

STUDENT WELLNESS THROUGH RESPONSIBLE TECHNOLOGY USE

by

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Abstract

Technology has many advantages, but research shows that excessive and unregulated use by youth can contribute to conditions such as increased anxiety, depression, decreased social skills, and addiction. This paper reviews literature on technology use amongst youth as well as technology addiction and its prevalence and how it can affect their lives. There is opportunity for stakeholders such as parents and educators among others, to support and educate youth to improve their overall personal wellness. Positive results have been observed when these groups are involved with them in regards to their technology use. Recent prevention strategies at home and schools as well as intervention programs within the professional community are discussed. The paper concludes with strategies for parents, teachers, and school counsellors that they can employ to assist youth when interacting with technology. Finally, suggestions for other possible areas of growth within the school district, public health, and community organizations are presented.

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Student Wellness Through Responsible Technology Use

Chapter 1: Introduction

Background

In our rapidly advancing technological world, the dependency of people on devices such as computers, gaming consoles, and smartphones is pervasive. The age at which children start to learn using these devices is progressively beginning at a younger age. A study by Vandewater et al. (2007) found that, "27% of 5 to 6 year olds used a computer for 50 minutes on average on a typical day" (p. 1006). For most children, the introduction of technology use begins at home where its uses are most often modelled by their parents. As children transition into the classroom, school districts further encourage the integration of technology to assist in learning curriculum, presenting of learning, and sharing assessments with students and their families. Indeed, students must be technologically literate, "so that they are more competitive and can participate in our highly knowledge and technology-intensive education system and society" (de Vries, 2006, p. 17) and although there are many advantages and benefits that technology offers, detrimental effects on students' overall wellness may also arise without proper education regarding safe and responsible use. A major contributing factor to the negative implications of technology is the degree to which it is regulated (or not) at home by parents and at school by teachers and school counsellors.

With the absence of defined limits and management, children can develop dependency and addiction to internet usage, gaming, and social media. It was found that females were more likely to develop smartphone addiction, possibly due to its primary use as a tool for interpersonal

relationships, while males are more at risk for internet addiction (Choi et al., 2015). These practices can lead to isolation, decreased social interaction, and missed opportunities. As a result, these individuals are predisposed to develop anxiety, depression, and decreased social skills. For example, in a study by Harman et al. (2005), "...children who pretended to be older on the internet had poorer social skills, lower levels of self-esteem, higher levels of social anxiety, and higher levels of aggression" (p. 1).

My professional background has motivated me to explore the relationship between technology and youth mental health more closely. I have been a computer teacher for the majority of my career, teaching courses such as digital media arts, animation, programming, video game development, computer hardware and software, and networking. Throughout this time, I have had students who dedicate a large part of their time playing video games, surfing the internet, and using their smartphones to play more games or participate on social media. Often during lunch, they interact with each other through online games while physically sitting beside each other. Walking through hallways, students all too often stare at their smartphones and communicate through social media with minimal conversation between themselves. I cannot help but wonder what impact such overuse of technology is having on the overall well-being of these youth. This paper intends to explore this more fully.

Purpose

Children are introduced to technology at progressively younger ages beginning at home. This may be due to lack of regulation because parents are preoccupied with work or because parents who also use technology excessively are modelling this behaviour. It may be seen as harmless as parents partake in the continuous use of social media to document and share

moments to family and friends through online posts instead of enjoying the moment with their children. This as well as surfing the internet and gaming in front of children shows that technology use is acceptable even when there are other people they could be interacting with. Lack of face-to-face social connection between family members can also be observed in public places. A situation I remember vividly was at a restaurant where a family of four sat down for dinner. They were all on their smartphones from the instant they sat down, as they ordered their food, ate their meals, paid the bill, and then left. Not once did they take their eyes off their screens and speak a word to each other.

At school, a similar issue was significant during my second year of teaching computer programming in a class composed of grade ten to twelve students. One of the students was extremely tired and could barely stay awake. He revealed that he and some friends had waited outside EB Games until a game was released at midnight three nights prior and they had been playing continuously. They ate while they played, had not showered or done any schoolwork, and had minimal sleep since purchasing the game. Research findings (which will be discussed in the next chapter) as well as situations such as these lead to questions that I feel warrant further investigation to address what is seemingly a growing concern for our children and students in regards to their use of technology.

There are multiple studies discussed in the following chapter. All of these studies tend to be conducted under the umbrella of Technology or Internet Addiction. These areas include Internet Gaming Disorder, Smartphone Addiction, and Social Media Addiction and their link to insomnia, anxiety, depression, stress, self-esteem, and lack of social skills. Many of these studies investigated subjects in their adolescence, high school, college, and later on in life. Some studies focussed on uncovering how these addictions are related or lead to psychological

disorders while others investigate how psychopathology early in life make it more likely to develop these addictions. For example, a study by Cho et al. (2013) found that, "those at a higher risk for Internet addiction are mainly boys who are withdrawn or anxious/depressed in childhood" (p. 554). Findings such as these suggest that prevention and intervention programs need to be directed toward youth, both at home and in schools. Prevention programs and guidelines should be targeted at children, by parents, teachers, school counsellors, and other stakeholders, to equip youth with responsible use and appropriate time spent on technology starting at an early period in their lives. There are limited studies that focus on the effects of early exposure of technology on infants, toddlers, and young children, but this also warrants further investigation. Indeed, there is potential for much research to be done regarding the use of technology and the mental well-being of youth. Implementation of prevention programs and regulation practices at home and in school as early as possible may be ideal in avoiding the onset of technology addiction and other problems. The focus of this particular paper will be on how the overuse of technology can lead to mental health concerns such as anxiety, depression, and a lack of social skills, as well as effective practices to intervene and eliminate the negative impact of technology on our children. My central question is: How might schools educate students and their network of supports (parents and educators) regarding responsible use and appropriate time spent on technology to help alleviate issues such as increased anxiety, depression, decreased social skills, and addiction? A secondary question is: What supports and programs are in place to help youth who have such problems, including technology addiction?

Significance of Study

Internet, gaming, smartphone, and social media's accessibility and rapid integration in youths' lives can have a significant impact later in life. Without control and regulation, they can develop addictions that are correlated with other psychological disorders, significantly impacting them for the rest of their lives. Based on completed studies and my own personal observations, the misuse and overuse of technology is apparent. This can in turn have adverse effects on students' personal and social skills as well as home and school life. As a parent of an eleven-year-old boy, I see opportunities for parents to model, educate, and regulate appropriate use of technology for their children early in life. Information sessions and support programs with effective resources is crucial for parents, teachers, and school counsellors to support the implementation of these at home and school. Hence, the intended audience for this paper is primarily parents, caregivers, teachers, school counsellors and other educators, but overall, it is for anyone who is concerned about the use of technology and youth mental health.

Definition of Terms

Technology - within the context of this literature review, technology refers to those encountered and used most often by our youth such as the internet, smartphones, and different forms of social media.

Addiction – in regard to technology, is an individual's preoccupation with technology resulting in the continuous desire to repeat the behaviour in order to experience the rewarding effects despite negative consequences to other areas of their lives.

Wellness - pertains more specifically to youth mental wellness. Included under this umbrella of wellness would include such things as how they cope with stress and anxiety and even having healthy social interactions with others.

Youth – are most often considered to be persons under the age of 18 years and are normally under the care of a parent or caregiver.

Remaining Chapters

The remaining chapters in this capstone will include a literature review and a conclusion. The second chapter, the literature review, will include studies and literature that give a more thorough definition of technology addiction, reasons why some children and students become addicted to technology, most common technology addictions that affect students, and what impacts technology addiction can have on them and their home and school lives. In addition, it will include current prevention and intervention programs and practices to address the issues of misuse and overuse of technology. Lastly, the final chapter will provide further discussion of the studies, but the focus will be more on what this actually means in the daily practice of parents and/or educators. A major part of chapter three will include some specific recommendations for parents and schools to address responsible use and appropriate time spent on technology from early childhood through high school.

Chapter 2: Literature Review

Introduction

There is growing research that supports the prevalence of technology addiction and how it affects the lives of those who use it excessively. Further concern has been raised because this has been found to significantly impact the lives of many youth. This literature review will aim to provide a comprehensive review of research regarding the relationship between technology overuse and today's youth. The themes discussed include technology addiction and its prevalence including theories of addiction and its similarities with other types of addiction such as substance and behaviour addictions. An analysis of different types of technology addictions that most commonly affect youth will follow. Finally, there will be a review of current prevention programs at home and school as well as intervention programs currently utilized within the professional community.

Technology Addiction and its Prevalence

Technology Addiction (TA) or Internet Addiction (IA) is also known as Internet Use Disorder (IUD) or Internet Addiction Disorder (IAD). This includes several different sub-categories, but this chapter focuses on the specific ones that affect students during their life stages, childhood and adolescence. The three main areas children and students are most likely to be exposed to and have the potential to develop are Internet Gaming Disorder (IGD), Smartphone Addiction (SA), and Social Media Addiction (SMA) (Addiction.com, n.d.). These are extreme end points of each area and involve specific criteria, but they evolve from improper and excessive use at an early age. The importance is focusing on what can be done to prevent getting to these life-altering conditions.

Technology and the internet without question have many advantages such as staying connected with families and friends in different parts of the world, saving time through online banking, being informed about the latest news, and expanding education through online learning. Like many desirable objects or habits, moderation is acceptable and can be a manageable part of a person's life. The concern arises when there is a continuous preoccupation of technology and internet activities so much that it negatively affects an individual's mental health and other aspects of their lives.

Although internet addiction is not officially listed as a disorder in the Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition (DSM-V), it has been considered for classification. It is likely to be part of the upcoming edition. Multiple findings that follow were obtained through a meta-analysis by Cheng & Li (2014) on the prevalence of internet addiction. The percentage of people identified as having internet addiction has been steadily increasing and can be as widespread as 10.9% in the Middle East region from Iran, Israel, Lebanon, and Turkey. The world region that had the lowest prevalence is Northern and Western Europe at 2.6% from Austria, Estonia, France, Germany, Ireland, Norway, Sweden, and United Kingdom. The United States has approximately 8.0% of its population affected by internet addiction. Overall prevalence based on seven world regions and 31 countries was found to be roughly 6.0%. Many of these countries analyzed in the study including Australia, China, Japan, India, Italy, South Korea, and Taiwan have classified this type of addiction as an official disorder and have taken steps to address the growing problem of their citizens. Hence, one is more likely to find a program and treatment centre within these countries that specialize in addressing this type of addiction. The types of treatment and treatment programs will be discussed in more detail later in this chapter.

Theories of Addiction

Familiarity with the theoretical models of addiction assist in our understanding of its development, progression, and approach to treatment and can help us further our understanding of internet addiction. Some of the more common models are cognitive-behavioural theory, learning theory, and social skills deficit theory. Below is a summary by Sharma & Palanichamy (2018) of each theory's main principles based on several research studies they examined.

Cognitive-behavioural theory (CBT) is based on the idea that our thoughts, feelings and behaviour interact with one another. In other words, our thoughts determine our feelings and behaviour. One aspect of CBT called catastrophic thinking may influence a person's tendency to avoid events or problems occurring in real life that leads to compulsive use of the internet to experience relief. This is not unlike other forms of addiction where individuals experience relief with drugs or alcohol. Faulty thoughts like over generalizing and negative core beliefs also contribute to compulsive internet use (Sharma & Palanichamy, 2018).

Learning theory explains internet addiction from the same viewpoint as other abused substances such as alcohol and drugs. The use of technology brings about positive reinforcement based on operant conditioning that may induce feelings of well-being and euphoria. Those who experience less satisfaction from basic needs such as food, water, and sex, seek out the instantaneous rewards of technology use. Impulsivity is a well-known risk factor in addictions that has also been found to contribute to internet addiction. A sub-trait of impulsivity, sensation-seeking behaviour, is correlated with internet use and thus impulsive individuals have a higher probability of being addicted to it (Sharma & Palanichamy, 2018).

Social skills deficit theory explains that those individuals who have challenges with social competency skills and resulting anxiety in social situations are attracted to the anonymity

of the internet. In this space, they feel more capable interacting and developing relationships with others in a virtual setting instead of a traditional face-to-face one. It also explains how situational factors can lead to technology addiction. Those who are experiencing stress or personal problems or life-changing events may seek solace during times of distress away from the real world (Sharma & Palanichamy, 2018).

Contributing Factors

Studies have identified factors that make technology and internet usage attractive and eventually addictive to some users, including children and adolescents. Some of those recognized are due to, "internet's interactivity, ease of use, availability, and the amount of information accessed online" (Chou, Condron, & Belland, 2005). As with most services and products, when demand rises, its ease of access increases and cost decreases. This has also prompted improvements in technology delivery that has allowed for higher bandwidth or the capability to transmit information, which in turn delivers multimedia resources in larger amounts and enhanced quality. The concept of instant gratification and abundance of information play a large role in attracting youth. Along with the different forms of stimulation they encounter when accessing online content, the above factors make the nature of the internet an influential factor in drawing this captive audience.

Another factor that makes the internet attractive is dependent on the nature of the user (Chou et al., 2005). Our nervous system makes us all susceptible to external stimulus. Internet addiction, similar to substance use addictions, has been linked to the activation of the reward centre or pleasure pathway of the brain. When this occurs, there is an increased release of serotonin and dopamine along with other chemicals. Eventually, tolerance of the chemical

receptors increases so the reward centre needs more stimulation to produce the same effect or high (Cash, D. Rae, H. Steel, & Winkler, 2012). It may be sufficient for a child or adolescent to play the latest game online for thirty minutes the first time, but subsequent episodes in the future will progressively require more time playing the game to gain that same satisfaction. The opposite effect occurs when there is continuous absence of this stimulation as withdrawal symptoms occur such as negative moods and increases in heart rate, blood pressure, and anxiety. In another study, the same regions of the brain that are involved in reward processing observed in behavioural and drug addiction were found to be activated. This links similar psychological and neural mechanisms to internet addiction (Yuan, Qin, Liu, & Tian, 2011). Another perspective comes from Suler (1999) who presents the user's six needs and how the internet fulfills those needs. It is with the understanding of these needs that we may be able to realize why people abuse the internet. Of the six he mentioned, there are three particular ones that relate to our students' possible addiction to gaming, smartphones, and social media. He states that the need for achievement and mastery is what drives youths' desire to game and surf the internet for seemingly endless amounts of time. Those who enjoy mastering technical features are driven by the motivating and rewarding cycle of challenge, experimentation, mastery, and success. Those who are not as motivated by mastering technical features, enjoy learning about cultures and people on the internet that satisfies curiosity and self-esteem. These by itself are not what leads to overuse problems. It is when youth become fixated with the desire to continuously master games or other internet activities, but the need is not completely fulfilled by the internet (Suler, 1999).

The last factor that contributes to our youth overusing technology is the nature of user interactions on the internet. The other two needs that Suler (1999) describes as most applicable

to youth is that the internet satisfies their interpersonal needs, particularly the need to belong and the need for relationships. Users may find the internet as a means to connect with others, gain social recognition, and belong to a group with a common cause. When a number of people connect through the same internet medium and communicate with one another for an extended period of time, they provide online social support for internet addiction (Young, 1999). This was previously more prevalent in the form of a newsgroup or chat room, but today this occurs more through posts and followings on Facebook, Instagram, Twitter, and real-time audio and text communication within online gaming platforms. It provides a creative and imaginative world, but essentially leads to an escape from the reality a youth is currently experiencing in their lives. They also see the internet as a source of satisfying their need for social support from the online community with less effort. Obtaining this from a real social environment may be perceived as or have been experienced as more difficult to attain (Neverkovich et al., 2018). In addition to the ease of access and availability of the internet, our biological susceptibility, and needs the internet have the potential to satisfy, there are other reasons our children and students can become addicted to technology and the internet.

Studies have also found that certain people are predisposed to and carry risk factors that make them more susceptible to technology addiction (as is the case with other forms of addiction). This includes personality characteristics, pre-existing psychopathology such as other addictions, environmental factors and access to technology, and other factors such as gender. These will be discussed in more detail in the next section as they specifically relate to the three main areas that youth are most vulnerable to.

This information is valuable as it identifies crucial areas that can be targeted to support youth as they navigate through different types of technology they are exposed to. Parents,

caregivers, educators, and other influential people around them have the opportunity to educate and regulate these points of exposure for children and students. These are where opportunities for prevention and intervention lie if psychological and behavioural modifications are to be successful in the prevention of different forms of technology addiction.

Youth and Technology Addiction

As mentioned previously, Internet Gaming Disorder, Smartphone Addiction, and Social Media Addiction are potential technology-related maladaptive conditions children and students may develop. These are what they are most commonly exposed to early in life and thus, have the potential to constantly overuse for prolonged periods at home, school, and other environments. Each of these will be reviewed including research findings on exposure, indications, risk factors, symptoms, and its impact on different aspects of their lives.

Prior to using technology in the classroom, many children are exposed to it during their foundational years, even during early childhood before attending school (Bozzola et al., 2018). Bozzola concluded that based on their inquiry of documented effects of media exposure, internet usage during early childhood was found to be critical in building habits and can have immediate effects as well as future developmental outcomes on a child. In addition, their analysis of an American survey revealed that in just two years alone from 2011 to 2013, the percentage of children ages zero to eight years old using a mobile device, of which smartphones and tablets are the most common, has increased from 38% to 72%. This significant climb puts youths' development at risk. Moreover, usage of mobile devices is starting at a very young age with 92.2% before one year old and by two years old, most children use a device everyday (Kabali et al., 2015). Parents and caregivers are key players in modelling technology and internet use

behaviour beginning in infancy. They are the ones who decide when their children are first exposed to electronic devices. The following studies have revealed the effects of early and prolonged use of technology on pre-school children. Specifically, these studies have found that early use of technology interferes in neurocognitive development, learning, well-being, sight and listening, metabolic and cardiological functions (Bozzola et al., 2018). In addition, the valuable personal, face-to-face interactions between parents and their children taken away by devices has a great impact in cognitive, language, and emotional development (Glascoe & Leew, 2010). The deficits mentioned compound as children get older and lead to decreased social skills, anxiety, depression, and addiction, if there is an absence of regulation and continuous and/or excessive exposure.

Internet Gaming Disorder

Internet Gaming Disorder (IGD) is currently included in the DSM, but is classified as a condition requiring further study. The American Psychiatric Association (APA) is encouraging more research on the disorder for it to be included in future editions of the DSM. As well as children's early exposure to games at home, young students are also being introduced to educational related games at school. This is called gamification and in conjunction with classroom instruction or online learning, it has been found to further engage and enhance student learning of concepts and skills. The elements of game design such as learning objectives, related content and skills, game mechanics, visual aesthetics, narrative, incentives, and musical score must be implemented effectively (Plass, Homer, & Kinzer, 2015). Subject areas that have incorporated gamification include language arts, math, science, and coding. Along with positive

applications of gaming in learning, there may be negative outcomes for children that stem from practices at an early age.

We may have witnessed children in public as young as five or six years old playing video games on a tablet. A study by Kabali et al. (2015) found that more than half of households (56%) had video consoles and nearly half (43.5%) of children less than one year old used a mobile device to access media on a daily basis to play video games, watch a video, or use apps. Those of us who are parents may even be guilty of letting our child at an early age do the same on a mobile device, computer, or gaming console whether it was because we were busy or for another reason. Parents have indicated they, "gave children devices when doing house chores (70%), to keep them calm (65%), and at bedtime (29%)" (Kabali et al., 2015, p. 1044). There is an upward trend in the frequency and total time spent by children on video games which takes away time from other leisure-time activities such as being active, social with their family and peers, and other hobbies. One-year olds were found to spend ten minutes of daily media screen time playing video games on consoles and that number increases to twenty-three minutes by the time they are four years old. From adolescence to adulthood, as much as 67.9% of the general population between the ages of ten to sixty five, particularly males, play online games on a regular basis whether on a computer or a smartphone. This leads to even more usage with up to five hours each weekday and up to seven hours each day on weekends spent on gaming (Paik, Cho, Chun, Jeong, & Kim, 2017). Time spent can increase further as the addiction becomes more severe and these prolonged practices can have detrimental effects to one's social, emotional, and psychological well-being. A cross-sectional and epidemiological study by Mihara & Higuchi (2017), reported that other studies have found that, "longer time spent playing

games, higher frequency of playing games, and more years playing games were all associated with internet gaming disorder" (p. 432).

In addition to early exposure to different forms of gaming media, there are also factors and risks that we must be aware of that predispose youth to excessive gaming. Video games are particularly attractive to them and they are especially vulnerable during their formative years since they have not fully developed coping strategies in order to limit their usage. Students who have lower social competence and greater impulsivity are also more susceptible to developing internet gaming disorder (Gentile et al., 2011). Gender differences and other preexisting psychological disorders were also found to contribute to eventual internet gaming disorder. Males were more associated with addictive video gaming as it involves a more solitary activity that has an aggressive and competitive nature (Andreassen et al., 2016). They also found that obsessive-compulsive disorder and depression were also positively related to a proneness to addictive video gaming. Familial and parenting factors as well as other psychological tendencies also contribute to the amount of time a child spends time playing video games. Mihara & Higuchi (2017) identified that those who are part of single-parent families often have lower emotional support from parents, and consequently often have poorer communication between themselves and their parents regarding internet use and are therefore more susceptible to internet gaming disorder. In addition, they pointed out that factors such as loneliness, low life satisfaction, self-efficacy, and self-esteem were also found to contribute to excessive gaming time.

Resulting symptoms and impacts of excessive gaming to children and students' lives are well documented and are actively being studied by researchers. Common symptoms observed include sleeping problems, missed classes, diminished energy, poor concentration, and fatigue.

Short and long-term impacts consist of impulse control problems, decrease in social contacts, and neglect of self-care, health problems, higher levels of depression, anxiety, social phobia, and lower school grades (Gentile et al., 2011). The accessibility of games across multiple devices has exacerbated the prognosis of those who are at risk. Paik et al. (2017) found that adolescents as young as fourteen years old who accessed games both on their computers and smartphones for equal amount of time had a higher prevalence of internet gaming disorder, depression, anxiety, and substance use disorder. This is in comparison to those that only used one form of media or used one form of media more than the other. The result of excessive gaming was also observed by Brunborg et al. (2014), who found that, "video game addiction is associated with depression, decreased academic achievement, and with conduct problems" (p. 27). The accessibility of smartphones certainly proliferates the access of games from a computer and gaming console, but they can also act as a tool to access other countless applications that may lead to smartphone addiction.

Smartphone Addiction

It is hard to believe that smartphones as we know them today in terms of capabilities and availability to the masses, were only released just over ten years ago. The iPhone entered the market in 2007 and Android-based devices a year later. We depend on them every day of our lives from surfing the internet, to communicating through text messaging, to accessing our favourite apps, to listening to music or watching videos, and playing video games, among many other purposes. It is a valuable device that we rely on heavily for personal and business use to a point of dependency and cannot imagine being without it. A cross-sectional study by Kabali et al. (2015) found that the prevalence of tablets in households could be as much as 83% and

smartphones not too far behind at 77%. They say that most children started using a mobile device before the age of one and almost all children aged six months to four years old at 96.6% currently use mobile devices. Further findings of their study indicated that by age four, 75% of children had their own mobile device. The earlier a child is introduced to smartphone use, the chances of them developing smartphone addiction and related conditions such as anxiety and depression increases.

Eighty percent of three to five year olds are able to use their parent's smartphone without any assistance (Bozzola et al., 2018). Exposure to smartphones for children has been progressively getting younger and caregivers have admitted that they are mostly used to keep their children occupied whether it be in a doctor's waiting room or on a road trip. Parents have said they, "use media as pacifiers, giving mobile devices to their child to keep them calm during the first (30%) and the second (70%) year of their life" (Bozzola et al., 2018). Moreover, parents use smartphones excessively in front of their children and they are modelling that behaviour from as early as their child's infancy while breastfeeding. Very frequent practices such as these can lead to the normalization of smartphone use regularly throughout the day.

In addition to being aware of harmful practices early in a child's life, it is also important to be aware of other risk factors for smartphone addiction. In a study by Choi et al. (2015), female gender, internet use, alcohol use, and anxiety were found to contribute to developing smartphone dependency. There are also additional risk factors similar to those observed in other types of addiction one must be aware of. They include preoccupation or the tendency to be absorbed in something, conflict or the need to encounter "drama", and use for ubiquitous trait or wanting to be everywhere and involved in everything (Lee, Kim, & Choi, 2017). This study also found that females were more at risk for smartphone addiction, being 2.7 times more likely than

males. Using the Revised UCLA Loneliness Scale and Cheek and Buss' Shyness Scale, Bian & Leung (2015), found that those who scored higher in these measures for loneliness and shyness were more likely to be addicted to their smartphone. Today's youths' preoccupation with their smartphones may lead to negative consequences later in their lives.

Those who have a dependency on their smartphone often display symptoms such as eye and neck strain, sleep disturbances, being late for classes, and lowered academic performance. According to the Korea Internet & Security Agency, additional effects that users report include, "45.8% feeling anxious when they are not holding their smartphone, 27.1% spending too much time using their smartphone, and 22.6% having repeatedly attempted to reduce their smartphone use but have always failed" (Choi et al., 2015, p.308). Other impacts of smartphone addiction on youth include, "disregard of harmful consequences, preoccupation, inability to control craving, productivity loss, and feeling anxious and lost" (Bian & Leung, 2015, p. 61). A specific area that students access endlessly using their smartphones wherever they go is social media. Children's early exposure to smartphones, their high availability as well as its ease of use and access to social media content play a significant role in propagating another growing concern, social media addictions.

Social Media Addiction

Another concern for youth is social media addiction. Social media is easily accessible with a computer, tablet, or smartphone anytime and anywhere internet connectivity is available. Among other things, social media allows us to stay connected with family and friends in remote locations by sharing moments that they would not otherwise experience. It can also be used effectively in education by creating a means to collaborate with others within their learning

community. Social media also provides information and updates regarding events around the world, provided a reliable source is being accessed. These are just a few of the positive aspects that social media brings to our lives; however, improper and excessive use can bring about social media addiction that can lead to cyberbullying, a platform for false information, and others that may disrupt a person's life (Addiction.com, 2014).

One may have witnessed an adolescent so immersed in the social media frenzy taking countless selfies, photos of every meal, and posting multiple updates of their lives throughout the day. They may even attempt taking multiple shots of the perfect sunset or a dramatic pose on the foreground with their tropical destination in the background. To complete the process, they must immediately upload these to Facebook, Instagram, or Twitter accompanied by a comment and a handful of hash tags. While all this is happening, they have disengaged with their significant others, family members, and friends who were close by and missed being with them further to share those moments.

Based on data from Lenhart (2012), 73% of adolescents use social networking sites, although those figures are most likely higher now. Although the minimum age limit of signing up for a Facebook account is thirteen years old, it is estimated that 7.5 million underage children have their own accounts. Adolescents and young adults spend an enormous amount of time on electronic media with an average of about eleven hours per day and of those, thirty minutes alone are on Facebook (Pempek et al., 2009). Many youth begin and end their day checking their social media accounts. Constantly checking their social networking site accounts disrupts their solitary activities as well as face-to-face interactions. The resulting effects of prolonged use on their lives has been a large focus of research in recent years including researchers Pantic (2014) and Wu, Cheung, Ku, & Hung (2013).

Just as gaming addiction has been found to be more prevalent in males, similar research has found that social media addiction is more common in females (Mihara & Higuchi, 2017). Girls are more associated with addictive social media as it involves social interaction and cooperation versus isolation in video games for males. Furthermore, attention-deficit hyperactivity disorder, obsessive-compulsive disorder, and anxiety were also positively related to being prone to addictive social networking (Andreassen et al., 2016). According to findings from Wu et al. (2013), other risk factors include low internet self-efficacy, favourable outcome expectancies, and high impulsivity trait. Other aspects that contribute to the development of social media addiction include depression, high stress levels, limited social life, failure to fit in a peer group, and struggles with other types of substance or behavioural addiction (Promises, 2015).

In a CNN article by Cohen (2009) specific to the popular social networking site Facebook, but applicable to any other form of social networking, negative symptoms include losing sleep, spending more than an hour a day being obsessed with old loves, ignoring work, and the thought of getting off, leaves one in a cold sweat. As preoccupation on social media increases, its impacts on life include a time sink where one neglects their personal and work lives, financial costs due to decreased productivity, emotional cost such as envy and bullying, and paying in privacy as they keep track of many aspects of users' lives (Addiction.com, 2014).

Parental and School Supervision of Technology Use (Prevention)

Those who play a significant role in influencing technology and internet behaviour of children and students include parents, caregivers, and educators. They are also part of their network of support who are in a position to aid in the prevention of internet gaming disorder,

smartphone addiction, and social media addiction. Prevention programs exist and can be improved or developed to educate them on how to approach the introduction and management of technology into a child's environment. Ideally, once children enter preschool and elementary school, the hope would be they have some foundation and understanding of appropriate technology use.

Parental Programs for Home

Similar to other areas youth can be vulnerable such as alcohol and drugs, technology and internet use is no different. In a review by Mihara & Higuchi (2017), they identified that high quality communication between parents and their children regarding responsible technology and internet use is an important protective factor. Parents must also be vigilant in setting time usage expectations with their children. Based on a report by the Entertainment Software Association in 2010, "25% of parents do not impose time limits on their children's Internet use in general and 17% of parents do not impose time limits on video and computer game playing" (Kuss & Griffiths, 2012, p. 3). Moreover, other protective factors highlighted from another study found, "that higher-level social competence and self-esteem at baseline played a preventive role" (Mihara & Higuchi, 2017, p. 439).

Other means of regulating technology such as the placement of electronic devices within the home is another way for parents to be proactive since its location plays a large role in how it may put children at a disadvantage. Fu et al. (2017) found that children whose electronic devices were placed in their bedrooms were associated with lower overall school readiness. Those who had their gaming consoles in their bedroom were associated with lower social competence. Following the analysis of results from related studies that identified risk factors to technology

addiction, Kuss & Griffiths (2012) highlight the need for effective classification and how that will assist in creating and implementing prevention measures. Once these and further understanding of this addiction are reached, efforts towards risk factors and strengthening of protective factors can begin. They suggest, "prevention efforts may include both psycho-education as well as provision of information and tools that focus on developing healthy ways of coping with daily stressors" (Kuss & Griffiths, 2012, p. 17). Furthermore, the negative consequences and impacts of technology addiction on youth could be minimized if prevention efforts are implemented as early as possible.

In accordance with the American Academy of Pediatrics and Australian guidelines, recommendations of the Italian pediatric society regarding media exposure to children are as follows:

- a) we recommend no media devices use:
 - in children under 2 years of age
 - during meals
 - at least for 1 h before bedtime
 - in case of fast-paced programs, apps with distracting or violent content
 - as a limit pacifier, to keep children quiet in public places.

- b) we suggest to limit media exposure:
 - to less than 1 h per day in children aged 2–5 years
 - to less than 2 h per day in children aged 5–8 years
 - to high-quality programming
 - just in presence of an adult
 - to apps tested by a caregiver before the child usage (Bozzola et al., 2018, pp. 4-5)

Other suggestions from Bozzola et al. (2018) include parents being present when media is used so that they can be part of learning and interactions with their children. In doing so, parents are able to teach them how to use technology safely as well as being able to monitor content and apps. Furthermore, parents must be good role models for their children and must limit their own use of technology. Interacting, hugging, and playing are better alternatives to media in terms of

connecting with children. It is also important not to use media as emotional pacifiers because it will inhibit their children's emotional regulation development.

Educator Programs for Schools

As children transition from their homes to the classroom, teachers and other educators should be aware of the risk and preventative factors as well as signs of technology and internet addiction. At the school or school district level, it would be valuable to begin or continue to educate students and parents on responsible use and appropriate time spent on technology. In their review of current literature, Mihara & Higuchi (2017) assembled protective factors that researchers have found to play a positive role in preventing technology addiction. Those that are relevant in the school setting include social integration in the classroom, school-related well-being, perceived behavioural control, academic achievement, and teacher autonomy support mediated by basic psychological needs satisfaction and school engagement. In addition to targeting growth and strengthening protective factors in students, countries such as France use early education on technology use for families to help prevent technology addiction.

France's latest educational reform bans smartphone use in the classroom for students ages three to fifteen years old. According to their Education Minister, the goal is to minimize screen exposure by eliminating access to smartphones throughout the school day (Smith, 2018). Current practices such as these provide children and students structure that allows healthy interactions with technology. This same practice may not be too distant in Canada following a recent meeting between Prime Minister Trudeau and Tristan Harris at the Global Press Summit in Montreal in September 2017. Harris was a former Google product manager who now leads an initiative to raise awareness about the dangers of attention-destroying technology he helped

create such as smartphones and apps for gaming and social media. Through a non-profit organization called Time Well Spent, his message encourages the tech world to design products more ethically by making technology that helps its users spend their time well. Although details of the meeting between Trudeau and Harris were not released, it may be related to the direction France has already taken (Andrew-Gee, 2018).

There are some school-based programs designed to prevent internet-based and gaming disorders. Beginning in early education with elementary students, Mun and Lee (2015) investigated the effects of an eight-session program focused on providing internet addiction education, empowerment, and behavioural modification. Results of the program revealed reduced internet addiction scores and internet use as well as improved self-regulation scores. In a study done in a middle school by Joo and Park (2010), sessions on topics such as stress control, social relationships, time management, and self-control were included in the curriculum. The students showed an increased improvement in internet addiction scores, stress levels, and felt more empowered. An evaluation of another program called P.A.T.H.S (Positive Adolescent Training through Holistic Social Programmes) is a broad-based positive youth development program that takes a holistic approach (Shek & Sun, 2008). Topics covered include drug abuse, sex and love issues, bullying, problematic internet use, and concepts of money, all delivered to high school students. It resulted in positive benefits in youth development and a positive difference in self-restraint using the computer.

Treatment Options for Technology Addiction (Intervention)

Although it would be ideal to focus all efforts on preventative measures with hopes that no addictions existed, this is unrealistic, and there will always be individuals that need

intervention strategies and programs to support their technology addictions. This section begins with a discussion of screening tests, then moves into approaches for intervention, treatment centres, treatment programs, and other intervention strategies.

Screening Tests

Screening tests including Internet Addiction Test (IAT) and Internet-Related Problem Scale (IRPS) gauges a person's level of addiction to the internet. Both are recognized as having high face validity. The IAT is used to test internet addiction and was developed by Dr. Kimberly S. Young in 1998. Her screening device was based on DSM-IV criteria for pathological gambling. The questionnaire consists of twenty items and respondents rate the items on a five-point scale. Some of the questions include, "Do others in your life complain to you about the amount of time you spend online? and Do you fear that life without the Internet would be boring, empty, and joyless" (Widyanto, Griffiths, & Brunsten, 2011, p.144)? They focus on how the internet affects their daily routine, social life, productivity, sleeping pattern, and feelings. A score between 20 to 39 means one is a typical online user who has no problems, 40 to 69 signifies frequent online problems and 70 to 100 has significant problems for the user as a result of internet usage. The other test, the IRPS is used to screen for possible internet addiction. It is a twenty-item questionnaire and uses a ten-point scale, but unlike the IAT, the IRPS is based on adapted DSM-IV criteria for substance abuse (Widyanto et al., 2011).

Cognitive Behavioural Therapy – Internet Addiction

There has been agreement among many researchers that internet addiction is comparable to impulse-control disorders such as intermittent explosive disorder, pathological gambling, and

trichotillomania (Young, 2011). They have also pointed out the effectiveness of cognitive-behaviour therapy (CBT) to substance abuse, emotional disorders and eating disorders. Due to the compulsivity of internet addiction and its similarity to other disorders previously mentioned, it seems fitting to use CBT for treating internet addiction.

One of the current and most effective treatments for technology addictions is cognitive-behavior therapy-internet addiction (CBT-IA) which involves the use of CBT with harm reduction therapy (HRT). This approach is used at the Center for Internet Addiction in Bradford, Pennsylvania which is a well-known digital detox facility in the USA. Patients at this center learn to recognize and alter their negative thoughts and identify those that trigger addictive feelings and resulting behaviours. Coping strategies are learned as well as ways to prevent relapse. Internet addiction differs from other disorders treated with CBT in that technology and internet addictions warrant daily and necessary use. Hence a specific version, CBT-IA, was developed which can be employed as an outpatient and inpatient model. The model consists of three phases including Phase 1: Behaviour Modification, Phase 2: Cognitive Restructuring, and Phase 3: Harm Reduction Therapy (Young, 2011). Each phase has specific goals.

In the first phase, the goal is to gradually decrease the amount of time the patient spends online. To achieve this, a daily internet log is used to determine current internet behaviour and use that as a baseline for treatment. This includes recording activities, situations, and emotions during each session to determine if any of them are triggers that lead to excessive use and to aid in setting future goals. In addition to this, strategies such as computer restructuring and the use of filtering software are employed in Phase 1.

The main goal in the second phase is cognitive restructuring that focuses on patients' maladaptive cognitions, which activate binge behaviour on the internet. Often, the internet is

used as a psychological escape from the real world where people find it easier to succeed compared to real life. Unfortunately, actual opportunities and interactions with other people are missed which could lead to further development of skills such as communication and improving their self-esteem. The patient's false assumptions are then challenged to convey there are opportunities outside the online world where they can experience success in their lives, then provide tools for them to take these on. Phase 2 also focusses on helping clients determine the negative consequences brought about by internet addiction and refocusing clients' goals when denial occurs during the therapy.

The third phase of CBT-IA uses HRT to continue the recovery and prevent relapse. As with other types of addiction such as substance abuse and dependence, internet addiction is often associated with other coexisting factors such as, "depression, anxiety, stress, relationship troubles, marital problems, and/or career difficulties" (Young, 2011, p. 309). In tandem with the treatment of internet addiction, any coexisting factors are addressed by choosing goals and strategies that work best for them. When indicated, appropriate medications are used to treat any primary psychiatric concerns. Studies have found that clients who were treated using CBT, "showed improved motivation to stop abusing the internet, lower IAD scores, and lower scores of depression, anxiety, compulsiveness, self-blame, illusion, and retreat (Cash et al., 2012, p. 295).

Young (1999) also suggests eight techniques practitioners can employ with their clients to treat internet addiction. Some of these may also be useful for school counsellors to use as strategies for students with minor problematic technology and internet use. These techniques include, "(a) practice the opposite time in Internet use, (b) use external stoppers, (c) set goals, (d) abstain from a particular application, (e) use reminder cards, (f) develop a personal inventory, (g)

enter a support group, and (h) family therapy" (Young, 1999, p. 28). Practicing the opposite involves learning about the client's internet use then constructing a new schedule with the client. Using external stoppers may utilize an alarm clock as an audible cue and actual life events as a prompt to discontinue technology use. Setting goals comprises of creating reasonable usage time goals with the client to give them ownership and making them visible by using a calendar. Abstaining from a particular application involves discontinuing all activity with the problematic application whether it be gaming, social networking site, or a forum. However, they can still use other applications in moderation that do not pose addictive tendencies. Using reminder cards helps the client stay focused on their goals by having them write five problems caused by their internet addiction and five benefits for cutting down on internet use. These are transferred onto an index card that the client reads when the temptation to use technology arises and at regular times throughout the week. Taking a personal inventory involves helping the client make a list of what other desirable, healthy activities had been neglected prior to their preoccupation with technology, reflect on their importance, and how they improved their quality of life. Entering a support group allows the client to interact with people in a similar situation for real life social support or even a group that can reconnect them to a physical, artistic, or any other productive activity they used to partake in. Finally, participating in family therapy are for those whose relationships have been negatively impacted as family support may be the difference for client recovery.

reSTART Program

Like CBT-IA, the reSTART program is also used in a popular digital detox facility. This program was founded by Dr. Cossette Rae and Hilarie Cash and is located in Fall City,

Washington. The program uses multiple therapeutic intervention strategies utilized to create individualized plans. Cash et al. (2012) describe the different elements available within this extensive program as:

an inpatient Internet addiction recovery program which integrates technology detoxification (no technology for 45 to 90 days), drug and alcohol treatment, 12 step work, cognitive behavioral therapy (CBT), experiential adventure based therapy, Acceptance and Commitment therapy (ACT), brain enhancing interventions, animal assisted therapy, motivational interviewing (MI), mindfulness based relapse prevention (MBRP), Mindfulness based stress reduction (MBSR), interpersonal group psychotherapy, individual psychotherapy, individualized treatments for co-occurring disorders, psycho-educational groups (life visioning, addiction education, communication and assertiveness training, social skills, life skills, Life balance plan), aftercare treatments (monitoring of technology use, ongoing psychotherapy and group work), and continuing care (outpatient treatment) in an individualized, holistic approach. (p. 295)

Primary results regarding the effectiveness of the program found, "Seventy-four percent of participants showed significant clinical improvement, 21% of participants showed no reliable change, and 5% deteriorated" (Cash et al., 2012, p. 296).

International Treatment Centres and Programs

As mentioned previously, several countries outside North America have recognized technology addiction as an official disorder and a public health crisis (Sharma & Palanichamy, 2018). Some of these include Korea and China that have public services available to address early and selective prevention as well as mental health services for those in need of support. Information regarding practices and infrastructure to assist those who are addicted to technology and the internet may prove valuable if it is eventually recognized as a disorder. Sharma & Palanichamy (2018) mentioned that since 2007, the Korean government has established 190 internet addiction counselling centres and hospitals with 1,043 trained counsellors. Korea also opened their first specialist clinic in 2011 that offers, "a five-week treatment module comprised

of group sessions, art therapy, medicines, neuro-feedback and transcranial magnetic stimulation" (Sharma & Palanichamy, 2018, p. 544). Furthermore, they highlight China's 300 treatment centres as well as the inclusion of both behavioural training and pharmacotherapy for the client at the General Hospital of Beijing's Military Region's Addiction Medicine Centre. These include, "dancing and sports, reading, karaoke and elements from the 12 step programmes of the Alcoholic Anonymous, along with family therapy" (Sharma & Palanichamy, 2018).

Treatment Efficacy

As mentioned in the previous section, treatment centres and programmes might not be readily accessible to all youth, so many may need to seek treatment elsewhere from trained professionals using specific methods. Liu, Nie, & Wang (2017) performed a systematic review and meta-analysis of 58 randomized trials on the effects of group counselling programs, CBT, and sports intervention on internet addiction. They found positive outcomes for the reduction of internet addiction of individuals who pursued different treatment modalities. Group counselling programs were effective in four dimensions of internet addiction such as time management, interpersonal and health issues, tolerance, and compulsive internet use. CBT led to improvements in depression, anxiousness, aggressiveness, somatization, social insecurity, phobic anxiety, paranoid ideation, and psychoticism. Sports intervention brought about positive change in all aspects of internet addiction mentioned, and specifically in managing withdrawal symptoms.

Summary

Despite all the information available to us, the reality exists that we are still far from recognizing the full extent of internet, gaming, smartphone, and social media addiction and there is still significantly more research to be done to address it. For those suffering with addiction right now, additional treatments include seeking treatment from other addiction specialists and engaging in multimodal treatments.

Although there may not be a treatment centre specific to internet addiction in close proximity to those who need it, addiction specialists and centres can tailor their treatment methods to technology overuse. Some approaches used in other types of addiction have proven effective with treating internet addiction such as CBT and the 12-step philosophy. In addition, "treatment options for technology addicts can include inpatient, outpatient and aftercare (post-rehab) support and self-help support groups, as well as individual, group and family counseling and workshops for addicts and their families" (Addiction.com, n.d.).

To further increase the success of treatment, different strategies from a variety of disciplines may need to be employed to increase the rates of success. The multimodal treatments utilized in treatment centres and programs discussed above can also be delivered in other settings that are more accessible. In a treatment study of a multimodal school-based group CBT that included parent training, teacher education, and group CBT was effective in decreasing internet addiction in twenty-four adolescents. Areas of improvement include emotional state and regulation ability as well as behavioural and self-management style (Du, Jiang, & Vance, 2010). In another multimodal approach that consisted of fifty-two adolescents with internet addiction disorder, their IAD and SCL-90 (Symptom Checklist-90) scores as well the amount spent online decreased significantly, following three months of treatment. This consisted of solution-focused

brief therapy (SBFT), family therapy, and cognitive therapy (CT) (Fang-ru Y. & Wei H., 2005). Finally, a treatment study utilizing behaviour therapy (BT) or CT, detoxification treatment, psychosocial rehabilitation, personality modeling and parent training were successful in considerably lowering IAD related symptom scores of twenty-three middle school students (Rong Y, Zhi S, & Yong Z, 2005).

Chapter 3: Summary, Recommendations and Conclusions

The overall objective of this chapter is to leave the reader with an overview of the issues facing youth in regards to technology use as well as some recommendations for those working with youth, particularly educators, and to a lesser degree, parents. Given that some youth are actually addicted to technology, suggestions for counsellors working with youth addiction have also been included. This final chapter has been divided into 3 separate, but related areas. The first provides a summary of the findings from the previous chapter. The second discusses the implications for stakeholders including students, parents, teachers, school counsellors, administration and possibly public health agencies and other community organizations. The third section will outline recommendations based on current research, teaching practices, and available resources.

Summary

The previous two chapters have provided a detailed analysis of an emergent and problematic issue that is facing youth starting from early childhood to adolescence. Growing up with technology everywhere leaves them extremely vulnerable to becoming dependent on the gadgets and devices they are exposed to the most. The most prominent issues that may affect youth include Internet Gaming Disorder, Smartphone Addiction, and Social Media Addiction. According to McRae (2018), "the digital activities students are talking about most are #1 playing video games, #2 watching videos online, and #3 using social media." (p. 3). As mentioned throughout the literature review in Chapter 2, research shows that children are exposed to technology at progressively younger ages and the amount of exposure increases as they get older. Parents have admittedly used technology devices to replace traditional parenting strategies as

pacifiers to keep their children calm, as rewards for improved behaviour, and as an activity prior to bed. It has also been found that parents themselves use technology for long periods of time in the presence of other family members and consequently, model this behaviour to their children, "76% of parents recognize that their technology habits influence those of their children" (McRae, 2018, p. 2). Regardless of the reason why caregivers choose to and when to integrate technology in their child's life, I believe that proper education of its benefits and harmful effects as well as recommended ages, frequency, and length of exposure will produce more favourable outcomes for youth. Indeed, there are challenges faced by youth and all stakeholders involved, but there are strategies and potential opportunities discussed in the following section to help alleviate some of these.

The literature review revealed that continuous and excessive exposure to the internet, smartphones, and social media leads to a disruption in different aspects of one's life. It can interfere with personal, social, school, and work to name but a few. This can lead to more severe outcomes such as increased anxiety, depression, decreased social skills, and addiction. However, research has also found that regulation of usage by parents and effective communication with their children regarding responsible use are protective factors in preventing overuse. There are also effective prevention and intervention strategies that have been implemented within some schools and communities. These include educational programs partnered with other interests such as leading a healthy life through exercise or other physical activities. Those who need intervention can undergo CBT-IA with HRT as well as attend detox facilities and centres equipped with a variety of treatment programs.

It seems as though we are playing catchup in addressing the overuse of technology amongst youth, adults, and the rest of the population within our communities. As mentioned,

there are several prevention and intervention strategies that have proven to be effective, but more has to be done to impede our youth's likelihood of developing a dependency on the internet, smartphones, and social media. Further to what is currently available, what is also needed is for parents, teachers, school counsellors, and other educators to be on the same page in terms of providing a blanket of support. It would also be plausible to coordinate with public health and community organizations to provide additional education and services that will equip youth to lead a more balanced lifestyle.

Implications for Stakeholders (students, parents, teachers, school counsellors, administration)

In order to best serve youth in learning about responsible technology use, there must be communication, coordination, and cooperation between all stakeholders. They all have a major influence and impact on the mental health and wellness of these youth. Those who have the most impact starting at a very early age are parents or caregivers. Studies show that those who provide continuous emotional support and have open lines of communication regarding limits with their children are less likely to have a child with a dependency on different forms of technology. Current and upcoming parents seen as role models for their children can also be immersed in technology themselves. It is not that parents are unaware of the issue as, "62% of parents feel negatively distracted by technology and 60% indicate that their child's use of technology has a negative impact on physical activity" (McRae, 2018, p. 3), but expanding education on the benefits and downfalls of technology could also be increased. One suggestion would be that parents could be educated through public health agencies as early as possible even

at the hospital or during visits at their homes. The earlier an education practice is put in place for parents, the better chances of less addictive behaviour amongst youth.

Once a child enters elementary school, there are programs within each school district that addresses the proper use of electronic devices and social media in order to become a responsible digital citizen. These are usually delivered within the classroom setting by teachers or other district employees. Programs include information on recommended time spent and management of technology in their daily lives as well as balancing them with other activities and interactions in their lives. The importance of this can be taken to another level with further support from administration and the school district. Some school districts hold information sessions for students, parents, and the community to educate them regarding technology use (discussed in the next section). These sessions are essential in assisting caregivers to develop skills to prevent dependency on technology that may consequently lead to anxiety, depression, decreased social skills, and addiction, among other things. All parties can interact and work together effectively to ensure success by improving communication between themselves and the youth they support as well as between support groups.

Recommendations

Success in supporting youth effectively brings about positives in all aspects of their lives. Parents who are more involved in their children's lives, communicate more effectively, and provide structure at home, are less likely to have a child become dependent on technology. As mentioned earlier, the Italian Pediatrician Society encourages parents to limit and monitor usage as well as participate in interactive play and contact with their children from a very young age. Perhaps one of the best recommendations for parents comes from a Canadian organization

(Brisson-Boivin, 2018). Essentially, their recommendations include Parents Engage, Parents Manage, and Parents Use Their Digital Skills.

Parents Engage means that, "Parents are actively involved in their children's digital lives by mindfully curating and minimizing their child's screen time as well as co-viewing" (p. 23). Additional practices could include no TV, gaming, and electronic devices in bedrooms as well as a designated charging area and check in bins at home and during family activities. Although numbers can definitely be improved, it is important to note that, "43% of parents reported that their children never use a digital device during family meals and over two-thirds of parents indicated that their families talk together about things that are important to them, their families, and their children" (p. 19). Family activities without technology can be extended to cooking dinner together, playing board games, building puzzles, going for a walk, and many others. It is simply not ok for a parent to pick up their phone, tablet, or laptop the majority of the time when they have the opportunity to have direct social interaction with their children and entire family.

Parents Manage involves parents setting limits and the, "top two rules parents set for their children are time spent on digital devices at 43% and talking to strangers online at 40%" (p. 3). This can be reinforced to them by being consistent and discussing the reasons with their children.

Parents Use Their Digital Skills indicates that, "the stronger the parents' confidence in their digital skills, the more likely they are to implement rules" (p. 51). A recommendation for educators would therefore be to hold an information session or a workshop to educate parents about the latest games, smartphone apps, and social media outlets youth gravitate towards. There is little doubt most parents want support in managing their children's technology use as indicated by questions from the Growing Up Digital research project (McRae, 2018). They include, "How can we balance the use of technology as a teaching and learning tool with kids'

ever-increasing addiction to device use," and "In a digital world, guidance on the 'right' amount of exposure to digital media would be helpful" (p. 4).

According to Programme for International Student Assessment (2015), areas of focus that contribute to students' well-being at school include psychological, physical, cognitive, and social. In addition, the means of improving their well-being include having caring parents, positive peer relationships, supportive teachers, and a disciplined learning environment (PISA, 2015). Focusing on and strengthening these areas will increase the protective factors that alleviate their inclination to become addicted to technology. Teachers have the ability to create balanced lesson plans that integrate technology in the classroom in constructive ways when needed with interactive social and collaborative activities. As a computer teacher, gaming or social media use not related to learning is not permitted in the computer lab before and during class, at breaks, and at lunch. They are only to be used for schoolwork and this policy is consistent with the library and other computer labs throughout the school. On the doors of all our computer labs, we constructed and placed a poster as a reminder that lists possible alternative and healthier activities to gaming or social media such as taking a walk outside, talking to friends, working out, drawing, painting, or playing a sport. Gaming, smartphone use other than for music, and social media sites are restricted to minimize use and distraction during class. To further improve my classroom environment because it is a screen heavy class already, I plan to implement breaks throughout class that involves walks outside together, doing puzzles, playing traditional games as well as implementing curriculum-related unplugged activities. Another means to assist students who may be too engrossed in technology would be to communicate to parents on what is being observed at school and then work together in order to reinforce the message at home as well. An

extension of this would be to recommend resources for willing parents on how to help their children at home.

To better illustrate how teachers can intervene with students and parents I will use an example from my own teaching practice. What follows is what occurred with one of my students in a Computer Science class. I spoke to the student about my concerns in class in regards to gaming and excessive social media use, then communicated with parents who expressed the same challenges at home. We spoke about strategies I have implemented at school and ones that can be implemented at home by parents. In addition, we put together an internet and device use plan in collaboration with the student, parents, teachers, behaviour support, and administration to manage internet, smartphone and in class computer use. So far, the student has been receptive and overall usage greatly decreased. Finally, for the last two years I have been part of our school Wellness Team comprised of student leaders committed to wellness initiatives and education throughout the year. One of our focuses is to continuously promote unplugged activities, clubs, and teams to our student population using the RSS Student Activity Guide (Charles, 2018), a handout created by a student leader, and events during Mental Wellness Week. Our goal is to get as many students connected within the school community so that they can come together with other students and staff with similar interests and passions.

Additional methods to educate youth, parents, and educators would be possible with the support of administrators and the school district. Currently in our school district, we have a Digital Wellness Committee that consists of students, teachers, parents, school counsellors, health promoting schools coordinators, and administration. At this stage, we are gathering feedback from elementary and secondary students regarding helpful and harmful ways students are using technology and how these technologies are impacting them. Eventually, details of

education program components, design, strategies, and implementation will be constructed. As well, a partnership between the school district and outside organizations can be formed. An example of this is a school in British Columbia that invited Benjamin Wong of Mindfully Digital, an expert in Gaming Disorder, to speak to families. He presented to them at the school as well as interested people from the general public regarding the topics of Screen Time, Digital Addiction, and Brain Development.

Initially this paper focused on parents and other educators as influential people who would help educate youth regarding responsible technology use. However, I believe there is an opportunity to exploit earlier points of contact by public health services such as Health Families BC to educate new parents early in their roles. This may include technology education during prenatal classes and after birth with couples at the hospital. Nurses, through a short additional session or a summary handout, could explain this information regarding recommended use. This could be done after teaching parents how to properly care for their children. Another opportunity would be through public health education within the community when nurses perform home visits for new or current parents to ensure everything is in order or during follow up checkups with their family doctor. There may also be follow up information for parents at preschool, elementary, middle, high, and post-secondary school levels.

One more important ally could be community organizations such as the YMCA and the Foundry Kelowna, a wellness centre where youth and their families can access mental health and substance abuse services. The YMCA offers Get Active, Feel Good and Thrive from the Mind Fit program that invites youth ages 13 to 18 to disconnect and be more active. It includes a three-month YMCA membership and youth learn how to cope with low mood, depression, and anxiety that have been found to result in or contribute to Internet Gaming Disorder, Smartphone

Addiction, and Social Media Addiction. Mind Fit helps improve mind and body wellness as well as an opportunity to participate in fun activities and meet new people in the process. Flex Your Head program at the Foundry Kelowna are for youth ages 12 to 18 as a place to talk about and understand the issues of mental health and wellness within a safe, fun, and welcoming environment. They are equipped with knowledge, skills, and strategies to cope with stress and distress and promote positive mental health and wellness. These are valuable resources in our community we must be aware of and share with youth who have an excessive preoccupation with technology.

In this section, I have suggested a number of recommendations that I feel would benefit youth who are prone to technology addiction and/or over-use. A limited number of programs are already in place to help parents and teachers combat this issue, however it is clear that more is needed to be done. Hence, I have made some recommendations I would like to see implemented in homes, schools, and in communities.

Conclusions

It is obvious that technology is a part of modern life and it is not going to go away. The key will be for each of us to understand the pros and cons of it, and for us to help youth acquire the skills and competencies of appropriate technology use so as to avoid a myriad of potential mental health issues including addiction. The objective of this paper was to address technology overuse, specifically within the youth population. Anyone working with youth has a responsibility to find ways of helping them with the potentially destructive forces of technology.

Research shows that strong parental connection and communication as well as positive modeling behaviours can set the tone at home during early childhood. Teachers can help ensure

their students are accountable digital citizens and have a balanced use of technology at school. There also must be continuous communication between home and classroom to ensure the well-being of students not only academically, but also socially and emotionally when it pertains to technology use, as doing so can dramatically affect these aspects of their lives. Indeed, there are also opportunities for other main players such as administrators, school district, public health, and outside organizations to provide support for our youth. The key is collaboration between all of these groups to effectively educate and support youth as well as those who they most closely rely on for guidance.

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