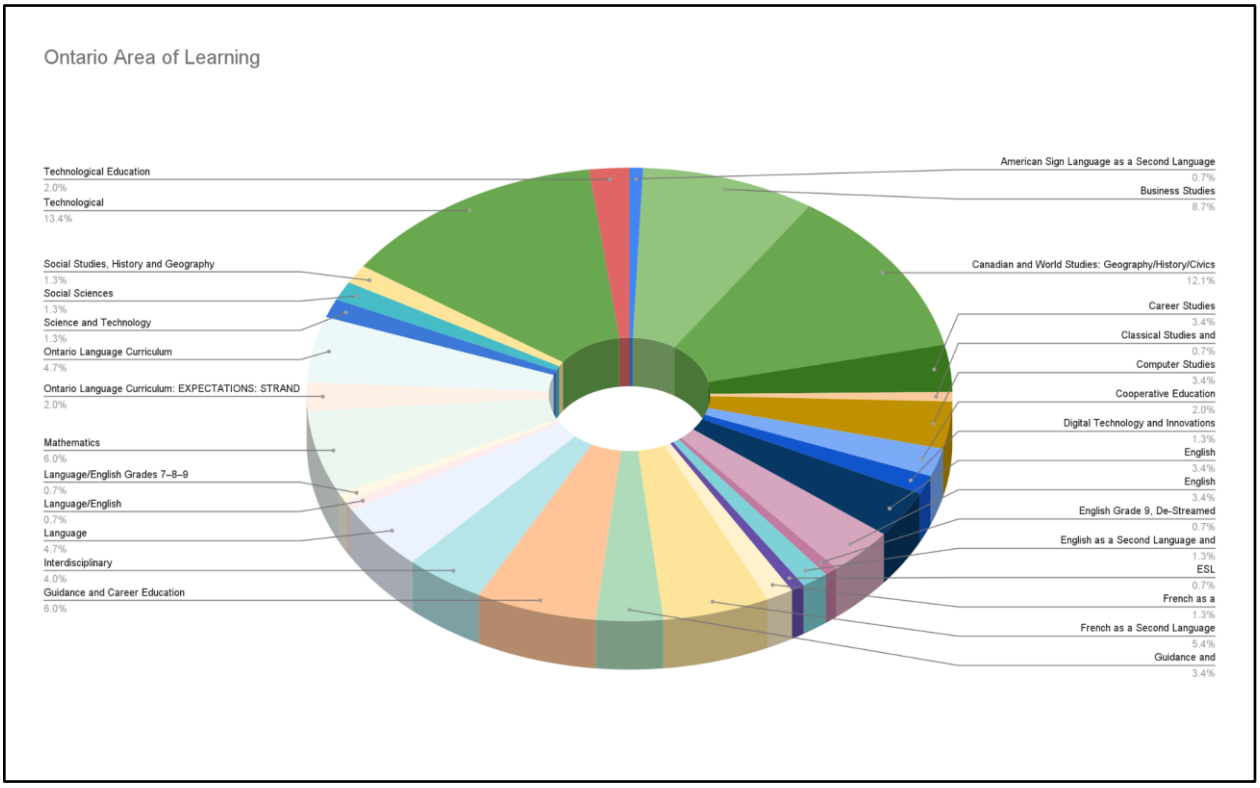
For the purpose of this thesis, we will be reviewing only the data, charts, and word clouds generated for the province of Ontario in relation to how thorough the guidance is and whether current teacher education programs paired with curriculum documents truly prepare new teachers to instruct this competency to their students.

Summary of Findings and Analytical Comments

Based on the analysis of Ontario's curriculum documents, several key findings emerge regarding the integration of privacy considerations into elementary and secondary education programs. Among the 73 documents examined, a total of 150 instances referencing privacy were identified, with 41 instances found in elementary school programs and 109 in secondary school programs. Below is a pie chart highlighting how digital media literacy is spread across teachable subjects within Ontario curriculum documents.

Figure 1.8

Instances of "Private/Privacy" in Ontario Curriculum Documents



Note: Values visualized above reflect the distribution instances of "private/privacy" divided by areas of learning within the Provincial Curriculum.

Notably, language-focused learning curricula and health education prominently feature privacy considerations in elementary education, while technological education, Language, and Canada & World Studies emerge as prominent areas addressing privacy in secondary education. Additionally, students are expected to grasp fundamental e-commerce principles, including privacy, security, and marketing implications, underscoring the importance of digital literacy in responsibly navigating online environments.

All curriculum documents for Ontario also emphasizes respect for privacy and intellectual property rights and the need to understand the balance between access to information and personal privacy rights. Concerns related to safety in physical education programs extend to privacy intrusion, bullying, misinformation dissemination, consent

challenges, and exploitation via digital technology, reflecting the multifaceted nature of privacy issues in educational contexts.

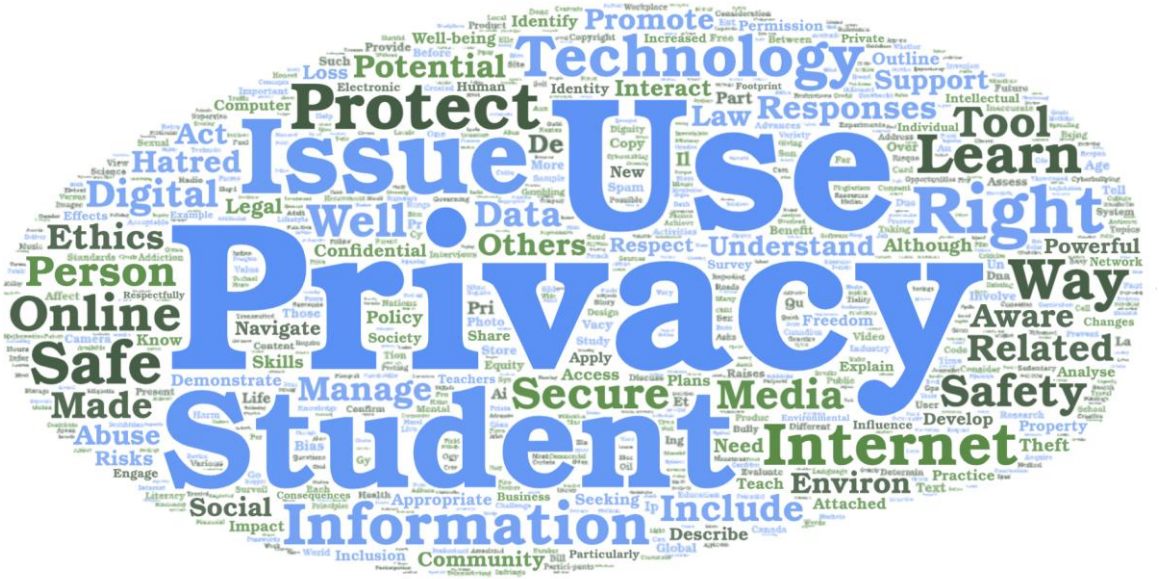
The analysis reveals areas for improvement, particularly in updating outdated curriculum documents. Technological Education and Business Studies documents, in particular, have not been updated since 2009 and 2006, respectively, suggesting a need for revision to address contemporary issues and technological advancements. Updating these documents would ensure that Ontario's curriculum remains relevant and effective in preparing students to navigate the evolving landscape of privacy and digital technology responsibly.

Coding Analysis

Sections in the Ontario curriculum documents that mentioned ‘privacy’ related to digital media literacy were pulled, and condensed into a word cloud to analyze which other words were frequently used alongside “privacy”. Word size correlates with how often they were found, with larger words occurring more frequently, shrinking as they occur less.

Figure 1.9

Words Connected to “Private/Privacy” in Ontario Curriculum Documents



In the image above, familiar words such as “protect”, “safe”, “right way”, “tool”, “secure”, “technology” and “information” are prominently featured. This suggests that references to digital media literacy in elementary and secondary education are often presented in terms of its use as a learning tool or guiding students to protect themselves when using technology. Looking deeper, we begin to see smaller, more nuanced words such as “ethics”, “abuse”, “hatred”, “loss”, “potential”, “respect” and “risks”. Zooming in further, we can catch the words used much less frequently, such as “teachers” or “teach”, “well-being”, “impact”, “property”, “identity”, “spam”, “assess” and “copy”. In the smallest writing of all, we see words such as “sexual”, “free”, “industry”, “content”, “bias”, and “copyright”.

From the coding words in this cloud, which represent all text associated to digital media literacy education from the Ontario curriculum relating to privacy, we generated a list from the most common words used to the least common. We input the data into ChatGPT and prompted it to categorize them in order of frequency, allowing the AI to scan through hundreds of paragraphs and organize words into categories that are the most representative of the sum total. It observed the following six areas:

1) **Security and Protection:** a focus on safety, security, and the need to safeguard individuals and information from harm or misuse.

2) **Ethics and Responsibility:** considerations of ethical behaviour, responsible use of technology and information, and the importance of promoting the well-being of individuals.

3) **Information and Technology:** highlighting the significance of technology and information as tools, resources, or subjects of study.

4) **Negative Impacts and Challenges:** negative impacts or challenges associated with technology and information, such as misuse, exploitation, or biased content.

5) **Education and Teaching:** a focus on education, teaching practices, and the assessment of knowledge or skills.

6) **Content and Copyright:** intellectual property rights, the creation, dissemination, and ownership of content, and the importance of respecting copyright laws.

With these themes laid out, we can see not only what is currently in the curriculum but it also illuminates what is missing. The sections above cover many aspects of Digital Citizenship but focus primarily on shielding students from harm and instilling a sense of responsibility and respect. These are valuable goals, but they do not encompass the full spectrum of digital media literacy. There is a significant need for more comprehensive training in critical thinking, as well as equipping students with the skills to navigate and leverage digital tools for creativity and innovation. By expanding the curriculum to include these components, we can better prepare teacher educators for the complexities of the digital media.

As stated in the previous chapter, MediaSmarts defines Digital Citizenship as having the following four categories: Empathy and Community, Positive Technology Use, Sharing Information and Ethics and Privacy. From the word cloud data, it seems that only the latter two are being fully addressed. **Empathy and Community** guidance states: "*When you're online, it can be hard to remember that there's a human being on the other side of the screen. Sometimes, people say things online that they would never say in real life. Because of this, it's important to take extra steps to be empathetic."* This is similar to the Ontario curriculum guidance of personal responsibility and respect, but it takes it further, tapping into emotional regulation. Similarly, **Positive Technology Use** states: "*What happens online can have a real impact. It's up to us whether the impact is positive or negative."* This mindful approach advises connecting with family and friends, being aware of tech and media use, engaging in positive and democratic online interactions, and speaking out against injustice.

Discussion

As we review the findings of the report, it becomes clear that curriculum guidance on teaching digital media literacy, including data privacy, is overwhelmingly lacking. While educators are encouraged to integrate technology into their teaching practices, there is a noticeable absence of specific guidance on how to navigate the complex landscape of digital media and privacy concerns. New teachers, in particular, are left to navigate this terrain on their own, often without adequate preparation or resources to address emerging challenges related to data privacy and online safety. Without comprehensive guidance and support, educators may inadvertently expose themselves and their students to potential risks associated with the use of digital tools and platforms in educational settings. This lack of guidance underscores the urgent need for curriculum development and professional development initiatives that prioritize digital media literacy and data privacy education for educators at all levels.

In a prior report from the Privacy Commissioner of Canada, “Where and How Does the Personal Data Protection Competency (PDPC) Framework Fit in Canadian Educational Resources?” (Lovell-Johnston & Hoeschsmann, 2018), they aimed to establish whether and to what degree the PDPC competencies were addressed in Canadian educational contexts and establish a list of best practices for the inclusion of the competencies, as well as to identify gaps where programming could be improved. As it explored a parallel goal to our examination of privacy, many of the recommendations they proposed are echoed here, particularly the suggestion to develop a Canadian digital privacy curriculum framework. In the current report, “Curriculum scan: Privacy and digital literacy elements in curricula across Canada” (Hoechsmann et al., 2024), we expanded beyond that core concept to offer precise goals that pave the way for meaningful improvements to current curriculum offerings.

Links to Teacher Candidate Confidence

Understanding how well-prepared teachers feel in navigating and teaching digital media literacy is crucial, as their confidence directly impacts their ability to effectively educate students. By examining the existing curriculum and identifying gaps, it becomes possible to start addressing those gaps and providing comprehensive training to enhance teacher candidates' digital media literacy knowledge and resources. In fact, some teachers are already turning to external resources for this reason.

For instance, the expanded Digital Citizenship categories from Media Smarts (Media Smarts, 2024), which add “Empathy and Community” and “Positive Technology Use” to their criteria, would provide teachers with clearer guidance. It may be assumed that new teachers can infer what is missing and incorporate newer insights into their teaching practice independently, but without direct instruction from the curriculum, these are only done at the discretion of the educator.

It is imperative for curriculum developers and policymakers to explicitly integrate these themes into the official curriculum. Providing comprehensive guidelines and resources will empower educators to confidently teach these critical aspects of digital media literacy. What’s more, teacher education programs must emphasize these components to ensure that teacher candidates are well-prepared to address the full spectrum of digital literacy skills in their classrooms. The protectionist model replaced by the empowerment model, creating a more balanced and forward-thinking approach to digital media literacy, equipping students with the necessary tools to navigate and thrive in the digital age.

Methodological Limitations

When we consider the ethical implications and limitations of the Privacy Commissioner's report analyzing digital media literacy across all Canadian curriculum documents and focusing on instances where the term "privacy" was used within the context of digital media literacy, several key considerations arise.

First, there may be limitations in the comprehensiveness and accuracy of the data gathered, as the report relies on publicly available curriculum documents and not school board-specific guidance. Ethical considerations arise in interpreting and analyzing the data, as subjective judgments can influence the categorization and assessment of curriculum content related to privacy. There is a potential risk of oversimplification or misrepresentation of privacy concepts within the analyzed documents, which could result in incomplete or inaccurate insights into the state of digital media literacy education.

While the Privacy Commissioner's report provides valuable insights into the integration of privacy education within Canadian curricula, it is essential to acknowledge and address these ethical considerations and limitations to ensure the integrity and reliability of the findings. The protectionist approach is putting our learners at a disadvantage, while empowerment models are gaining traction and addressing the flaws in the current design. As always, more research is needed to improve upon what has been presented here.

Chapter 4: Data Synthesis

Figure 1.2

Fiannaca, N. (2023). Switching Off. Digital painting rendered in CSP.

Summary of Findings and Analysis

When reviewing the insights from the Operation Happy To Be Here (OH2BH) survey findings and the Privacy Commissioner of Ontario's report, we begin to see the specific needs and requirements of teacher candidates concerning digital media literacy. Educators face the challenge of preparing students to navigate the complexities of digital media responsibly and effectively.

This section aims to integrate and analyze the key findings from both datasets to identify the overarching themes and actionable insights that inform the preparation of teacher candidates in Ontario. There may be references to sections of the Appendices of this thesis. Appendix A contains supplementary research of three potential external resources that could be valuable to educators. Appendix B contains the complete coding table created for the Privacy Curriculum Scan, with all instances of “private/privacy” linked to the section of text in which they were located, as well as the subject and grade level of each instance. Appendix C contains all tables, charts, word clouds and arts-integrated research that have been used throughout the chapters.

Bridging the Divide: Teacher Candidates vs. Curriculum Documents

Comparing the data analysis from the Operation Happy To Be Here (OH2BH) survey and the Curriculum Privacy Scan reveals striking disparities in the language and focus of teacher preparation programs and curriculum documents. In the OH2BH survey responses, notable omissions include key terms such as "critical thinking," "mental health," "mindfulness," "access," "ownership," and "privacy." This absence suggests a potential gap in teacher candidates' awareness and prioritization of critical issues related to digital media literacy and privacy. The lack of mention of these terms indicates a possible disconnect between the concerns voiced by teacher candidates and the broader discourse surrounding digital media literacy and privacy rights.

Conversely, the Curriculum Privacy Scan highlights a different concern, wherein the analysis suggests a superficial examination of digital media literacy and privacy within curriculum documents. The scan appears to avoid exploring the substantive issues at hand in any depth. Instead of fostering empowerment and critical engagement with digital media, the curriculum documents seem to adopt a protectionist mindset, emphasizing control and

restriction rather than education and engagement. This approach may mirror broader societal attitudes towards digital media and privacy, which prioritize risk mitigation over the development of skills and competencies necessary for navigating the digital landscape effectively.

A commonality between both data sets is that teachers are expressing concerns about students using AI to cheat while also showing a desire to understand how to effectively integrate AI into their teaching practices.

Teachers are particularly worried about the potential for AI tools to be misused by students, especially in generating content for assignments or tests without proper oversight. For example, the OH2BH data highlights instances where teachers discussed the potential misuse of AI-powered writing assistants or chatbots due to *"students relying on AI to complete tasks."* This has raised alarms among educators who feel that such practices could erode academic integrity and make it difficult to distinguish between students' original work and AI-generated content. The Curriculum Privacy Scan also reflects the lack of updated guidance for teachers in Ontario, leaving educators questioning how they can effectively monitor and prevent AI-based cheating, particularly when such tools are becoming more sophisticated and accessible to students.

Simultaneously, the data reveals that teachers are eager to explore the educational benefits of AI, provided they receive adequate support and training. Educators expressed a strong interest in leveraging AI to personalize learning, streamline administrative tasks, and enhance student engagement. For instance, the Curriculum Privacy Scan document mentions how teachers are turning to external resources like Media Smarts to address the gap in official guidance.

This dual sentiment—concern about AI's potential for misuse and optimism about its educational applications—suggests that teachers are at a crossroads, seeking to balance the risks and rewards of AI in their classrooms.

Overall, the comparison between the OH2BH survey and the Curriculum Privacy Scan underscores the need for a more nuanced and proactive approach to addressing digital media literacy and privacy in both teacher education and curriculum development. Teacher candidates and their students require more than just passive protection; they need empowerment through education and the development of critical thinking skills to navigate the complex digital world. The Convention on the Rights of the Child (CRC) focuses on the right to protection, provision, and participation; but the emphasis on child protection in the case of digital media can obscure the right to engage (Smith, & Shade, 2021). A key competency for teachers lies in empowering students through education and fostering critical thinking skills to navigate the complexities of the digital world. This entails bridging the awareness gap between teacher candidates and curriculum content regarding digital media literacy and privacy issues. In this way, educators can better equip themselves and their students with the knowledge and skills needed to thrive.

Actionable Insights from the OH2BH Survey

The insights gleaned from the "Operation Happy to Be Here" survey responses provide valuable contributions to ongoing research in digital media literacy education. Teacher candidates highlight a prevalent lack of preparedness and a strong desire for more training, underscoring the necessity for equipping educators with the skills needed to effectively integrate digital tools into their teaching practices. The survey also reveals a need for curriculum enhancement, particularly in addressing ethical considerations and academic dishonesty in the digital realm. Furthermore, the emphasis on professional development opportunities suggests that continuous support and education for teachers are crucial for fostering confidence and competence in

digital media literacy. Below, we will examine the basis for these findings, which offer a clear direction for future research and development in this field, ensuring that educational strategies are aligned with the evolving digital landscape.

Lack of Preparedness

Teacher confidence is vital for effective teaching and improved student achievement, and the level of knowledge and skills at their disposal determines teachers' confidence in making sound judgements in their practices (Nolan & Molla, 2017). Both datasets indicate a notable gap in the preparedness of teacher candidates concerning digital media literacy. OH2BH responses reveal a general discomfort among candidates in incorporating technology, including AI tools, into their lesson plans. Similarly, the Privacy Commissioner Report (Hoechsmann et al., 2024) highlights deficiencies in the integration of digital privacy and media literacy into the K-12 curriculum, indicating a need for more comprehensive teacher training in this area.

These findings align with parallel research on the confidence of new teachers in general, wherein soft skills and competencies that aren’t covered as extensively in their training, and curriculum documents provide limited support. New teachers will already be feeling the pressure of the role transition, from being a university student to becoming a trained teacher working in a school after graduation (Gardesten & Herrlin, 2024). Digital media literacy is therefore one of many less developed elements of teacher training that needs more space in teacher education programs.

Something to keep in mind; the Gen Z generation is growing fast, and will eventually be among our teacher candidates. They will have the lived experience of the technological harms we are currently trying to mitigate, and would likely benefit from the same concept of empowerment we hope they’ll bring to their own students.

Desire for Training

Building upon the previous finding, there is a clear desire among teacher candidates for more training and education regarding digital media literacy. OH2BH responses express a keen interest in learning about AI and incorporating technology effectively into teaching practices. Likewise, the Privacy Commissioner report suggests that teacher candidates would benefit from explicit instruction and resources to address the complexities of digital privacy and media literacy in the classroom.

Ironically, once new teachers enter the field, opportunities for new learning can become difficult to access, usually due to limited offerings and tight scheduling. Some new teachers seek out mentorships outside of their school board, which can help them establish networks of collaborative learning communities; critical deliberation on one's practice can be valuable in building pedagogic competence, boosting their confidence (Nolan & Molla, 2017).

Need for Curriculum Enhancement

Insights from both datasets underscore the necessity of enhancing the existing curriculum to better address digital media literacy. OH2BH responses indicate a perceived inadequacy in current educational programs in preparing candidates to navigate the digital landscape confidently. Similarly, the Privacy Commissioner report reveals gaps in the incorporation of digital privacy education into the Ontario curriculum, emphasizing the need for curriculum revisions to encompass essential media literacy skills. The most common references to digital media literacy in the Ontario curriculum relate to knowing how to “navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission” (Ontario Ministry of Education, Language, 2023) and in most other instances falls under “considerations for program planning” and

“Transferable Skills: Digital Literacy”, which reinforce the notion of safety and respect (Ontario Ministry of Education, 2019).

It isn’t until secondary school that students encounter deeper digital media literacy knowledge, and the most in-depth explorations are reserved for elective courses such as Business Studies, Canadian and World Studies, Digital Technology and Innovation, Technological Education, and Computer Studies (Privacy Commissioner Report, 2024).

The simplistic notions of protection and good etiquette are now insufficient for elementary school students. They are already involved in complex interactions with digital media that require a foundation that is established as early as possible. Changes in the media environment are altering our understanding of literacy and requiring new habits of mind, new ways of processing culture and interacting with the world around us (Jenkins, 2007), and without curriculum enhancements, we lay a heavy burden on new teachers to independently develop their own interpretations of what matters in digital media literacy.

Ethical Considerations and Academic Dishonesty

Both datasets highlight the importance of integrating ethical considerations into digital media literacy education. OH2BH responses suggest a concern among teacher candidates regarding the ethical implications of technology use, including issues of plagiarism and reliance on AI tools. Likewise, the Privacy Commissioner Report emphasizes (Hoechsmann et al., 2024) the significance of fostering responsible digital citizenship and ethical behavior among students, indicating a need for teacher candidates to model and teach these principles effectively.

When it comes to technology use, teacher candidates are experiencing an understandable wariness for the sudden prominence of AI. In the OH2BH survey, many reported concerns of it replacing traditional teacher roles and responsibilities, and producing lazy teachers who are unable to innovate. A counterargument is that to innovate effectively, teachers must first understand and utilize these technologies themselves to educate their

students in an informed and proficient manner. For instance, with concerns of responding to student plagiarism using AI, one promising detection approach is training an AI-based classifier, a program that classifies texts based on specific criteria, to distinguish between human-written and AI-generated texts (Ibrahim, 2023). All technology is merely a tool, and educators new or seasoned can thrive here with the appropriate knowledge.

For digital citizenship, in the Ontario curriculum grade 1-8, the recommendation for Transferable Skills: Digital Literacy is simply that students must learn to “manage their digital footprint by engaging in social media and online communities respectfully, inclusively, safely, legally, and ethically…(they must) understand their rights with respect to personal data and know how to protect their privacy and security and respect the privacy and security of others” (Ontario Ministry of Education, 2019). This statement does not provide guidance on what defines ethical participation of digital media, nor does it invite participation, leaving new teachers on their own to somehow work it into their lessons.

Professional Development Opportunities

Insights from both datasets suggest a need for expanded professional development opportunities for teacher candidates in digital media literacy. OH2BH responses reveal a desire for more training and support in incorporating technology into teaching practices, while the Privacy Commissioner report emphasizes the role of ongoing professional development in enhancing teacher proficiency in digital privacy and media literacy education.

To this end, new teachers would benefit from provincial policy directives that incorporate Professional Development (PD) approaches that take into account teachers' needs and address specific school circumstances (Hardy, 2009). However, post-secondary institutions can provide more PD opportunities within their own programs in order to support teacher candidates throughout their professional learning experiences.

Ongoing PD opportunities would help teachers stay updated with the latest technological advancements and pedagogical strategies, ensuring they can provide high-quality education that meets the demands of the 21st century. Consistent PD sessions could foster further collaboration among teacher candidates for co-planning experience, pooling knowledge and experiences to further their confidence teaching multiple subjects, but in particular the complex topic of digital media literacy. This would allow for the development of self-efficacy, which typically results from a combination of intrinsic motivation, supportive school norms, and administrator encouragement (Hunzicker, 2012). Although there is no substitute for on-the-job experience on this front, simulating similar circumstances within teacher education programs may yield positive results. Further research is required.

Actionable Insights from the Curriculum Privacy Scan

The insights derived from the Curriculum Privacy Scan underscore several key recommendations for enhancing digital media literacy education. The integration of privacy linkages within the Digital Media Literacy and ICT Curriculum is essential for ensuring students' understanding of data privacy in online learning environments. Consolidating these concepts across all educational levels will foster a comprehensive approach to digital literacy. Modernizing curricula to keep pace with technological advancements is critical, as is promoting synergies with the non-formal learning sector to create a cohesive educational framework.

Below, we will explore these items in detail and consider how these recommendations emphasize the need for a proactive and integrated approach to curriculum development, ensuring that students are well-equipped to navigate and thrive in the digital age.

Privacy Linkages with Digital Media Literacy and ICT Curriculum

A mutually reinforcing dynamic exists between well-developed K-12 Information and Communication Technology (ICT) and digital media literacy curricula and privacy curriculum

requirements, learning objectives, and instructional materials. This interdependence underscores the opportunity to integrate digital literacy, media literacy, information literacy, ICT, and related concepts across all grade levels, extending beyond senior years.

Curriculum overview charts can be simple and cost-effective. For example, Alberta makes use of an ICT overview chart to highlight the dispersal of digital literacy throughout the K-12 curriculum documents. Comprehensive ICT documents are practical, and cost-effective supplements to the curriculum in the short term and can be generated and disseminated to teachers quickly and frequently. These documents can complement existing curricula by referencing locally available curriculum expectations and frameworks, and can also support the introduction of a more robust, grade-by-grade “privacy in/and digital media literacies” curriculum rollout.

Digital citizenship initiatives are also productive sites for teaching and learning about privacy, especially around questions of ethical comportment and behaviour. The proviso here is that equating privacy concerns solely around student comportment and behaviour at worst can make the teaching about privacy a corrective function (confronting and fixing bad behaviour) rather than an educational one (presenting the challenges and opportunities of online life and learning).

Consolidating the Concept

In the full scan of curricula across the country, it was revealed that there are varying approaches to defining privacy. The term has evolved in recent years from the protection of personal photos and email conversations to the protection of data ranging from consumer habits, credit history, health data, and even DNA profile information. In addition, the tone of some curricula that suggests privacy is dependent on the good behaviour of individuals or peers can appear protection and prevention oriented. Rather than try to shield students from the reality of media

as it evolves, it would be more effective to teach and empower students as active participants who already produce and engage with media.

Ensuring Data Privacy in Online Learning Environments

The current curricula in Ontario lacks substantial coverage of privacy concerns associated with the use of third-party platforms for student learning. Many new teachers utilize apps like Google Drive or Canva to create engaging and customized lessons, often overlooking the potential risks of data breaches or data collection by these platforms. This oversight can lead to issues such as companies claiming ownership of user-generated content or exploiting student data for commercial purposes.

There are also areas of risk in data security that can affect entire school boards, and can encompass various scenarios, including theft, loss, neglect, and insecure practices. Deliberate attacks aimed at accessing sensitive data, such as hacking into district records or installing malware for ransom, pose significant threats. Inadvertent exposure can occur through the loss of media, such as misplaced backup tapes or laptops. Neglecting to adequately protect data, such as failing to erase information before selling or recycling outdated devices, also exposes vulnerabilities (Czuprynski, 2019). Additionally, insecure practices, such as transmitting student data via unsecured email or public wireless networks, further heighten the risk of data breaches and unauthorized access.

Early awareness of these privacy implications is essential for educators. To address this, educators can benefit from proactive measures such as evaluating the risks associated with online learning and data privacy and providing guidance on selecting software that prioritizes user privacy. Additionally, educators can set learning goals for themselves and their students to understand how to navigate the use of such software while protecting privacy rights. Given the increasing prevalence of online learning and the growing concerns surrounding data privacy,

addressing these issues is becoming increasingly urgent. It may only be a matter of time before a significant data breach or manipulation event prompts widespread recognition of the importance of safeguarding privacy in educational settings.

Modernizing Curricula for Technological Advancements

To keep pace with technological advancements, older curriculum documents should be updated to address contemporary issues such as the use of social media; AI and VR technologies; and algorithms in (and outside of) the classroom, ensuring students are prepared to navigate these innovations ethically and responsibly, while respecting the data of others and maintaining adequate protections of personal and collective data. While some newer documents integrate lessons addressing online research and sharing information on social media, there is little mention of the role algorithms play in delivering such information. Students must learn how algorithms and data-driven technologies can induce similarity across an industry and create institutional dependencies, which negatively impact society and personal wellbeing (Caplan & boyd, 2018). Digitally literate students will need these skills moving forward. It is also imperative that, like coding, teaching these foundational competencies begin as early as possible.

Promoting Synergies with the Non-Formal Learning Sector

Provincial curriculum updates do not need to reinvent the wheel. There are excellent curriculum and framing materials currently produced and distributed by organizations such as Media Smarts/Habilo Media and teacher associations such as the Association for Media Literacy (AML). Collaborating with these organizations could foster a hybrid approach amalgamating the strengths of diverse models could enhance privacy integration within digital literacy frameworks across Canadian provinces, better-preparing learners for the complexities of the digital world they will inherit.

Chapter 5: Potential for Support and Future Research

Enhancing Media Literacy Preparedness

The cumulative of insights from the Operation Happy To Be Here (OH2BH) survey findings and the Privacy Commissioner of Ontario's report provides a robust foundation for further research aimed at addressing the identified needs of teacher candidates regarding digital media literacy. The data highlights specific areas where teacher candidates may lack confidence or preparation in teaching digital media literacy concepts effectively. There is little understanding by teacher candidates of the value of empowerment to their students in this respect. By understanding these gaps, future research endeavors can focus on developing targeted interventions and training programs to enhance teacher education in this crucial area, and teacher candidates build the requisite competencies to adapt to change in the future. The findings underscore the importance of ongoing evaluation and refinement of teacher education curricula to align with the evolving demands of digital media literacy education.

Further research can delve deeper into exploring innovative pedagogical approaches, integrating emerging technologies, and fostering collaboration between educational institutions and industry stakeholders to ensure that teacher candidates are adequately equipped to navigate the digital landscape and empower their students with essential digital literacy skills.

The Need for Data

As technology continues to shape the way information is consumed, disseminated, and understood, teachers play a pivotal role in guiding students through the complexities of the digital world. However, to effectively fulfill this role, it is imperative to have a comprehensive understanding of teacher candidates' preparedness and confidence levels in teaching media literacy. While existing research provides valuable insights, there remains a pressing need for

more data that delves deeper into the specific competencies, challenges, and perspectives of educators-to-be as well as in-service educators. Only through a thorough examination of these factors can we identify areas for improvement and develop targeted strategies to enhance teacher training programs and support the cultivation of media-literate educators.

Surveys like OH2BH serve as invaluable repositories of data, offering rich insights into the perspectives and experiences of participants. However, to extract the full potential of such surveys, it is crucial to refine the questions to elicit more precise and nuanced responses. By carefully crafting questions that target specific aspects of interest, researchers can enhance the depth and accuracy of the data collected. Additionally, reflecting on past survey experiences provides valuable hindsight considerations for optimizing future survey design and administration, ensuring that subsequent iterations are even more effective in capturing relevant information and generating meaningful insights.

The OH2BH survey indicates that although it provides valuable information, its questions related to media literacy were overly broad and lacked the specificity needed to yield precise insights. To address this limitation, a dedicated section within the survey focusing solely on media literacy, comprising a dozen or so specific questions tailored to assess various aspects of digital literacy competence, would likely prove more effective. Such targeted inquiries could delve into areas such as familiarity with digital tools, confidence in teaching media literacy concepts, and strategies for integrating technology into lesson plans. Additionally, expanding the scope of data collection to encompass multiple teacher education programs across various universities would provide a more comprehensive understanding of the state of media literacy preparedness among teacher candidates. By surveying more teacher candidates in various programs across Ontario, researchers could capture diverse perspectives and practices, enabling a more nuanced and holistic depiction of the landscape of media literacy education within teacher training programs.

Why Knowledgeable Teachers Make a Difference

Most children cannot develop appropriate digital media literacy skills independently, which is only exacerbated by disparities in access to media technologies and participation opportunities. Children from lower socioeconomic backgrounds often lack the rich, continuous access to digital resources available to their middle-class peers. This gap creates a disparity in the ability to leverage these tools effectively for learning and participation. Therefore, teachers need to be equipped to bridge this divide by integrating digital media literacy into the curriculum, ensuring all students, regardless of background, can develop these essential skills (Jenkins, 2007).

Confident teachers play a vital role in addressing the transparency problem. Many young people use media without fully understanding the underlying mechanisms and biases within these platforms. While students may excel at using media for various purposes, they often fail to critically evaluate the media itself. Without guidance, students may accept digital content at face value, unable to discern the commercial or ideological influences at play. Understanding that media messages are not reality, but several levels of abstraction removed from reality, is a central concept in media literacy (Hobbs, 2017). Another common misunderstanding is that interpretation colours our reality. This process of grasping different audience readings and interpretations enhances democracy depends on citizens that can embrace multiple perspectives as a natural consequence of varying experiences, histories, and cultures constructed within structures of dominance and subordination (Kellner & Share 2005). Educators equipped with strong digital media literacy skills can help students develop the critical thinking necessary to deconstruct media messages, understand their constructed nature, and recognize the intent behind them. This critical approach to media consumption is essential for fostering informed and discerning digital citizens (Jenkins, 2007).

The ethical challenges presented by participatory cultures further underscore the need for teachers to confidently impart digital media literacy. In the world today, we all navigate complex online environments where the lines between content creators and consumers blur, often without clear ethical guidelines. Educators must guide students in understanding the ethical implications of their online interactions and content creation. There are crucial links between literacy, democracy, empowerment, and social participation in politics and everyday life, and without developing adequate literacies, many individuals and groups will be left out of the emerging global economy, networked society, and culture (Kellner & Share, 2005). By fostering an environment where these issues are openly discussed, teachers can help students navigate the digital landscape responsibly, making thoughtful decisions that reflect both personal and communal values. This ethical literacy is critical for students to engage meaningfully and positively in digital spaces, contributing to a healthier and more respectful online community (Jenkins, 2007).

Connections Between Mindfulness and Digital Media Literacy

Mindfulness is closely related to digital media literacy, offering significant benefits for teacher candidates as they navigate the complexities of modern education. With the growing cluster of issues associated with internet use, such as Internet Addiction, maladaptive emotional regulation through media, cognitive overload, and other harmful behaviors (Fendel, 2022), educators need to prepare students to overcome these obstacles and advocate for themselves. Mindfulness practice can help address these challenges by fostering self-awareness and self-regulation, which are crucial for healthy media consumption. As students are constantly exposed to misinformation, exploitation, surveillance, and media manipulation, developing mindfulness can help them manage obsessive behaviors like doomscrolling and online social comparisons. This practice is especially important for children and adolescents who are vulnerable to the addictive mechanics of video games and the unmoderated content of

platforms like YouTube Kids and Roblox (Smith, 2021). By integrating mindfulness into digital media literacy education, teacher candidates can better equip their students to navigate the digital world responsibly and healthily.

For teacher candidates, incorporating mindfulness into their pedagogy can provide a robust framework for promoting digital media literacy. Mindfulness practices help individuals achieve normal functioning amidst moderate anxiety and stress, making them a valuable tool for preventing and treating Internet Use Disorder (Schreiner, 2008; Fendel, 2022). Research indicates that higher levels of mindful awareness significantly reduce the likelihood of problematic internet use by promoting better self-regulation and mood management (Gámez-Guadix, 2016). By teaching students to be mindful of their media consumption, educators can help them resist the urge to use digital media as an escape from negative emotions. This approach emphasizes empowerment over restriction, encouraging positive online experiences through self-control and digital detox methods (Schmitt, 2021). Teacher candidates should also be mindful of their students' cognitive limits when structuring online lessons to reduce cognitive overload and maximize learning outcomes (Jiang, 2021). Integrating a variety of mindfulness techniques, such as non-judging and emotional regulation, along with creative outlets for processing media, can foster moderation and healthy media habits (Calvete, 2017; Huang, 2021). By equipping students with these skills, teacher candidates can ensure their students are prepared for a future where emotional regulation and self-knowledge are essential, regardless of technological advancements. Despite the perceived relationship between online opportunities resulting in increased risk, avoiding digital media likewise restricts access to opportunities (Livingstone and Helsper, 2010).

Conclusion

Digital Media Literacy: It Matters

Our current education establishment is only scraping the surface of what it should in the field of digital media literacy. The importance of addressing digital literacy and privacy rights in educational contexts cannot be overstated. In its current state, teacher candidates are being taught methods that were relevant five years ago and following a curriculum that is at least ten years out of date. The children they teach will be using any new technology as it develops, but will lack the critical skills to understand how it works and who is profiting from their engagement and personal data.

It is crucial that teacher candidates and new teachers are confident in teaching digital media literacy to adequately prepare students for the challenges of the digital age, as this not only impacts student success, but also benefits student mental health and well-being. The data tells us that many teacher candidates worry about the information crisis that is unfolding. Most feel unprepared to teach Digital Media Literacy in the classroom, let alone use AI technology in their teaching practice. The current curriculum doesn't have the answers. Those that feel competent with technology and AI is due to personal experience rather than formal training, but the rest want to learn.

Teachers who are confident are better equipped to foster a critical understanding of technology among students. This includes awareness of data privacy, the manipulative nature of persuasive technology, and the ethical implications of online behavior. Empowering teachers with the knowledge and skills to teach digital media literacy not only enhances their professional development but also ensures that students receive a comprehensive education that prepares them for the future.

If we want to educate students to think critically about their interactions with technology and the corporations that control them, we need to equip their teachers with the fundamentals of digital media literacy, and all associated knowledge of mental health, resilience and well-being. They need a strong foundation framed within an empowerment model that can be built upon as technology improves, and be able to adapt to the latest developments. Confident teachers make confident students, no matter what subject they're teaching.

Where Do We Go from Here?

Moving forward, there are several avenues for research that could contribute significantly to the field of digital media literacy within teacher education programs, and would better prepare teacher candidates to adapt to this ever-evolving field of education.

If ministries of education are not doing enough to support digital media literacy, new teachers can seek out several external resources. MediaSmarts, a Canadian not-for-profit organization, offers comprehensive resources and professional development workshops tailored to digital and media literacy. As mentioned in Appendix A, Crash Course, a popular YouTube channel, provides engaging video-based courses on topics like media literacy and artificial intelligence, serving as an accessible entry point for foundational understanding. Additionally, MOOCs offer flexible, often free, educational opportunities worldwide, allowing educators to deepen their digital media literacy skills at their own pace. By leveraging these resources, educators can enhance their competencies and better prepare students for success in today's digital world (see Appendix A).

Teacher Education Program Analysis

An in-depth analysis of the required courses in teacher education programs across Ontario could provide valuable insights into the current landscape of digital media literacy instruction. Identifying redundant or less useful courses for students could help streamline curricula,

allowing for more focused and effective training in media and technology. Conducting comparative studies to assess the extent of digital media literacy instruction in different schools and programs could highlight disparities and areas for improvement, to the benefit of all education faculties and new teachers.

Expanding surveys such as OH2BH to include other post-secondary institutions beyond Ontario could offer a broader perspective on digital media literacy education across various regions. Alternatively, new surveys could be organized by education departments in other post-secondary institutions.

The Looming Threat of "Datafication"

There is a need to investigate the potential data risks associated with the use of digital media by school boards and teachers in order to develop strategies to safeguard student privacy and security. Research on effective approaches to engage policymakers and faculties in considering changes to digital media literacy education policies and practices is also essential for driving systemic improvements.

Datafication refers to the process of converting social actions into online quantified data, enabling real-time tracking and predictive analytics (Hillman, 2022). In education, datafication promises to monitor real-time student behavior within digitally mediated learning environments, aligning with the broader trend of using data to drive decision-making and performance metrics across various sectors. The integration of datafication in schools relies heavily on education technology (edtech) businesses, which provide products and services that facilitate this process (Hillman, 2022). As these products gain traction, edtech companies amass pedagogic power, positioning themselves not just as facilitators of education but as entities with significant control over educational outcomes and processes.

However, the pervasive use of datafication in education raises critical concerns about privacy and ethical implications. Despite claims that personal data can be anonymized and de-identified to protect privacy, these measures often fall short. While datafication offers potential benefits in personalizing education, it also necessitates a critical examination of its broader implications on privacy and individual rights. The unchecked influence of edtech companies and the datafication process demands careful consideration to ensure that the benefits do not come at the expense of students' privacy and ethical standards.

Digital Media Literacy is Only Part of the Solution

It's easy to fall into the trap of 'solutionism' (Buckingham, 2019) by implying that Digital Media Literacy is the single solution to fake news, media manipulation, and critical thinking. As with most complex issues that shape society, the reality is much more nuanced. Misinformation has always existed, and digital media are just the latest and most successful tool to bypass regulatory bodies. The echo chamber effect, where we only see information that aligns with our pre-existing beliefs, is now fueled by algorithms. This selective exposure reinforces emotional biases, making individuals more susceptible to believing fake news not through logic, but through an emotional fantasy.

Fake news exists because it's profitable, driven by the enormous power of digital advertising and the global companies that dominate online spaces. To challenge misinformation effectively, we must address the root cause: the profit motives of digital giants. A significant step would be for these companies to acknowledge that they are media companies that need to regulate their content. Breaking them up and enforcing stricter regulations will pave the way for more significant change, tackling the issue at its core.

We can't do everything, but as educators, we have the power to instill a foundation in digital media literacy and nurture a passion for democracy in our students. By preparing our

teacher candidates for this crucial task and ensuring they enter the classroom with confidence and understanding, we can make a significant impact.

The Intersectionality of Digital Media Literacy

Digital media literacy, with its broad application across various aspects of education, presents a comprehensive solution to numerous contemporary challenges. By equipping students with the skills to critically analyze and responsibly engage with digital content, digital media literacy addresses issues such as mindfulness, mental health, and internet use disorder. Effective digital media literacy programs can mitigate the disruptive influence of cell phones in schools, curb bullying and hate speech, and navigate the complex dynamics of online clout-seeking behavior.

Exploring the integration of mindfulness practices with technology education could offer innovative strategies for promoting responsible and mindful use of digital media among educators and students alike.

Leading the Way: Positioning Lakehead as a Leader in the Field

By leveraging its unique features as a leading educational institution, Lakehead University can situate itself as a leader in this highly relevant component of teacher education by strategically implementing changes to its B.Ed. curriculum.

When considering how teacher education programs in Ontario prepare pre-service teachers to navigate digital media literacy competencies within the structure of core subjects, there is little in the way of organized data. Based on the Privacy Commissioner Report (Hoechsmann et al., 2024), we know that Ontario curriculum documents currently lag behind recent technology in their guidance. Institutions mainly offer courses based on the core subjects of elementary or secondary education, but there is no single resource to review and compare between programs. Although many Ontario institutions often integrate digital literacy concepts

within broader courses on technology in education, dedicated courses solely focused on digital media literacy are not common.

Of all the Ontario institutions, Brock University's Primary/Junior Bachelor of Education program stands out with a course called "Teaching Digital Learners in the Digital Age" (Brock University Academic Catalog, n.d.). However, the course description suggests a focus on digital learning environments and the use of technology for teaching and learning, which is only a small part of digital media literacy as a competency.

As Canada's #1 Undergraduate Research University, Lakehead has a diverse area of research that sets it apart from other institutions: Early Literacy and Numeracy, Large-Scale Testing and Evaluation, Aboriginal Education, Math and Science Education, Environmental Education, and Arts Integrated Inquiry (Lakehead University Undergraduate Program, n.d.). Digital Media Literacy would be a strong addition to this list. Therefore, to elevate Lakehead's program in the field of digital media literacy, the following recommendations outline potential areas of growth:

1. **Develop A Specialized Digital Media Literacy Course**

Lakehead University can create a specialized digital media literacy course to address the knowledge gap between daily technology use, critical thinking, mental health and mindfulness. This can focus on the critical analysis of media, the impact of digital media on mental health, and practical strategies for teaching it in diverse classroom settings and interwoven in various classroom subjects. Alternatively, Lakehead could structure this as a module of an existing course as it refines and develops this new initiative. By becoming a leader in digital media literacy education, Lakehead can attract students particularly interested in the newest research and applications of this competency in their future practice.

2. **Incorporate Regional and Indigenous Perspectives on Digital Citizenship and Privacy**

Lakehead's commitment to Indigenous education creates a unique opportunity to integrate Indigenous perspectives into digital citizenship and online privacy education. This could include collaborating with Indigenous communities to create curriculum content that reflects the values and concerns of these communities regarding data privacy and digital literacy.

3. **Create and Promote Professional Development Programs**

Lakehead can establish itself as a hub for professional development by offering a variety of workshops, online courses, and MOOCs focused on digital media literacy. By collaborating with local school boards, Lakehead can ensure these programs are responsive to the needs of Ontario educators and position itself as a go-to resource for ongoing professional learning.

4. **Establish a Research Hub on Digital Literacy and Education**

Lakehead University has the opportunity to position itself as a leader in digital media literacy by establishing a dedicated research hub focused on this critical area. By conducting and disseminating research, Lakehead can significantly contribute to the field, attract research funding, and foster partnerships that enhance the university's reputation and influence. To achieve this, it is essential to gather more data from various stakeholders, including frontline teachers, pre-service teachers, and education university professors. Facilitating a conversation between these groups is crucial for developing a comprehensive understanding of the challenges and opportunities in digital media literacy education.

Final Thoughts

Ultimately, the integration of digital media literacy into teacher education is not just about equipping future educators with technical skills but also about instilling a deeper understanding

of the socio-political landscape of digital information. It seems we are asking the wrong questions in the curriculum and giving the wrong solutions in teacher training. This is about more than pressing buttons, but rather this is about cultural participation in a democratic society. By championing these efforts in our schools, we can create an educational environment that not only embraces technological advancements but also cultivates informed, critical, and responsible citizens. I have prepared a set of resources and observations included in this thesis as Appendix A which can be of use to aspiring media educators and instructors in faculties of education who are looking for resources to support the teaching of teacher candidates. Given the enormity of the challenges to more adequately address the changes brought about by the rapid change of communication technologies, we have to proceed as best as we can. Larger, more transformative, changes to teacher education and K-12 media education are needed, though we may need to proceed in manageable steps. Every small step is a positive step forward. Let’s take the next step.

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Appendices

Appendix A

External Resources for New Teachers

This section examines three external resources crucial for teacher candidates and new teachers entering the education field: Media Smarts, MOOCs, and Crash Course.

MediaSmarts, a Canadian not-for-profit organization, has been a leader in digital and media literacy education for over two decades. Offering high-quality Canadian-based resources, professional development workshops, and public awareness campaigns, MediaSmarts equips educators with the tools to integrate media literacy effectively into their teaching. Crash Course, a pioneering YouTube channel, provides accessible video-based courses covering topics like media literacy, digital information navigation, and artificial intelligence, serving as a valuable entry point for educators seeking foundational understanding. Meanwhile, MOOCs offer accessible and often free educational opportunities worldwide, including digital media literacy-focused courses. Participating in MOOCs enables educators to deepen their understanding of critical concepts at their own pace, making them ideal for busy professionals seeking professional development opportunities. By leveraging these resources, educators can enhance their digital media literacy skills and prepare students for success in today's digital world.

MediaSmarts

As a Canadian not-for-profit organization dedicated to informing the public on digital and media literacy, MediaSmarts is an excellent resource for teacher candidates and new teachers to familiarize themselves with digital media literacy and how to teach it in schools. They offer “high-quality Canadian-based resources and conduct as well as research that contributes to the development of informed public policy on issues related to media” (MediaSmarts, 2024).

Founded in 1996, MediaSmarts has been at the forefront of digital and media literacy education in Canada for over two decades. Originally emerging from a TV violence initiative initiated by the Canadian Radio-television and Telecommunications Commission (CRTC) in the early 1990s, MediaSmarts is now dedicated to empowering Canadian homes, schools, and communities with the necessary tools and resources to navigate the media landscape. Their work is organized into three main areas: education, public awareness, and research and policy. In the education sector, MediaSmarts provides K-12 resources covering a wide range of media issues, including traditional and digital media, which are aligned with curriculum outcomes across all Canadian provinces and territories. These resources, which include classroom lesson plans, worksheets, tip sheets, and multimedia games, are freely available on their website, along with professional development workshops for educators. MediaSmarts also plays a crucial role in raising public awareness through extensive awareness campaigns, community-based programs, and events like Media Literacy Week, held annually in partnership with the Canadian Teachers’ Federation.

They also conduct research through their ongoing Young Canadians in a Wireless World (YCWW) program, which is Canada's largest study of children's and teens' internet use. This research, combined with other reports produced independently or in

collaboration with various institutions, covers a broad span of digital and media issues, including privacy, online harms, digital well-being, and digital equity. By informing policy development in both the public and private sectors, MediaSmarts ensures that their programs and resources remain relevant and responsive to the evolving online experiences of Canadians. Since its inception, MediaSmarts has operated as an independent entity, governed by a volunteer board representing leading Canadian media companies, government agencies, educational institutions, libraries, and non-profit organizations, reflecting its commitment to collaboration and inclusivity in promoting digital and media literacy across Canada.

How MediaSmarts Helps Teachers

MediaSmarts offers a wealth of resources for educators striving to keep pace with the ever-evolving landscape of digital and media literacy. These resources, designed to align with provincial and territorial curricula across Canada, are freely accessible online and include lesson plans, backgrounders, tip sheets, and multimedia games and quizzes.

In addition to its extensive repository of teaching materials, MediaSmarts emphasizes professional development for educators. The organization licenses professional development workshops and interactive modules aimed at enhancing teachers' digital media literacy. These workshops are tailored to address the unique challenges and opportunities presented by digital media, providing educators with the practical skills and knowledge necessary for effectively integrating media literacy into their teaching practices. This hands-on training is invaluable as it equips teachers with concrete examples and strategies for teaching media literacy in the classroom.

MediaSmarts is dedicated to raising public awareness about the importance of media literacy. Through initiatives like Media Literacy Week and collaborations with various partners, including the Canadian Teachers' Federation and local community organizations, MediaSmarts engages the broader community in media literacy education. This holistic approach ensures that educators are not only equipped with the necessary tools and knowledge but are also supported by a community that values and understands the significance of media literacy in today's digital world.

Massive Open Online Courses (MOOCS)

In today's rapidly evolving digital landscape, it is essential to develop a deeper understanding of the workings of communication technology, and how people interact, learn, work, play and socialize with it. Our lives are so intertwined with digital hardware and tools, that the study of their implications and potentials should be at the center of educational practices and processes; there is no outside of the digital realm, no bypass that educators can follow if they hold too tightly curriculum and pedagogies from the past. While this concept may have seemed rare to educational discourse even five years ago, the COVID-19 pandemic brought home to everyone in educational settings that, for better or worse, we would have to adapt more fully to a digital universe.

Current research in the field of media literacy suggests that there is a strong interest in the connection between professional development and MOOCs. Critical media literacy can be effectively incorporated into educational frameworks. To raise the next generation prepared to participate in a democratic society, we must strive to help our students master this new frontier (Kellner & Share, 2019).

What are MOOCs?

MOOCs, or Massive Open Online Courses, are the next step in online learning, providing accessible and often free educational opportunities to learners worldwide (The Oxford Review, 2020). These courses, offered through digital platforms, cater to diverse audiences and cover a wide range of subjects. One defining feature of MOOCs is their massive scale, with enrollment numbers often reaching into the thousands or even millions. This scalability allows learners from different backgrounds and locations to participate simultaneously in the same course, fostering a global learning community. MOOCs can be accessed in two ways: synchronous and asynchronous. Synchronous MOOCs involve all participants following the same modules of the course concurrently, while asynchronous MOOCs allow learners to join and progress through the course at their own pace, leading to a more flexible learning experience.

There are two prominent types of MOOCs: cMOOCs and xMOOCs. cMOOCs, or connective Massive Open Online Courses, emphasize collaboration, connectivity, and the creation of personal learning networks among participants. Learners engage in an interactive learning environment where they actively contribute to discussions, share resources, and co-create knowledge. On the other hand, xMOOCs, or extended Massive Open Online Courses, share more in common with online courses. They follow a more structured and content-focused format, drawing on material provided by universities and educational institutions. xMOOCs prioritize the delivery of research-based content and may incorporate elements such as lectures, quizzes, and assessments to facilitate learning outcomes.

How MOOCs Help Teachers

It can be challenging for educators to access up-to-date media literacy knowledge that they can disseminate to their students. Educators demonstrate motivation for professional development, as they gain skills that apply to their daily lives and media use (Ranieri, 2017). To that end, MOOCs hold potential as free and constantly curated courses taught by leaders in their fields that are offered remotely.

However, online education poses its own challenges. Although MOOC content structure, instructional strategies, and assessment methods are designed similarly, collaborative and interactive courses are rare (Dreisiebner, 2019). Striking a balance between autonomy, competence and relatedness, the three factors of motivation of self-determination theory, is crucial when developing a successful MOOC course (Durksen, 2016). As such, MOOC development needs to find new ways to reduce dropout rates by nurturing a sense of community (Clarke, 2013). When comparing MOOCs with traditional e-learning models, having a sense of community and perceived gains from courses seem equally meaningful for both formats, but the perceived convenience and computer self-efficacy influence MOOC learners further (Hsu, 2018). MOOC learners can also benefit from the diverse viewpoints of their peers in the global community (Stephens, 2014).

MOOCs have been found to contribute to developing skills crucial to the field being studied (Beltran Hernandez de Galindoa, 2019). A European project investigating teachers' professional development in digital and media literacy through a MOOC revealed significant benefits when teachers received transferable training resources and concrete examples of classroom media literacy instruction. These teachers found the training particularly valuable as it provided practical skills applicable to their daily lives and media use (Ranieri, 2017). However, obstacles such as heavy workloads, time pressures, low technical skills, and limited institutional

support posed significant challenges to effective implementation. There is strong potential for growth and viability for MOOC education in the coming years, but we need to find new ways to reduce dropout rates (Clarke, 2013).

To that end, some research has been exploring the link between SDT (self-determination theory) and motivation when completing MOOCs, focusing on autonomy, competence and relatedness. The goal is to consider the learner's physiological needs while completing a MOOC, demonstrating that participants with higher autonomy are more likely to achieve a higher level of competence. Relatedness, the sense of belonging an individual experiences, could also be a factor in competence. Results suggest that self-determined learners get more out of MOOCs, but also that MOOCs that simulate relatedness in the form of small group discussions and other social interactions, create engagement that leads learners to competency (Durksen, 2019). In another study, it was found that a "sense of community" and "perceived gains" from courses were equally meaningful for both e-learning and MOOCs, but the perceived convenience and computer self-efficacy did influence MOOC learners (Hsu, 2018).

This synthesis of literature supports the idea that some media literacy MOOCs can be effective in teacher professional development, emphasizing the need for accessible, supportive, and effective platforms to support educators in navigating the intersection of media literacy and professional growth.

YouTube's CrashCourse

For new educators looking for a more entertaining resource, a surprising option can be found on YouTube. Crash Course, a pioneering YouTube channel, offers a refreshing and engaging approach to education exclusively in video format. Launched in January 2012 by the Green Brothers as part of YouTube's original channel initiative, Crash Course quickly gained traction, boasting

over one billion views to date. The channel's content covers a wide array of subjects, from history to science, attracting a global audience of learners across various age groups and educational backgrounds.

Initially facing financial challenges, Crash Course's innovative approach to funding through crowdfunding platforms like Subbable and later Patreon helped it build a stable platform. The channel's partnership with PBS Digital Studios in 2014 further solidified its presence, enabling the production of additional series and expanding its reach to new audiences. Despite occasional setbacks, such as the temporary removal of the Human Geography series due to factual inaccuracies, Crash Course remains an accessible and comprehensive educational resources to learners worldwide. With recent collaborations with institutions like Arizona State University and Google, Crash Course continues to evolve, offering college-level courses on YouTube and affirming its status as a leading force in online education.

Courses Offered for Digital Media Literacy

The three main courses that would be of use to teacher candidates and new teachers would be **Media Literacy**, **Navigating Digital Information** and **Artificial Intelligence**.

The **Media Literacy** course delves into critical concepts for understanding and analyzing media, covering topics such as the impact of media on society, the influence of bias and propaganda, and the importance of digital citizenship, this course equips learners with the skills needed to navigate and evaluate media messages effectively.

In the **Navigating Digital Information** course, Crash Course provides insights into discerning credible information in a sea of online content. With the proliferation of misinformation and fake news, this course serves as an excellent resource for people seeking a better understanding of the topic.

In the **Artificial Intelligence** course, learners explore the applications, limitations, and ethical implications of AI. From understanding the basics of machine learning and neural networks to examining the societal impacts of AI on industries and economies, this course offers a comprehensive overview of one of the most transformative and misunderstood technologies of the last decade. By engaging with topics such as algorithmic bias, privacy concerns, and the future of AI, learners gain a deeper understanding of the complexities surrounding this rapidly evolving field.

How CrashCourse Helps Teachers

While Crash Course offers an informal approach and its videos may become outdated over time, it can still serve as an accessible entry point for educators seeking to enhance their foundational understanding of digital media literacy. This resource provides a starting point for educators looking to familiarize themselves with key concepts before diving into more complex literature or academic studies.

Appendix B

The following is a table of instances in the Ontario curriculum from the Privacy Commissioner Report (2024) where “privacy” is mentioned in relation to digital media literacy.

Table 1

Grade	Area of Learning	Section	Sentence priva(cy) exists in
1	Language	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
1-3	Ontario Language Curriculum: EXPECTATIONS: STRAND A	OVERALL EXPECTATION A2. Digital Media Literacy	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
1-8	Health and Physical Education	Some Considerations for Program Planning in Health and Physical Education - The Role of Information and Communications Technology in Health and Physical Education	"Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues related to inaccurate information, Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used in a way that has a negative impact on the school community, or to promote hatred."

1-8	Health and Physical Education	Considerations for program planning: Ethics	Teachers may supervise students' use of surveys and/or interviews, for example, to confirm that their planned activities will respect the dignity, privacy, and confidentiality of their partici-pants.
1-8	Health and Physical Education	Transferrable Skills: Digital Literacy: Student Descriptors	Students manage their digital footprint by engaging in social media and online communities respectfully, inclusively, safely, legally, and ethically. Students understand their rights with respect to personal data and know how to protect their privacy and security and respect the privacy and security of others.
1-8	Health and Physical Education	Glossary: cyber-bullying	It may include put-downs or insults and can also involve spreading rumours; sharing private infor-mation, photos, or videos; or threatening to harm someone. Cyber-bullying is always aggressive and hurtful.
1-8	Social Studies, History and Geography	Considerations for program planning: Ethics	Teachers may supervise students' use of surveys and/or interviews, for example, to confirm that their planned activities will respect the dignity, privacy, and confidentiality of their partici-pants.
1-8	Social Studies, History and Geography	Transferrable Skills: Digital Literacy: Student Descriptors	Students manage their digital footprint by engaging in social media and online communities respectfully, inclusively, safely, legally, and ethically. Students understand their rights with respect to personal data and know how to protect their privacy and security and respect the privacy and security of others.
1-8	The Arts	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN ARTS EDUCATION	Although the Internet is a powerful learning tool, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the Internet can be used to promote hatred.

1-8	Science and Technology	Considerations for program planning: Ethics	Teachers may supervise students' use of surveys and/or interviews, for example, to confirm that their planned activities will respect the dignity, privacy, and confidentiality of their partici-pants.
1-8	Science and Technology	Transferrable Skills: Digital Literacy: Student Descriptors	Students manage their digital footprint by engaging in social media and online communities respectfully, inclusively, safely, legally, and ethically. Students understand their rights with respect to personal data and know how to protect their privacy and security and respect the privacy and security of others.
1-8	Mathematics	Transferrable Skills: Digital Literacy: Student Descriptors	Students manage their digital footprint by engaging in social media and online communities respectfully, inclusively, safely, legally, and ethically. Students understand their rights with respect to personal data and know how to protect their privacy and security and respect the privacy and security of others.
1-8	Mathematics	The Role of Information and Communication Technology in Mathematics	When using technology to support the teaching and learning of mathematics, teachers consider the issues of student safety, privacy, ethical responsibility, equity and inclusion, and well-being.
1-8	Language	Considerations for program planning: Ethics	Teachers may supervise students' use of surveys and/or interviews, for example, to confirm that their planned activities will respect the dignity, privacy, and confidentiality of their partici-pants.
1-8	Language	Transferrable Skills: Digital Literacy: Student Descriptors	Students manage their digital footprint by engaging in social media and online communities respectfully, inclusively, safely, legally, and ethically. Students understand their rights with respect to personal data and know how to protect their privacy and security and respect the privacy and security of others.

1-8	Language	The Strands in the Language Curriculum: Strand A. Literacy Connections and Applications	Students develop and apply digital media literacy knowledge and skills to support their learning. They learn about their rights and responsibilities when interacting online and developing their digital identity, learn to navigate online environments while managing their data, security, and privacy, including seeking appropriate permission, and use digital and media tools to evaluate information and demonstrate their learning. They learn and apply the conventions and techniques of digital and media texts and analyze the relationship between text forms and content, audiences, and creators. They use digital and media tools in the design process to develop innovative solutions. Students learn how to interact and contribute to an empathetic, respectful, and inclusive online community.
1-8	Language	Some Considerations for Program Planning in Language: Selecting Texts and Learning Resources	Are digital and media resources used to teach about students' rights and responsibilities for online interactions, to develop their digital identity, and to support their learning to navigate online environments while managing their data, security, and privacy?
1-8	Language	The Role of Information and Communications Technology in Language Education	The use of technology in the language curriculum also provides opportunities for students to develop their transferable skills, including digital literacy. When using technology to support the teaching and learning of language, teachers consider the issues of student safety, privacy, and ethical responsibility, respect and inclusion, and student well-being.

1-8	Language	The Role of Information and Communications Technology in Language Education	Although the internet is a powerful learning tool, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the internet can be used to promote hatred. In all grades, students also need to be reminded of the ethical issues relating to plagiarism and appropriation. In a digital world that provides quick access to abundant information, it is very easy to copy the words, music, or images of others and present them as one's own. Both blatant and nuanced forms of plagiarism and appropriation, as well as the consequences of engaging in them, should be clearly discussed before students engage in creating texts.
1-8	FSL	Rôle de la technologie de l'information et des communications dans les programmes de français langue seconde	Bien qu'Internet soit un puissant outil didactique, son utilisation présente aussi des risques potentiels. Il faut donc sensibiliser l'élève aux questions de confidentialité, de sécurité et d'utilisation responsable, de même qu'au risque d'abus potentiel de cette technologie quand elle est particulièrement utilisée pour promouvoir la haine.
2	FSL	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
3	FSL	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission

4	Health and Physical Education	Healthy Living Decision making - assessing risk D2.2	"I respect the privacy of my peers by not posting or sharing videos of them without their consent. If someone asks me for any personal information or a personal photo, I should not respond, and I should tell a parent or trusted adult about what happened."
4	FSL	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
4-6	Ontario Language Curriculum: EXPECTATIONS: STRAND A	OVERALL EXPECTATION A2. Digital Media Literacy	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy and personal data, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
5	Health and Physical Education	D2.5 Human Development and Sexual Health	Sharing private sexual photos with others or posting sexual rumours online is hurtful, unacceptable, and illegal.”
5	FSL	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
6	Health and Physical Education	D2.3 Healthy Living	“My family and I can investigate privacy tool options.”
6	FSL	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission

7	Health and Physical Education	D1.1 Healthy Living: Personal Safety and Injury Prevention	describe benefits and dangers, for themselves and others, that are associated with the use of computers and other digital technologies (e.g., benefits: efficiency and time savings; increased access to information; improved communication, including global access; dangers: misuse of private information; negative impact on mental health, including possible social isolation, feelings of depression, and addiction; identity theft; cyberstalking; exposure to online predators, including those involved in sex trafficking and/or soliciting explicit sexual images; hearing damage and/or traffic injuries associated with earphone use; financial losses from online gambling), and identify protective responses
7	Health and Physical Education	D1.1 Healthy Living: Personal Safety and Injury Prevention	Do not send it to anyone else or share it online, because respecting privacy and treating others with respect are just as important with online technology as with face-to-face interactions.”
7	FSL	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
7-8	Ontario Language Curriculum: EXPECTATIONS: STRAND A	OVERALL EXPECTATION A2. Digital Media Literacy	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, personal data, and security, and interact in a way that supports their well-being and that of others, including seeking appropriate permission

7-9	Language/English	Alignment Chart OVERALL AND SPECIFIC EXPECTATIONS	A2.2 Online Safety, Well-Being, and Etiquette: demonstrate an understanding of how to navigate online environments safely, manage their privacy, personal data, and security, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
7-9	Language/English Grades 7–8–9 Alignment Chart	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	demonstrate an understanding of how to navigate online environments safely, manage their privacy, personal data, and security, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
8	FSL	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
9	Mathematics	The Role of Information and Communication Technology in Mathematics	When using technology to support the teaching and learning of mathematics, teachers consider the issues of student safety, privacy, ethical responsibility, equity and inclusion, and well-being. The strategic use of technology to support the achievement of the curriculum expectations requires a strong understanding of: • the mathematical concepts being addressed; • high-impact teaching practices that can be used, as appropriate, to achieve the learning goals; • the capacity of the chosen technology to augment the learning, and how to use this technology effectively.
9	Mathematics	Strand D. Data: D1.1 Application of Data	• potential implications and consequences: "...the need for privacy protection and other security aspects of data storage"

9	Mathematics	Strand D. Data: D1.1 Application of Data	• How is the importance of individual privacy weighed against the societal value of collecting certain data?
9	English - De-Streamed	STRAND A. Literacy Connections and Applications, A2. Digital Media Literacy	A2.2 Online Safety, Well-Being, and Etiquette: demonstrate an understanding of how to navigate online environments safely, manage their privacy, personal data, and security, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
9	English GRADE 9, DE-STREAMED	Strand A. Literacy Connections and Applications	Students develop and apply digital media literacy knowledge and skills to support their learning. They learn about their rights and responsibilities when interacting online and developing their digital identity, learn to navigate online environments while managing their data, security, and privacy, including seeking appropriate permission, and use digital and media tools to evaluate information and demonstrate their learning.
9	English GRADE 9, DE-STREAMED	Selecting Texts and Learning Resources	Are digital and media resources used to teach about students' rights and responsibilities for online interactions, to develop their digital identity, and to support their learning to navigate online environments while managing their data, security, and privacy?
9	English GRADE 9, DE-STREAMED	The Role of Information and Communication Technology in the English Program	The use of technology in the English curriculum also provides opportunities for students to develop their transferable skills, including digital literacy. When using technology to support the teaching and learning of language, teachers consider the issues of student safety, privacy, and ethical responsibility, respect and inclusion, and student well-being.

9	English GRADE 9, DE-STREAMED	The Role of Information and Communication Technology in the English Program	Although the internet is a powerful learning tool, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the internet can be used to promote hatred
9	English GRADE 9, DE-STREAMED	A2. Digital Media Literacy: Online Safety, Well-Being, and Etiquette	A2.2 demonstrate an understanding of how to navigate online environments safely, manage their privacy, personal data, and security, and interact in a way that supports their well-being and that of others, including seeking appropriate permission
9-10	Technological Education	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN TECHNOLOGICAL EDUCATION	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to bully or promote hatred.
9-10	Technological Education	SOME CONSIDERATIONS FOR PROGRAM PLANNING: COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING	Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
9-10	Science	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN SCIENCE	Although the Internet is a powerful learning tool, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
9-10	Guidance and Career Education	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF TECHNOLOGY IN Guidance and Career Education	Although the Internet is a powerful learning tool, however, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the Internet can be used to promote hatred.

9-10	Guidance and Career Education	Health and Safety in Guidance and Career Education	In addition, they must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act and be able to function in an environment free from abuse and harassment.
9-10	English	THE ROLE OF TECHNOLOGY IN THE ENGLISH PROGRAM	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
9-10	English	COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING	Before taking part in workplace learning experiences, students must acquire the knowledge and skills needed for safe participation. Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
9-10	The Arts	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE ARTS PROGRAM	All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
9-10	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE CANADIAN AND WORLD STUDIES PROGRAM	All students must be made aware of issues related to Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.

9-10	Business Studies	Introduction; Five Critical Areas of Learning in All Business Studies Courses; Critical areas of learning & Related areas of knowledge and skills	Ethical, moral, and legal considerations in business: The understanding and/or determination of social and environ-mental consequences of business prac-tices on the local, national, and global levels. • principles and guidelines for ethical business practice • privacy issues • social responsibility • equity and diversity • professional standards • responsibility for environmental consequences and sustainability • accountability • intellectual property
9-10	Business Studies	The Role of Technology in Business Studies	Although the Internet is a powerful learning tool, however, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the Internet can be used to promote hatred.
9-10	Business Studies	Health and Safety in Business Studies	Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
9-10	Business Studies	Information and Communication Technology (BTT1O, BTT2O) in Business, Ethics and Issues in Information and Communication Technology	• analyse privacy and security issues relating to information and communication technology;

9-10	Business Studies	Information and Communication Technology (BTT1O, BTT2O) in Business, Ethics and Issues in Information and Communication Technology, Privacy and Security Issues	– describe privacy and security issues related to information and communication tech-nology (e.g., protection of credit card information; cookies; identity theft; spyware; cyber stalking);
9-10	Business Studies	Glossary: firewall	firewall. A system used to prevent access to or from a private network. Firewalls are often used by companies to prevent individuals outside the company from accessing private networks that are connected to the Internet.
9-12	Social Sciences	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE SOCIAL SCIENCES AND HUMANITIES PROGRAM	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues related to Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
9-12	First Nations, Métis, and Inuit Studies	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE FIRST NATIONS, MÉTIS, AND INUIT STUDIES PROGRAM	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues related to inaccurate information, Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technol-ogy, particularly when it is used to promote hatred and discriminatory attitudes.

9-12	American Sign Language as a Second Language	Transferable skills: Digital Literacy	Students manage their digital footprint by engaging in social media and online communities respectfully, inclusively, safely, legally, and ethically. Students understand their rights with respect to personal data and know how to protect their privacy and security and respect the privacy and security of others.
9-12	French as a Second Language: CORE FRENCH • EXTENDED FRENCH • FRENCH IMMERSION	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE FRENCH AS A SECOND LANGUAGE PROGRAMS	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues related to Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
9-12	English as a Second Language and English Literacy Development	THE ROLE OF TECHNOLOGY IN ESL AND ELD PROGRAMS	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and respon-sible use, as well as of the ways in which this technology is being abused – for example, when it is used to promote hatred.
9-12	English as a Second Language and English Literacy Development	COOPERATIVE EDUCATION	Before taking part in workplace learning experiences, students must acquire the knowledge and skills needed for safe participation. Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.

9-12	Classical Studies and International Languages	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE CLASSICAL STUDIES AND INTERNATIONAL LANGUAGES PROGRAM	All students must be made aware of issues related to inaccurate information, Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
10	Digital Technology and Innovations in the Changing World	Program Planning and Cross-Curricular and Integrated Learning: Innovations and Emerging Technology	These topics also provide students with opportunities to critically assess technologies and to consider issues surrounding digital accessibility, privacy, appropriate use, bias, ethical design, and environmental sustainability.
10	Technological Education	Communications Technology, C. TECHNOLOGY,THE ENVIRONMENT, AND SOCIETY: C2. Technology and Society	C2.4 describe legal concepts and issues relating to communications technology and media produc-tion (e.g., copyright, privacy rights, consent);
10	Technological Education	Computer Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES: Health and Safety	D1.2 identify issues related to Internet safety and personal identity security (e.g., protection of information stored on computers or transmitted over a network, identity theft, cyberstalking, cyberbullying, privacy policies).
10	Technological Education	Hospitality and Tourism, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES: Customer Service and Professionalism	D2.3 identify common ethical standards in customer service in the tourism industry (e.g., standards relating to confidentiality and privacy).

10	Science	Science, Academic: B. Biology: Tissues, Organs, and Systems of Living Things; B1. Relating Science to Technology, Society, and the Environment	B1.1 analyse, on the basis of research, ethical issues related to a technological development in the field of systems biology (e.g., cloning, stem-cell research, live organ transplants, transgenic transplants), and communicate their findings [IP, PR, AI, C] Sample issue: DNA screening is a valuable tool for determining whether a person is genetically predisposed to certain diseases. However, it raises ethical issues related to privacy, choice, access, treatment, and discrimination. It also raises questions about how far society should go in using available technologies, who funds research, and who owns or manages the resulting product or technology.
10	Science	Science, Academic: E. Physics: Light and Geometric Optics: E1. Relating Science to Technology, Society, and the Environment	E1.2 analyse a technological device that uses the properties of light (e.g., microscope, retro- reflector, solar oven, camera), and explain how it has enhanced society [AI, C] Sample issue: Cameras can produce a range of optical effects, from highly detailed and realis-tic to manipulated and abstract. Photographic images are used for a wide range of purposes that benefit society, including in the areas of culture, education, security, policing, entertain-ment, and the environment. However, the widespread use of cameras raises privacy concerns.
10	Digital Technology and Innovations in the Changing World,	STRAND B: Hardware, Software, and Innovations, B3. Cybersecurity and Data:	B3.2 apply safe and effective security practices, including practices to protect their privacy, when using digital technology in various contexts

10	Computer Studies	Introduction to Computer Studies, Computers and Society: C1. Social Impact	C1.2 explain the impact on privacy of techniques for collecting and processing data (e.g., camera phones, reward programs, targeted advertising, digital rights management, monitoring software);
10	CAREER STUDIES	Expectations At a Glance: Strand B. Exploring and Preparing for the World of Work, B2. Preparing for Future Opportunities	B2.3 explain how digital media use and a social media presence can influence their education and career/life opportunities, while at the same time demonstrating an understand-ing of the importance of managing their personal information and protecting their privacy online
10	CAREER STUDIES	Expectations At a Glance: Strand B. Exploring and Preparing for the World of Work, B2. Preparing for Future Opportunities	Information privacy: protecting their social insurance numbers (SINs) and personal identification numbers (PINs); using secure passwords
10	CAREER STUDIES	Expectations At a Glance: Strand B. Exploring and Preparing for the World of Work, B2. Preparing for Future Opportunities	How can knowledge of your privacy rights and responsibilities, as well as of the privacy and information-sharing policies of the site you are using, help you decide what personal information to share online?
10	CAREER STUDIES	Expectations At a Glance: Strand B. Exploring and Preparing for the World of Work, B2. Preparing for Future Opportunities	How can you build an online personal brand that supports your job search while also managing your personal information and protecting your privacy online?
10	CAREER STUDIES	Expectations At a Glance: Strand B. Exploring and Preparing for the World of Work, B2. Preparing for Future Opportunities	What information could you include in your public profile for a networking site, keep-ing your privacy rights and responsibilities in mind, and how might you present it?

10	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Civics and Citizenship, B.CIVIC AWARENESS, B1. Civic Issues, Democratic Values	B1.1 “What are some privacy or safety issues related to the use of social media? Do they have an impact on the way you or your friends use social media?”
10	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Civics and Citizenship, B.CIVIC AWARENESS, B3. Rights and Responsibilities	B3.1 “What are some challenges to Canadians’ right to privacy presented by new technological developments?”
10	French as a Second Language: CORE FRENCH • EXTENDED FRENCH • FRENCH IMMERSION	French Immersion, B. SPEAKING, B1. Speaking to Communicate	B1.2 Producing Oral Communications: produce prepared and spontaneous communications in French containing information, ideas, and opinions about academic and familiar topics, including literary topics, with support as appropriate (e.g., retell a story or fable, paying particular attention to the sequence of events; explain how reading a humorous literary story improves their ability to tell amusing anecdotes of their own; deliver a monologue articulating the point of view of a stakeholder after an environ-mental disaster; deliver a persuasive presentation on an equity issue; outline plans for an outing to a French film festival; state their opinion on whether social media are creating the demise of privacy)

10-12	Computer Studies	The Role of ICT in Computer Studies	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and respon- sible use, as well as of the potential for abuse of this technology, particularly when it is used to bully or promote hatred.
10-12	Computer Studies	COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING	Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
11	Technological Education	Communications Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES: D2. Professional Standards and Ethics	D2.1 demonstrate an understanding of and adhere to laws applicable to creative content (e.g., laws governing copyright and other creative property rights, domain names, privacy, defamation);
11	Technological Education	Communications Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES: D2. Professional Standards and Ethics	D2.2 describe privacy and security issues related to the use of communications media technology;
11	Technological Education	Communications Technology: Broadcast and Print Production, C. TECHNOLOGY,THE ENVIRONMENT, AND SOCIETY: C2. Technology and Society	C2.2 identify legal and ethical issues related to communications media production (e.g., copy-right, respect of privacy and personal information);

11	Technological Education	Computer Engineering Technology, C. TECHNOLOGY, THE ENVIRONMENT, AND SOCIETY, C2. Technology and Society	C2.2 describe some of the drawbacks of computer and electronic technology for society (e.g., loss of privacy, infringement of intellectual property rights through unlicensed copying and electronic distribution, a more sedentary lifestyle, spam, telemarketing, Internet gambling addictions).
11	Technological Education	Computer Engineering Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES D2. Ethics and Security	D2.1 describe the components of an acceptable-use policy for computers (e.g., restrictions on commercial or personal use, prohibition of inappro-priate content, protection of privacy);
11	Technological Education	Computer Engineering Technology, C. TECHNOLOGY,THE ENVIRONMENT, AND SOCIETY, C2. Technology and Society	C2.2 describe the drawbacks of computer technol-ogy for society (e.g., Internet gambling addictions, more sedentary lifestyle, spam, telemarketing, loss of privacy).
11	Technological Education	Computer Engineering Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES, D1. Health and Safety	D1.2 describe issues related to Internet safety (e.g., protection of information stored on computers or transmitted over a network, cyberstalking, cyberbullying, privacy policies).
11	Technological Education	Computer Engineering Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES, D2. Ethics and Security	D2.1 comply with acceptable-use policies for com-puters (e.g., restrictions on commercial or personal use, prohibition of inappropriate content and plagiarism, protection of privacy and intellectual property rights);

11	Social Sciences	Dynamics of Human Relationships, D. RIGHTS AND RESPONSIBILITIES D1. Individual Rights and Responsibilities	D1.1 identify the rights of the individual in human interactions as outlined in a variety of laws and policies (e.g., the Ontario Human Rights Code, the Employment Standards Act, the Ontario Environmental Bill of Rights, the Canadian Charter of Rights and Freedoms, the Indian Act, the Privacy Act, the United Nations Convention on the Rights of the Child, the Universal Declaration of Human Rights)
11	Science	Physics, B. Kinematics, B1. Relating Science to Technology, Society, and the Environment	B1.2 assess the impact on society and the environ-ment of a technology that applies concepts related to kinematics (e.g., photo radar helps prevent vehicular accidents and reduces fuel consumption associated with excessive speeding) Sample issue: The use of the global positioning system (GPS) increases accuracy in mapping, surveying, navigation, monitoring earthquakes, and tracking the movement of oil spills and forest fires, among other benefits. However, its extensive use raises concerns about privacy and human rights.
11	Interdisciplinary Studies	Theory and Foundation: Ideas and Issues	– identify and describe, with particular reference to each of the subjects or disciplines studied, the principles and practices regarding the safe, ethical, and legal use of information and information technologies (e.g., “netiquette”, personal privacy and security, copyright, software user agreements).

11	English	Media Studies, B. MEDIA AND SOCIETY, 2. Understanding the Impact of Media on Society: Privacy	2.4 examine the ways in which the media and communication technologies can infringe on the privacy rights of individuals, and how consideration of those rights affects the behav-iour of the media industry (e.g., discuss whether and how school surveillance technolo-gies affect student behaviour; explain why news outlets do not immediately release the names of people who are injured or killed; discuss the conflict between the privacy rights of celebrities and the rights of journalists to meet the audience's desire for information; identify the ways in which camera phones are changing expectations of privacy in public situations)
11	Cooperative Education	Creating Opportunities through Co-op, Grade 11: B. EXPERIENTIAL LEARNING AND TRANSFER OF SKILLS AND KNOWLEDGE: B2. Skills for the Future	"Understanding and adhering to policies pertaining to confidentiality, privacy, and acceptable use of technology are important to many different industry sectors and are part of responsible digital citizenship.
11	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Understanding Canadian Law, B. LEGAL FOUNDATIONS, B4. Development of Law	B4.2 evaluate the responsiveness of Canadian legislation to societal issues (e.g., protection of privacy, protection of intellectual property) raised by developments in science (e.g., advances in human genetics, new understanding of the effects of toxic/harmful substances) and technology (e.g., advances in information and communications technology)

11	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Understanding Canadian Law in Everyday Life, B. LEGAL FOUNDATIONS, B2. Development of Law	B2.4 describe ways in which advances in science (e.g., in reproductive medicine) and technology (e.g., in information technology) have influenced the development of Canadian law or may influence it in future (e.g., the Assisted Human Reproduction Act, 2004; laws relating to the protection of privacy; laws relating to the protection of intellectual property such as the Copyright Modernization Act, 2012)
11	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Understanding Canadian Law in Everyday Life, C. HUMAN RIGHTS, C2. Development of Human Rights Law	C2.3 describe how some human rights codes and related legislation have been influenced or might be influenced in future by factors such as evolving social attitudes and values, changing technology, and changing demographics (e.g., social attitudes and values: laws relating to women's rights, reproductive rights, gender identity rights; changing technology: laws relating to privacy rights; demographics: laws relating to mandatory retirement age)
11	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Understanding Canadian Law in Everyday Life, C. HUMAN RIGHTS, C2. Development of Human Rights Law	"Do you think existing laws for the protection of individual privacy are adequate in the Internet age? Why, or why not?"
11	Business Studies	Information and Communication Technology: (BTA3O) The Digital Environment, Information and Communication Technology Ethics and Issues	• analyse privacy and security issues related to conducting business electronically;

11	Business Studies	Information and Communication Technology: (BTA3O) The Digital Environment, Information and Communication Technology Ethics and Issues, Privacy and Security Issues	– explain the reasons for protecting informa-tion and computer systems, and the meth-ods of protection (e.g., passwords, firewalls, login, anti-virus software) used in stand-alone and networked environments; – describe privacy and security issues (e.g., cybercrime, loss of privacy, identity theft, viruses) related to the use of information and communication technology tools; – identify the security measures that e-businesses provide for consumers (e.g., encryption of credit card information, passwords, user identification).
11-12	Technological Education	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN TECHNOLOGICAL EDUCATION	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to bully or promote hatred.
11-12	Technological Education	SOME CONSIDERATIONS FOR PROGRAM PLANNING: COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING	Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
11-12	Technological Education	Computer Technology, C. TECHNOLOGY,THE ENVIRONMENT, AND SOCIETY: C2. Technology and Society	C2.2 analyse the drawbacks of computer technolo-gy for society (e.g., Internet gambling addictions, more sedentary lifestyle, spam, telemarketing, loss of privacy).

11-12	Science	THE ROLE OFINFORMATION AND COMMUNICATIONSTECHNOLOGY IN SCIENCE	Although the Internet is a powerful learning tool, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
11-12	Science	COOPERATIVE EDUCATION AND OTHER FORMS OFEXPERIENTIAL LEARNING	Students must understand their rights to pri-vacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
11-12	Mathematics	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN Mathematics	Although the Internet is a powerful electronic learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the ways in which this technology is being abused – for example, when it is used to promote hatred.
11-12	Mathematics	COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING	Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
11-12	Guidance and Career Education	SOME CONSIDERATIONS FOR PROGRAM PLANNING: THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN Guidance and Career Education	Although the Internet is a powerful learning tool, however, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the Internet can be used to promote hatred.
11-12	Guidance and Career Education	Health and Safety in Guidance and Career Education	In addition, they must understand their rights to privacy and confiden-tiality as outlined in the Freedom of Information and Protection of Privacy Act and be able to function in an environment free from abuse and harassment.

11-12	Guidance and Career Education	Exploration of Opportunities: Understanding the Workplace	identify workplace issues (e.g., harassment, ethics, confidentiality and the right to pri-vacy, responsible use of computers, gender equity) and explain how policies and pro-cedures dealing with them contribute to a positive and productive work environment;
11-12	English	THE ROLE OF TECHNOLOGY IN THE ENGLISH PROGRAM	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
11-12	English	COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING	Before taking part in workplace learning experiences, students must acquire the knowledge and skills needed for safe participation. Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
11-12	Cooperative Education	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN COOPERATIVE EDUCATION	Although the Internet is a powerful learning tool, there are potential risks attached to its use. All students must be made aware of issues related to inaccurate information, privacy, safety, and responsible use, as well as of the potential for abuse of technology.
11-12	Cooperative Education	Cooperative Education Linked to a Related Course: B.EXPERIENTIAL LEARNING AND TRANSFER OF SKILLS AND KNOWLEDGE: B2. Skills for the Future	“Professional and ethical standards and policies pertaining to confidentiality, privacy, and acceptable use of technology are important to many different industry sectors and are part of responsible digital citizenship.

11-12	The Arts	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE ARTS PROGRAM	All students must be made aware of issues of Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
11-12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	THE ROLE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY IN THE CANADIAN AND WORLD STUDIES PROGRAM	All students must be made aware of issues related to Internet privacy, safety, and responsible use, as well as of the potential for abuse of this technology, particularly when it is used to promote hatred.
11-12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	LAW, The Concepts of Legal Thinking, Legal Perspective	In view of developments in technology, are existing laws adequate to protect individuals, corporations, and governments from invasions of privacy? Why or why not?
11-12	Business Studies	Introduction; Five Critical Areas of Learning in All Business Studies Courses; Critical areas of learning & Related areas of knowledge and skills	Ethical, moral, and legal considerations in business: The understanding and/or determination of social and environmental consequences of business practices on the local, national, and global levels. • principles and guidelines for ethical business practice • privacy issues • social responsibility • equity and diversity • professional standards • responsibility for environmental consequences and sustainability • accountability • intellectual property

11-12	Business Studies	The Role of Technology in Business Studies	Although the Internet is a powerful learning tool, however, all students must be made aware of issues of privacy, safety, and responsible use, as well as of the ways in which the Internet can be used to promote hatred.
11-12	Business Studies	Health and Safety in Business Studies	Students must understand their rights to privacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
12	Technological Education	Computer Engineering Technology, C. TECHNOLOGY,THE ENVIRONMENT, AND SOCIETY, C2. Technology and Society	C2.2 assess the drawbacks of computer and elec-tronics technology for society (e.g., Internet gambling addictions, more sedentary lifestyle, spam, telemarketing, loss of privacy, infringement of intellectual property rights through unlicensed copying and electronic distribution).
12	Technological Education	Computer Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES: Health and Safety	D1.3 research and discuss issues related to Internet safety (e.g., protection of information stored on computers or transmitted over a network, cyberstalking, cyberbullying, privacy policies).
12	Technological Education	Computer Technology, D. PROFESSIONAL PRACTICE AND CAREER OPPORTUNITIES, D2. Ethics and Security	D2.1 describe the components of an acceptable-use policy for computers (e.g., restrictions on commercial or personal use, prohibition of inappro-priate content and plagiarism, protection of privacy and intellectual property rights);
12	Interdisciplinary Studies	Model A: Samples of Single-Credit Interdisciplinary Studies Courses: Information and Citizenship, Grade 12	They will investigate criminal laws and procedures regarding privacy and security, including those involving patents, copyright, and intellectual property. They will also examine the access to and creation, storage, and use of information for private and public purposes, and will apply methods of inquiry and research used by legal practitioners to solve problems.

12	Interdisciplinary Studies	Theory and Foundation: Ideas and Issues	identify the principles, practices, and sys-tems regarding the safe, ethical, and legal use of information technologies (e.g., in terms of ergonomics, personal privacy, and computer security) and describe the consequences of their appropriate and inappropriate use for each of the subjects or disciplines studied.
12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Analysing Current Economic Issues, C. FIRMS, MARKETS, AND ECONOMIC STAKEHOLDERS, C1. The Firm and Market Structures	C1.3 analyse how new technology has affected markets and consumers (e.g., with reference to e-tail, e-commerce payment systems, planned obsolescence of electronics, consumers' digital footprints and concerns about privacy, availability of information on companies and products on the Internet)
12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Spatial Technologies in Action, D. SPATIAL SYSTEMS, INTERCONNECTIONS, AND INTERDEPENDENCE, D1. Relationships between Systems, D2. International and Social Implications	D2.1 analyse the ways in which spatial technolo-gies are used in relation to national and global security and safety and international cooperation, and explain some ethical issues that arise from such uses (e.g., national security versus individual privacy rights)

12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	World History since the Fifteenth Century, E. THE WORLD SINCE 1900, E1. Social, Economic, and Political Context	E1.2 describe a variety of developments in science and/or technology during this period (e.g., developments in household appliances, motion pictures, radio and television, automobiles, airplanes, satellites and space travel technologies, computers and cellular technologies, reproductive technologies, medicine or biotechnology, mechanization or robotics, weapons, renewable energy), and assess their impact (e.g., increased mobility, decreased infant mortality rates and increased life expectancy, increased number of wartime casualties, changes in the workplace and in recreation, changes in agricultural practices, “cashless” societies, digital fraud, challenges to privacy)
12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Canadian and International Law, B. LEGAL FOUNDATIONS, B3. Development of Law	B3.1 “What are some legal issues that have emerged with the widespread use of social media? What are some new laws that have been adopted to address cyberbullying, online harassment, and/ or privacy issues related to social media use?”
12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Canadian and International Law, C. RIGHTS AND FREEDOMS, C4. Contemporary Issues	C4.1 analyse from a legal perspective contemporary circumstances in which individual or group rights and freedoms are threatened (e.g., loss of autonomy due to globalization, loss of privacy or intellectual property rights due to cybercrime) or limited (e.g., by imposition of travel security checks or environmental protection laws)

12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Canadian and International Law,, E. INTERNATIONAL LEGAL ISSUES, E4. Emerging Legal Issues	E4.1 analyse from a legal perspective how various technological advances (e.g., in communications or surveillance technology, in medical science, in financial transactions) may challenge or support the administration of justice, in Canada and internationally (e.g., challenges: protection of privacy of victims/accused, protection of intellectual property; supports: developments in quality of DNA evidence, availability of surveillance information from CCTV cameras) Sample questions: “In view of developments in technology, are existing laws adequate to protect individuals, corporations, and governments from invasions of privacy? Why or why not?”
12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Legal Studies, C. RIGHTS AND RESPONSIBILITIES, C3. Influences on Human Rights Issues	C3.2 evaluate from a legal perspective the impact of advances in technology on human rights protection in Canada and in the world (e.g., increased opportunities for education and access to information versus increased opportunities for identity theft, theft of intellectual property, and invasion of personal privacy [such as in airport security searches]; medical advances enabling life to be prolonged versus an individual’s right to refuse treatment that would prolong life)
12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Legal Studies, E. LAW IN THE WORKPLACE, E3. Legal Issues in the Workplace	E3.2 explain the impact on the workplace of legal issues related to environmental practices (e.g., health and safety issues related to the handling of hazardous and other industrial waste or to second-hand smoke or other airborne toxins; security, privacy, and health issues related to the disposal of electronic devices)

12	Canadian and World Studies GEOGRAPHY • HISTORY • CIVICS (POLITICS)	Canadian and International Politics, E. RIGHTS AND POWER IN THE INTERNATIONAL COMMUNITY, E2. Technology and Globalization	E2.1 assess the influence of communications and information technologies, including social media, on politics in Canada and other countries (e.g., with reference to increasing difficulty of controlling public access to previously privileged information; the use of robocalling to influence voters, of blogs to criticize governments, of texting to share information, of crowdsourcing to address a problem, of social media to follow, communicate with, and comment on politicians; ease of spreading propaganda or disinformation; the need for measures to protect privacy/confidential information)
11 & 12	Technological Education	Communications Technology: Broadcast and Print Production, C. TECHNOLOGY,THE ENVIRONMENT, AND SOCIETY: C2. Technology and Society	C2.2 identify legal and ethical issues applicable to communications media production (e.g., copy-right, respect of privacy and personal information);
11 & 12	Interdisciplinary Studies	Theory and Foundation: Ideas and Issues	identify and describe practices in Canada and around the world that effectively safe-guard privacy and intellectual ownership of information in areas related to interdis-ciplinary studies (e.g., academic conven-tions, copyright legislation), and describe possible future changes to these practices.
11 & 12	Interdisciplinary Studies	Implementation, Evaluation, Impacts, and Consequences: Personal and Career Development	analyse their personal information skills (e.g., their ability to cope with information overload, to follow appropriate safety and privacy procedures, to synthesize findings from a variety of sources) and identify those skills that require development if they are to achieve success in interdiscipli-nary studies;

11	Computer Studies	D. Computers and Society D3. Emerging Technologies	D3.1 explain how emerging technologies can affect personal rights and privacy (e.g. video surveil-lance, cyberbullying, identity theft);
11	Business Studies	Marketing: Goods, Services, Events, Trends in Marketing, Issues, Ethics, and Social Responsibility in Marketing	– identify marketing issues created by changes in information technology (e.g., expanding markets; privacy issues; con-sumers' reactions to junk mail, spam, and information overload);
11	Mathematics	Foundations for College Mathematics,: D. DATA MANAGEMENT: 1. Working With One-Variable Data	1.1 identify situations involving one-variable data (i.e., data about the frequency of a given occurrence), and design questionnaires (e.g., for a store to determine which CDs to stock, for a radio station to choose which music to play) or experiments (e.g., counting, taking measurements) for gathering one-variable data, giving consideration to ethics, privacy, the need for honest responses, and possible sources of bias
12	Computer Studies	D. Computers and Society, D2. Ethical Practices	D2.1 investigate and describe an ethical issue related to the use of computers (e.g., piracy, pri-vacy, security, phishing, spyware, cyberbullying);
12	Business Studies	Information and Communication Technology: (BTX4C) Multimedia Solutions, Electronic Communications, E-Commerce Solutions	analyse privacy policies on e-commerce websites.

12	Mathematics	Foundations for College Mathematics,: D. DATA MANAGEMENT: 1. Working With Two-Variable Data	1.2 describe characteristics of an effective survey (e.g., by giving consideration to ethics, priva-cy, the need for honest responses, and possi-ble sources of bias, including cultural bias), and design questionnaires (e.g., for determin-ing if there is a relationship between age and hours per week of Internet use, between marks and hours of study, or between income and years of education) or experiments (e.g., growth of plants under different conditions) for gathering two-variable data
NA	Digital Technology and Innovations in the Changing World	B. Hardware, Software, and Innovations: B3. Cybersecurity and Data	B3.2 apply safe and effective security practices, including practices to protect their privacy, when using digital technology in various contexts
NA	Science	COOPERATIVE EDUCATION AND OTHER FORMS OF EXPERIENTIAL LEARNING	Students must understand their rights to pri-vacy and confidentiality as outlined in the Freedom of Information and Protection of Privacy Act.
NA	Interdisciplinary Studies	Theory and Foundation: Perspectives and Approaches	analyse and describe the different perspec-tives of each of the disciplines involved in an enterprise (e.g., the engineer’s interest in making roads safe and the sociologist’s interest in who benefits from the new roads; the journalist’s interest in reporting a news story and a citizen’s

Appendix C

Tables, Charts, Word Clouds, and Arts-Integrated Research

Figures

Figure 1.1

Fiannaca, N. (2023). Harmonious Flow: Balancing Media and Mindfulness. Digital painting rendered in Clip Studio Paint.

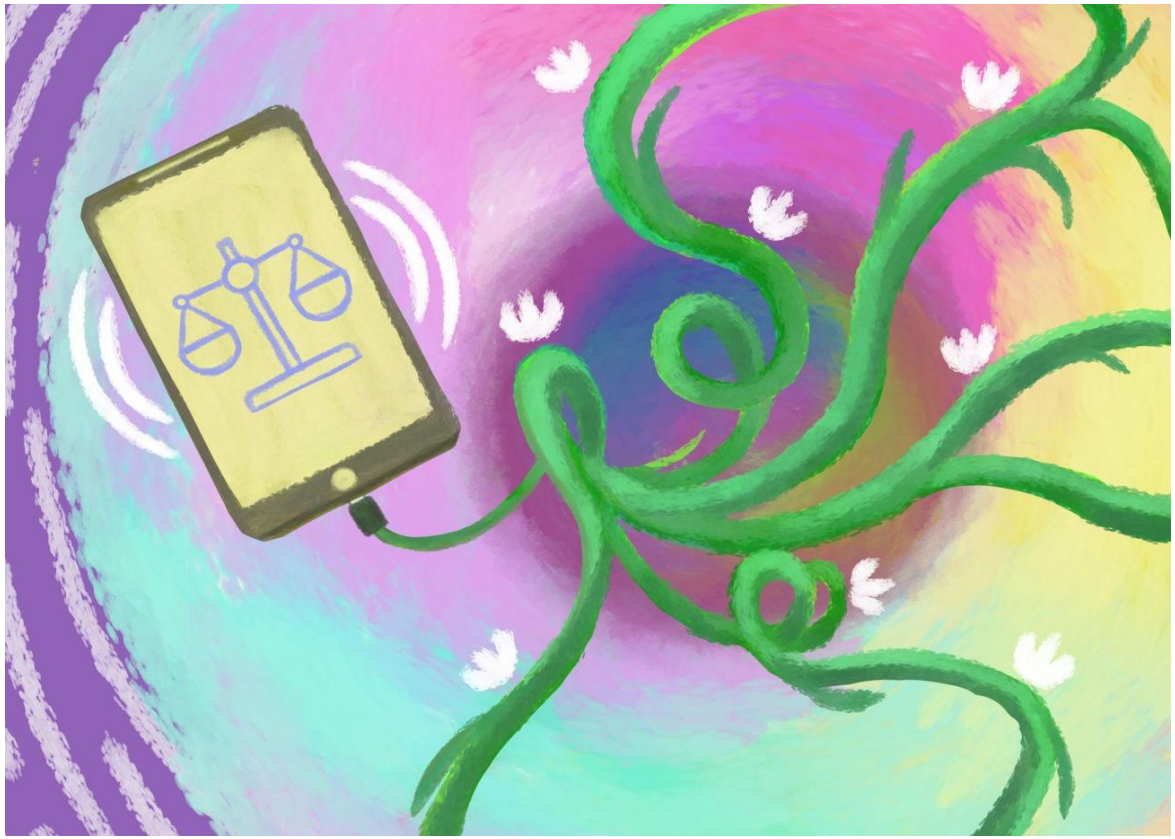
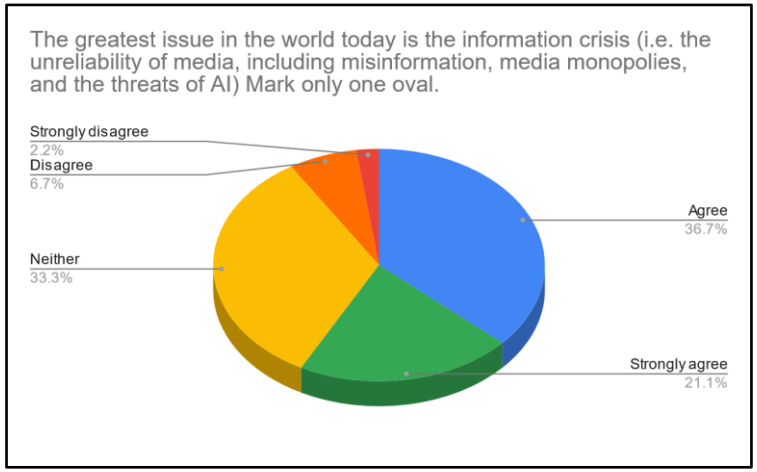


Figure 1.2

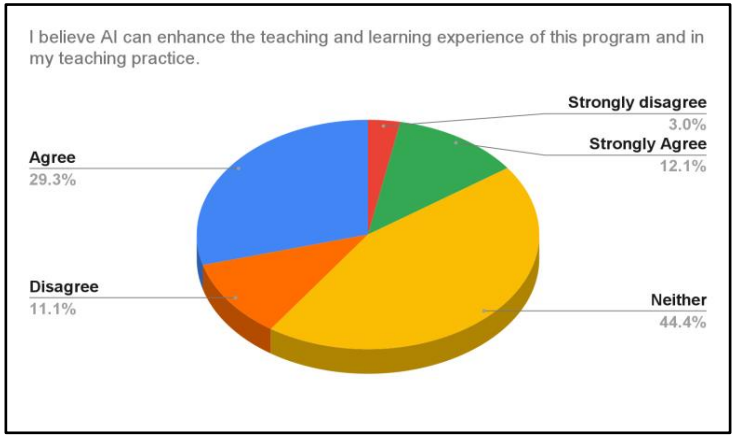
Question 1 Percentage Breakdown of LIKERT Scale Responses



Note: Results from 90 respondents across both Thunder Bay and Orillia campuses in both P/J and I/S programs.

Figure 1.3

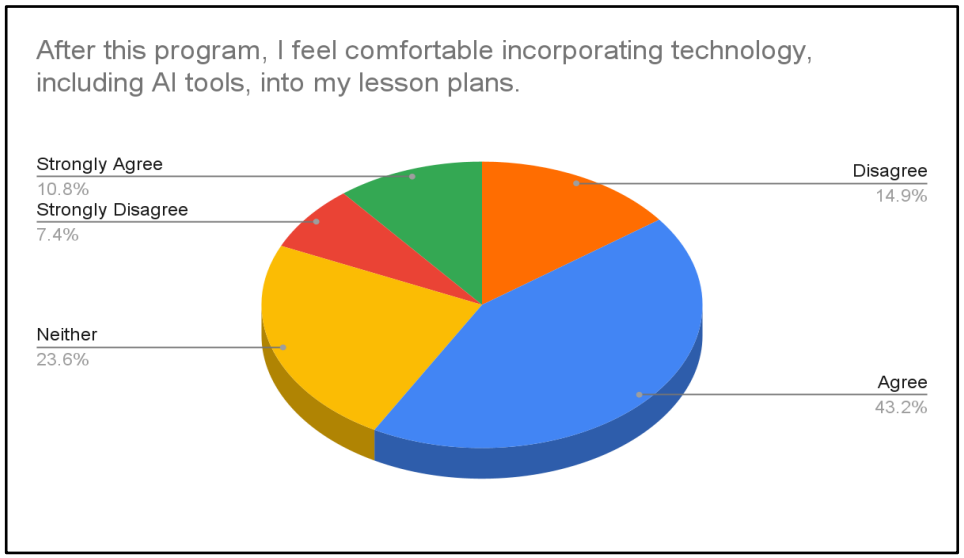
Question 2 Percentage Breakdown of LIKERT Scale Responses



Note: Results from 90 respondents across both Thunder Bay and Orillia campuses in both P/J and I/S programs. Values visualized above reflect the responses from students to question 2a.

Figure 1.4

Question 3 Percentage Breakdown of LIKERT Scale Responses



Note: Results from 90 respondents across both Thunder Bay and Orillia campuses in both P/J and I/S programs. Values visualized above reflect the responses from students to question 3A. When separated, both campuses scored similarly.

Figure 1.5

Word Cloud Representation of Coding Words Associated with Opportunities with AI in Teaching

Note: This word cloud was generated using the keywords coded from all the student responses to answer question 3B.

Figure 1.6

Word Cloud Representation of Coding Words Associated with Threats of AI in Teaching

Note: This word cloud was generated using the keywords coded from all the student responses to answer question 3C.

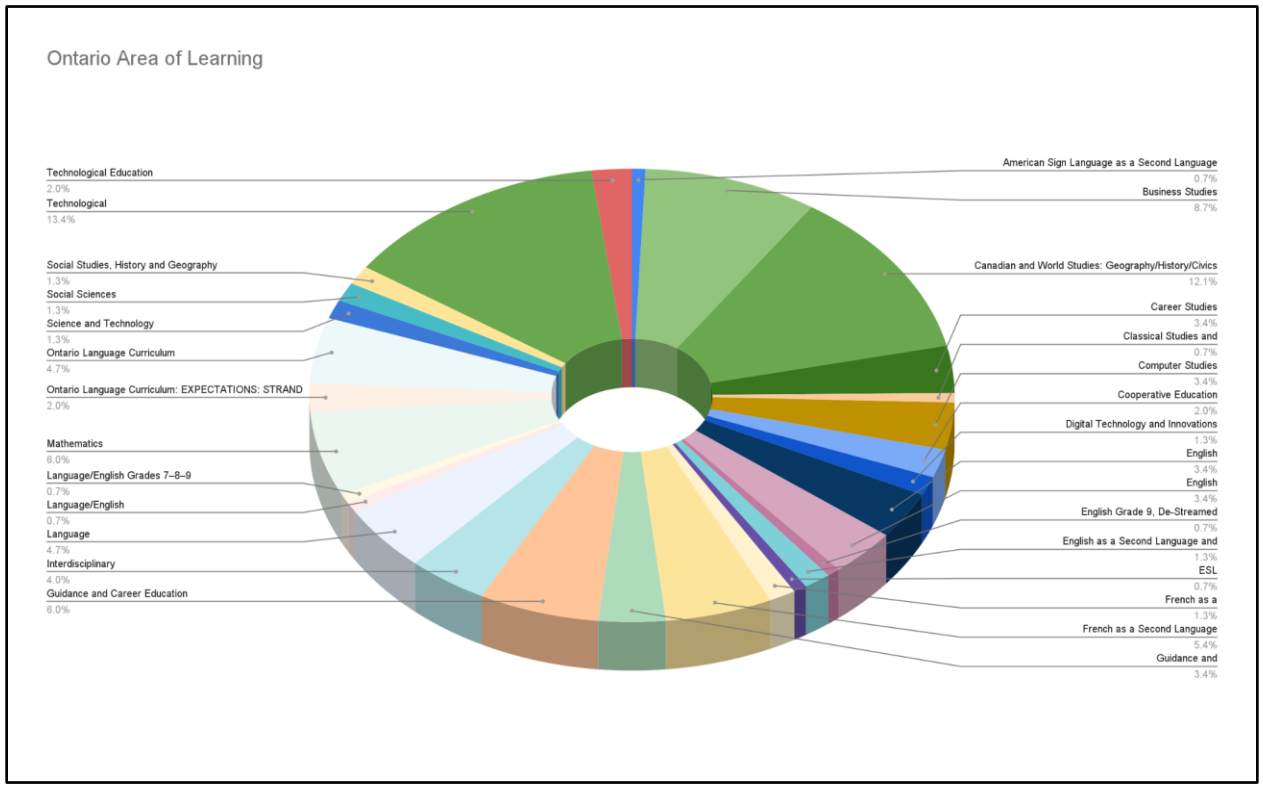
Figure 1.7

Word Cloud Representation of Coding Words Expressing Emotional Language

Note: This word cloud was generated using the keywords coded from all the student responses to answer question 3A: “After this program, I feel comfortable incorporating technology, including AI tools, into my lesson plans.”

Figure 1.8

Instances of "Private/Privacy" in Ontario Curriculum Documents



Note: Values visualized above reflect the distribution instances of "private/privacy" divided by areas of learning within the Provincial Curriculum.

Figure 1.9

Words Connected to "Private/Privacy" in Ontario Curriculum Documents

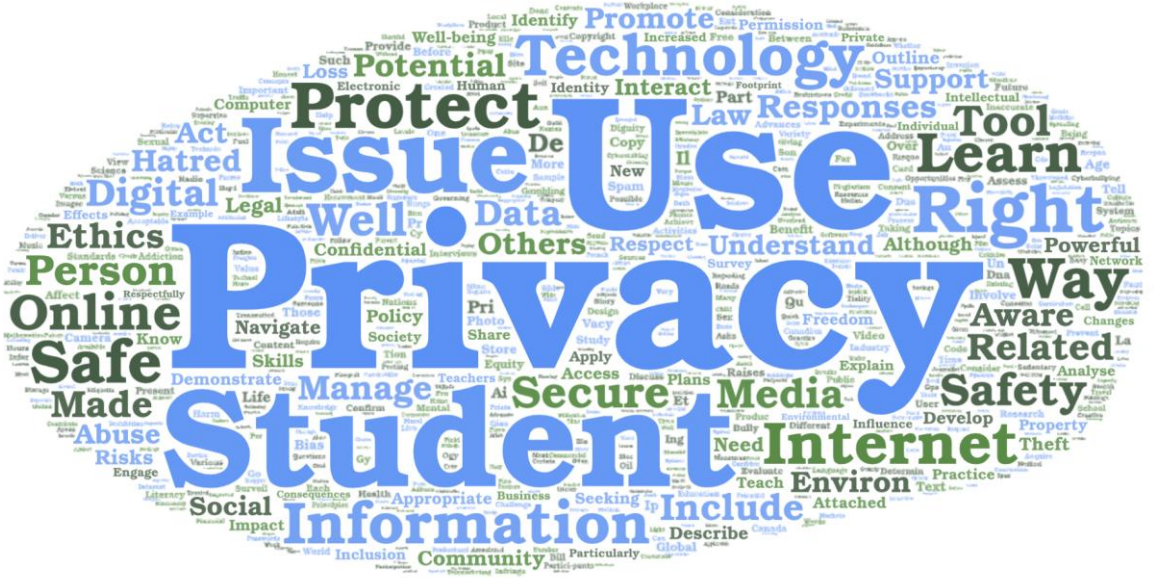


Figure 1.10

Fiannaca, N. (2023). Switching Off. Digital painting rendered in Clip Studio Paint.

Tables

Table 1.1

Question 1 Percentage Breakdown of LIKERT Scale Responses

Strongly Agree	21.1%
Agree	36.7%
Neither Agree nor Disagree	33.3%
Disagree	6.7%
Strongly Disagree	2.2%

Question 1: The greatest issue in the world today is the information crisis (i.e. the unreliability of media, including misinformation, media monopolies, and the threats of AI) Mark only one oval.

Table 1.2

Question 2 Percentage Breakdown of LIKERT Scale Responses

Strongly Agree	12.1%
Agree	29.3%
Neither Agree nor Disagree	44.4%
Disagree	11.1%
Strongly Disagree	3.0%

Question 2: I believe that AI can enhance the teaching and learning experience of this program and in my teaching practice.

Table 1.3

Question 3 Percentage Breakdown of LIKERT Scale Responses

Strongly Agree	10.8%
Agree	43.2%
Neither Agree nor Disagree	23.6%
Disagree	14.9%
Strongly Disagree	7.4%

Question 3 (A): After this program, I feel comfortable incorporating technology, including AI tools, into my lesson plans.