The Influences of Technology

on Adolescent Social and Interpersonal Development:

A School-Based, Interdisciplinary Team Perspective.

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Abstract

The lives of many adolescents in Canada are consumed by technology. The adolescent population are among the most prolific users of technology and have an intrinsic understanding of the ways around technology that escapes most adults (Shifflet, 2013). Current research is somewhat contradictory as to whether technology has a harmful, helpful or neutral impact on adolescents (Barth, 2015, Fairlie & Kalil, 2017). Concerns over the perceived negative impacts of technology on social, emotional and relational development of adolescents are prevalent but largely uninformed by plausible, causal evidence (Fairlie & Kalil, 2017, Shifflet, 2013, Lotrean, et al., 2016, Scott, et al., 2017). This paper consists of a research study that investigates adolescent technology use and its influences on social and interpersonal development, from the perspectives of a school-based interdisciplinary team. This study was based on qualitative interviews with five, school-based interdisciplinary team members who have been working with a recently implemented technology-based learning program. The participants identified that technology has influenced teacher/student relationships, peer relationships, opportunities to connect and learning with technology.
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Introduction

Adolescents in Canada have been born into a digital age consumed by technology. Over the past thirty years, technology, the internet, cell phones, video games and television has increasingly dominated their leisure time. The widespread adoption of these technologies has become a significant part of the grain of daily life and is changing almost every facet of their evolving lives (Scott, Valley, & Simecka, 2017). Although figures vary, many adolescents spend around 11 hours each day engaged with media content (Spies-Shapiro & Margolin, 2014). Over the last decade, they have acquired an intrinsic understanding of technology that escapes most adults (Shifflet, 2013) and are easily able to identify the technological tools and resources available to them, how to assemble and initiate them and how to manage technologies to support learning and engagement experiences (Fitton, Ahmendani, Harold, & Shifflet, 2013).

Educational environments, such as schools, are quickly being challenged to move beyond the traditional modes of teaching and learning and provide contemporary technological, informational and communication skills needed by 21st century learners (Shapely, 2011). The present vision for educational environments is for technology to be infused into all aspects of the educational system (Shapely, 2011). Technology has become recognized as a highly effective tool to enhance learning opportunities through the involvement of real world problems, current and authentic informational resources, virtual tours of remote locations, simulations of concepts or interactions with practicing experts and global communities (Groff, 2013, Yamatoto & Ananou, 2015, U.S Department of Education, 2014). The integration of technology into schools has engendered a new landscape (Yamatoto & Ananou, 2015), which will likely require schools to newly examine their approaches to teaching and working with adolescent students. Schools may benefit from the findings within this study and use them to inform the way they work with
and guide adolescents through this digital age they are growing up in. Schools may become motivated to adapt their policies and procedures regarding technology and implement educational and preventative programs for their staff, students and caregiver populations.

This paper explores how technology influences adolescent social and interpersonal development from the perspectives of a school-based interdisciplinary team. Interdisciplinary research is a collaborative approach that joins together knowledge and understanding from professionals of different disciplines (Carr, Loucks & Blosch, 2018). Utilizing an interdisciplinary research approach invites opportunities for new knowledge to be produced through collaboration and interaction from professionals with different educational and theoretical backgrounds (Kim, 2012). A greater understanding of the influences of technology on adolescent social and interpersonal development may be presented. Through an analysis of the interdisciplinary perspectives we may be reminded that schools are not solely academic environments but are places where adolescents develop lifelong skills that also inform their social lives. This paper will also discuss the important role school social workers have, as valuable members of interdisciplinary teams. School social workers have a significant responsibility to understand the implications, intersections and impacts technology can have. Furthermore, they must learn to utilize technology to communicate, engage and empower adolescents in the ways that are familiar to them.

The paper will also include a review of current literature, an analysis of the findings from this study, implications for social work and areas for future research.

The research question guiding this research study is: From a school-based interdisciplinary team perspective, how is technology influencing interpersonal and social development of adolescent students?
Literature Review

This portion of the paper will provide a review of literature in the area of how technology is influencing adolescent social and interpersonal development and will include perspectives from interdisciplinary professionals. In a school environment, interdisciplinary teams are made up of principals, vice principals, learning support services, school psychologists, counsellors, social workers, teachers, educational assistants and outside community supports (Ambrose-Miller & Ashcroft, 2018). The majority of the studies available included research from individual disciplines as opposed to interdisciplinary research in a single study.

The following research is completed by diverse disciplines, hence the varied perspectives. Interdisciplinary perspectives are an important feature of technology-based projects because their varied expertise allows for positive solutions to be produced, expertise needs to be effectively integrated (Parsons, Yuill, Brosnan, & Good, 2017). Educational environments looking to integrate technology-based learning may have more success if they consider the experiences and expertise of their interdisciplinary team members. The term interdisciplinary is most commonly defined as the “interaction between two or more different disciplines which lead to an integration of disciplinary insights.” (Carr, et al. 2018, p. 35). An interdisciplinary approach offers a multilevel analysis by bringing together converging theoretical perspectives (Sigfusdottir, Kristjansson, Thorlindsson, & Allegrante, 2017), in the attempt to create a contemporary framework. A strong perspective from Parsons, et al (2017) maintained that some research questions can only be addressed by teams of people from different disciplines. Carr, Louks & Bloschl (2018) maintained that interdisciplinary perspectives are necessary for implementing programmes appropriately because more data can be collected from diverse disciplines, creating a larger body of knowledge.
A review of literature revealed how technology and adolescent development is connected to social work. Johnston-Goodstar, Richards-Schuster, & Sehti (2014) studied how the profession of social work could benefit from technology by seeking new ways to engage with vulnerable adolescents and empower marginalized groups through contemporary ways of communicating and distributing resources. Johnston-Goodstar, Richards-Schuster, & Sehti (2014) performed a study that found technology to be a helpful tool for creating community-driven, collective narratives to counter and disrupt societal perspectives and perhaps move toward understandings within individuals, families and communities. Specifically, three significant roles for social workers presented themselves from a review of current literature. Firstly, social workers on interdisciplinary teams play an important role in collaboration. Research has indicated that by social workers participating in interdisciplinary collaboration, they are able to define their role more clearly, gain input into decision making processes, marshal staff resources toward better service delivery and challenge practices that may be oppressive or marginalizing for certain students and families (Kim, 2012). Secondly, social workers, often times, take on the role of the social and emotional support persons. Social workers may have an easier time meeting the needs of students if they understood the pervasiveness of technology in their lives. Thirdly, social workers are case managers and act as liaisons between the school and families. Technology can be a helpful tool to reach those families who are most often marginalized and silenced in the larger society. Interdisciplinary teams are essential sites for social work practice. The core values of the social work profession are grounded in theories of social justice, empowerment and dignity for all persons (BCCSW, 2009); Each of which are values conducive to the success of interdisciplinary teams.
Future research that utilizes the interdisciplinary approach must also recognize the barriers that exist. Interdisciplinary teamwork can be challenged by rigid professional identities, attachment to clinical roles, role confusion and territoriality between various disciplines (Kim, 2012). Ambrose-Miller & Ashcroft (2018) also noted that power differentials can exist which can hinder collaboration efforts. Social workers, in particular, are often times left negotiating their roles in order to meet the goals of the work environment (Ambrose-Miller & Ashcroft, 2018). With that said, the benefits of the interdisciplinary approach outweigh the barriers. It is a chance to create new information and knowledge (Hakkinen, et al., 2016). Furthermore, it is a chance to reconsider, reimagine and re-invent learning environments in order to prepare each student for lifelong learning (Groff, 2013). Interdisciplinary research informs ways that professionals can better serve clients and is recognized in technology research as vital for producing usable solutions to meet real needs (Parsons, et al. 2017).

**Relevant Themes from the Literature**

In the past thirty years, access to various types of technology has grown exponentially across North America with little accompanying research to understand its risks and benefits (Cyr, et al., 2015). Concerns over the perceived negative impacts of technology on social, emotional and relational development of adolescents are prevalent but largely uninformed by plausible, causal evidence (Fairlie & Kalil, 2017, Shifflet, 2013, Lotrean, et al., 2016, Scott, et al., 2017). What we know for certain about technology is that it has the ability to influence individuals behaviourally, affectively and cognitively (Scott, et al., 2017). Especially for today’s adolescent who is experiencing life, developmental milestones and interactions through technology (Lotrean, Ailoaiei, & Stan, 2016). While some researchers maintain that research is somewhat contradictory as to whether technology has a harmful, helpful or neutral impact on adolescents...
(Barth, 2015, Fairlie & Kalil, 2017) others argue that it should come as no surprise that adolescents are experiencing negative effects of excessive technology use, such as, lowered social skills, emotional intelligence, self-regulation and increased stress and mental health issues (Scott, et al., 2017, Yamatoto & Ananou, 2015, Fitton, et al., 2013, Rempel, 2012). Upon a review of current literature, three significant themes were presented: a) teacher/students relationships, b) adolescent mental health and c) peer interpersonal relationships.

**Teacher/Student Relationships**

Relationships between teachers and students have been overlooked within research (Bernstein-Yamashiro & Noam, 2013). Alongside of academic instruction, teachers are also being tasked with the responsibilities of preparing students with the skills and capacities of 21-century citizenship- global awareness, creativity, collaborative problem-solving and self-directed learning (Groff, 2013). Now that technology has such a pervasive presence in the lives of adolescent students, teachers have had to adapt to new and emerging technologies and reconsider their approaches learning and instruction.

Bernstein-Yamashiro & Noam (2013) discussed that positive connections between teacher and students were associated with student success in areas such as, grades, motivation, behaviour, learning and overall attitudes towards school. One of the key components associated to teacher/student relationships and positive outcomes for students is collaboration. Collaboration is recognized as a crucial component because it can promote productive interactions and learning activities, such as questioning, explaining and justifying opinions, articulation, argumentation and opportunities to elaborate in a teamwork environment (Hakkinen, et al., 2016). Collaboration and teamwork are two components effective for positive social development, relationships and effective communication development (Bernstein-Yamashiro &
Noam, 2013). Technological devices can make collaboration more effective and efficient (U.S Department of Education, 2014). Whereas, Fairlie & Kalil (2017) would argue that collaboration through a means of excessive technology and computer use could lead to social isolation.

Collaboration, through the means of technology, has also been noted to have positive outcomes for students with diverse learning needs who may have difficulty building relationships with teachers. For students who experience difficulties with language, social anxiety, communication, organization and group work, technological devices have the potential to bridge some of those gaps (U.S Department of Education, 2014). For example, technological devices can ease interactional, language and communication differences for those students who have differential learning abilities. In addition, those who have anxiety about face-to-face interactions often times prefer online interaction because they feel they are in better control of the exchange (Yamatoto & Ananou, 2015). Learning, collaboration and interaction over technology allows student perspectives to be accorded equal value (Yamatoto & Ananou, 2015). Within the report done by the U.S Department of Education (2014) on learning technology effectiveness, it was found that increased teacher/student engagement can improve a student’s ability to develop self-regulation skills. A skill like self-regulation involves students’ abilities to monitor their own understanding and progress, regulate one’s thoughts, feelings and emotions and make decisions about their learning. The development of self-regulation can be improved through teacher’s capacity to provide more frequent feedback and interaction over technology (U.S Department of Education, 2014).

Current literature recommends that teachers become aware of the many ways that technology can positively and negatively affect their relationships with adolescents. This will
become increasingly important as technology-based learning becomes a prominent framework in educational environments.

**Adolescent Mental Health**

The facets of many young people’s lives, i.e. school, work, home and personal has been transformed by technology. The effects of technology on adolescent mental health are still emerging and just starting to be understood. Scott, et al., (2017) argued that as technological advances continue to drastically change the way adolescents live, they can also have significant effects on one’s mental health. For instance, blurred boundaries and inability to disconnect can quickly lead to stress and have long term negative effects on a person’s mental health (Scott, et al., 2017).

There are a growing number of researchers who argued that adolescent mental health is at risk due to excessive technology use (Scott, et al., 2017, Spies-Shapiro & Margolin, 2014, Rempel, 2012, Yamatoto & Ananou, 2015, Cyr, et al., 2015). These researchers have identified a number of factors, stemming from technology, that they believe to be threatening to the mental health of adolescents, such as, stress, over-stimulation, excessive use, increased sedentary behaviour, isolation and peer aggression. Scott, et al., (2017) provided a comprehensive look at mental health concerns in the digital age and maintained that connectivity, accessibility and information overload can contribute to anxiety and depression. Scott, et al., (2017) hypothesized that adolescents may be more susceptible to mental health issues because as their brain evolves and shifts its focus to new technological skills, focus is taken away from developing fundamental social skills. In Nicholas Carr’s (2011) book, *The Shallows*, he revealed how technologies that are used to find, store and share information can reroute the brains neural pathways. Carr (2011) maintained that there is evidence in today’s adolescents that they are losing capacity for
concentration, contemplation and reflection. Additionally, Rempel (2012) argued that adolescents are being over stimulated by information technology and are experiencing stress at unprecedented levels, placing them at risk of social-emotional difficulties, issues with self-regulation, anxiety and depression. Connectivity, accessibility and information overload can contribute to a variety of mental health issues including stress, anxiety and depression (Scott, et al., 2017). Moreover, consequences of attachment to technology include lowered social skills, self-motivation, emotional intelligence and increased internet addiction (Scott, et al., 2017). Sigfusdottir, et al., (2017) discussed that high levels of stress for adolescents can affect a young person’s mental, emotional and physiological health; potentially leading to substance abuse, suicidal behaviour, self-inflicted harm and delinquency. If rates of stress continue to rise, due to excessive technology use, it is likely that adolescent mental health may continue to be negatively affected.

Another topic that is quickly becoming a growing concern among researchers is internet addiction (Yamatoto & Ananou, 2015, Scott, et al., 2017, Cyr, et al., 2015). Psychologist Dr. David Greenfield explained that technology can be addictive because it is psychoactive, mood-altering and often trigger enjoyable feelings (Scott, et al., 2017, p. 608). He noted that things like emails and texts provide immediate satisfaction that draws people to keep checking their devices for new messages. It is important to note that some adolescents may be more vulnerable to develop symptoms of internet addiction than others, for example, adolescents who experience pre-existing mental or psychological symptoms and disorders such as depression, ADHD symptoms and hostility (Spies-Shapiro & Margolin, 2014). On the other hand, technology can offer many benefits to adolescents with chronic mental health issues. Shapiro & Margolin (2014) explained how technologies can be used to make meaning out of sufferings and challenges by
connecting adolescents with support groups and reaching out to those who cannot leave their homes.

The World Health Organization (2005), recognizes good mental health in adolescents as the ability to achieve and maintain optimal psychological and social functioning and well-being. They have a sense of identity and self-worth, sound family and peer relationships, an ability to learn and be productive, and a capacity to tackle developmental challenges and use cultural resources to maximize growth. As technological advances continue to drastically change the way adolescent’s live, it will become increasingly important for every individual person to become aware as to how they are being influenced.

**Peer Interpersonal Relationships**

During adolescence, young people view relationships with peers as the most important source of intimacy, nurturance, companionship and admiration (Wubbels, et al., 2012). Interestingly, many adolescents today have reported technology to be a central component for creating relationships, socially and interpersonally (Shifflet, 2013). Relationships are typically defined as enduring connections between two individuals with presenting evidence of trust, intimacy, closeness, communication and the presence of positive affect (Wubbels, den Brok, Van Tartwijk, & Levy, 2012). Previous generations have viewed face to face interaction as the preferred, if not only ‘real form of interaction; however, today’s adolescents find great merit in technology assisted interaction (Shifflet, 2013). Many adolescents are offered nonstop technology by means of phones, computers and digital messaging systems which are virtually impossible to unplug (Scott, et al., 2017). The popularity of these technologies has and continues to grow exponentially among the adolescent population (Cyr, et al., 2015). A study based in the United States from the Pew Research Center (2015), stated that 92% of adolescents report going
online daily, nearly three-quarters (72%) of adolescents play video games online or on their phones and a typical adolescent sends and receives thirty texts per day. Much of their time spent online is most popularly used for creating relationships through social interaction, communication and development of intimacy (Fitton, et al., 2013). Evidently, technology allows interaction with more people, more frequently, over greater geographic regions, thereby greatly expanding social and familial networks. Adolescents now accept and expect technology to be an integral and pervasive part of their lives (Shifflet, 2013).

The majority of adolescents today have constant and easy access to various forms of technology. This transition toward a digital world has had exceptional influence on many areas of adolescent’s lives. It is important to understand the potential risks and benefits associated to technology use (Cyr, et al., 2015), however, much of the literature is somewhat contradictory as to whether technology has a harmful, helpful or neutral impact on adolescent development (Barth, 2015). Some researchers, Spies-Shapiro & Margolin (2014) Kukulska-Hulme (2012), Fitton, et al., (2013) felt that technology has positively impacted adolescent’s abilities to develop relationships by promoting interaction, connectivity, identity formation and communication. While other researchers Scott, et al., (2017), Fairlie & Kalil (2017), Cyr, et al., (2015), Yamatoto & Ananou (2014) believed that technology has had serious negative impacts on adolescent relationship development such as, increased social isolation, online conflict, peer aggression and makes the task of identity formation more difficult. For example, Cyr, et al., (2015) argued that the constant and easy of technology may affect adolescents’ identity formation because of the lack of in-person communication which allows for facial expressions, tone and prosody of voice. Whereas, Shifflet (2013) reported otherwise by stating that many adults believe that the relationships adolescents create online are different than those in the “real world,” however,
adolescents themselves reported that their online friends and real-world friends are the same. Furthermore, this study found that social interaction and relationships were being maintained longer and adolescents pride themselves on their large social networks. Yamatoto & Ananou (2014) investigated the cognitive, social, emotional and ethical implications of technology. This study found that communication and interactions over technology have the potential to negatively influence social relationships. For instance, when one cannot see another person’s facial expression or emotional disturbance that a statement causes, they are quicker to make a rude remark, forgetting there is a real person on the receiving end (Yamatoto & Ananou, 2014). However, Fitton, et al., (2013) argued that technology can increase closeness amongst peers and ease social interaction, social anxiety and friendship formation. An interesting point mentioned by Cyr, et al., (2015), was when technology usage changes from being a convenient method of communication to a preferred method of communication, it can be problematic for relationships, especially when this preference stems from a desire to avoid face-to-face social contact. “Such avoidance might interfere with the development of appropriate social skills” (Cyr, et al., 2015, p. 82).

**Theoretical Framework**

This research study has been grounded within a framework that focuses on adolescent development, to better understand the interplay between the adolescent's behaviour and environment. This study will examine adolescent technology use and its influences on social and interpersonal development through the consideration four theories; a) Identity and Psychosocial Development b) Attachment theory, c) Sociocultural theory and d) Ecological Systems theory. These theories provide understandings of how adolescents are shaped by their environments and what role technology may be playing in this.
Identity and Psychosocial Development Theory: Adolescence Stage

One of the earliest and most well-known theorists to study adolescence was Eric Erikson (Shifflet, 2013). His theory of adolescence is one stage within his eight-stage theory of identity and psychosocial development. He believed that personality develops in a certain order and builds upon each stage (Erikson, 1994). At each stage, an individual, experiences a psychosocial conflict which may have positive or negative effects on personality development. This conflict is between the psychosocial needs of the individual and the conflicting needs of society. This theory explores the impact of external factors such as parents, culture, and society on personality development from childhood to adulthood. According to Erikson’s theory, all individuals must pass through a series of eight stages over the entire life cycle that are connected to each other with the goal of developing a wide range of life skills that work together to develop an autonomous individual (Erikson, 1994). In the first four stages of Erikson’s theory, development is dependent on external factors and moving from one stage to the other is dependent upon influences outside of the individual and what is done to them. Erikson believes that adolescent development now depends primarily upon what a person does. Erikson theorized that an adolescent must struggle to discover and find his or her own identity, while negotiating and struggling with social interactions and “fitting in” and developing a sense of morality and right from wrong (Erikson, 1994). He explained the adolescent stage of development as a time where young people (ages 12-18) are searching for a sense of self and personal identity through an intense exploration of personal values, beliefs and goals (Shifflet, 2013).

During this time, a young person’s brain undergoes profound changes in both structure and function (Mills, 2014). Structural alterations take place in both the limbic and cortical regions as the brain matures (Romeo, 2017). These significant changes in the brain highly impact
a young person’s social, emotional and cognitive functions (Romeo, 2017). Furthermore, this stage is a naturally malleable period for young people (Mills, 2014). They struggle to differentiate and move toward independence and autonomy and favour intimate peer associations and friendships to help inform their individual identities (Fitton, 2013). Involving technology into this mix creates the potential for adolescent development to become an even bigger challenge for young people. It further exposes them to the risks and benefits of new social experiences, social media and unlimited access of information. For example, the internet provides new contexts for young people to try out new identities, learn and attempt new social skills and establish affiliations all over the world (Spies-Shapiro & Margolin, 2014).

This theory informed many of the findings from this study. It assisted in the understanding of how adolescents interpret experiences and develop life skills to inform their psychosocial needs, and even more so, how they are using technology to meet those needs. The findings will be discussed in more depth later in this paper as to how technology can promote social connection amongst peers and aid in identity formation.

Attachment

The crucial bonds that form good mental health and healthy relationships are known as attachment relationships. According to Bowlby’s Attachment Theory, attachment is a psychological connectedness that occurs between humans and lasts for a long period of time (Sincero, 2012). To Bowlby, attachment is what keeps a baby connected to his mother, considering the needs of the child that can only be satisfied by his parent (Sincero, 2012). This theory consists of four basic characteristics a) safe haven, b) a secure base, c) proximity maintenance and d) separation distress. Within safe haven, a child has the sense that he can turn to his caregiver when he feels frustrated, unsafe and/or in danger. A secure base is where the
caregiver creates a stable and reliable foundation as the child learns on his own. Proximity maintenance is when a child strives to experience things on his own yet stays connected to his caregiver to seek support when necessary. Lastly, separation distress is when a child gets upset, anxious or agitated when separated from his caregiver. As young children interact, they build up a sense of attachment, otherwise known as an ‘internal working model’ of the self. The internal working model consists of behaviours a person needs to maintain a sense of secure attachment and internal stability (Borden, 2015). In order to maintain internal stability, one must recognize and have access to immediate support of a caregiver when their needs are being threatened (Howe, 2009). Children who experience inconsistent, unpredictable and emotionally rigid support from caregivers may develop avoidant or ambivalent forms of attachment (Howe, 2009). The goal of this theory is to experience secure attachment to caregivers to facilitate healthy relationships outside the family, identity formation and functioning sense of self (Barth, 2015).

In relation to the topic of this paper, is it perceivable that technology has the potential to replace traditional forms of attachment. As discussed in the review of literature, adolescents are using technology to support their learning and engagement experiences (Fitton, Ahmendani, Harold, & Shifflet, 2013), and experiencing life, developmental milestones and interactions through technology (Lotrean, Ailoaiei, & Stan, 2016). Already, it is becoming evident of the ways that young people are using technology to meet their own needs of feeling attached. For example, a young person that does not have a ‘secure base’ with a caregiver may rely on the internet to provide this. For instance, establishing relationships with peoples online, where they receive feelings of stability, safety and security, otherwise, modelling a secure base. In some cases, this may be a person they have never met and can result in unfavourable outcomes for that young person.
Strong attachment relationships have the potential to aid in good mental health and healthy relationships, however, attachment relationships to technology can have both harmful and helpful impacts.

**Social Development Theory**

Leo Vygotsky’s theory of social development highlights that socialization affects the learning process of an individual (Sincero, 2011). This theory is made up of three major components 1) the Role of Social Interaction in Cognitive Development, 2) the More Knowledgeable Other and 3) the Zone of Proximal Development. The role of social interaction in cognitive development is fundamental in order for social learning needs to be met. In other words, the social environments in which children grow up influence how they think and what they think (McLeod, 2014). Secondly, the more knowledgeable other is any person who has a higher level of ability or understanding to which a person learns from i.e teacher and student. The zone of proximal development is referred to as the distance between what is known and what is unknown by a person (Sincero, 2011). This model of social development attempts to understand children in their interactive relationships and views them as constructs that are continuously re-constructed through political, practical, social, cultural and ideological forces (O'Dowd, 2013). Furthermore, it illustrates the importance of face-to-face interactions in formulating a young person’s social needs, emotional stability and conflict resolution (O'Conner, Matias, Futh, Tantum, & Scott, 2013).

It was hypothesized in this study that excessive technology use can have significant influence on adolescent’s social development. Reason being, they are being exposed to new social environments, unlimited access to information, social media, social networking sites and online relationships. Additionally, technology is allowing them to accomplish online many of the
social tasks that are important to them offline: staying connected with friends and family, sharing pictures and exchanging information. One of the goals of this study was to explore whether or not these new forms of socialization are fostering or hindering the learning process of adolescents. Hypothetically, these experiences may offer deeper benefits that extend into their view of self, identity formation and views about the world, while simultaneously posing negative effects, which will be discussed later in the paper.

**Ecological Systems Theory**

Ecological systems theory (EST) is a helpful framework that can help interdisciplinary teams understand the influences that technology can have on adolescent social and interpersonal development. Urie Bronfenbrenner (1979), was one of the earliest pioneers of EST who described it to be an interaction between a person’s qualities and their environment that influence growth and development (Psychology Notes, 2013). Furthermore, this theory holds that a behaviour is thought to be a function of a person and their environment and that a person’s development is affected by multiple systems that exist around them. The three systems that will be discussed throughout this paper are the micro, mezzo and macro systems. The first of these systems is the microsystem, which looks at an individual’s immediate environment or in other words their personal interactions within their immediate relationships with friends and family members. The second system is known as the mesosystem, which expands to relationships between contexts (i.e distant relationships, school, neighborhood, culture), and thirdly, the macro system, which relates to broader environments like community, policy and socioeconomic status (Shifflet, 2013). Ecological theorists believe that humans are in a constant struggle to create and maintain balance within these systems and when the balance gets out of kilter, we experience personal difficulty (Howe, 2009).
The ecological systems theory (EST) is a favourable approach to understanding how technology may be influencing the multiple environments within adolescents’ lives and the risks and benefits that are associated. It is pretty clear that technology has become a major instrument at every level, micro, mezzo and macro. Adolescents interact with technology on every level from individual to community and now their school environments. This certainly has to impact how adolescents today are maintaining balance, boundaries and structures within the relationships they have at each systemic level. Since adolescents’ technology use is such a relatively new topic of research, with very little resources available, it is extremely necessary to figure out how it is affecting adolescent development overall.

In a school setting, interdisciplinary team members would benefit from adopting an ecological perspective because it may help them understand the new ways adolescents are coping, creating relationships and learning new skills. Utilizing the expertise of different professionals, with diverse educational backgrounds, is one way to collect multiple viewpoints on a significant issue. For instance, a counsellor’s educational background may lead them to consider a student’s cognitive and behavioural environments, whereas a social workers background may lead them to consider a student’s social and physical environments. Therefore, by combining both viewpoints, a better understanding of a student’s situation may present itself. Thus, resulting in more comprehensive support.

School social workers are particularly valuable members of interdisciplinary teams whose practices are also grounded in ecological perspectives. Having a social worker as part of an interdisciplinary team invites the opportunity for more integrated services within the school environment. They have the opportunity to work with students in the context of their own environments, create links between teachers, families and various community groups to provide
holistic support. Additionally, social workers have the ability to take on multiple roles such as, leadership, advocacy and policy development. Therefore, the holistic approach that social workers can bring may quickly become a highly regarded need in schools integrating technology.

**Design and Methodology**

**Research Question:** From school-based interdisciplinary team perspective, how is technology influencing interpersonal and social development of adolescent students?

**Research Design**

The research design utilized an exploratory method to gather information and seek understanding from a school’s interdisciplinary team, with respect to their diverse disciplines, expertise and opinions, conducive to the topic of this study. This was an exploratory study using qualitative methods. Qualitative methods are one approach to collecting data in the attempt to discover new understandings (Dudley, 2011). This method is effective because it is used to elicit data from conversations and behaviours that are neutral to what people say and do in their daily lives (Dudley, 2011). With a topic like adolescent technology use, where little is understood, qualitative methods were viewed as the more advantageous option over quantitative methods, because there is more flexibility and much of the information collected could not be reduced to variables with numerical measures. Therefore, the researcher of this study chose the qualitative approach to explore meaning, context and provide opportunity for participants to share personal experiences, concerns and ideas.

The researcher organized structured interviews using a structured questionnaire that was formulated beforehand. All of the questions were open-ended in order to gather detailed qualitative data. The purpose of using open-ended questions was to compliment the structured interview method. Open-ended questions allow for flexibility in the interviews and to encourage
in-depth and descriptive responses. A structured questionnaire with a total of seven questions were asked of each participant (Appendix F). The questions were formulated with the hope that they would inquire about participants’ experiences, approaches and practices within the work they do with adolescents in a technology setting. Each participant was asked the same questions in exactly the same way to provide consistently in responses and little variation. The advantage to this approach was so that the researcher could compare the responses to one another during the analysis process.

In-person interviews took place with five staff from a local school between the dates of February 23 to February 28, 2017. Structured interviews offered reliability, efficiency and formality. The interviews ranged in duration from twenty to forty minutes each. All interviews were audio-recorded and later transcribed by the principal investigator.

**Recruitment & Sample**

Approval to conduct research was received from the Ethics Board at the University of the Fraser Valley on March 1, 2017 (Appendix A) and from the Abbotsford School District on February 21, 2017 (Appendix B). The researcher thought that collecting interdisciplinary perspectives from diverse disciplines would present unique points of view from different education and theoretical backgrounds. As noted in the literature review, interdisciplinary perspectives can influence multilevel analyses through the collaboration of converging theoretical backgrounds related to a topic of this study (Sigfusdottir, et al, 2017). Furthermore, interdisciplinary research and collaboration is lauded as an important feature of technology-based projects because different perspectives and expertise need to be effectively integrated to produce good solutions (Parsons, et al., 2017). Therefore, the researcher felt that an interdisciplinary approach would be advantageous to bring together knowledge from different
disciplines in a coherent study to advance our understanding of how technology may be hindering or advancing adolescent social and interpersonal development. In order to obtain a sample from different disciplines, every staff member at the school was invited to participate in the research study. An invitation explaining the research study, its purpose and criteria for participation was included in the email (Appendix D). Six staff members responded to the invitation. Of those six who expressed interest, one person did not fit the qualification criteria and was politely excluded from the study. They were assigned a number, one to five, in the order that contact was made and were emailed a consent form to review and sign (Appendix E). They were asked to contact the primary investigator to arrange for an interview at a time and place that was convenient for them. There was significant variation in the years of experience participants had working with adolescents and technology in a school setting. In total, the positions of the participants ranged from administration, learning support staff and teachers. Two participants were male and three were female. Their experience ranged from fourteen to two years.

**Data Collection**

The participants were asked at the beginning of the interview to share the length of their experience working at the school, along with their specific role and position.

Each interview was conducted individually with only the participant and the researcher in the room. Four of the interviews took place at the school and one interview took place in a public area. Each interview was audio recorded with a recording application on the researcher’s iPad to obtain accurate verbal responses. Once an interview was completed, it was saved to the researcher’s password protected private device.

The audio-recordings were later transcribed onto an electronic file on the investigators password protected computer. Once the data was transferred to the researcher’s computer, the
recordings of the interviews were deleted from the iPad. The transcripts from each interview were stored on the researcher’s computer for the duration of the study. Once the audio-responses of each individual were thoroughly transcribed word for word onto a computer file, a thematic analysis was conducted to identify common themes and patterns prevalent in the participants responses. During a thematic analysis, the research identified common words and phrases and grouped them into themes. Throughout a thorough analysis, significant themes were discovered. Some themes appeared more regularly than others. The dominant themes were identified and guided the findings of this research study. Upon completion of the study, the data was kept and securely stored on the researcher’s password protected computer.

**Ethical Considerations**

Approval to conduct research was received from the Ethics Board at the University of the Fraser Valley on March 1, 2017 (Appendix A) and from the Abbotsford School District on February 21, 2017 (Appendix B). A consent form was given to each participant outlining the purpose and goals of the study to which they needed to sign. (Appendix E). The findings of the research will be made available in the UFV Public Library. Since the findings of the research are going to be made public, one ethical consideration of this study included the confidentiality of each participants’ identity and the school itself. All identifiable information from each participant was replaced with a number for confidentiality purposes. Participants were reminded that they have the ability to withdraw from participating in the study at any point. Some participants were initially uneasy about the interviews being audio-recorded, however they consented when they were reminded that their personal identity and identifying information were being protected and anonymous. In addition, the researcher was the only person who transcribed the interviews, therefore no one else had access to the data collected from the interviews. The
researcher recognized the importance of accurately entering the data to avoid inaccurate data entry that could threaten the integrity of the entire study. Accuracy was important in this study because conclusions and hypotheses were drawn from the data collected.

In research that involves human participation, it is important to consider any and all potential emotional and psychological effects. After analyzing any potential risk or harm, the outcome resulted in minimal risk according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) guidelines.

**Limitations**

Several limitations presented themselves over the course of this study. Firstly, the sample size was small. A larger number of participants would have provided more results and a more accurate representation of the findings. Although the researcher chose an exploratory approach with the hope that it would provide new and insightful information, the small sample size did impact the depth of the results.

Another limitation of this study was the structured interview process as opposed to unstructured or semi-structured. This approach was found to quicken the interview process and did not allow for much in depth discussion and analysis of important topics that were brought up during interviews. A more flexible approach like semi or unstructured interviews would have allowed for more flexibility and more detailed results. Additionally, the interviews would have lasted longer thus providing the researcher with more data.

The researcher of this study chose to interview adults who work closely with adolescents and technology, instead of directly interviewing adolescents. This researcher opted out of interviewing adolescents because there is more risk involved and this study was not given enough time to provide the appropriate supports for the young people. However, the researcher
acknowledges that for future studies, adolescent individuals would have valuable, first-hand experience that could really inform the issues related to the topic of this study. Specifically, having adolescents as the participants, could have greatly impacted the quality of the data found in this study by contributing more in-depth discussion based upon personal experiences and opinions. Furthermore, adolescents may have insight into recommendations for intervention and prevention approaches for education programs.

**Analysis of the Findings**

**Themes**

During this study, interviews revealed significant themes from the perspectives of a school’s interdisciplinary team. The themes consisted of; role reversal and connection in relationships, peer relationships and conflict, impacts of technology on learning and perspectives from the interdisciplinary team.

**Themes**

*Role Reversal and Connection in Relationships*

The data found in this study reported that technology is certainly having an impact on how adolescents are connecting and building relationships with peers, family members and adults. Specifically, participants maintained that they noticed changes such as, increased connectivity, more efficient communication and that technology may be fostering a role reversal between adults and adolescents. Participants recognized adolescents’ unique ability to navigate technology better than them and viewed the students as the experts. Statements that were made to support this theme were:

“Technology is a part of their culture” (Participant A).
“They are the digital natives, we are the digital immigrants.” “Kids know technology better than we do” (Participant C).

Traditionally, adults have been viewed as the teachers and experts with the adolescents as the learners, however technology may be reversing these roles. It is evident in the literature review and findings from this study that adolescents today have inherited deep understandings and navigational skills towards technology. Whereby many of these understandings escape most adults (Shifflet, 2013). They have acquired the ability to use the technological tools and resources available to them, how to assemble and initiate them and how to manage technologies to support learning and engagement experiences (Fitton, Ahmendani, Harold, & Shifflet, 2013). These technological tools are quickly becoming fundamental components in the lives of many adolescents and fostering opportunities to connect and build relationships. This was also reflective in the statements made by participants of this study.

“Technology was introducing greater opportunities to build relationships with students” (Participant D).

“Our relationships with students have extended outside the classroom because students know they can reach me at any time through email” (Participant B).

“I just know we are all learning modern ways of being and building relationships.” “We are so much more connected” (Participant A).

“It allows to me connect with my students at the drop of a hand” (Participant E).

“They know I use technology so they know they can connect with me at any time and I will respond” (Participant E).

Using technology to connect and collaborate was a theme identified in current literature. Specifically, there was research to support that collaboration between teachers and students, by
means of technological devices, has the ability to promote productive interactions and learning activities, such as, questioning, explaining, justifying opinions, articulation, argumentation and elaboration (Hakkinen, et al., 2016). These skills may assist adolescents in meeting some of their social needs, which fits in with Vygotsky’s theory of social development. Although adolescents may be acquiring some valuable social skills and connections to promote relationships development, participants acknowledged that there are also areas that technology is hindering this process as well.

“I think technology is hurting our kids socially and emotionally. I think students are using technology to deal with their problems instead of going to peers and family members for support” (Participant A).

“It seems like students are struggling to respond to verbal ques.” “Students are spending more time hiding behind a screen and less time interacting face-to-face” (Participant B).

“Parents assume they are always doing homework on their computers” (Participant E).

“We as parents need to do get more involved and do a better job at monitoring screen time” (Participant C).

Although there may be a role reversal taking place that recognizes adolescents as the experts when it comes to understanding and navigating technology, it is also evident that adults have an important role when it comes to monitoring and promoting healthy connections over technology.

“We as teachers need to find ways to feel confident and proficient within the realm of technology” (Participants B)

“Technology is a powerful tool and they haven’t been taught responsible use yet” (Participant B).
“As professionals, we need to become familiar with the networks, problems and capacities of technology within the classroom” (Participant D).

“How much technology is impacting our kids might not be truly understood for many more years” (Participant A).

Bowlby’s theory of attachment supports this notion that adults will always have an important role in connecting interpersonally with their children to healthy, secure attachment.

**Peer Relationships and Conflict**

For this study, peer relationships included all forms of social and interpersonal relationships online and offline. Data from this study represented two themes associated with the integration of technology in the classrooms a) less face-to-face interaction and b) increased online conflict.

Findings from this study and the literature review both revealed that adolescents are adapting to new ways of creating and maintaining relationships with peers and family members and moving away from traditional means of interacting such as face-to-face. Research indicated that technological devices have become to be a central tool for creating relationships, socially and interpersonally (Shifflet, 2013). Participants from this study also expressed that adolescents are spending much more time conversing over their devices and much less time communicating and interacting in face-to-face interactions.

“They don’t sit face to face, eye to eye anymore” (Participant C).

“There is less interpersonal, social interaction between students” (Participant D).

“Students are not learning to deal with their issues face to face anymore” (Participant A).

“Technology does take away from the face to face” (Participant B).

“They have lost the ability of proper, formal communication” (Participant E).
“Students seem more comfortable conversing over their devices” (Participant D). “I think students are communicating more over their devices” (Participant C).

“Technology makes communication easier” (Participant A).

Through an analysis of this theme, it is perceivable that adolescents are finding modern ways to communicate using technology. Although participants perceived this as negative impact, current literature has maintained that technological devices have shown to positively impact social interactions amongst peers (Fitten, et al., 2013), Spies-Shapiro & Margolin (2014). As mentioned in the literature review, technology allows for interactions with more people, more frequently, over greater geographic regions, thereby expanding social and familial relationships (Shifflet, 2013).

Technology is allowing adolescents to accomplish online many of the social tasks that are important to them offline: staying connected, interactive relationships, sharing pictures and exchanging information. Technology may be providing more opportunities for adolescents to deepen their view of themselves, assist in their identity formation, expand their views of the world and meet social development goals in new, creative ways.

Online conflict was another theme that four out of the five participants believed to be associated with increased technology use.

“A good majority of the issues we deal with stem from conflict online” (Participant E).

“Issues over devices are larger scale because there is a larger audience involved, inviting more responses, opinions and remarks” (Participant A).

“Students are much quicker to say rude and belaying remarks via their devices, that they probably wouldn’t say face-to-face” (Participants A & E).
“The way you would express something in person is so different than the way you would express something from behind a screen” (Participant C).

“The cattiness between girls over social media and relationships problems often comes back to technology in some form” (Participant C).

Participant E shared an example of an online conflict that took place between a group of girls;

“I had a group of girls writing horrible things about each other online and as a consequence I printed out the conversation and made them read it aloud to each other at school the next day. They had a horrendous time trying to read what they had wrote face-to-face and started crying.”

Research done by Yamatoto & Ananou (2015) also found that issues over technology have the potential to have a ripple effect because it may give the sense that one is being humiliated in front of a large audience. When one cannot see a person’s facial interaction on an online environment, he/she may make a rude remark, forgetting there is a real person on the receiving end (Yamatoto & Ananou, 2015).

Upon consideration of Erikson’s adolescent stage of development, we are reminded that external factors and experiences influence a young person’s thoughts and actions. The experiences that adolescents have online and through their devices are prime examples of external factors. In the example shared above, a negative experience took place online, whereby, the girls felt a sense of sadness and guilt. This type of emotional response has the ability to influence their future thoughts and actions, thus informing their personal development in some way. This example is just one of the many ways that technology is involved in psychosocial
development. As time goes on and more research is collected, a greater understanding of the how technology influences adolescent development will become known.

**Impacts of Technology on Learning**

The data represented in this study identified that all of the participants viewed technology as a necessary part of curriculum and noticed that it can have positive impacts on learning.

“I could not imagine going back to a traditional mode of teaching” (Participant C).

“Technology has improved the quality of students work, their ability to collaborate and no longer limited to information in a textbook” (Participant C & D).

“Technology is taking learning further” (Participant E).

“Technology has extended learning outside the classroom and outside the traditional hours of the school day” (Participant C).

“I think it has made things easier” (Participant A).

“I love it, I have integrated it into almost every facet of my work.” “Technology increases student engagement and more collaboration is taking place online” (Participant E).

“It quickens the pace of work, revisions are faster” (Participant B).

“Higher quality presentations are produced and students are more creative when they use their devices.” “Technology is great because it offers the students a shoe in to the digital world” (Participant D).

“This is life for us now, we need to keep up with it” (Participant A).

“Technology is what the future is all about” (Participant D).

These statements make it clear that technology has introduced exciting and innovative opportunities for both students and staff. Although this was not a theme included in this studies literature review, there is a growing body of literature researching the benefits of integrating
technology as a tool for learning. Technology is quickly becoming recognized as a highly effective tool to enhance learning opportunities through the involvement of real world problems, current and authentic informational resources, virtual tours of remote locations, simulations of concepts or interactions with experts and global communities (Groff, 2013, Yamatoto & Ananou, 2015, U.S Department of Education, 2014). Using technology as a tool for learning is associated to have positive outcomes for students with social anxiety, learning challenges and language barriers. Technological devices are being used to relieve tension for students who find group work, social situations and social interaction to be very anxiety provoking (U.S Department of Education, 2014). Specifically, for students who experience learning challenges and language barriers, technological devices can be used to replace typical modes of communication, thus influencing inclusiveness and collaboration that may have otherwise not been as easy (Yamatoto & Ananou, 2015, U.S Department of Education, 2014). Interestingly, one participant from this study made a statement that correlated with this research.

“Quiet or shy students will email me if they are too embarrassed to ask me a question in class, in front of other students” (Participant C).

It was not evident as to why only one participant noticed this. Perhaps this participant spends more time working with students with learning disabilities or social and emotional needs.

Although there is a growing popularity for using technology as a tool to enhance learning, many participants expressed concern that traditional modes of teaching and learning were disappearing.

“Many students do not even know how to handwrite anymore.” “Text language is creeping into their work i.e yo, wuz, thx” (Participant A).

“They have lost the ability of proper formal communication” (Participant E).
“Traditional literacy is digressing, I have to spend time teaching them appropriate English now” (Participant C).

“I think technology has promoted learned helplessness in a way because students know they have access to me at any time and are not putting in the effort to find the answers themselves” (Participant E).

Current literature also noted that today’s generation of adolescents think and learn differently than any other generation that has come before (Thompson, 2012). The ecological systems theory (EST) provides a helpful framework to understand this shift. EST holds the belief that a person’s growth and development is a product of their environment. Moreover, the multiple systems that are involved in a person’s life affect how they function within it. Technology and the digital world have become a new ‘system’ in the lives of today’s adolescent. A new system that did not exist in previous generations. Therefore, an ecological systems approach is necessary to understand how technology is influencing the multiple systems that exist within adolescents’ lives.

**Perspectives from the Interdisciplinary Team**

Within this study, the interdisciplinary team consisted of three teachers, one learning support staff and one administrative. This diversity of disciplines resulted in a variation of points of view, identified above, and yielded more well-rounded results and themes. The interdisciplinary approach to research that took place in this study aligned with many of the recommendations made in current interdisciplinary research. As Parsons, et al (2017) maintained, some research questions are better addressed by teams of people from different disciplines. This was true for this study as the variation of perspectives offered multilevel points
of view and converging perspectives to present themselves. As a result, a greater understanding and larger body of knowledge emerged regarding the many influences of technology.

Interdisciplinary research and ecological systems theory (EST) complement each other well. They both have the potential to view issues from a multiple systems approach (micro, mezzo, macro). Both approaches invite the notion that multi-angled approaches, shared commitment and collaboration is necessary to offer holistic support and comprehensive programs. This topic will be explained in more detail in the discussion portion of this paper.

**Discussion**

Based on the analysis of the findings from this study it was evident that technology is influencing many areas of adolescents’ lives and not just social and interpersonal development. The topics that were brought up from the interdisciplinary team included various areas such as, social and emotional development, relationships formation, connectivity, learning outcomes and opportunities and the need for education programs. These discussion topics brought up by participants align with many of the topics discussed in current literature as well, which stated that integrating technology into educational environments does have an influence on academic, social and relational experiences. It important to note that participants drew from their own theories and perspectives about adolescent technology use and its positive and negative impacts, based on their personal experience.

Now that technology has been infused into educational environments, students are virtually provided with even more access to each other and opportunities to engage on social networking sites, the internet and social media. As discussed earlier in both the literature review and the theory section of this paper, connection and healthy social interactions amongst peers and family through technology use can promote social development, forms of attachment and
influence adolescent identity formation. Interactions over technology were also found to be associated with social isolation, aggression, cyber bullying and stress, which can hinder positive connections, healthy social development and secure forms of attachment. Research done by Yamatoto & Ananou (2015) explained that when technology is affiliated with positive emotional experiences, such as satisfaction, enthusiasm and happiness it can broaden awareness and attention skills, however, when affiliated with negative emotions, such as anxiety, anger, disgust, guilt and fear, it can cause distraction (Yamatoto & Ananou, 2015). Skills like attention and distraction have the potential to influence an adolescents’ ability to create and maintain relationships, perform academically and regulate ones emotions. Therefore, educational environments integrating technology need to understand that learning outcomes and academic success are not the only aspects of their students’ lives that are going to be influenced. Research has clearly identified that adolescents are using technology to pursue autonomy, gain acceptance from peers and develop a sense of themselves (Spies-Shapiro & Margolin, 2014). Previously, these social interactions were taking place at home, but now adolescents have access to these opportunities during school hours. As a result, educational environments must take on the responsibility of educating their staff and students around appropriate ways to use technology.

Education, intervention and prevention programs was a significant theme brought up in this study and current literature as well. The realization that there is still so much contradiction as to whether technology has a harmful, helpful or neutral impact on adolescent social and relational development, confirms the need for these programs. Something that other studies might find interesting from this study was the invaluable perspectives collected from utilizing an interdisciplinary approach. Interdisciplinary research was a valuable way to collect knowledge from professionals of different disciplines and different education backgrounds.
All the participants from this study identified parents and guardians to be individuals who have significant roles when it comes to creating stability and boundaries for their children with regards to technology use. The following statements were also mentioned in the findings section of this paper. “Parents and adults have such an important role in helping our kids” (Participant C). “I think responsibility falls to the parents as well” (Participant D). “As adults, we have to help teach them healthy relationships within the parameters of technology” (Participant C).

Current research aligned with this theme as well by maintaining that education programs would be able to assist parents in promoting healthy development of their adolescent children (Yamatoto & Ananou, 2015, Spies-Shapiro & Margolin, 2014). Research done by Scott, et al (2017) argued that adolescents need boundaries and structured time away from their devices because periods of rest, away from technology, are important for allowing the adolescent brain to synthesize information, make connections between ideas and develop a sense of self, all of which are critical to mental well-being. If parents were aware that technologies can influence the development of these skills, they may recognize the importance of creating boundaries around technology use. Providing adolescents with structured time away from their devices may provide them with opportunities to reflect, analyze and think critically about themselves, their identity and how technology is influencing them on a personal level. They too need to understand what the research is saying about how technology has the ability to influence their social, emotional, physical and mental well-being. For example, the internet provides new contexts for young people to try out new identities, learn and attempt new social skills and establish affiliations all over the world (Spies-Shapiro & Margolin, 2014). For some, these forms of engagement may be worthwhile, but for others, the outcomes can be unfavourable.
interdisciplinary teams, parents and guardians and adolescents’ need to be educated have the opportunity to engage in education and awareness programs.

This study suggests that researching interdisciplinary perspectives is necessary for gathering information on significant issues. This study found that different disciplines examined adolescent technology use from very different frames of reference, thus resulting in very different opinions, biases and perceptions as to how technology influences adolescents’. For example, the participants with a teaching background, whose main responsibility is instruction, mainly discusses how technology has positively impacted student’s opportunities to learn and be innovative. Whereas, learning support staff and professionals who work with students on behavioural and social needs, spent more time discussing concerns between technology use and its impacts on social and emotional health of adolescents. Although these disciplines had very different perceptions, both were absolutely valuable and necessary for obtaining well rounded, collective results. As the technological landscape continues to change and impact adolescent’s lives, professionals must continue to collaborate in interdisciplinary settings to result in holistic conclusions.

**Implications for Social Work Policy and Practice**

Adolescents’ dependency on technology and the internet has become a worldwide epidemic (Yamatoto & Ananou, 2015). In fact, unlike most adults, they have never known a world without technology (Barth, 2015). This pervasive presence of technology in their lives has major implications for school-based social workers. As valuable members of interdisciplinary teams, social workers can offer holistic approaches that inform significant issues regarding adolescent technology use. Social workers utilize ecological systems theory (EST) in the work
they do. As mentioned earlier EST is a framework that considers the multiple systems involved in a person’s lives i.e micro, mezzo, macro.

Through a micro lens, a social worker is curious how about the individual and how their life is influenced on a personal level. For instance, a person’s mental health, ability to self-regulate or manage conflict are some examples. As noted earlier in the literature review, adolescents are experiencing stress at unprecedented levels due to overstimulation from technology (Rempel, 2012) are at high risk of developing mental health issues like anxiety or depression and high rates of aggression from inability to self-regulate one’s emotions (Scott, et al., 2017, Romeo, 2017). Social workers have a key role in educating the interdisciplinary team, parents and students about identifying psychosocial symptoms that can arise from technology use. Understanding this risk to an adolescent would be one way a social worker incorporates a micro analysis. Another example would be recognizing and understanding how adolescents are using technology to create contemporary relationships with peers and family members. As discussed earlier, adolescents are using technology as a means for creating and maintaining relationships. No longer are they limited to social networks of family, friends, school and community, but they are now able to participate with people all over the world. Social workers must take this into account and not minimize the experiences and relationships adolescents are having over technology. In fact, social workers must also learn these new ways that technology can inform relationship development and use them to promote therapeutic relationships. One way this can be done it by recognizing that adolescents may be more comfortable discussing their issues/experiences with a social worker through a technology medium as opposed to face-to-face.
A social worker utilizing a mezzo lens would consider the individual within their larger environments, such as, schools, neighborhoods, religion and culture. Social workers can assume leadership and advocacy roles by providing education, awareness and resources to schools, health professionals and families on topics related to the risks and benefits of technology use. Thirdly, a macro level would involve a social worker initiating at a community, policy and administrative level, thus, assuming a leadership and advocacy role in areas like policy development and maintenance and community advancement.

The flexibility and adaptability from social workers is what makes them valuable members of interdisciplinary teams. They ecological approach that they utilize allows them to offer holistic support to the individuals they work with. All of which are necessary characteristics when it comes to working with many individuals with various needs.

**Conclusion**

The lives of many adolescents in Canada have been consumed by technology. They have acquired an intrinsic understanding of how to navigate technology and use it to inform their daily lives. This newfound affiliation with technology has become a particularly interesting topic among researchers. Mainly because there are many contradictory views as to whether technology has a harmful, helpful or neutral impact on adolescent development. A vast majority of the research that supports adolescent technology use is in the area of education, learning opportunities and academic success. On the other hand, there is a growing body of research stating that technology can have negative influences on their activities and knowledge, managing their social interactions and relationship development.

The purpose of this study was to explore perspectives the ways technology influences adolescent social and interpersonal development, from the perspectives of a school-based
interdisciplinary team. This study benefited from utilizing the interdisciplinary approach because a variety of opinions, biases and perceptions were collected that resulted in well-rounded findings pertaining to adolescent technology use. The themes discussed were; perspectives from the interdisciplinary team, technologies influence on relationships, peer relationships and conflict, impacts of technology on learning.

As technology continues to be infused into all aspects of the educational system, it will become increasingly important for schools, interdisciplinary teams to use their collective knowledge to inform adolescent development at each level, micro, mezzo and macro. This may entail amendments of policies and practices, pertaining to technology, to reflect the changing needs of adolescents. As noted in the literature review, these policies and practices must reflect appropriate prevention, intervention and education programs to counter the negative repercussions associated to excessive adolescent technology use. The more research that is acquired about the effects of technology, the more useful that will be in the creation and refinement of prevention and intervention programs aimed at promoting positive adolescent development (Cyr, et al., 2015). Furthermore, the recommendation that education programs also include health professionals, parents and adolescents themselves, is vital for understanding and addressing significant issues (Yamatoto & Ananou, 2014, Lotrean, et al. 2016, Scott, et al., 2017). Education programs can be a means for helping adolescents create a healthy co-existence with technology (Yamatoto & Ananou, 2014).

Another way to help adolescents create healthy relationships with technology is to invite them to reflect and share their experiences. Future research should utilize the experiences of adolescents to inform and expand on current knowledge and the small research base. After all, the findings from this study did stress that “adolescents know technology better than adults do”
and that they are the digital natives. Therefore, they may have valuable insight that could benefit future adolescent generations.
References


https://www.simplypsychology.org/vygotsky.html


http://www.who.int/mental_health/policy/services/9_child%20ado_WEB_07.pdf


Appendices

Appendix A: Certificate of Human Research Ethics Board Approval

Certificate of Human Research Ethics Board Approval

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<th>Contact Person</th>
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<td>Influences of Technology-Based Learning</td>
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Certification:

The protocol describing the above-named project has been reviewed by the UFV Human Research Ethics Board, and the procedures were found to be in compliance with accepted guidelines for ethical research.

Michelle Riedlinger, Chair, Human Research Ethics Board

NOTE: This Certificate of Approval is valid for the above noted term provided there is no change in the procedures or criteria given.

If the project will go beyond the approval term noted above, an extension of approval must be requested.
Appendix B: School District 34 Ethics Approval

Caydeean Clayton
Masters of Social Work Student
University of the Fraser Valley
33844 King Road
Abbotsford, BC V2S 7M8
604-264-7441

February 1, 2017

Influences of Technology-Based Learning: Confirmation Agreement

Purpose/Objectives of the Study

This study will analyze if and how technology-based learning influences interpersonal relationship skills of middle school students at Abbotsford Traditional Middle School. The principal investigator for this study is Caydeean Clayton of the University of the Fraser Valley.

Procedures involved in the Research

For this study, the principal investigator will conduct five, 30-50-minute individual interviews with school staff from Abbotsford Traditional Middle School. The purpose of these interviews is to gather information from school staff with respect to their experiences regarding the technology-based curriculum and how it may be influencing interpersonal relationship skills. Interviews will take place on campus at Abbotsford Traditional Middle School. The responses gathered in the interviews will be recorded, transcribed and protected by the principal investigator.

This study aims to analyze if interpersonal skills such as communication styles, peer interactions and teacher/student relationships are influenced by the technology-based curriculum. This study may highlight areas of interest whereby schools and teachers will become more aware of the influences associated with technology-based learning and implement appropriate strategies and programs to target any negative influences.

Please confirm that you are agreeing to this research study taking place.

Principal/School Board Signature

Date: Feb 23, 2017
Appendix C: Invitation to Participate

Influences of Technology-Based Learning on Interpersonal Skills
Recruitment Letter

The digital world is increasingly becoming an integral part of a student’s learning environment. Abbotsford Traditional Middle School recently incorporated a 1-1 technology-based learning initiative whereby each student has their own laptop to engage in the technology-based curriculum.

Purpose/Objectives of the Study

My name is Caydeen Clayton and I am a Master of Social Work student at the University of the Fraser Valley. I am the principal investigator conducting a research study that will analyze if technology-based learning influences interpersonal skills of middle school students at Abbotsford Traditional Middle School.

Procedures involved in the Research

For this study, the principal investigator will be conducting individual interviews lasting 30-50-minutes in length with five staff from Abbotsford Traditional Middle School. The purpose of these interviews is to gather information from staff with respect to their experiences. The interviews will take place at a convenient location for each participant. The responses gathered in the interviews will be recorded by Caydeen Clayton. This study aims to analyze if communication styles, peer interactions and teachers/student relationships are being influenced by the technology-based curriculum. The proposed benefits for this study is to highlight areas of interest whereby schools, teachers and support staff can implement education, awareness and preventative programs to students and families to target any risk factors. There are no proposed risks involved in this study. If you would like to participate and be interviewed, please respond to this email by providing your name and contact information.

Sincerely,
Caydeen Clayton
Appendix D: Research Study Consent Form

Caydeen Clayton  
Masters of Social Work Student  
University of the Fraser Valley  
33844 King Road  
Abbotsford, BC V2S 7M8  
604-504-7441  
February 1st/2017  

Influences of Technology-Based Learning on Interpersonal Skills  
Letter of Informed Consent for Individual Interviewees

The digital world is increasingly becoming an integral part of a student’s learning environment. Abbotsford Traditional Middle School recently started a technology-based learning initiative whereby each student has their own laptop to engage in the technology-based curriculum.

Purpose/Objectives of the Study

My name is Caydeen Clayton and I am a Master of Social Work student at the University of the Fraser Valley. I am the principal investigator conducting a research study that will analyze if technology-based learning influences interpersonal skills of middle school students at Abbotsford Traditional Middle School.

Procedures involved in the Research

For this study, the principal investigator will be conducting individual interviews with five school staff from Abbotsford Traditional Middle School. The purpose of these interviews is to gather information from staff, with respect to their experiences, regarding the technology-based curriculum and how it is influencing interpersonal relationship skills of middle school students. The interviews will take place at a convenient location for each participant. Each interview will take approximately 30-50-minutes; whereby selected questions will be asked. The responses gathered in the interviews will be audio-recorded by Caydeen Clayton.

Potential Harms, Risks or Discomforts to Participants

There are no foreseeable risks involved in this study.
Appendix E:

**Interview Questions**

1. How long have you worked at this school?
2. What is your role at this school?
3. What are your experiences of the recently implemented technology-based curriculum?
4. Since the implementation this curriculum, have there been changes in the way students communicate? If so, what are they?
5. How do you think technology-based learning influences teacher and student relationships?
6. What changes have you noticed in middle school student’s ability to develop healthy relationships with peers and teachers?
7. What are your suggestions for other schools/teachers looking to implement a technology-based curriculum?