The Internet Habits of Children and Adolescents: A Guidebook for Teachers and Parents

By

Melanie Laird

A project submitted to the Faculty of Education in conformity with the requirements for the degree of Master of Education

Queen’s University

Kingston, Ontario, Canada

March, 2014

Copyright © Melanie Laird, 2014
Internet Use by Children and Adolescents

Abstract

Many young children, including toddlers are using the Internet. By the time, children are eight years old, 98% of them will have accessed the Internet independently, some with digital devices of their own (Katherine, 2013). During childhood and adolescence, our youth develop particular habits while learning how and where to navigate on the Internet. What do parents and educators know about these habits and how they develop? Accordino & Accordino (2011) found that 44% of children who reported participating in cyber-bullying also had poor parent-child relationships. According to some researchers (Endicott-Popovsk, 2013; Weeden, Cooke, & McVey, 2013), parents and teachers have a limited understanding of the Internet habits of children and adolescents. When parents and teachers lack knowledge of what their children and students are doing online, it greatly restricts their ability to help children learn and develop healthy Internet habits.

Drawing from academic literature, journal articles, books, media sources, and blogs, this project develops an information guide for parents and teachers containing information about the Internet practices of children and adolescents from 2-18 years of age. This guide addresses strategies for communicating with children and adolescents about their Internet practices, discussing and creating Internet boundaries, working with children and youth on becoming mindful contributors to the Internet, and incorporating practices that help maintain their safety online. The project will to be a useful tool for improving Internet education for parent, teachers and youth.
Acknowledgements

The process of completing this project could not have been possible without the patience and support of a few committed individuals. A sincere thank you to my project supervisor Rebecca Luce-Kapler for her guidance, insight and support throughout the last year. Your advice has helped me to refine my ideas and discover my written voice. I would also like to thank Dr. Richard Reeve for acting as my second reader.

To my husband and best friend thank you. Your patience and encouragement throughout the last three years of this academic endeavor is immeasurable. To my daughter Charlotte, thank you for reminding me of what is important in life.
Table of Contents

Chapter 1: Introduction .................................................................................................................. 1
Introduction ................................................................................................................................. 1
Rationale .................................................................................................................................. 3
Purpose .................................................................................................................................... 4

Chapter 2: Literature Review ........................................................................................................ 6
The Internet ................................................................................................................................. 6
The changing landscape of the Internet ....................................................................................... 8
Global look: General habits of Internet Usage ........................................................................... 10
Children and the Internet .......................................................................................................... 13
The influences of online activities on children ......................................................................... 13
Millennial behaviors .................................................................................................................. 16
The Internet habits of children and adolescents from 0-18 .................................................... 19
Digital Internet-Enabled devices ................................................................................................. 19
Where are children and adolescents navigating online? ........................................................... 20
Motivational Factors ................................................................................................................. 23
Benefits and risks: Children’s and adolescents’ Internet use ................................................ 29
The benefits of Internet use in children 0-8 ............................................................................ 29
The risks of Internet use in children 0-8 .................................................................................. 31
The impact of Internet use in children and adolescents ages 9-18 ....................................... 36
Categories ............................................................................................................................... 50
Communication ......................................................................................................................... 50
Safety and ethics ....................................................................................................................... 50
Expression ................................................................................................................................ 51
Scholar ..................................................................................................................................... 51
Skills ......................................................................................................................................... 51

Chapter 3: Resources .................................................................................................................. 53
Overview: Guide for Parents and Teachers ............................................................................. 53
How to use this guide? .............................................................................................................. 53
The modules ............................................................................................................................. 55

Chapter 4: Discussion ................................................................................................................. 77
Research Connection ................................................................................................................. 77
Directions for further study ...................................................................................................... 78
My project experience ............................................................................................................ 78

Appendix A: Glossary of Internet Terms ................................................................................. 80

References ................................................................................................................................. 84
Chapter 1: Introduction

Introduction

The Internet is a powerful tool with many of us depending on it as part of our daily functioning. There is rapid development of new digital devices that continue to improve Internet accessibility and ease of use. The impact of the Internet can also be seen in the actions of our youth: some toddlers as young as two are navigating through apps, switching easily between tablets and cellular devices (Marsh, 2011; Moreno, Egan, Bare, Young, & Cox, 2013). Children are usually introduced to Internet-enabled devices by their families, and first play games and look at pictures under some form of adult supervision. Children gain confidence and skill using Internet-enabled devices as they grow from toddler to school age. By school age, children may have a great number of opportunities to access the Internet unsupervised (MacGregor, 2013; Guerra, Williamson, & Sadek, 2012). Alarmingly, very young children often have their own Internet-enabled devices to which parents do not access or apply safety filters (Furnell, Tsaganidi, & Phippen, 2008). Nor do all parents teach their children about the risks and benefits of using the Internet (Chang, 2010). Although children can learn the functions of various digital devices independently, they need guidance understanding the Internet, how to contribute to its development and how to adopt user practices that will help to maintain their safety. While there is debate as to who should be responsible for educating children about the Internet, society as a whole will face the consequences if this education does not take place. Cyber-bullying, commercial exploitation, child sexual exploitation are increasing, creating issues that affect the well being of our youth and our communities. MacGregor (2013) and Katherine (2013) discovered that many young children labeled as cyber-
bullies were unaware that their actions offended or harm the victim, clearly showing how children require guidance learning virtual boundaries.

As an educator, I work with parents, teachers and community police officers to promote the safe and ethical use of the Internet. For instance, I started a class project in which children in grades five and six would bring their personal Internet-enabled device to class, to learn and develop Internet skills, such as network/online user etiquette, programming and gaming. Additionally, students participated in-group projects such as video hashing (creating videos with multiple resources such as existing videos on the Internet, pictures, voice recordings) as well as various forms of research using the Internet.

With every new class I teach, regardless of the grade level, I am amazed at the fluidity that children have in navigating with portable digital devices. Despite this technological fluency, students consistently lack basic knowledge about the fundamental nature of the Internet. In my experience, parents place their trust in teachers to educate their children on ethical and safe Internet use. Some parents know very little about the Internet, and unfortunately the same is true for many teachers. Having worked with many different schools, and through teaching hundreds of students in three provinces, I have noticed many inconsistencies with Internet policies as well as parent, teacher and children’s knowledge about the nature of the Internet, etiquette with Internet-enabled devices, and how to remain safe while online.

The purpose of this project was to explore the nature of the Internet and how children and adolescents are using it, in order to identify areas in which parents and teachers could provide additional guidance. Using literature to develop a better understanding about the Internet habits of children and adolescents, I developed a guide for parents and teachers, so they are better informed as to how children and adolescents are using the Internet. With this guide, teachers and
parents will be able to teach children and adolescents safer Internet practices and help them use the Internet more critically and appropriately.

**Rationale**

I was seven years old when I used my first computer. In subsequent years, I used computers as a form of entertainment, playing games such as Pac Man and Tetris. It wasn’t until I was thirteen, when I was asked by a teacher to summit a typed assignment, that I used a computer for schoolwork. Gradually through my high school years, the demand by teachers to submit typed work increased. In high school, we were taught that information literacy (IT) was knowing how to type quickly and to name the parts of the computer. While attending university, I found the Internet started to become an important element in my daily routine since I was expected to communicate with professors through emails and shared networks.

The days of simply knowing basic computer operations, such as typing are long past. A certain level of computer literacy is now an expectation. Peers, educational institutions and employers demand and assume that people are comfortable using and communicating with Internet-enabled devices, are able to decipher information found on the Internet, can multi-task, work in teams and quickly adapt to learning new software. Children born after 1980 are referred to as the millennial generation (Monaco & Martin, 2007), a generation born into a world full of endless information at the press of a button. Children are very keen to use these tools, but they need our guidance. Having taught students from kindergarten to grade eight I have a good understanding of the Internet habits of our youth. I have witnessed the proliferation of handheld Internet devices and the spread of WiFi networks that permit younger and younger children to access information and virtual worlds about which they may know very little. Both these advancements have influenced society, yet the scope of how they are influencing our youth, and a growing number of
children and toddlers, underscore how important it is to educate, guide and protect our youth (Endicott-Popovsky, 2013; Chang, 2010; Toshack & Colmar, 2012).

Growing up with the Internet as part of vital modes of peer-to-peer communication, children tend to be more technical with computers than previous generations (Geer & Sweeney, 2012; Gee, 2000). The gap between adults that didn’t grow up with the Internet and children and adolescents that use it daily have attributed to some of the growing concerns about what adults really know about Internet habits of children and adolescents (Chang, 2010). Many traditional forms of teaching have been used to inform students about online safety; however, many of these methods do not reflect how children and adolescents use the Internet. As well, schools can no longer be solely relied upon to provide guidance on ethical and moral issues regarding Internet practices when pre-school children are going online. As Don Orth and Edward Chen said in the Strategy For Digital Citizenship:

Our children know more than we think they know, and less than they think they know. They are swimming in oceans of data, communications, and media. While we call members of this generation ‘digital natives’- those with the ability to consume, create, absorb, and navigate everything in the digital spectrum - - in truth, our children are in danger of being overwhelmed by this 24/7 unfiltered digital world without our guidance. While we carefully oversee other areas of their lives, many of us are unintentionally negligent when it comes to their digital experiences. Though we may be uncomfortable with the full scope of our responsibility in the digital world, ignoring it won’t make it go away.” (Summer, 2013, p. 1)

With such a proliferation of data and the prevalence of digital devices, we need strategies in place to increase safety and improve the digital citizenship of our children.

Purpose

For this project, I wanted to investigate strategies that parents and teachers could use around the areas of Internet use and education so that they may use this information to guide
youth Internet habits in ways that foster safer, more critical and contributory use. I aimed to better understand the nature of the Internet habits of children and adolescents and how these habits affect all aspects of their lives. From this information, I created a guide for parents and teachers for the following reasons: (1) to highlight how children and adolescents are using the Internet; (2) to help them guide the Internet practices of children and adolescents and; (3) to help build continuity between parents and teachers about what children know about the Internet.
Chapter 2: Literature Review

The Internet

The Internet is a multifaceted tool accessed by more than 1.1 billion users around the globe (Participation Inequality, 2006). Google defines the Internet as “a global computer network providing a variety of information and communication facilities, consisting of interconnected networks using standardized communications protocols.”(Google, web definitions, accessed November 10th, 2013).

The Internet originated at the ARPAnet (Advanced Research Projects Agency network), as a military computer network in 1966 (Bilgil, 2009). Other government agencies and universities created internal networks based on the ARPAnet model however, the catalyst for the Internet was provided by the National Science Foundation (NSF) when they began a "chain" of connections in which institutions could connect to their "neighbours" computing centers (all tied into central supercomputing centers) (Bilgil, 2009). These supercomputing centers allowed computers all over the world to communicate with one another and share information stored at various computer "servers," either on a local computer or a computer located anywhere in the world. Although the Internet originated as a military computer network, it is not governed by any official organization; nevertheless, there are groups that work to make the Internet more accessible and useful such as W3C, an international community that develops open standards to ensure the long-term growth of the Web (W3C, 2013).

According to Carr (2013) the functions of the Internet can be divided into four main categories: 1) a hyper tech systems (all the links between bits of information that can be interlinked simultaneously), 2) multi-media system (text, video and audio system), 3) a messaging system that can connect groups of people and/or one-to-one communication, and 4) a multitasking system (tweeting, reading emails, watching videos) (Carr, 2012).
One of the most common uses of the Internet is finding information through a search engine such as Google. Within seconds, multiple websites will appear based on the search terms entered by the user. Increasingly, handheld Internet-enabled devices are used as intelligent personal assistants. For example, if it is not convenient to type a search into a search engine, a user can talk to the device’s intelligent personal assistant such as Siri, which comes pre-installed on the iPhone 4S and the iPhone 5. The person using this function can speak into the cellphone speaker asking Siri a question such as, “what is the weather like in San Francisco today?” and within seconds have a local weather report pulled from an Internet weather service. The entire process of parsing the query, searching the appropriate site and formatting the data for the screen is transparent to the user. Another function is the ability to communicate with others. There are many different ways to communicate online, including chatrooms, blogging, social networking and VoIP (voice over internet protocol). According to Jackson et al. (2003) and MacGregor (2013) social networking is one of the main ways people maintain communication. A few of the most popular social networking sites in North America are Facebook (as of January, 2013 over one billion users globally), and Twitter (27 millions users in North America) (Digital Buzz, 2013). People also connect with others online by using chat and instant messaging programs that allow users to have conversations with others through written text (sending notes). A few programs available on the Internet are Yahoo! Messenger and Microsoft Messenger. Some websites such as Facebook, allow users to chat using a web-browser. VoIP allows users to have telephone service through the Internet connection. Some VoIP services allow users to video-conference such as Skype and Facebook Video Calling. Blogs (a neologism for web-logs, initially referring to diary type websites) are personal websites that provide information to others and are often updated with new information. Websites such as Blogger.com and Wordpress.com permit users to create blogs for free. As well, traditional forms of media such as newspapers and magazines are
online because print versions are experiencing declining sales. Numerous types of media such as television shows, movies, videos, radio, podcasts, are all available using services over an Internet connection.

**The changing landscape of the Internet**

The only constants about the Internet are change and rapid growth. Two things have marked this growth: the social aspects of the Internet and the increase in mobile technologies that are Internet-enabled. Internet-enabled means a device that is designed to operate through Internet technology. Some of the many Internet-enabled devices are desktop computers, laptops, tablets, smartphones, iPhones and game consoles (such as the Xbox 360 and Playstation).

According to Cisco’s Visual Networking (Index: Forecast and Methodology, 2012-2017), Internet traffic is expected to increase threefold in the next five years and Asia and North American will consume a dominate portion of Internet traffic as shown in the figure 1 below. If this prediction is even remotely correct, how are these two countries applying measures to guide and build understanding of Internet use among our youths? For instance, if Asia Pacific and North American are the largest areas of Internet traffic how will this effect the content of material found online? There is no doubt that children and adolescents require critical thinking skills in order to decipher the vast amount of information online, and to distinguish between creditable websites and those having information that is misleading, out of date or plainly fraudulent.
Figure 1: Regional Internet Growth


Figure 1, shows the predicted Internet traffic growth from 2012 to 2017. When combined with the information from figure 2, the worldwide mobile data growth, one might wonder who will contribute to this exponential growth? How many of these Internet users and contributors will be children and adolescents? What do we know about who contributes to the growing amount of information found on various search engines? Parents and teachers need to be able to help foster Internet skills in our children and adolescents so that this growth in Internet traffic is filled with quality contents. All involved need to understand the practical and ethical consideration of the “digital footprints” so that actions taken in childhood will not impede the healthy growth of our youth. For instance, some children and adolescents are unaware that future potential employers or
professional school admissions committees may conduct an Internet search to examine the digital footprint of an applicant such as pictures and blogs.


**Global look: General habits of Internet Usage**

Anyone who accesses the Internet can be a consumer or a content creator. As shown in figure 3, most people who access the Internet are lurkers which means that they search and use content found on the Internet, yet create and/or add very little.
How can we use these facts to teach children and adolescents about sources and quality of information found on the Internet? Most importantly, how can we encourage children and adolescents to think critically about this information and encourage ethical Internet practices?

According to NN/g Nielsen Norman Group (2013), Internet user participation often more or less follows a 90-9-1 rule:

- 90% of users are lurkers (i.e., read or observe, but don't contribute).
- 9% of users contribute from time to time, but other priorities dominate their time.
- 1% of users participate a lot and account for most contributions.

From 2012-2017, The Cisco networking index predicts that online gaming and file sharing will remain constant, and it projects that consumer Internet growth will increase in the areas of web, email; and data; as well as a sharp increase in Internet video streaming (as shown in figure 4 below).
The projected regional Internet traffic growth (figure 1), the regional data growth (figure 2) user and contributor (figure 3), and consumer Internet growth by segment (figure 4) show the increasing complexities of the Internet. If growth does increase exponentially in Asia and North America, how does this impact the imbalance of content contributed by these countries in comparison to the contribution from the rest of the world? Also, if figure 3 demonstrates the percentage of people who “lurk” (90%), how can parents and teachers help children and adolescents contribute to having a larger role in the development of content?

As the above data show, there is a need to contextualize the nature of the Internet to demonstrate the complexity with which parents and educators are faced in being able to teach and guide children in safe and productive Internet use. As well, what do children and adolescents
know in regards to how the Internet influences and affects aspects of their life. In the following section, aspects of how the Internet is changing aspects of children's’ lives are discussed.

**Children and the Internet**

The following sections examine how daily interaction with Internet technologies influence the growth and development of children and adolescents.

The influences of online activities on children

The online habits of children and adolescents continue to change as the Internet evolves and Internet-enabled devices continue to increase. Relying on and using the Internet for an endless array of functions is largely ingrained into daily lives of children, adolescents and adults (Jackson et al., 2003; MacGregor, 2013). Children born between 1981 to present are considered to be part of the millennial generation (Monaco & Martin, 2007; McGee, 2008) many of whom were born into a highly connected world and, more than any preceding generation, have had the opportunity to seize the potential of networked medias (Crittenden & Scott, 2002). But what do we know about how networked medias are shaping the lives of children and adolescents?

Experts in the fields of neurobiology and psychology have found that the brains of millennial children and adolescents may be different from other generations because of the bombardment of digital inputs received almost from birth (Carr, 2006; Thompson, 2013; Small & Vorgan, 2008; Bauerlein, 2013; Coates, J., & Draves, W., 2003). The brain’s plasticity—it’s ability to change in response to stimuli from the environment is most sensitive in children. Therefore, the brains of millennials may be different than previous generations because the brains of children and adolescents are exposed daily to several hours of digital stimulations. By using digital tools and performing Web searches and/or playing interactive games an hour a day, changes the way
the brain processes information (Carr, 2008). The research by Carr examines how the Internet influences the way people think. According to Carr, author of The Shallows: What the Internet is Doing to our Brains” (2010) and The Big Switch: Rewiring the World, from Edison to Google (2008) our brains are changing because of the high exposure to networked medias, and, as a result, are becoming rewired to favour superficial understanding. Carr explains how the way we use the Internet can hinder a person’s ability to focus on one thing because Internet technology allows people to multitask-sending and receiving texts, emails, and speaking on the phone simultaneously—which distracts us from focusing on one specific task at a time. The inability to focus on one thing negatively impacts one’s ability to think deeply about what they are doing because when someone engages in multitasking, one is often over stimulated and distracted impeding one’s ability to reflect on what they are doing or thinking during that period of time. The inability to take the time to reflect on one’s actions, in turn, results in changes in the way information is moved from our short-term to our long-term memory (Carr, 2008). Therefore, people may be able to multitask and may be high functioning, but in doing so, may lose the ability to reflect and react based on ‘thinking something through’. Carr believes that simply being able to get a lot done is superficial in a context -where people should be more concerned about what, how or why they are doing it.

Small & Vorgan (2008) also support Carr’s argument adding how daily exposure to digital technologies- computers, smart phones, video-games, search engines -stimulate brain cell alternation and neurotransmitter release, gradually strengthening new neural pathways in our brains while weakening old ones. As Small & Vorgan state,

Besides influencing how we think, digital technologies are altering how we feel, how we behave, and the way in which our brains function… these alternations can become
permanent with repetition… As the new brain evolves and shifts its focus towards
new technological skills, it drifts away from building fundamental social skills, such
as reading facial expressions or grasping the emotional context of a subtle gesture. (p. 1-2)

If these alternations can become permanent how does this impact the developing behaviours of children and adolescents? Significant exposure to digital tools, such as using the Internet may heighten skills such as multi-tasking and complex reasoning, but may diminish “people skills” such as emotional aptitudes such as empathy (Small et al., 2008). The results from one study showed that for every hour one spends on their computer, traditional face-to-face interaction time with people drops by nearly 30 minutes. As a result of prolonged exposure to digital technologies, some people may experience awkward social interactions as well as misinterpreted and even missed subtle, non-verbal messages (Small et al., 2008).

Small cautions that accessing and spending length periods of time online may negatively impact children and adolescents. What are the consequences if children and adolescents continue to engage in lengthy periods of digital use with limited or no parental or teacher control nor guidance? Research by Pea and Nass (2012) found that digital multitasking may harm the social and emotional development of teenage girls. The researchers found that of 3,461 girls’ ages 8-12, those who spent endless hours watching videos and multitasking with digital devices tend to be less successful with social and emotional development (Pea et al. 2012). In this study, the girls responded to an online survey, detailing the time they spent watching videos, listening to music, emailing, posting on Facebook, texting, talking on the phone, doing homework, and video chatting, as well as how often they were doing two or more of these activities simultaneously. The responses from the survey showed that multitasking and spending many hours watching videos
and using online communication were statistically associated with a series of negative experiences: feeling less social success, not feeling normal, having more friends whom parents perceived as bad influences and sleeping less (Pea et al., 2012).

Researchers have identified how the brains of millennials may be different, but how are these changes affecting their psychological and social development? And what behaviours tend to be associated with millennials? The next section explores this research more in-depth by looking at how millennial have been identified as being different than previous generations.

**Millennial behaviors**

If the brains of those exposed to large doses of digital technologies are different, how are they different? Millennial children and adolescents have been described as having unique characteristics when compared to other generations (D. Oblinger & Oblinger, 2012; Monaco & Martin, 2007; Simpson, & Clem, 2008). Tapscott (2012) states that millennials have distinctly different behaviours, values and attitudes from previous generations as a response to the technological impacts on society and daily life. His research was funded with a four million dollar research project conducted between 2006-2008 where he and his colleagues interviewed nearly six thousand, 13-20 year olds from the United States, Canada and twelve other countries to find out how they interacted with technology and how these interactions influenced their behaviours. In his book, Growing Up Digital (2008) Tapscott divides his research findings into 8 groups and explains how millennials or as he refers to as the Net Generation, think and behave:

1) freedom -they use and contribute to the Internet when, where and with who they want and enjoy the freedom to do so 24 hours a day, seven days a week.
2) customization - they use Internet-enabled devices to tailor their daily needs, such as organizing their agendas on cloud-based calendars, or synching their personal devices such as personal trainers, where they can download their heart rate, cadence, time, and training route onto their personal computers to evaluate, improve and alter training programs.

3) scrutiny - they do not tolerate censorship and will voice their opinions online through blogs, Twitter, social networking sites, news feeds and other areas they see fit.

4) integrity - they believe racial discrimination and cultural differences are not issues. They believe that if they research a product, the information from the manufacture should be correct, in the instances where it is not, they advocate for change, or they discontinue use.

5) collaboration - they often refer to others for information, such as discussing the details of an episode of a television show, movie or the latest headlines. They also communicate more frequently with peers through the use of digital technologies.

6) entertainment - they tend to download and listen to music, books, audio-books, videos, games and use their personal digital devices to watch, listen and play what they find of interest.

7) speed - they use Internet-enabled devices to network with others, stay connected to global events and for reference. Because the Internet is constant, they expect timely responses, and one click quick answers to questions. When this does not happen, they tend to be irritable, easily bored and frustrated.

8) innovation - they were born into a generation that seems to constantly change, and therefore they seem more accepting of change and promote changes in products and services if it means that it will make something better. (Tapscott, 2008).

The research by Foreman et al. (2004), also found that Millennials valued experiential and exploratory learning. Simpson et al. (2008) agrees adding that Millennials tend to learn best through trial and error and random access versus sequential direct instruction. Both Foreman and Simpson
et al. agree that some of the consequences of traditional instructional practices, such as passive lectures, result in Millennials becoming impatient, easily bored, have low-attention spans and feel disconnected. In Generation Me, Twenge, (2006) argues that Millennials are narcissistic and have a sense of entitlement. An example of this is how Millennials feel entitled to respond to a headline through the news-feed. Even though they may be uneducated and ignorant of the data, they may respond with their personal feelings as opposed to responding based on the facts presented. On the other hand, Burstein, (2013) describes Millennials approach to social change as “pragmatic idealism,” because they desire to make the world a better place, therefore they are feel responsible to respond online to issues that are of concern to them. Tapscott- agrees arguing, “The stereotype that this generation doesn’t care doesn’t give a damn is not supported by the facts.

NetGenes care about integrity-being honest, considerate, transparent, and abiding by their commitments. This is also a generation with profound tolerance” (as cited in Bauerlein, 2013, p.142). Tapscott, Foreman and Simpson et al. believe Millenials are high achievers, very grade motivated, team oriented, comfortable working in groups, and process information rapidly.

In spite of this research, one could argue that many of the above characteristics could be used to describe other generations of learners; however, one overarching similarity in the research cited so far is the influence of digital technology that is part of the culture of children and adolescents.

Even though some researchers believe that the brains of Millennials are different, children do not access and use the Internet in the same way. In the next section, the research of the Internet habits of children and adolescents is explored to determine where and what children are doing online to gain a better understanding of patterns of Internet use in children and adolescents.
The Internet habits of children and adolescents from 0-18

Children and adolescents around the globe have access to the Internet. If younger children are using digital devices daily and are exposed from a young age, how does this affect how they use and value Internet-enabled devices and online communication? Studies in this section focus broadly on the Internet habits of children and adolescents.

Digital Internet-Enabled devices

There are a variety of digital-Internet enabled devices as well as unlimited numbers of online interests. A study by OFCOM (2013) examined how children access and use different types of media. Among older children (12-15), smartphones remain more widely used than tablets. Around three in five (62%) own a smartphone, while 15% owned a tablet computer. The number of tablet computers grew in popularity among 5-15 year olds since 2012 (42%, up from 14% in 2012). Similarly, tablet usage is rapidly increasing among 5-7 year olds (39% from 11% in 2012) and 8-11 year olds (44% from 13% in 2012) (OFCOM 2013). According to OFCOM, these devices are becoming more popular even among very young Internet users, who are five times more likely than in 2012 to mostly use a tablet when accessing the Internet at home (19% from 4%). At the same time, “more traditional devices such as laptops, netbooks and desktop computers are being used less often to access the Internet by tweens and adolescents” (OFCOM, 2013 p. 6).

Tablet computers are more popular with younger children because they provide a larger screen and are easy to operate (Savirimuthu, 2011; OFCOM, 2013). Because of this, younger children are motivated to use tablets for their entertainment needs, such as watching audio-visual content and playing games, whereas older children mainly use smartphones to communicate
(MacGregor, 2013; Couse & Chen, 2010). According to OFCOM, 2013, children with smartphones send an estimated 184 instant messages (IM) in a typical week: “Traditional text messaging (SMS) remains a highly popular way of communicating for youngsters, especially those aged 12-15. These teenagers send on average 255 text messages per week, up from 193 in 2012” (OFCOM, 2013, para 10).

Where are children and adolescents navigating online?

Around the age of 8, children are not only using a wider selection of technologies, but, they are also more likely to personally own digital devices with Internet capabilities (Gutnick, Robb, Takeuchi & Kotler, 2011). For instance, the studies by Gutnick et al. (2011) attribute the shift in Internet usage to developmental changes such as the ability to focus on activities for longer periods of time, improved memory, logical reasoning, and problem-solving skills as to the reasons why there is a shift in their Internet usage. Children can also apply their literacy skills to operate or communicate with digital devices (Marsh, 2011; Rutherford, Bittman, & Biron, 2010). In addition, “children at this age are also beginning to form stronger, more complex relationships outside the family, especially with same-sex peers, and showing more concern about group acceptance” (Cognitive Group Development, 1997, para. 1). Therefore, some changes in the Internet habits of youth happen around 8 years of age because they are able to communicate using a broader range of skills. When children begin and expand their written communication skills, they develop more confidence to communicate through written messages (Hopkins et al. 2011).

According to Holloway, et al. (2013) very young children use the Internet as a primary source of entertainment. For instance, children younger than five tend to watch video clips and look at pictures (Couse & Chen, 2010) such as those found on YouTube, Instagram, and Flickr. Around 3 to 4 years of age, children become interested in playing online games. By the time
children are 9 years of age, their Internet habits are more varied, including watching videos, listening to music, playing games, searching for information, homework activities, and socializing within virtual spaces.

Virtual worlds are simulated Internet environments in which children play and interact with each other via avatars (Rutherford et al., 2010; Mitchell, Finkelhor, & Wolak, 2007; Couse & Chen, 2010). As children become better at using Internet-enabled devices and more at ease with navigating, exposure to virtual spaces increases. Savirimuthu (2011) concludes that tweens accessing virtual worlds have increased with the most significant growth in pre-teens users ages 3-11. Some of the online social networks geared for young children are the following: Club Penguin, Minecraft, Moshie Monsters and Webkinz. Alarmingly, tweens are also dabbling in social networks aimed at adults (Weeden et al., 2013; Strom & Strom, 2012). OFCOM media literacy report found that 34% of 8-12 year olds reported having an account on a social network site aimed at adolescents over the age of 13 (OFCOM, 2011).

A study by Olivia Gordon (2013) found that as children become adolescents, they become more sophisticated Internet users. Adolescents also value communicating with others using virtual spaces where they feel more daring, and less conservative then they would feel in face-to-face interactions with peers (MacGregor, 2013). Gros (2007) found that tweens and adolescents were more likely to use the Internet as an anonymous identity playground, participating in vlogging (self videos), surfing for information, participating in social networks, watching videos, texting, blogging, listening to and remixing music.

As tweens and adolescents continue to explore the Internet, they often participate in social networks. A social networking provider is a platform to build social networks or social relations with people who may share similar interests, activities, backgrounds, and/or real-life connections
and typically each user provides a representation of themselves (profile) as well as other forms of information such as education and interests (Strom & Strom, 2012; Livingstone & Brake, 2010). Social networking sites provide a means to group like-minded individuals in an online community. For instance, some social networks allow users to share ideas, videos, pictures, events, interests, friends, posts, and activities. Some examples of these social networks are Nexopia, Facebook, Myspace, Google Hangouts, and Twitter, Anonplus, Ask.fm, Duvamis, and Social Number. A study by Kaiser, (2013) found that 94% of adolescents 12-18 had Facebook accounts and as I mentioned above, there is concern that more and more children and adolescents are accessing social networks meant for adults.

Online gaming is also popular among young children, and as they grow, they become more comfortable playing more advanced games where they can interact with other players (Foreman et al., 2004). Social gaming is playing games online where a player can play with or against another player who is also playing the same online game. According to the blog, Digital Buzz (2013) the fastest growing social games are Words with friends, Tetris battle, Texas Hold'em poker, Magic Land, Bubble Witch Saga, Diamond Dash, Games, Men vs Women, Pool Live Tour and Mazraasaida.

One of the main concerns for parents and teachers is the fact that online games as well as social networking sites created for adult users are often used by children (Mitchell, Finkelhor, Wolak, 2007). Children may be exposed to mature content such as sexually explicit or graphic images on these sites. These images may cause psychological harm to children if they are unaware of how to process the information.

Doing something fun and enjoyable are strong motivational factors for why young children participate in online activities. As young children’s skills develop, their reasons of participat-
ing online activities become more complex as they transform from a basic to a sophisticated user. As of July, 2013 95% of North American adolescent access the Internet daily (Purcell, 2013).

Although this paper discusses the research on the most popular Internet habits of children and adolescents, it is important to note that online interests among children vary considerably. In the next section, this paper focused on specific research on the motivational factors for why children and adolescents venture online.

**Motivational Factors**

There are a number of motivational factors for why people participate in online activities, however young children’s reasons for online use seem simple, where as the reasons for adolescents are more complex. For most children, their first online experiences are basic, comprised of looking at online pictures and/or videos (OFCOM, 2013). The research by Livingstone & Brake (2010) and Savirimuthu (2011) showed that very young children (0-2) enjoyed looking at pictures and video clips whereas pre-school children (3-5) tend to enjoy the entertainment of playing online games. As children begin to socialize with others of the same age, they often use playing video games as a reason to ‘hang-out (Olsen, 2010). The research by Ito & Bittani (2009) and Gee (2004) compared children playing video games as the evolution of the role of board games.

In one study, a youth participant said, “If I didn’t play video games- it’s a kind of a topic of conversation, and so I don’t know what I’d talk about” (Olsen, 2010 p. 180). In Olsen’s research, she surveyed 1,254 middle school students to determine what motivated children to play electronic games (some being online games) and what needs the games met. Olsen’s research showed how children have various motivations for playing video games; social motivators, such as, a focus for hanging out, the joy of competition, the enjoyment and satisfaction of teaching others, opportuni-
ties to lead, and making friends; emotional motivators, such as regulating feelings; and intellectual and expressive motivators, such as challenge and mastery, expressing creativity, experimentation with different identities, curiosity, and learning (Olsen, 2010). For instance, in Olsen’s survey, 57% of boys stated that they enjoyed playing video games because of the thrill of the competition that sometimes led to a heightened social status, or “bragging rights” amongst peers. As a result, she found that video games can provide some players with the sense of greater self-esteem since they feel a sense of accomplishment and pride after winning (Olsen, 2012). In the area of teaching others how to play, Olsen found that 36% of boys and 30% of girls agreed that teaching others appealed to them. In peer-based learning environments, students can congregate around common interests and motivate one another to learn and become better players.

Some children and adolescents enjoy the mechanisms of playing games, such as learning how to use a specific gaming consoles and learning the dynamics of using the buttons for specific gaming functions such as pressing a button to make a character jump or shoot a target. (Gee, 2000; Foreman et al. 2004). Tapscott (2013) and Olsen (2010) agree that tweens and adolescents’ are motivated to play video games because they enjoy mastering a level and have the opportunity of expanding their skills through a “trial and error” approach. In addition, online video games allow players to create new content, which is very appealing for tweens and adolescent players (Tapscott, 2012; Foreman, et al. 2004). In Olsen’s study, children and adolescents enjoyed “modding” video game content (modding allows players to customize aspects of a game such as the appearance of a character). Participants in both Gee’s and Olsen’s studies responded similarly when they were asked what appealed to children in the “unreality of games.” In Forman’s study, one participant said, “virtual spaces allow students to explore, create and experiment without the fear of failing, since failing during a video game is part of the process of becoming better and their are no
real life consequences” (2004, p. 61). In Olsen’s study, one participant said, “I just love the fact that I know it can’t happen. I just love all the things that they (games) can do. Cause if you’re in a real world, then there’s limitations to what you can do, and what you can’t do” (p. 183).

Although games continue to be a popular online activity, around the age of five children may begin to show interest in social networking sites marketed to children thirteen years of age and younger Savirimuthu (2011). There are a number of social networking sites marketed to children under thirteen, such as, Edmodo, Club Penguin and Fantage. Social networking websites for children often limits a child’s ability to communicate with others, or limits who children can ‘friend’ as a protective security measure. These websites allow children to participate in blogs, create avatars, play games, and participate in virtual themed parties.

A shift in the online interests of children occurs around the age of eight, when children may begin to use the Internet at school, and/or they begin to place greater emphasis on building friendships-having friends and being liked by others (Olsen, 2010). As a result, ‘tween’ social culture tends to involve online social networks and this trend continues to increase in adolescents social habits (Tapscott, 2008; Livingstone & Brake, 2010; Olsen, 2010).

Very little research had been done around what age appropriate social networking sites are popular for the 8-12 age group. However, there is much research on how this age group creates profiles and lies about having accounts on social networking sites aimed for adolescents of 13 years of age and older; showing that more education is needed in helping children develop skills in virtual communication, since interest and involvement in social networking sites become important for children into adolescents where most of their peer-to-peer communication occurs in virtual environments (Purcell, 2013). According to Purcell (2013) 82% of North American adolescents
have joined some form of social networking site. Figure 4 shows the wide range of social networks used by adolescents.

Figure 4: Where teens have social media profiles or accounts (Purcell, K. 10 Things to Know About How Teens Use Technology. Pew Internet & American Project, 2013. Retrieved December 29, 2013 copyright of Pew Research Center).

Children and adolescents are motivated to participate in social networks because they provide an avenue for self-expression, where they enjoy sharing their identity with others (Livingstone & Brake, 2010; Gee, 2000; Foreman, 2004). Many children and adolescents' believe their social
network profiles are extensions of themselves, similar to the way they dress, decorate their binders and rooms with images (Hopkins et al., 2011). Traditionally, adolescents expressed themselves by writing in personal notebook diaries—however, many Millennials prefer to post these personal mementos in the public domain (Livingstone & Brake, 2010). In these domains, children and adolescents can update their profiles frequently—with personal opinions, pictures, audio and video files. In the research by Purcell (2013), 62% of adolescence posted photos of themselves in their online profiles.

Online communities permit children and adolescents to have control of the way they want to present themselves online without correction or interference from adults: it’s an area where they can explore, expand and push the limits of their independence (Foreman et al. 2004; Tappscott, 2013). As well, children and adolescents enjoy having someone pay attention to their opinions, and give them honest feedback (Strom et al., 2012). Strom et al. (2012), found that social networks increase the likelihood that children and adolescents will meet new friends with similar interests. “These “spaces” allow participants to exchange dialogue with others having similar interests, and encourage postings regarding mutual hobbies and/or concerns” (Strom & Strom, 2012 p. 50). The research by Livingstone & Brake (2012) found that online communities provide opportunities for children’s and adolescents’ to find out who they are, and where they ‘fit in’. In addition, reading and viewing the profiles of online participants allows children and adolescents to confirm that they are not alone in how they feel or how they interpret issues, events and interests (Berson & Berson, 2006). On various social networks, ‘tweens’ and adolescents can practice logic in debates in which they might be reluctant to participate in person, similar, to why they also enjoy online gaming.
In addition to children playing games, listening to music, watching videos and participating in social networks, children begin to search for information online around the age of eight. However, there is little research on where, when and how children and adolescents navigate and search for information. Also, adolescents may be familiar with reference tools such as Google, yet may be unfamiliar on how to distinguish between a reputable site, and one’s that are not.

Figure 5 shows how the Internet usage for children increases with age. As toddlers online competences develop, and children become more independent, their Internet usage also increases as well as the number of purposes they use the Internet for. By the time children are ‘tweens’, social networking websites and online gaming are part of everyday youth culture (Forman, 2004; Savirimuthu, 2011; Jackson et al., 2003).

Figure 5: How Children and Adolescents Use the Internet

In addition to social networking, ‘surfing the net’ and online gaming, the research by Purcell (2013) found that 27% of adolescents recorded and uploaded videos, 13% streamed live videos to the Internet and 37% used video chat. However, there were no studies on the number of children and adolescents creating and contributing content.
The information gathered in this section shows the complexities of how children and adolescents may use the Internet and how there are so many areas where little research has been done. In addition, most North American children and adolescents may show Internet proficiency, but what do we know about how these skills are cultivated in youth and do they really possess online competencies? As the content on the Internet continues to multiple, how can parents and teachers adapt and focus efforts on guiding and educating youths’ as their online dependences increase as they grow into adulthood?

In the following section, the benefits and risks of children’s and adolescents Internet uses are discussed to gain a better understanding of how children and adolescents use the Internet and world wide web impacts their life.

Benefits and risks: Children’s and adolescents’ Internet use

There is a paucity of data on the risks and benefits of Internet use in younger children (0-8) years old; nevertheless, the studies here can be broadly divided into those showing benefits and those suggesting harm. Considerably more work has been done in older children (9-18) and these studies look at multiple aspects of learning and development as well as the societal changes linked to increasing Internet use.

The benefits of Internet use in children 0-8

The majority of North American children are starting school with significant experience using digital devices and navigating the Internet. They demonstrate emerging skills in navigating, retrieving and creating content (Bittman, Rutherford, Brown, & Unsworth, 2011). These emerg-
ing skills also form the basis for responsible use of these technologies (also referred to as digital citizenship) (Orth & Chen, 2013). Being able to use digital devices and the Internet effectively and responsibly support good interpersonal relationships and promotes creativity, self-expression and individual identity making. It also helps strengthen a sense of belonging or social connectedness and assists with the development of both online social skills and digital citizenship (Pulman et al. 2012; Savirimuthu, 2011).

According to Gee (2004), young children use the Internet in ways that reflect conventional childhood use of media and communication technologies in previous generations, such as playing board-games. They play, learn, interact and maintain relationships with other children and family members. The use of the Internet helps to sustain children's social interactions and play. Although very young children are using various digital Internet-enabled devices, little is known about how this exposure impacts their lives. For instance, the research by Couse & Chen (2010) found that tablet computer used by 3 to 6 year olds in preschool increased engagement, though little is known about what these children were doing while using the tablet, or if this tool has positive benefits other than engagement. In addition, studies such as Savirimuthu (2011) found that infants and toddlers are using various Internet-enabled devices though similar to pre-school children, very little is known about the short or long term effects.

Longitudinal studies by Dowell, Burgess, & Cavannaugh (2011) found a positive correlation between Internet use during early childhood and achievement at school. Judge, Puckett & Mee (2010) concluded that frequent use of the Internet and proficiency in computer use correlated positively with academic achievement. The study by Judge et al. (2010) examined the progress made toward equitable technology access and use over children’s first four years of school. The large-scale longitudinal study consisted of 8,283 in kindergarten, first to third grade students. The
results of the above study found that children accessing the Internet through a home computer had an advantage in terms of their achievement in reading, writing, mathematics and critical thinking skills.

Very little is known about the benefits of early exposure to the Internet, other than infants, toddlers and preschoolers seem to enjoy interacting with technology and show signs of engagement. In addition, there are no studies that have examined the benefits of Internet and World Wide Web exposure, and how it may benefit children at each developmental milestone.

**The risks of Internet use in children 0-8**

The Internet provides access to massive collections of unfiltered information, which can be harmful to young children without the supervision, and support of adults. When children use the Internet under the supervision of an adult with Internet knowledge, it lessens children’s risks such as navigating to inappropriate websites (Endicott-Popovisky, 2013; Jones et al., 2012; Wishart, Oades, & Morris, 2007).

A report by The Federal Trade Commission, *Mobile Apps for Kids: Disclosure Still Not Making the Grade*, 2012, found that some parents do not have the information needed to make informed decisions about protecting their children’s privacy when it comes to data collection from some children’s mobile applications. In the above report, the FTC’s research team examined the privacy disclosures and practices of four hundred apps offered for children in the Google Play and Apple App stores. They concluded that little has been done in addressing privacy concerns because children’s data are still being collected, shared and reviewed without the knowledge or consent of a parent (FTC, 2012). For instance, in the study by the FTC (2012), fifty-eight percent of the apps contained advertising, but only 15% disclosed this practice. As well, many of these 400 apps included, interactive features such as connecting to social media, and sent information
from the mobile device to ad networks, analytics companies, or other third parties, without disclosing these practices to parent (FTC, 2012).

Parents and teachers may be concerned about the inclusion of hidden interactive features such as connecting to social networking sites for a number of reasons. The biggest concern of parents with children accessing social networking sites marketed for adolescents and adults are that children may be provoked to create profiles where they may reveal personal information about themselves that can be potentially harmful. For example, if the child posts a picture of themselves and where they live, a stranger would than have personal information of that child, which they could use to ‘lure them’ into meeting the stranger in person. It’s for this reason that the Children’s Online Privacy Protection Act (COPPA) enforces regulations such as social networking sites geared for adults, such as Facebook to impose age restriction for users to be 13 years of age and older. In figure 6, the number of apps that contained social networking integration, of the 400 evaluated by the FTC’s researchers is shown. Surprisingly, most of these social networking sites in figure 6 are meant to be accessed by users 13 years of age and older, not children.

The main reason there are age restrictions on many adult social networking sites is to help protect children from sharing personal information in public virtual spaces. The Children's Online Privacy Protection Act (COPPA) was developed to place restrictions on age limits for certain social networking sites. One regulation of COPPA is that websites marketed to children 13 years of age and younger are not suppose to ask children for their names, birthdays, and addresses. Though tech savvy children can easily access a social network geared for adults because no internal mechanisms for stopping children from falsifying their ages to become members. In addition,
the barriers to admission are relatively low because most social networking sites offer free memberships and there are no age checks on users once they have gained access to the system.

<table>
<thead>
<tr>
<th>Social Network</th>
<th># of Apps</th>
<th>% of Apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>41</td>
<td>10.4%</td>
</tr>
<tr>
<td>Google+</td>
<td>36</td>
<td>9.1%</td>
</tr>
<tr>
<td>Twitter</td>
<td>29</td>
<td>7.3%</td>
</tr>
<tr>
<td>Game Center</td>
<td>6</td>
<td>1.5%</td>
</tr>
<tr>
<td>OpenFeint</td>
<td>5</td>
<td>1.3%</td>
</tr>
<tr>
<td>YouTube</td>
<td>5</td>
<td>1.3%</td>
</tr>
<tr>
<td>HeyZap</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>Tumblr</td>
<td>2</td>
<td>0.5%</td>
</tr>
<tr>
<td>LinkedIn</td>
<td>1</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>88</strong></td>
<td><strong>22%</strong></td>
</tr>
</tbody>
</table>

Figure 6: Apps Containing Social Networking Integration, Mobile Apps for Kids: Disclosures Still Not Making the Grade. FTC Staff Report, December 2012, accessed December 30th, 2013.

When parents and teachers allow young children to access and use the Internet unsupervised, children may develop undesirable behaviors because they are unaware of how to decipher the information they stumble upon. For instance, the research by Holloway et al. (2013), showed that, when compared to children 9-12, younger children were: 1) less resilient to comments made by others, 2) more likely to become distressed when things go wrong (for example, being socially excluded from games or when they experience virtual losses during game play), 3) lack of the necessary skills to negotiate the nuances of gameplay (for instance, taking turns).

The research by Ey & Cupit (2011) also support the research from Holloway et al, (2013) since they found that children ages 5-8 were more vulnerable to Internet harm than older children, de-
spite having an overall understanding of the risks encountered while online. For instance, Eye & Cupit state, “5-8 year olds were able to identify content risks such as sexual content, inappropriate language and violence, yet displayed a degree of naivety when they were presented with real life Internet scenarios” (p. 62). For example, when participants were asked if they would attend a birthday party or play date, they failed to identify inappropriate communication, commercialism, unreliable information and revealing personal information on the Internet. Other researchers such as Mitchell et al. (2007) and Berson & Berson (2006) also support the claims that children younger than 9 are at greater risk, extending the list of risks to include cyber-bullying (Toshack & Colmar, 2012; Suniti-Bhat, Chang, & Linscott, 2011; Endicott-Popovsky, 2013; Dowell et al., 2011; MacKay, 2006; MacGregor, 2013), sexual exploitation (MacGregor, 2013) solicitation (Savirimuthu, 2011; Chang, 2010), and commercialism (Berson et al., 2006; Savirimuthu, 2011).

In addition, parents and teachers can assist children in choosing age appropriate social networks; such as Minecraft, Moshi Monsters, Beanie Babies and Club Penguin. These social networking sites typically have filters, which make it difficult for children to exchange personal information with others. As well, “real time” moderations such as peer in-game silent and/or automated in order to deter instances of bullying behaviours (MacGregor, 2013). By helping children choose appropriate online content, such as participating in age appropriate social networks, parents and teachers can foster safe online experiences and help develop online competences in children that will later be discussed.

Another concern of parents and teachers is the easy access and abundance of inappropriate content. For instance, one of the first online activities of children is viewing pictures or watching videos. YouTube is a popular website for posting, as well as viewing videos. YouTube boasts that the video, Sesame Street: The Good Bird’s club had 4,801,406 views and Sesame Street:
Sing the Alphabet had 4,147,755 views (as of January 16th, 2014). Both videos are marketed and appropriate for young children, yet, once children are set up in front of a Internet-enable device, the easy-to-use graphic interfaces allow very young children to activate the playlist choices on the sidebar where they can inadvertently access adult oriented footage.

In the study by Ey et al. (2011) participants ages 5-8 shared what they have seen online (shown in figure 7). Thirty-three percent of children in this study revealed that they saw sexually explicit or provocative images online. One concern for parents and teachers regarding the above content is that young children may find it difficult to interpret what they see and hear online, and as a result, may be unable to decipher between virtual (the unreal) and face-to-face (real) relationships (discussed in earlier discussions).

Figure 7: What is on the Internet that you think shouldn’t be on the Internet? Ey & Cupit: Exploring Young Children’s Understanding of Risks Associated with Internet Usage and their Concepts of Management Strategies, p.58)
In addition to inappropriate content and child commercialization, pediatric physicians also warn of the affects of prolonged exposure to screen time. The Canadian Pediatric Society recommends that children 0-2 have little to no screen time, and children older than two having no more than two hours a day (Canadian Pediatrics, 2013).

The benefits and risks of the Internet use by toddlers, preschoolers and young children can be minimized with parent and teacher supervision and guidance. Therefore, if children stumble on inappropriate content, parents may step in, and control the situation as well as discuss ‘the situation’ with the child so they may gain the skills necessary for unsupervised use when they are older. As children become older and have opportunities to access and use the Internet without parental supervision, children require the support and guidance from parents and teachers. In the next section, the Impact of the Internet use on children 9-18 is discussed.

**The impact of Internet use in children and adolescents ages 9-18**

Children older than eight years of age tend to spend more time unsupervised while online, and they access the Internet more frequently than younger children. Many factors contribute to children’s increase in Internet use: children eight years of age and older are more likely to own their own personal Internet-enabled digital device, they enjoy exploring online applications and researching information online, they require accessing the Internet for scholarly reasons, and the most influential contributor is the social culture of Internet platforms amongst tweens and adolescents, such as social networking sites and blogs (Holloway, Green & Livingstone, 2013). As children spend more time online and unsupervised the risks of harm also increase. In addition, as tweens and adolescents spend more time online, the likelihood that the benefits of the Internet may positively affect aspects of their lives also increase.
In this section, the impact of Internet use of children and adolescents is discussed, first focusing on the negative aspects of online use, such as being ill-informed, lacking skills and parameters, than ending with the positive effects of online use with such topics as online learning collectives, tailoring skill sets and learning, identity and the benefits of connectivity.

As discussed earlier in the risks of Internet use for children 0-8, parents that lack the knowledge about the Internet, inadvertently may expose their child to more online opportunities that may cause them harm. According to Savirimuthu (2011) there is a strong correlation between parents with a high degree of online proficiency and minimized online risks for their children. In the study by Livingstone et al. (2012), the researchers found that when parents were aware of what their children were doing online and participated in joint online activities; children were less likely to dabble in risky online behaviours. As well, they were more likely to notify a parent or teacher if they witnessed negative online behaviours by others. Therefore, if children develop online competences and awareness about the nature of digital information and inappropriate activities from the time they start accessing and using the Internet, then they will be better equipped with the knowledge and confidence they will need in order to manage their online activities in a safe and appropriate manner (Savirimuthu, 2011). While some children without parental online guidance may learn to manage their online activities appropriately, some children without this support will not.

According to Livingstone (2013), the risks are augmented for children with various kinds of psychological and/or social difficulties offline, such as poor relationships with friends, not supported by parents or they feel lonely- these are the types of factors that can lead children to take offline vulnerability and expand it online. For instance, in one study by Livingstone, Haddon & Gorzig (2012), the researchers found that 7% of 9 to 16 year olds claimed to have experienced cyber-bullying in the previous 12 months, with the incidence of cyber-bullying victimization increasing
with age, peaking at the ages of 13-16 (Livingstone et al. 2012). The researchers also found that children with a higher level of psychological difficulties and children who felt ostracized more often reported being victims of cyber-bullying. In addition, 6% of the children in the above study who participated in online activities said that they had been bullied on some form of social media platform. Another key finding by Livingstone et al. was that “incidents of offline bullying (perpetrator and/or victim) were strong predictors of cyber-bullying, even stronger than socio-demographics, and psychological variables” (p.148).

Many parents without the awareness of online safety issues are more likely to allow their child to use digital Internet-enabled devices with little adult direction and/or are more likely to allow their child under the age of 13 to have a profile on a social networking site, such as Facebook, geared towards adolescents 13 years of age and older. For instance, the research by Boyd, Hargittai, Schultz & Palfrey (2011) found that 95% of 10 year olds with accounts on Facebook had parental consent. In addition, 78% of ten-year olds with Facebook accounts said that their parents helped them create their account, even though they were aware that their child did not meet the legal age requirements for use on this website (Boyd et al. 2011). In addition, 93% of parents believed they should decide whether or not their child should be allowed to access websites and online social networks, yet 43% of these parents were unaware that Facebook had a minimum age requirement and/or seeks personal information. In addition only 20% of the parents with children under the age of 13 with Facebook accounts monitored their children’s Facebook activities. This above information shows that some parents believe they should be the one’s deciding where their children navigate online, yet they lack the Internet awareness of being properly informed about the nature and intention of certain websites. When parents lack a thorough understanding of the online activities of their children, they may increase the likelihood of their child behaving inappropriately online, such as acting in a manner they may later regret. For instance, a
number of researchers have found that children are more likely to post inappropriate pictures and videos of themselves, as well as disclose personal information if they believe their parents are not involved in their online activities and/or they are unaware that people other than their friends may access them (Livingstone et al. 2011; Weeden, Cooke, McVey, 2013). The dangers of children participating in risky online activities increases their exposure to possible harm to such things as, child luring, exploitation, sexual solicitation, online harassment, cyber-bullying, and having a negative digital footprint (Weeden et al. 2013).

When children and adolescents lack guidance and boundaries while using the Internet and the World Wide Web, they may cross the line, participate in risky online behaviours, infringe on the rights of others and commit acts they may be unable to remove or resolve. For instance, children and adolescents may exhibit characteristics of online disinhibition. Some children participate in risky online activities experimenting with anonymous social networks where children and adolescents can work with avatars and/or otherwise remain anonymous. For instance, on the website Ask.fm, users may post things that are blatantly offensive such as, pictures and/or personal information about another individual that can be personally damaging (Bauman et al. 2013).

The research by Willard (2003) identified a number of theoretical factors that help explain the issues of disinhibition. When children and adolescents use the Internet, they may be: 1) virtually invisible, 2) anonymous or use a false identity, 3) unknown by others, that may encourage behaviours that would not occur if others knew their identity, 4) unable to easily receive feedback of the pain they are inflicting through the use of technology 5) have the opportunity to assume the role of an avatar and therefore they may be less likely to feel personally responsible communicating online as opposed to in person (Willard, 2003).
The report by MacGregor (2013) found that students labeled bullies did not mean to bully the individual, rather it started with them sending a silly text, Instant Message or email - that was then used as the vehicle to further harass the same person, yet by different people. The bullies never thought the initial message had the capacity to cause harm. As well, in the studies by Suniti-Bhat et al. (2011) and Simpson et al. (2008) they found that children and adolescents had no idea that the virtual comments they made to an individual were offensive.

Cyber-bullying is another risk that children are often exposed to during some point of their youth online experiences. Livingstone et al. (2013) believes that cyber-bullying is common, but most cases are very mild and that the most severe cases are also the most rare. Nonetheless, mild negative comments communicated by children and adolescents may still be hurtful. And, in the few cases of extreme risks that caused harm such as child and adolescent depression, which has in a few cases led to teen suicides, are rare - but severe (Livingstone et al. 2013; Bhat, Chang, Linscott, 2010).

The story of Rehtaeh Parson, is a sad story of the thoughtless acts of a few adolescents. Rehtael was a fifteen-year-old adolescent who attempted to commit suicide after pictures of her alleged raped were photographed, then these pictures were later circulated through different forms of media around her school and community (Ross, 2013). After the pictures were posted online, she received insulting texts and Facebook messages from people requesting to have sex with her (Ross, 2013). Another instance is the gang rape of a young girl in Pitt Meadows, B.C. where those involved took pictures that were then uploaded on YouTube (MacGregor, 2013).

When some youth participate in risky or careless online behavior, do these behaviours stem from the fact that they may have been over-exposed to the Internet, and therefore they think differently, lacking certain vital social skills? For instance, the research by Small (2011) suggests that children exposed to hours of daily online consumption experience difficulties in face-to-face
social interactions—misinterpreting body language and/or not picking up on subtle cues. A study by Nielsen (2005) examined the daily electronic texts sent and received by thirteen-to-seventeen-year-olds. He found that in September 2008, the participants in the study averaged 1,742 text messages per month; however, when the same study was done in October 2010 the number of texts per month jumped to 3,339. On average, each adolescent was sending and/or receiving approximately 111 texts per day. Therefore, if children and adolescents continue to participate in risky and repetitious online behaviours, while also multitasking, how can they become aware that some of the things they say and do online are inappropriate?

Many children and adolescents seem to experience adverse affects when blocked from using their digital Internet-enabled devices. Tapscott, (2009) states that when some children and adolescents are removed from their connected world they feel alone and socially isolated. A study, by the International Center for Media & the Public Agenda (ICMPA) asked 200 students to abstain from using all media for 24 hours, after which participants were asked to blog on private class websites about their experiences (Moeller, 2010). One participant wrote, “Texting and IM-ing my friends gives me a constant feeling of comfort.” (para. 5).

Internet addiction disorder is on the rise in adolescence due to variability in developing their cognitive control (Casey, Tottenham, Liston & Durston, 2005) and boundary setting skills (Liu & Potenza, 2007). In one study, the researchers found that 4% of adolescents in the United States were identified as having Internet addictions (Kuss, Rooij, Shorter, Griffiths, Van de Mheen, (2013). The use of online gaming and social applications (social networks and Twitter) increased the risk for Internet addiction, whereas extraversion and conscientiousness appeared as protective factors in high frequency online gamers (Kuss et al., 2013). This information demonstrates ‘gray’ areas where parents and teachers can communicate with youth about their online
activities and how to set realistic and healthy perimeters around what they do online, and how much.

Adolescents with clinical disorders and premorbid symptoms (for example -depression, insomnia, suicidal ideations, attention-deficit hyperactivity disorder, social phobia, hostility, schizophrenia, obsessive-compulsive disorder, aggression, drug and problematic alcohol use) have higher risks of becoming addicted to the Internet (Kuss et al. 2013). Yet, of 191 participants in the study by Kuss et al. (2013), 99.8% of adolescents with clinical disorders and premorbid symptoms used the Internet at home, and 44.9% of participants stated that their Internet activities were unsupervised. This further supports the claims that parents and teachers need to be better informed on how to education and guide youth’s online experiences, in addition to being conscious, aware and supportive about how children the most vulnerable learn and use the Internet.

Wolf (2005) believes that as we become more saturated in a digital world, the affects will negatively impact how youth approach reading, learning, and knowledge. She argues that children need to have both time to think and the motivation to think for themselves (p.38) As well, Jackson (2008) argues that when we multitask to make better use of our time, we lose the capacity to question and explore, living exclusively in relations to others (p. 308). Although the re-search by Tapscott (2009) shows that youth’s interactions with the Internet are mostly positive, some adolescents can feel overwhelmed with ‘constant connectivity’ by the expectation of immediate response, the experience of saturation, and the sensation of never having a moment of peace. (as cited in Bauerlein, 2013, p.153).

There are numerous risks for children and adolescents if they use the Internet without supervision, if they lack knowledge, and are unaware of the potential harm caused by inappropriate use. However, there are many children and adolescents using the Internet with the guidance, support
and knowledge of adults, leading to positive ways of how the Internet which has transformed the way they live and learn for the better.

The Internet provides a platform where people have access to almost every subject imaginable. In the context of gaining knowledge, children and adolescents can search for information and improve their understanding of a particular subject. For instance, there are a number of websites that offer free college courses: MIT Open Courseware, Carnegie Mellon OpenLearning, Khan Academy, University of California at Berkeley, Stanford University iTunesU, Tufts Open Courseware, Open University LearningSpace, John Hopkins and OpenCourseware. The courses are available to everyone, anytime. So, if a student in high school was interested in learning more about algorithms, he/she could take the free course offered through MIT regardless of age or where they live. Another example is LenMus, a website for people that want to develop their skills in music theory, and Edudemic, a website that offers free courses in learning about solar energy. Children and adolescents are using these learning collectives to improve their understanding of the world around them at their own pace. As one participant said, “There are lots of smart people out there, and we should be using new technologies to tap into their talents” (as cited in Bauerlein, p.149).

As well, there are a number of educators inspired by emerging educational philosophies that are using the Internet as a vehicle to advance the acquisition of knowledge in children (Davis, 2013). One participant in the study by Tapscott said, “To them, knowledge isn’t a commodity that’s delivered from teacher to student but from something that emerges from students own curiosity-fuelled exploration.” (p.158). One such innovator is Sugata Mitra, a professor of educational technology at Newcastle University in the United Kingdom. He conducted experiments in which he gave children in India access to computers by placing the computer in a wall next to his
office where he worked. Without providing any instruction, random children were able to teach themselves about a wide variety of topics, such as English to DNA (Davis, 2013). In one study, Mitra loaded a computer with material on biology, and then selected a small group of 10-14 year olds to explore independently. Over the course of 75 days, children had figured out how the computer worked but when he tested their knowledge on biology, he found children answered one out of four questions correctly. He continued the same study for an additional 75 days, then asked the same students to complete another similar test. The results showed that the students achieved one hundred percent (Davis, 2013). Mitra’s educational philosophy is, “if you put a computer in front of children and remove all other adult restrictions, they will self organize around it like bees to a flower” (Davis, 2013, p.159)

A key component in Mitra’s theory was that children could learn by having access to the Internet (p. 163)

To further support Mitra’s philosophy, Juarez Correa, an elementary school teacher in a impoverished area of Mexico, started applying Mitra’s theories when he noticed that both he and his students were bored and test scores continued to plummet (Davis, 2013). He was further inspired, when one of his students, Paloma, Noyola Bueno’s keen academic interests further inspired him to change how and what he was teaching. Slowly, over the course of the school year, Juarez started to implore Mitra’s philosophies in his classroom. When his students wrote the national standardized exam near the end of the school year, 63% had an excellent score in math and Paloma Noyola Bueno had the top score in the country. The Internet is helping children and teachers in remote, or impoverished communities access a wealth of knowledge available online to improve learning outcomes that would otherwise not be available. Having global information accessible 24/7 is helping people learn and develop skills that would otherwise be unavailable.
The Internet had also provided children and adolescents with the platform where they can expand their skills through online research. An example of adolescents using online information is order to expand their knowledge is Eric Chen, who at 17, won the Google Science Fair in biology, for his project on a new anti-flu medicine. He admitted to using the vast amount of information on the Internet to research and develop his project. In addition, Viney Kumar, who at 14, also won the Google Science Fair in innovation for creating a signaling system for emergency vehicles. This system uses Android-GPS wireless applications available for mobile phones that receive early-warning graphics and voice signaling 800 meters before heavy traffic. This advance warning provides enough time for the driver to alter his/her direction (googlesciencefair.com/projects).

Self-directed learning is not a new concept in education- however, many schools around the world are embracing technologies to foster self-directed learning in students. “Letting kids pursue their own interests sharpens their hunger for knowledge” (Kehe, Jason, p.159). As a handful of schools have discovered, Internet-enabled technologies are helping to fuel youth’s curiosity for learning. NYC iSchool has an educational philosophy based on core values of innovation and individualization of the student experience where students participate in online collaborative spaces, interact with peers, teachers and experts in fields such as scientists at NASA (NYCiSchool, 2013). This school highlights student success by the fact that 95% of students attend school daily, students earn credits at an accelerated rate of more than 10 credits a year, and students have an average of 95% pass rate on Regents examinations (iSchool, success, 2013). Similarly, High Tech High schools serve more than 5000 K-12 students using principles of personalization, adult world connection, common intellectual mission, and teacher as designers. High Tech High schools have labs for areas as biotech, and graphic design. And lastly, Cloud Schools are in the
process of being developed in England and India, where children can participate in self-directed learning through the use of computers. “Cloud grannies” will act as moderators’ and connect to these schools using Skype. Children in developing countries could use computers to educate themselves when typically they do not have access to educational resources or materials (Mitra, 2013). These schools are all but a few examples of how education is being transformed globally by the tools available on the Internet.

There are a number of benefits of being globally connected, made possible by the Internet. The research by Johnson (2011) found that most forms of sustained online activity are participatory in nature. For example, the website Wordpress.com had 42,000,000 blogs in 2012, and 329 million people viewers, 500,000 new blogs everyday and 400,000 daily comments (Blogging Statistics, Facts and Figures in 2012- infographic, 2013). People feel that they are a part of the Internet, or as Rushkoff, (2001) said, “The Internet is us” (as cited from Bauerlein, 2013, p.122). The Internet is a place to share and explore one’s identity. Johnson (2005) said, “The screen is not just something you manipulate, but something you project your identity onto, a place to work through the story of your life as it unfolds” (29); because of this, the Internet can provide a platform for new modes of activism. Palfrey suggests “new modes of activism made possible by the use of networked digital tools leads to benefits for citizens of established democracies, countries in transition, and authoritarian regimes alike (as cited in Bauerlein 2013, p. 191). For instance, news from around the world is available almost instantaneously and these articles are available for commentary from every possible viewpoint. For example, Twitter and YouTube have been largely used to broadcast the events in Tunisia and Egypt and more recently in Bahrain, Yemen, Libya and Syria (Radsch, 2013). By broadcasting the political upheavals, people around the world felt committed to get involved and by doing so, they exposed corruption amongst govern-
ment officials (Radsch, 2013). The Internet can connect people near and far, informing one another on matters they care about.

Summary

The Internet can be a powerful tool if used correctly, and a devastating weapon if abused. As William Richardson said:

> Whether we’re comfortable with it or not, digital footprints—‘online portfolios of who we are, what we do, and by association, what we know’—are an inevitable by-product of life in a connected world. Instead of teaching students to be afraid of what others can learn about them online, let’s teach them how digital footprints can quickly connect them to the individuals, ideas, and opportunities that they care most about. (2008, p. 66)

Most children can learn how to use the Internet. However, not all children and adolescents learn to use it properly, nor do they learn how to push the limits of their online capabilities in positive ways. Online risks can out-weigh the benefits if an individual lacks the knowledge of how to use it appropriately. Differences in parenting and teacher practices vary. Even though many adults are taking measures to educate children about how to use the Internet, the degrees to which they are being taught are unclear. Recommendations for improving how and when and what children learn about the Internet includes starting to educate children at a younger age and providing opportunities to develop online content that spans from pre-school to late adolescence. If children are not guided from the time they are introduced to the Internet, learning about responsible and contributory Internet use at a later age could be problematic, such as correcting misbehaviors as well as poor habits.
A guide for parents and teachers can provide children with opportunities to engage in online activities that align with their development and online proficiency while parents and teachers can work together to support, guide and nurture safe, ethical, and positive online habits that reflect the needs of an individual.

Parents and teachers can access the Internet using a number of search engines to find out information on different approaches to learning about specific areas surrounding Internet education. Some of the most notable approaches are to encourage parents and teachers to establish open communication and participatory activities with both adult and child. Participating in authentic online activities provides real opportunities to gain skills using the Internet that youth can apply in real life.

In addition, parents and teachers are encouraged to become familiar with the general developmental milestones of children from birth to eighteen years of age. According to Centers for Disease Control and Prevention, developmental milestones are general age groups when youth acquire certain skills and develop cognitive abilities pertinent or distinct to a group of youth. For the purpose of this guidebook, I used developmental milestones as a way to create general groupings of skill sets in youth (that I refer to as modules) as well as to assist parents and teachers become familiar with developmental milestones and how developmental milestones may affect what, when and how we approach Internet education.
## Suggested modules and categories of Internet education for youth

<table>
<thead>
<tr>
<th></th>
<th>The consumer</th>
<th>The explorer</th>
<th>The scientist</th>
<th>The critical thinker</th>
<th>The creator and contributor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communication</strong></td>
<td>0-4</td>
<td>5-8</td>
<td>9-12</td>
<td>13-18</td>
<td>13-18</td>
</tr>
<tr>
<td>Building verbal communication skills with parents and teachers</td>
<td>Interactive games Introduction to social networking</td>
<td>Social media Communication with peers (Texting/IM/emailing) How to deal with conflict Effecting virtual communication</td>
<td>Effective virtual communication Organisation of email and communicative devices Volp</td>
<td>Effective virtual communication Organisation of communicative devices Personalization Volp</td>
<td></td>
</tr>
<tr>
<td><strong>Safety and Ethics</strong></td>
<td>Limit time Permission supervision boundaries</td>
<td>Permanency Strangers How, who and where children can trust Boundaries Etiquette</td>
<td>Permanency Pictures and videos Cyber-bullying Plagiarism Appropriate use and mannerisms Boundaries Etiquette</td>
<td>Permanency and the future Cyber-bullying Plagiarism Posting Appropriate use and mannerisms Boundaries Life without the Internet and daily functioning</td>
<td>Permanency and the future Cyber-bullying Plagiarism Posting Appropriate use and mannerisms Boundaries Life without the Internet and daily functioning</td>
</tr>
<tr>
<td><strong>Expression</strong></td>
<td>X</td>
<td>Profile Avatars Blogs</td>
<td>Graphics blogs Avatars Videos/pictures</td>
<td>Podcasts Videocasts Audiobooks Graphics</td>
<td>Podcasts Videocasts Audiobooks Graphics</td>
</tr>
<tr>
<td><strong>Scholar</strong></td>
<td>Counting Language shapes</td>
<td>Basic research How to deal with inappropriate content Academic assistance</td>
<td>Plagiarism Reliability of sources Search strategies Academic assistance</td>
<td>Courses and sources Reliability of sources Search strategies Academic assistance</td>
<td>Courses and sources Reliability of sources Search strategies Academic assistance</td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td>How to use a mouse Basic functions of digital Internet enabled device Simple games</td>
<td>Terminology Networking concepts WWW and the Net Blogging</td>
<td>Basic coding ex. Ruby, HTML Create webpage Graphics Videos More in-depth look at the Internet</td>
<td>Basic coding ex. Ruby, HTML Create webpage Graphics Videos (All the above in more depth than previous module)</td>
<td>ibooks Websites Web apps Coding Mobile apps Learning how to solve problems with programs</td>
</tr>
</tbody>
</table>
Categories

Communication

Communication is the act of transferring information through verbal messages, the written word, visually and non-verbally. How well one transmits and receives information is a measure of how well one’s communication skills are. Being able to communicate effectively is an important life skill that can greatly impact the livelihood of an individual. Therefore, the communication category in each module aims to improve the communication skills of children and adolescents, both in virtual environments and in face-face interactions.

Safety and ethics

The number one goal for every parent and teacher is to provide a safe environment for youth. Online safety issues are widespread and pose hazards for children and adolescents. Such concerns as exposure to inappropriate content, inappropriate language, cyber-bullying, child luring, are a few of the many harmful areas where children and youth need guidance to understand, build competencies, and avoid. As well, establishing good ethics while online helps build desirable characteristics in youth such as being courteous and responsible. Parents and teachers are encouraged to work with children on developing appropriate online skills as well as discussing methods of dealing with and avoiding online harm. As well, parents and teachers are encouraged to establish ‘protocols’ if a child ends up in an uncomfortable situation.

In this category, themes on safety and ethics range from risky behaviors, Internet identity, and copyright to ethical communication.
Expression

Expression is the process of making known one’s thoughts or feelings. Many children and adolescents express themselves online where they may be unaware of the accessibility of these thoughts or feelings by others, whether friends or strangers. As well, children and adolescents may be unaware of how to express themselves appropriately and effectively online. In this category, parents and teachers are provided with a few resources, ideas, examples and strategies to encourage positive digital footprints, and creative expression in children and adolescents.

Scholar

The Internet provides an endless amount of information that can help an individual build knowledge in facts, information, descriptions and skills. In this category, parents and teachers are encouraged to help children deepen their understanding of the world, and widen their knowledge by using resources online.

Skills

An online skill is the learned ability to carry out a task with a pre-determined result. In this category, parents and teachers are encouraged to support and guide youth’s abilities to build their online skills in a wide variety of areas.

In order to teach children effectively, parents and teachers first need to have a grasp of the fundamental nature of the Internet and key aspects of the technology including home privacy settings, permanency of images and content, and the potential for the uncontrolled, rapid, global dissemination of information. As well, school Internet policies and staff training is inconsistent and highlights the need for improved school programming and initial teacher training. Research suggests that when young children are provided with structure and support while they learn online,
they are more likely to be conscientious of the risks and benefits, and therefore better equipped to make safe and more appropriate online decisions (Jackson et al., 2003; MacGregor, 2013; Livingstone et al., 2013; MacKay, 2012).

In the following chapter, a guide for teachers and parents was created to link parents and teachers on what children can learn about the Internet. This guide was created so that parents and teachers can use it as a guide to support youth’s online learning. By using this reference, children will be less likely to have ‘gaps’ in Internet knowledge, and therefore will be better equipped to use the Internet and the WWW with diligence, responsibility and greater confidence.
Chapter 3: Resources

Overview: Guide for Parents and Teachers

This guide has five modules divided by five broad developmental milestones and five categories highlighting areas of Internet education. The five developmental milestones are; the consumer (ages 0-4), the explorer (ages 5-8), the scientist (ages 9-12), the critical thinker (ages 13-18) and the creator and contributor (also ages 13-18). As discussed earlier, these milestones are based on general assumptions around the emotional/social and thinking/learning skills children and adolescents may have as they grow and develop from one developmental milestone to the next. Each module serves to help parents and teachers become more familiar with potential Internet habits of youth in their care, as well as provide resources and guidelines to support teachers and parents in providing a range of topics and materials when working with children and adolescents and their developing Internet habits. These topics are categorized to include; communication, safety and ethics, expression, scholar, and skill development. Each module reflects areas of research around the Internet and emerging Internet skill or the lack of skills in youth based on a broad range of studies. In addition, parents and teachers can use the guide to open communication between areas of Internet education taught at home and what is taught at school.

How to use this guide?

Parents and teachers can incorporate this guidebook as part of a family activity at home and a cross-curricular activity at school. The five modules are in order from someone with little to no experience with the Internet to the last module, for those working with youth with extensive online skills. It is up to parents and teachers to determine what module best meet the needs of a particular child. In addition, it is advisable that parents and teachers be familiar with the categories and suggested learning outcomes in each module, so they are comfortable discussing the
module and course of study with the youth. Once parents and teachers are familiar with the content, children can work through the module by completing activities from each of the five categories: communication, safety and ethics, expression, scholar and skills. The decision on what activities to include is up to parents and teachers—however, they should be open to include suggestions from the child. Therefore, in the module ‘the scientist’ parents and teachers may decide the categories of, communication, safety and ethics are of the upmost importance. Therefore in these two categories, parents and teachers would include more activities than in other categories. For instance, if a child shows significant ability to research information online, yet lacks skills in how to effectively communicate in virtual environments, then parents and teachers may have the child complete one activity to improve the child’s research skills, and five activities to improve how they communicate online.

Parents, teacher and child decide when a child is ready to proceed with the next module after a child completes a minimum of one activity from each of the five categories of a module, the child has completed the reflection, and parents, teacher and child meet to discuss their thoughts, ideas and reflections of the completed module as well share information and collaborate on the material for the categories of the following module.

The structure of each module is similar: an overview of the module, examples of specific goals, resources and examples for where to find information on specific material, as well as a module reflection and end of module checklist to be completed prior to beginning the following module.

When adolescents have completed either module 4 or 5 to the satisfaction of their parents and/or teacher, they are finished.

Prior knowledge may be different, but the different approaches of parents and teachers will help the child have multiple experiences and exposure to a plethora of online learning opportunities.
The purpose of the following guide is to provide cohesion between what parents and teachers know and should teach children around the areas of Internet education and to provide an overview of some of the key areas that children and adolescent should built their understandings and skills on the Internet and World Wide Web.

The modules and categories are not intended to be a comprehensive presentation of all areas on Internet education, nor is the guide a step-by-step formula on how to become an expert of the Internet. Rather the guide should serve as an overview of some of the more prominent areas around Internet education.

In each module, a list of websites are available to provide parents and teachers with resources and information on Internet use, and how to present the specific learning objective they may be working on with a child. For example, mediasmart.ca is a Canadian website that provides information on a number of Internet related areas such as cyber-bullying, as well as research and policy.

The intention of this guide is to develop, nurture and expand children’s online abilities. By guiding children and adolescents through each of these modules and the five categories, parents and teachers are helping to bridge the gap in what and how children approach and use the Internet and the worldwide web.

**The modules**
The 5 modules

1. the consumer
2. the explorer
3. the scientist
4. the thinker
5. the creator + contributor
Young children are encouraged to use the Internet under the direct supervision of an adult.

**Beginning competencies:**

- Children should be able to press buttons on a digital device and able to move a computer mouse.

**Ending competencies:**

- Awareness of online boundaries such as; asking and waiting for permission to access online material; talking to an adult if they get stuck on something or somewhere online.
- Experience playing a number of age appropriate games.
- Understanding of basic computer functions and terminology such as- mouse, button, browser, apps etc.

**Categories:**

**Communication**

Building communication skills verbally with parents and teachers

**Examples of activities:**

1) Ask a child to draw a picture that illustrates their online experience, then have the child explain their diagram.
2) Discuss the importance of Internet parameters relating to why and where they are allowed to navigate.

**Safety and Ethics**

Parents and teachers construct boundaries---when, where and how a child accesses and navigates online. As well, parents and teachers are encouraged to supervise the child while he/she is online. Parents and teachers can review and install safety features on their Internet-enables devices. Parents and teachers can review certain websites and apps they would like the child to experience prior to letting the child use it.
Parents and teachers are encouraged to navigate and play on the Internet with the child to gain understanding of their interests. As well, parents and teachers can gain insight on areas the child needs assistance.

Websites:
- [www.cybertip.ca](http://www.cybertip.ca)- Canada’s National Tipline for reporting the online sexual exploitation of children. This website offers lots of information on Internet safety for children and provides resources for Internet safety for children of all ages.
- [canadasafetycouncil.org](http://canadasafetycouncil.org)- This website is dedicated to the cause for safety and provides parents and teachers with a great checklist on online safety rules for kids.

Examples of activities:

1) Abstain from using your personal Internet-enabled device and discuss why this is important with a child.
2) Display a YouTube video to a child. Explain and create rules on what buttons they can push and what to do, if they see ‘pop-ups’.

Children are just beginning to access and use the Internet, and therefore they may skip this category.

Young children may be introduced to the Internet and the world wide web by- watching videos, viewing fun and entertaining webpages and playing games of interest and educational value. There are endless educational resources online such as apps, games etc. Filter through some of your choice in areas of interest and that may be a fun educational tool as well.

Resources:
- [pbskids.org](http://pbskids.org)- Children can participate in a number of activities ranging from playing games, drawing and watching videos
- [kids.nationalgeographic.com](http://kids.nationalgeographic.com)- games, videos, pictures, and information on animals, pets, communities and countries
- [funbrain.com](http://funbrain.com)- math, reading, games, books and comics
Examples of activities:

1) Find games on puzzles, the alphabet, counting, sorting, naming objects etc. Discuss what they enjoyed and what other games they would enjoy playing and why.

Reflection:

An example of a reflective activity: Ask the child what games or videos they like online and discuss its features.

Before beginning the next module complete the checklist with a parent or teacher.

Checklist

- I have completed at least one activity in each category (with the exception of expression).
- I have discussed each category in this module with my parents and teacher.
- I have gained the skills required as mentioned under the title “ending competencies”.
- I have completed a reflection activity and discussed it with a parent and/or teacher.
• Young children are encouraged to use the Internet under the direct supervision of an adult.

Beginning competencies:

• Awareness of online boundaries such as; asking and waiting for permission to access online material; talking to an adult if they get stuck on something or somewhere online.
• Playing a number of age appropriate games.
• Understanding basic computer functions and terminology.

Ending competencies:

• Communicating in virtual communities with parents and/or teachers.
• Actively participated in discussions and scenarios around safety related issues.
• Knowing ‘what to do if’ situations while online and have an understanding of who to talk to in order to resolve problems and/or answer questions.
• Creating an avatar, listening to music and watching videos.
• Critiquing a website with peers and adults.
• Expanding their tech terminology and understanding the basics of what they mean.
• Researching and surfing certain websites with the assistance of an adult.

Categories:

Communication

Children may begin to communicate using interactive games, social networking websites, through sending and receiving texts and video chatrooms or Volp (voice over Internet Protocol) such as Skype.

Themes that parents and teachers may want to use are the following: the difference between face-to-face communication and virtual communication, appropriate methods of communicating, and ways to communicate with others if they communicate inappropriately with you.

Resources:

• http://www.commonsensemedia.org/blog/10-simple-steps-to-internet-safety
• Example: Send two texts a text to a child, one with a pleasant message and one critiquing something simple you would like them to improve (ex. making their lunch). Then, have the child explain all the things they liked and disliked about the first and then second message. Discuss how some things such as critiquing may not be appropriate for virtual communication, and may be misinterpreted by others. Have the child send a text to you and discuss it.

As children begin to communicate in virtual environments, in some instances they may be unsupervised. Child should learn about Internet permanency, strangers, who they can trust, boundaries and etiquette.

Resources:
• http://www.getcybersafe.gc.ca/index-eng.aspx
• cybersmart.gov.au Cybersmart Australian Government

Examples of activities:

1) Find examples of how people may have a negative reputation because of what they said online. Discuss the example and discuss ways the situation could have been avoided.
2) Have children navigate and explore websites such as kids helpline. Have children either discuss or illustrate what parts of the website they found useful, what they learned, and ask what areas around Internet safety would they like to learn more about?
3) Create scenarios where and how strangers may try to communicate with them. Find solutions on how, where and who they can trust to help maintain their safety.
4) Have children prepare lunch and while eating start watching a video, texting etc. Discuss why there are certain times when accessing the Internet and using digital Internet-enabled devices are inappropriate. Establish the Internet boundaries in your home and classroom and discuss why they are important.

Children may begin to play virtual games and participate in age appropriate social networking sites. Children may create avatars, profiles on age appropriate website and comment on blogs and news feeds.

Resources:
• http://www.commonsensemedia.org/website-reviews/kidzworld-
Examples of activities:

1) Create a Webkinz account with a child and have them create an avatar. Discuss the importance of being anonymous.
2) Find an app where they can draw, use graphics and/or edit pictures.

There are endless resources for children online. As children become more comfortable accessing and using the Internet, children need to gain skills in how to find appropriate resources online, as well as how to deal with inappropriate content they may stumble upon. In addition, there are many online resources to assist children in developing academic skills, so parents and teachers may want to explore certain education tools available to assist with educational objectives.

Resources:
http://www.openculture.com/free_k-12_educational_resources. 200 free kids education resources, video lessons, Apps, books and websites.
http://www.e-learningforkids.org
http://www.bbc.co.uk/learning/subjects/childrens_learning.shtml

Examples of activities:

1) Have children find a website that helps them develop their skills in an academic area. Ask them to show you how this website helps their learning.
2) View one of the videos from one of the above resources and have children critique it, sharing all the elements they liked, disliked or things they would change or keep the same

Children should continue to build their understanding of online terminology such as- texting, blogs, avatars, URL, web browser, social networking sites, homepage, bookmark, domains etc. Children should continue to build their understanding of different areas of a webpage and various elements of search strategies.

Resources:
http://library.rice.edu/services/dmc/guides/e-resources/internet-searching-strategies/
http://www.noodletools.com/debbie/literacies/information/5locate/adviceengine.html

Examples of activities:

1) Collaborate with children on how to use different types of search engines and critique and evaluate them together by creating a table with the different elements such as quality of information, safety of website, etc.

Reflection:

Before beginning the next module complete the checklist

Checklist

☐ I have completed at least one activity in each category (with the exception of expression).
☐ I have discussed each category in this module with my parents and teacher.
☐ I have gained the skills required as mentioned under the title “ending competencies”.
☐ I have completed a reflection activity and discussed it with a parent and/or teacher.
Module 3: The scientist

Overview- This module is intended for children familiar and comfortable using different modes of online communication. As well, they are developing skills in online proficiency. Children commencing module three may access and use the Internet at school and in the homes of peers. As well, children may communicate with peers and parents using their own personal digital device. Therefore, there is added importance on children learning appropriate communicate skills, boundaries and knowledge relating to the use of online tools and resources.

Approximate age group 9-12

Beginning competencies:

- Communicating in virtual communities with parents and/or teachers.
- Actively participating in discussions and scenarios around safety related issues.
- Knowing 'what to do if' situations while online and have an understanding of who to talk to in order to resolve problems and/or answer questions.
- Creating an avatar, listening to music and watching videos.
- Critiquing a website with peers and adults.
- Expanding their tech terminology and understanding the basics of what they mean.
- Researching and surfing certain websites with the assistance of an adult.

Ending competencies:

- Experienced in dealing with online conflict.
- Numerous experiences in communicating in virtually communities with the support and guidance from a parent and/or teacher.
- Opportunities navigating age appropriate social networking sites with the support and guidance of a parent and/or teacher.
- Safety and ethics of online access and use.
- Watching videos, listening to music and podcasts.
- Viewing a number of age appropriate websites related to personal and scholarly interests.
- Critiquing and evaluating reliability and trustworthiness of online tools with peers and adults.
- Discussing boundaries of online use with parents and/or teacher.
- Creating an avatar, webpage or other form expression online and discussed them with a parent and/or adult.
- Attempting an online course or tutorial.
- Took pictures and videos using a digital Internet-enabled devices and discussed ethical and safety issues relating to pictures and videos with parents and/or teacher.
- Understanding of the Internet and world wide web, as well as a larger understanding tech terminology.

Categories:

Communication
Children may be using their personal digital devices to communicate with family members and peers. Therefore, parents and teachers may want to include a number of activities that help children develop appropriate communication skills such as; when to communicate, how to communicate with opportunities to try various communicative strategies. As well, parents and teachers should include activities that highlight the importance of age appropriate social networking sites, what information is appropriate in blogs, how to voice their opinions respectfully in virtual chat rooms, and how to deal with conflict in virtual spaces.

Resources:
- whyville.net
- http://www.kidzworld.com/kwzone
- edmoto.com
- http://gromsocial.com:

Examples of activities:

1) Ask a child to send and receive texts to a friend and develop five ways to communicate positively. Afterwards, ask both children what they liked and disliked about how their friend communicated to them.

Safety and Ethics

Many children are comfortable in age appropriate social networking sites and may begin to participate in social networks aimed at children older than thirteen. In addition, they may own their own portable digital Internet-enabled device and use it unsupervised. Therefore, it is important that parents and teachers review with children what they are doing online and discuss areas that may concern you, such as privacy, passwords etc. As well, children may become more comfortable using various applications such as video recording and cameras. Therefore, it is important that parents and teachers discuss appropriate boundaries and mannerisms when using and posting content in virtual environments. In addition, children are learning various information online and using some of it to re-hash projects for school. Therefore, it is important that children in this age group learn about plagiarism along with other issues relating to cyber-ethics.

Resources:

Examples of activities:
1) Ask a community member such as a community police officer to discuss and participate in various activities and discussions around relevant safety and ethical online issues. Ask children to reflect on their experience.

2) Go through the Internet history on a child’s web browser and discuss any concerns you may have.

3) Create parameters around where children can access the Internet in their homes, for instance placing a computer in a common area and having children place digital Internet-enabled devices in a disclosed area every night. After which time, they are no longer able to use them until the following day.

Children may enjoy sharing their opinions and expressing themselves online. They may start experimenting with video, graphics and camera features on apps and various websites. As well, they may enjoy participating in blogs, creating avatars, using various online graphics, using various music websites to listen and create their own tunes.

Resources:

- [https://yoursphere.com/welcome](https://yoursphere.com/welcome)
- [www.youtube.com](http://www.youtube.com)

Examples of activities:

1) Ask children to create a short video either with a friend or independently. Watch and critique the video, than decide whether or not to post it online.

2) Ask children to share an artistic website and another that helps them to learn new artistic skills, such as cropping and organizing pictures and learning skills in graphic design.

Children in this age group may frequently use the Internet to find information and do research for school. Learning how to find good, reliable information and learning how to use this information without plagiarizing are things that children need assistance in learning how to do. As well, children may show a keen interest in a specific area of the Internet, so parents and teachers may want to assist children in finding great websites and Internet sources to expand and continue to spark their curiosity in that specific area or may choose to introduce them to a number of other possibilities.

Resources:

Examples of activities:

1) Find great resources to share with a child on how to distinguish between reliable and unreliable information. Then have them research ten websites they can use to gain knowledge about certain facts and information.
2) Find five to ten stories in the news. Read/watch the articles/stories together. If possible, find multiple sources for one story and compare and contrast information in each. Create a graph/table to show your findings. Are the stories the same, what information is different? Should I trust all information that I hear/see in the news? How does this change how you interpret what you see and hear in the news and other stories you may find online.

Skills

Children should continue to build their understanding of terminology, such as; streaming and coding languages. As well, in module three, children may be interested in learning the basics on computer code, further developing their skills in creating webpages, blogs, using and developing graphics, videos and pictures. As well, looking more deeply at what is the Internet and the world wide wide (differences and similarities). How does the Internet influence how we live and interact, cloud computing, anatomy of a web page, how to personalize a homepage etc.

Resources:

- khanacademy.com

Examples of activities:

1) Explore free online courses children might be interested in taking.
2) Watch a free tutorial on a website to learn a new skill.
3) Find a website where children have take a free course online on how to learn to code.

Reflection:
Checklist

- I have completed at least one activity in each category (with the exception of expression).
- I have discussed each category in this module with my parents and teacher.
- I have gained the skills required as mentioned under the title “ending competencies”.
- I have completed a reflection activity and discussed it with a parent and/or teacher.
Overview- This module is intended to strengthen existing skills learned from previous modules. It may also be the last module for adolescents in this guidebook depending on their needs and interests. Therefore, this module is intended to help adolescent development and refine online skills so they are more knowledgeable users, capable of making better online decisions and more confident in how they are able to contribute to online content. Approximate age group 13-18.

Beginning competencies:

• Experience in dealing with online conflict.
• Numerous experiences in communicating in virtually communities with the support and guidance from a parent and/or teacher.
• Familiarity navigating age appropriate social networking sites with the support and guidance of a parent and/or teacher.
• Discussing safety and ethics of online access and use.
• Watching videos, listening to music and podcasts.
• Viewing a number of age appropriate websites related to personal and scholarly interests.
• Critiquing and evaluating reliability and trustworthiness of online tools with peers and adults.
• Discussing boundaries of online use with parents and/or teacher
• Creating an avatar, webpage or other form expression online and discussed them with a parent and/or adult.
• Attempting an online course or tutorial.
• Taking pictures and videos using a digital Internet-enabled devices and discussed ethical and safety issues relating to pictures and videos with parents and/or teacher
• Understanding the Internet and world wide web, as well as a larger understanding of a number of tech terminology.
• Adolescents should have a good understanding of what and how the Internet and world wide web work.

Ending competencies:

• A solid understanding of safety issues and should be aware of appropriate ways to deal with problematic situations they may encounter online.
• Opportunities to learn skills in virtual communication that extents beyond their peers and family members.
• Created websites, games, apps and/or blogs either independently or within a group.
• Took an online tutorial and/or course on coding.
• Referencing the works of others.
• Deciphering between unreliable and reliable sources of information.
• Critiquing, collaborating, and thinking critically about the Internet and world wide web.

Categories:
Adolescents may have their own personal digital device with Internet capabilities and may rely on its functions to connect with peers, be in the “know” with current global events, and for entertainment. In this module, adolescents continue to develop skills in effective communication. Parents and teachers may want to include activities with and without electronic devices so that adolescents learn how ‘live’ without being connected; as well, youth should learn to identify the signs of excessive Internet use and dependency. In addition, adolescents should have opportunities to learn skills in virtual communication that extents beyond their peers and family members.

Resources:
- http://withoutmedia.wordpress.com
- http://www.pewinternet.org/topics/teens-and-youth/

Examples:

1) Ask the adolescent to review the website withoutmedia.wordpress.com. Discuss details they bring up from the article. Ask them to share if they’re felt similar to the participants in the study.

Adolescents may use the Internet for inappropriate entertainment. Parents and teachers should become informed of how youth may be using the Internet inappropriately and should create activities that cover the risks and harm associated with these behaviors. Adolescents should learn about the risks and harm to themselves and to others in such acts as posting and streaming inappropriate videos, cyber-bullying, plagiarism, safety with personal information, law etc. As well, many adolescents may shop online. Parents and teachers may want to include activities where youth purchase items online together, and they talk about what risks are associated with shopping online.

Resources:
- http://idtheft.about.com/od/preventionpractices/a/OnlineShopping.htm

Activities:
1) Go through the apps on the personal device of a child and discuss the safety concerns you may have.
2) Provide examples of adolescent suicides that were associated with those individuals who have been bullied online. Discuss the cases and share ideas on what they and others could have done differently to prevent the tragedy. Where could have they turned for help? What kind of repercussions should there be for the bully, if any?
Expression

Promote activities that encourage safe and effective expression.

Resources:

- http://pickaface.net
- http://bitstrips.com/create/avatar/
- http://www.pixton.com/ca/
- http://mashable.com/2010/10/24/create-your-own-comics
- http://www.codecademy.com
- http://venturebeat.com/2013/10/31/the-7-best-ways-to-learn-how-to-code/
- http://www.codeavengers.com

Examples:

1) Ask adolescents to come up with ideas for websites, blogs and work with them on creating it! Add different features such as web links, graphics and videos.
2) Explore the possibilities of the above websites. Use one of the above websites to create games and apps.

Scholar

Adolescents may use the Internet and world wide web for scholarly efforts, but do they know how to maximize the potential of online resources? Parents and teachers may want to focus on assisting adolescents on finding online resources that serve a purpose for their scholarly needs.

Resources:

http://www.studentpulse.com
http://edtechteacher.org/index.php/teaching-technology/tswt

Examples:

1) Have adolescents check out the MIT Blossoms website and have them create a module with simulations for one of the units. Discuss and critique the creation and chat about how such material may help other kids around the world. How does this influence the content?
Adolescents should continue to build their understanding of tech terminology. In addition, parents and teachers may want to encourage adolescents to further develop their online skills in areas such as coding, communication and design.

Resources:
- http://www.edheads.org/#
- http://www.rubegoldberg.com/rubeworksgame
- https://itunes.apple.com/

Examples of activities:

1) Ask adolescents to choose an activity they completed in one of the previous modules and how they might do things differently if they were to re-create it.
2) Have adolescents search blogs in a specific area of interest and have they critique the blog as well as evaluate if the related links and blog provided in the blog are relevant and reliable.

Reflection:

The checklist

- I have completed at least one activity in each category (with the exception of expression).
- I have discussed each category in this module with my parents and teacher.
- I have gained the skills required as mentioned under the title “ending competencies”.
- I have completed a reflection activity and discussed it with a parent and/or teacher.
Module 5: The creator and contributor

Overview - This module is intended for adolescents who enjoy accessing, using, creating and contributing to the development of the Internet and world wide web. Parents and teachers can assist with this development by continuing to support and guide their online habits as well as providing opportunities where they can safely test and explore online creations.

Approximate age group 13-18.

Beginning competencies:

• Solid understanding of safety issues and awareness of appropriate ways to deal with problematic situations they may encounter online.
• Opportunities to learn skills in virtual communication that extents beyond their peers and family members.
• Creating websites, games, apps and/or blogs either independently or within a group.
• Completing an online tutorial and/or course on coding.
• Referencing the works of others.
• Deciphering between unreliable and reliable sources of information.
• Critiquing, collaborating, and thinking critically about the Internet and World Wide Web.

Ending competencies:

Developed and refined skills in a number of areas related to the five categories.

Categories:

Communication

Adolescents continue to develop skills on how to effectively communicate with others. They may want to connect and converse with likeminded individuals around the globe using various forms of communicative platforms.

Resources:

• facebook.com
• skype.com
• twitter.com
• meebo.com

Examples of activities:
1) Create scenarios where youth can experiment with different VoIP providers. Have them connect virtually with a friend and work out the kinks.

Adolescents may use the Internet for inappropriate entertainment. Parents and teachers should become informed of how youth may be using the Internet inappropriately and should create activities that cover the risks and harm associated with these behaviors. Adolescents should learn about the risks and harm to themselves and to others in such acts as posting and streaming inappropriate videos, cyber-bullying, plagiarism, safety with personal information, law etc. As well, many adolescents may shop online. Parents and teachers may want to include activities where youth purchase items online together, and they talk about what risks are associated with shopping online.

Resources:

- http://idtheft.about.com/od/preventionpractices/a/OnlineShopping.htm

Examples of activities:

1) Create activities and discuss issues around the challenges in areas such as: Internet access, domain name systems, networks and trust, online identity, intellectual property, Internet regulations, Internet governance, privacy and identity, routing and security, spam etc.

Adolescents should have opportunities to develop their ideas and creations from the previous module. Parents, teachers and adolescents can collaborate on different topics and ideas related to these interests and help to support and guide adolescent’s quest to further learn, expand and present these ideas online.

Resources:

- http://www.codecademy.com
- http://venturebeat.com/2013/10/31/the-7-best-ways-to-learn-how-to-code/
- http://www.codeavengers.com

Examples of activities:
1) Create an E-book.
2) Instruct a course on coding to younger children.
3) Create a complex website with all your favorite links.

Adolescents use the Internet and world wide web for scholarly efforts, but what are they doing as far as adding to and promoting all the good that the Internet provides to the world. Parents and teachers can provide opportunities for adolescents to think critically on how the Internet evolves in their everyday life, and how this impacts how they learn and live with others.

Resources:

- http://www.studentpulse.com

Examples:

1) Parents and teachers can ask the youth to record all their online transactions during a 24 hour periods than graph how the Internet influences the way they think and behave.

Adolescents should continue to build their understanding of tech terminology. In addition, parents and teachers may want to encourage adolescents to further develop their online skills in areas such as coding, communication and design. * Focus on positive skill development *

Resources:

- http://www.edheads.org/
- http://www.rubegoldberg.com/rubeworksgame
- https://itunes.apple.com/

Activities:

Provide many opportunities for adolescents to share their online learning, creations and possible ways they are contributing to the Internet and world wide web. Have youth share them with others, including younger children and community members.

Reflection:
Parent and teacher reflection

1) How did this guide help you assist children and adolescents?

2) Did you learn anything about the Internet and World Wide Web that you were unaware of prior to beginning this guidebook?

3) What were the benefits and gaps in these modules and/or categories?

Youth’s reflection

1) How did the modules influence your online habits?

2) What are some suggestions to making this guide for parents and teachers even better?

3) Do you think this guide helped you to build awareness and understanding of the Internet and World Wide Web? Explain your answer?
Chapter 4: Discussion

This project involved the use of a literature review to develop a teacher and parent guide designed to help parents and teachers assist children and adolescents on learning knowledge and building skills in areas of the Internet and World Wide Web. In this final chapter, I explain the connections to research that directed the creation of the guide as well as areas of further study. This is followed by a personal reflection including some of the challenges and realizations that occurred during the creation of this project, and changes I would make in hindsight.

Research Connection

I was motivated to create one guide as a useful tool for parents and teacher to use when children in their care begin to use the Internet and World Wide Web, so that children have a great number of opportunities to explore multiple aspect of the Internet while being supported and guided by parents and teachers. The first step in this process involved a review of literature around the Internet, the Internet habits of children and adolescents and lastly, how the habits of children and adolescents influence and impact all aspects of their lives.

My review of literature also revealed several challenges and recommendations for improving the way parents and teachers guide, support and nurture Internet skills in children and adolescents. One of the main concerns of online education is that there is little consistency in what, when and how children learn online skills. Therefore, the main intention of this guide, is to provide a simple and informative tool that parents and teachers could use to guide, support and nurture Internet skills, as well as to build understanding around when children learn about the Internet and Internet related skills at home, and what they learn in school to help eliminate gaps in online skills in youth.
One of the suggestions I have to expand the coverage of these concerns is the inclusion of instructional methods for teachers in when, how and what they instruct to children in the areas of online education. As well, further inclusion of how instructional strategies from teachers can be combined with instructional suggestions in this guide.

**Directions for further study**

This project only seeks to develop a useful guide for parents and teachers; therefore the next logical step would be to share this guide with parents and teachers and to evaluate its effectiveness. Without studying the effectiveness of this guide, it is unclear how exactly it could be implemented as well as the general timeline for how long it takes for a child and/or adolescent to complete one module, and/or the whole guidebook. It is also unclear whether or not education in the five categories of each module would have any impact on children’s understanding of the Internet, better awareness and/or more developed online skills.

Another area for further study regards the long term affects of Internet use of children and adolescents. Issues such as feeling of isolation and Internet dependence should be explored to improve how parents and teacher approach both topics, and to determine the best approaches to resolving problems in these areas.

**My project experience**

Working on this project allowed me to explore areas and interests in my personal and professional life -while developing a guide for helping parents and teachers help children in areas that I believe are important.

My curiosity of the Internet and my passion for guiding the educational pursuits of children influenced my decision to analyze information on the Internet and how are children and adoles-
cents are developing online habits. However, as the project progressed, I experienced many challenges. First, it was very difficult to find information on how children and adolescents develop online competences. Therefore, I was limited to a few studies on how teachers instruct Internet skills to children. So, I eventually looked more broadly as where children and adolescents navigated online, but even this proved to be challenging, since there were few studies that I could find.

Looking back at my experience, I would further refine my project by focusing on one aspect of Internet education, such as how are parents currently teaching children Internet skills.

Although this project was intended for others at the beginning, I can see how I can use this guide in my professional career as a teacher and my personal life as a mother. Upon completing this project, I hope to further research strategies for assisting parents and teachers on ways they can support, guide and nurture children’s’ Internet skills.
Appendix A: Glossary of Internet Terms

**Bitmap**- A representation, consisting of rows and columns of dots of a graphic image in computer memory. The value of each dot (whether it is filled in or not) is stored in one or more bits of data.

**Blog**- A blog is information that is instantly published to a Web site. Blog scripting allows someone to automatically post information to a Web site. The information first goes to a blogger Web site. Then the information is automatically inserted into a template tailored for your Web site.

**Bookmark**- a way of storing your favorite sites on the Internet. Browsers like Internet Explorer or Apple let you to categorize your bookmarks into folders.

**Browser**- A software program that allows users to access the Internet.

**Non-graphical**- a user interface for computers, which allows you to read plain text, not pictures, sound, or video, on the Internet. It is strictly text based, non-Windows, and does not place high memory demands on your computer.

**Graphical**- a user interface for computers which enables people to see colour, graphics, and hear sound and see video, available on Internet sites. These features are usually designated by underlined text, a change of colour, or other distinguishing feature; sometimes the link is not obvious, for example, a picture with no designated characteristic.

**Chat**- real-time, synchronous, text-based communication via computer.

**Cookie**- Information (in this case URLs, Web addresses) created by a Web server and stored on a user's computer. This information lets Web sites the user visits to keep of a user's browsing patterns and preferences. People can set up their browsers to accept or not accept cookies.
**Domain Name**- A method of identifying computer addresses. Your e-mail address has a domain address. If you have an "edu" at the end of your e-mail address that means your account is affiliated with an educational institution. A "com" extension means you have a business account. A government account has a .gov suffix.

**Firewall**- The name "firewall" derives from the term for a barrier that prevents fires from spreading. A computer "firewall" is a barrier between your computer and the outside world. Just like a fire is most likely to spread through open doors in a building, your computer is most vulnerable at its ports (the doors). Without ports you could not go on the Internet or let Internet traffic enter your computer.

**Home page**- Generally the first page retrieved when accessing a Web site. Usually a "home" page acts as the starting point for a user to access information on the site. The "home" page usually has some type of table of contents for the rest of the site information or other materials. When creating Web pages, the "home" page has the filename "index.html," which is the default name. The "index" page automatically opens up as the "home" page.

**HTML**- A type of text code in Hypertext Markup Language which, when embedded in a document, allows that document to be read and distributed across the Internet.

**HTTP**- The hypertext transfer protocol (http) that enables html documents to be read on the Internet.

**Hypertext**- Text that is non-sequential, produced by writing in HTML (Hypertext Markup Language) language. This HTML coding allows the information (text, graphics, sound, video) to be accessed using HTTP (Hypertext Transfer Protocol).

**Hyperlink**- Text, images, graphics that, when clicked with a mouse (or activated by keystrokes) will connect the user to a new Web site. The link is usually obvious, such as underlined text or a "button" of some type, but not always.
Instant Messaging (IM) - a text-based computer conference over the Internet between two or more people who must be online at the same time. When you send an IM the receiver is instantly notified that she/he has a message.

**IP Address** - (Internet Protocol) The number or name of the computer from which you send and receive information on the Internet.

**JAVA** - a computer language, developed by Sun Microsystems, that lets you encode applications, such as animated objects or computer programs, on the Internet

**JavaScript** - A Web scripting language developed by Netscape. It was developed independently of the full JAVA language and is an "open" language, free for anyone to use and adapt.

**Listserv** - An e-mail list of e-mail addresses of people with common interests. Software enables people who belong to a list to send messages to the group without typing a series of addresses into the message header.

**Modem** - A device that connects your computer to the Internet, when you are not connected via a LAN (local area network, such as at work or on a campus.)

**Multimedia** - The Web's integration of audio, video, graphics and text.

**Portal** - A Web site "gateway" that provides multiple services, which could include Web searching capability, news, free-email, discussion groups, online shopping, references and other services.

**Search Engine** - specialized software, such as AltaVista and Yahoo, that lets WWW browser users search for information on the Web by using keywords and phrases. Different search engines have different ways of categorizing and indexing information. Search engines are accessed by typing in the URL of that engine or using a browser's compilation of search engines in its Internet search function.
**URL**- A universal resource locator (a computer address) that identifies the location and type of resource on the Web. A URL generally starts with "http."

**Virus**- a computer program usually hidden in an existing program. Once the existing program is executed, the virus program is activated and can attach itself to other programs or files. Viruses can range from benign activities such as attaching a harmless message to performing malicious activities such as destroying all the data on a computer hard drive. Viruses are commonly distributed as e-mail attachments that activate when the attachment is opened. Virus protection software, updated regularly with the latest virus definitions, can help protect computers from viruses.

**Wide World Web (WWW)**- A hypermedia information storage system, which links computer-based resources around the world. Computer programs called Browsers enable words or icons called hyperlinks to display, text, video, graphics and sound on a computer screen. The source of the material is at a different location - a different file in the same directory, a file in another computer, which can be located anywhere in the world.

**WORM**- A destructive computer program that replicates itself throughout your computer's hard drive and memory.
References


Guerra, N. G., Williamson, A. A., & Sadek, S. (2012). Youth Perspectives on Bullying in Ado-
lescence. *Prevention Researcher*.


Screen Smart. Heling Families manage media. Screens and Health. Retrieved from Screensmart.ca/screens_health


