



Promoting Child Rights Through Use of Technology in the Classroom

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Abstract

While there is a myriad of ways to use technological advances in the school setting, this chapter focuses particularly on educational technology in contrast and supplemental to a traditional or more typical school setting. The chapter starts by describing articles of the UN (1989) Convention on the Rights of the Child (Convention) that are of importance in understanding the use of technology in schools, followed by a description of technological trends in learning. The chapter delves into three important applications of technology in advancing child rights in education, including how technology can support student access to learning (Article 28), how technology can support education that advances the development of each child's full potential (Article 29), and finally a section on practical applications for school psychologists to facilitate technol-

ogy use in line with the Convention, including protecting each child's freedom of expression (Article 13), thought (Article 14), and association (Article 15). This chapter relies on case studies and practical examples from the authors' own experiences to illustrate the concepts being described.

A 13-year-old boy in Dublin, Ireland places a helmet over his head, his eyes covered by opaque glasses. Once the helmet is fitted, he looks around and finds that the pale blue walls of his classroom have turned into a vast expanse of sand. On the horizon he sees the great pyramids his teacher had spoken of just this morning. He begins to explore his new landscape in Ancient Egypt. He dons the outfit of an archaeologist, preparing to enter a pharaoh's tomb. His mission is to survey the contents of the tomb, and to bring a catalogue of these contents back to his teammates for analysis.

While this scene reads as if it were pulled from a science-fiction novel, virtual reality games as tools in the classroom are much closer than we think. In fact, Google Expeditions, a brainchild of Google, has created a virtual reality experience for the classroom out of smartphone software (applications for Android and Apple phones) and cardboard. The applications for these programs are endless: a trip to the Great Wall of China, watching an ecosystem unfold, or seeing

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and manipulating a demonstration of the Pythagorean theorem. Twenty years ago, the idea of putting on a headset that could transport you visually to a different landscape resided solely in movies and books but has now become a viable way for medical students to practice surgery or for a fifth grader to explore a pharaoh's tomb. Technology is growing exponentially in ways that promise a near and continuing future of amazing learning. The application of these new technologies in education is endless. In fact, over time there has consistently been the belief across educational associations that technology has the potential to transform education by increasing access to learning for all students and enhancing the experiential, student-driven nature of learning, both ideals in line with provisions for education expressed in the U.N. Convention on the Rights of the Child (Madden et al. 2013). However, on its own technology is simply a tool. Ultimately, technology is a tool that educators can use to realize the greatest ideals of education.

Technology's inevitable advance and integration in the classroom requires all school faculty to be aware of technology's many applications and trends. Broadly, technology refers to the application of tools and the scientific method to solve practical problems. The colloquial reference to technology today primarily centers on the application of computerized machines and computer software to develop solutions to problems or enhance the functioning of current practices. While technology has many positive applications, its applications may also be insidious. For example, increasing youth access to Internet spaces without adult supervision, such as social media websites, has created a new avenue for bullying. The youth perceive online or cyberbullying as worse than traditional bullying (Sticca & Perren, 2013). Cyberbullying also has been implicated in many bullying-related deaths in recent years and has unique implications for female and LGBTQ+ identifying students (Bauman, Toomey, & Walker, 2013; Wiederhold, 2014). Cyberbullying allows for relative ano-

nymity on the part of the aggressor and therefore is a platform for relational bullying seen among female identifying students. School psychologists are in a unique position to optimize the use of technological opportunities in support of the full holistic (physical, mental, social, spiritual, and moral) development of children and youth. While school psychologists wear many hats, their roles in designing school systems, school leadership teams, special education consultation, family advocacy, and evaluation coordination place them at a vantage point allowing them to facilitate seamless integration of technology to enhance educational practices.

Although there is a myriad of ways to use technological advances in the school setting, this chapter focuses particularly on educational technology in contrast and supplemental to the traditional or more typical school setting. The more traditional or typical school setting is conceptualized in this chapter as a classroom setting, typically with 25–30 children and a single teacher, who then imparts content knowledge on youth through reading materials, presentations, and classroom activities. This chapter starts by describing articles of the United Nations Convention on the Rights of the Child (hereafter referred to as the Convention) that are of importance in understanding the use of technology in schools, followed by a description of technological trends in learning. The chapter delves into three important applications of technology of advancing child rights in education: (a) how technology can support student access to learning (Art. 28), (b) how technology can support education that advances development of each child's full potential (Art. 29), and (c) practical applications for school psychologists to facilitate technology use in line with the Convention, including protecting each child's freedom of expression (Art. 13), thought (Art. 14), and association (Art. 15). This chapter relies on case studies and practical examples from the authors' own experiences to illustrate the concepts being described in each section.

The U.N. Convention on the Rights of the Child in a Technological World

The Convention is an aspirational document that provides guidelines to all about the essential rights of children (defined as individuals under 18 years of age). (The Convention, including its contents and history, is detailed in Hart & Hart, chapter “[Child Rights and School Psychology: A Context of Meaning](#)”, this volume, and Lee & Krappman, chapter “[Status of Child Rights in the International Community](#)”, this volume.¹) Though the writing of the Convention precedes the explosion of personal digital tools, each article provides guidance on how to promote and protect children’s rights in all contexts. Sonia Livingstone, a child rights academic and a partner of the UNICEF project Global Kids Online, created an edited version of the Convention to highlight how the Convention can be interpreted in the digital era (*An Updated UNCRC for the Digital Age*, 2018). For example, Livingstone edited Article 8 to read the following (italicized text added by author to indicate Livingstone’s edits): “governments must protect the child’s right to a name and nationality and a family life: *Every child’s digital identity should be protected from being hacked.*” Yet another example is Article 11, rewritten to read the following (italicized text added by author to indicate Livingstone’s edits): “*Trafficking is organized online and offline. Governments should prevent both* to stop children being taken illegally to another country.” Livingstone’s project serves not to replace or even officially alter the Convention but to indicate ways in which the document might contribute to understanding the promotion and protection of child rights in a digital era.

The Convention also provides explicit guidelines for education, including Article 28 (children have the right to an education) and Article 29 (education should develop each child’s full potential). However, the intersection of how technology might impact the realization of child rights in the educational setting is left to interpre-

tation. Livingstone’s project and the Global Kids Online project focus on digital access and protection from harm, including interpretations of Articles 28 and 29. The purpose of this chapter is to outline ways in which digital tools can help educators realize important child rights related to education as integrated into the process of learning.

Technology Trends in Learning

As technology expands, so does its role in learning. In fact, current conceptualizations of the role of digital hardware (such as computers or cell-phones) in human culture describe them as an inseparable part of the human experience. Anthropologist Amber Case argues that the symbiotic relationship between humans and computers is so codependent that we have become cyborgs (Case, 2010). Though cyborgs are traditionally imagined as humans with some organic parts replaced by computer parts, Case argues that our dependence on computers, as an extension of the mental self, fulfills the requirements for defining us as cyborgs. This is further exemplified by the fact that children are using computers at younger and younger ages. Very young children, some 2½ and 3 years of age, are accessing the Internet through a tablet or computer and making choices about games they play, choices that expand progressively and dramatically later in life. This means that many children beginning school arrive already knowing how to operate tablets, phones, and computers. They are also arriving with a set of preconceptions about technology, the purpose of technology, and unique understandings of the application of technology.

In our always changing digital world, the idea of students learning in the traditionally highly structured monolithic setting is regularly challenged as this learning experience does not mirror student’s at-home lives. Increasingly, students turn to Internet and digital products to engage in creative projects, including social media platforms like YouTube. Currently, 60% of people worldwide have access to the Internet, up from 1% in 1995 (Child Trends, 2018; Internet World

¹A complete copy of the Convention articles and optional protocols is available in the Appendix of this volume.

Stats, n.d.). The Internet Live Statistics Project reports that in any 1 second, there are over three billion people using the Internet. Looking specifically at the youth, in Western countries 95% of teens are online during part of their day (Madden, Lenhart, Duggan, Cortesi, & Gasser, 2013). This percentage has been consistent since 2006; however, the ways that youth access technology is changing radically. In 2006, it was more typical that an adolescent was tied to a computer for access to the Internet; however many youth can now access the Internet through mobile devices. Although there is increased use of technology for youth worldwide, the costs exceed that of paper and pencil communication tools. As such, the rate of use is positively correlated with income, and children of families with lower household income access the Internet less often than more affluent families (Child Trends DataBank, 2018). A 2013 survey by the Pew Research Center found that countries with higher gross domestic product per capita have higher rates of smartphone ownership and Internet use (Pew Research Center, 2015).

With this increased access and use of the Internet, children are constantly being bombarded with information of varying types, quality, and veracity. The Convention notes that each child has a right to access information from the media, specifically to “access reliable information from a variety of sources” (Art. 13), and emphasizes that the government should encourage media corporations to create material that is developmentally appropriate for children. The Internet plays a large socio-economic role, both acting as a social connection platform, a source of seemingly endless information on a practically endless number of topics, and serving as an online economic tool (Anderson & Whalley, 2015). Internet protection groups have since become the bastions of free speech across the world, pushing for free Internet access in every country and net neutrality or the absence of political or private interests filtering access to online content (Battle for the Net, 2015). These topics have been brought out amid debates concerning

government regulation of Internet costs globally and Internet censorship in countries under communist party rule, including North Korea, Vietnam, China, and Cuba (Vanderhill, 2015). Therefore, restrictions on reliable consistent access to the Internet and censorship of content act as barriers to the realization of children’s rights to media from varied sources.

Although the Internet is a great tool, it is a tool nonetheless, and access alone is not enough to promote education (Vanderhill, 2015). Increased efforts to provide free Internet access in libraries in the U.S., for example, have been met with mixed results, highlighting the importance for library staff who can assess the needs of their community when it comes to Internet access and provide training and expertise in understanding the use of computers and the Internet (Bertot, McClure, & Jaeger, 2008). Schools, like libraries, function as community centers and are often the only place where students can access the Internet. Furthermore, schools are increasingly reliant on technological services to promote student education. In some cases, online schools have completely replaced the traditional school building and are touted as a cost-effective way to reach unique student populations (Waters, Barbour, & Menchaca, 2014). Therefore, educators and school psychologists may act as cultural liaisons in understanding how technology can be appropriately and effectively incorporated into their schools.

The remainder of this chapter highlights three ways that the authors have integrated technology into the promotion and protection of child rights in the school setting. The following sections address the use of technology to increase access to education (Art. 28) and the use of technology to promote individualized learning aimed at developing the full potential of each child (Art. 29). The chapter concludes with a review of practical applications for school psychologists in using technology to promote and protect child rights. Other articles of the Convention are used to expand section ideas as all articles are interdependent.

Increased Access to Formal and Informal Education Opportunities

In recognition of the importance of technology to education, newer technologies breach economic barriers by providing low-cost high-quality electronic products to educational entities that are able to access the Internet. The programs are specifically aimed at providing these products to students from low-income communities around the world. For example, One Laptop Per Child (OLPC) is a nonprofit organization with the goal to “empower the world’s poorest children through education,” and the mechanism for this is distribution of over two million laptops around the world. While this project initially gained much recognition for innovation, it did not do as well as projected, placing only two million of its initially projected ten million computers in countries with lower gross domestic product (GDP) per capita (Yujuico & Gelb, 2011). Education and marketing experts argue that OLPC’s main failure was in ignoring cultural differences across countries in their marketing of computers (Yujuico & Gelb, 2011).

As noted earlier in the chapter, children and adolescents now have virtually unlimited access to a variety of resources on an almost limitless number of topics. The world, and the virtual world, can become a classroom full of virtual tours of museums or ability to play musical notes of instruments from other countries. In this way the child becomes his/her own teacher, managing one’s own development. The job of adults around the child is to then make space and provide support for unique holistic development. However, some would argue that facilitation of technology use in classrooms is nothing more than the same style of education introduced in a different medium. In his book *Beyond Technology*, Buckingham (2013) argues that much of the way we talk about technology today is truly just a consideration of media. For example, while video viewing through YouTube happens via a new medium (the Internet), it is not in and of itself a new technology. However, technology is the computer and the Internet, which allows greater

access to these mediums. In this way technology has become a tool to help increase access to informal learning for the youth. However, it is the responsibility of adults around a child to help guide him or her in understanding and using this space.

Students now access the Internet and utilize technology more and more fluidly in a very informal way. Students are able to talk to each other more and access different media more readily. Despite this, schools have yet to fully realize the potential of technology tools (Buckingham, 2007). While schools are often equipped with digital technologies, the incorporation of technology into the curriculum is done with little attention to the way the youth have grown to naturally use computers. For example, students increasingly use online platforms to house projects and to connect globally with others. The use of the Internet in this way is paramount as a twenty-first-century job skill; however, it is unclear if schools are integrating technology in a way that facilitates these skills. For schools to help develop the whole child, anticipating, mirroring, and expanding these experiences in the classroom are key. A case study for understanding the benefits of an online learning curriculum can be found in a collaboration project posed to a group of students in Finland. The larger project required the collaboration of over 200 students in the development of a musical in an eight-month period. Authors followed a group of 21 fifth and sixth grade students as they collaborated on writing the musical. They found that in a three-month period of writing, students utilized an online writing tool to effectively collaborate on writing not only during school but also outside of school. The authors concluded that traditional school models constrict the space and time available for students to work and that online learning tools allow students to take control of their learning practices and allow for personalization and creativity (Kumpulainen & Rajala, 2017).

Why is it that many schools are using technology more as traditional access versus applying its full range of capabilities? It is possible that teachers are afraid of how these changes might affect their roles in schools. If students can take full

control of their learning, then maybe there will no longer be a space for their authority and guidance. It is also possible that technology progresses so quickly that it results in teachers and students using digital technology in very different ways and that teachers are not sure how to best integrate technology to reach their students. The fact remains, however, that the way students spend their free time and the way they communicate with each other and the world are vastly different at home versus school.

Historians have documented that throughout time, new technologies have been met with much opposition. Take for example the invention of the telephone. For years, social commentary noted that the advent of the telephone would ruin intimate relationships by allowing the outside world to intrude on the home. Maybe this tendency to cast shadows of danger on new technologies that we do not fully understand helps to balance the misuse; however, it also may serve to unfasten the youth from outdated teaching modes. When children can use Wikipedia to learn about what interests them and take control of their own learning, traditional schoolhouse learning may be considered overly restrictive, insensitive to individual capacities and interests, conducted in slow motion, and smack of obsolescence. Therefore, a teacher's time and efforts might be best spent guiding youth in the use of these technologies and using them to supplement and, in some cases, replace traditional teaching pedagogies.

Use of technology does not just mean facilitation of media like videos, but it also means application of new tools to engage students generally and uniquely. One example of a technological advancement that can engage students is a student remote that is the twenty-first-century version of hand raising. Using these devices, students participate in class discussion, and class data are aggregated so that the teacher can analyze trends in the moment on a class-wide scale. For example, if the teacher asks students a question such as, "how many students believe that recycling is important?" students can then chime in by either typing out a response or choosing from a list of multiple choices. The teacher can then display on her computer or projector the percentage of stu-

dents who agreed/disagreed. This tool can be used to spark student discussion and/or by a teacher to gauge class-level understanding of a concept.

Inset 1: Case Study: Increased Access to Education Through Digital Technology

The following case study is an example of digital technology that both increased student access to education broadly (Art. 28) and built an educational environment to promote the development of the whole child (Art. 29). Ahmad was an 8-year-old child living in a large refugee camp in the Middle East. Ahmad was born in the refugee camp but struggled with severe anxiety, including separation anxiety. With aid from a nonprofit organization, Ahmad was able to access schooling through an online medium while remaining in close physical proximity to his parents while he was attending therapy. Those working with Ahmad through a community mental health center were also able to connect Ahmad to his classmates and his peers around the world through the digital medium. Over time, Ahmad was able to return to his nearby community schools while also continuing access to others his age globally in collaborating on projects. In under a month, Ahmad was able to complete a written project, maintain his schooling status, and work to overcome some of his separation anxiety in order to return to school. His mother reported feeling an immense amount of relief that her son did not fall behind in his schooling. This use of technology in this case allowed Ahmad to continue his access to education (Art. 28) in a way that continued to help develop his full potential and develop his unique talents for writing (Art. 29). Though this case study only involves one student, it speaks to the many ways that technology can be integrated into supporting students around the world across contexts.

Using Technology to Promote Individualized Learning

In Ernest Cline's science fiction novel *Ready Player One* (2011), the destitute main character is a young teen, Wade Watts, with a single worldly possession, a laptop. In the future that Cline creates, though Wade only has this single laptop, it is all he needs as it allows him to virtually attend school, spend time with his friends, and access recreational activities, as well as educational materials. Though this book is set in the year 2045, it is not so far off from today's reality. When asked to picture a school building, most individuals would mention groups of students at desks intently focusing, or attempting to focus, their attention on a teacher as he or she presents the day's prescribed lesson. Financial costs involved in this traditional scenario include building space, classroom materials, considerations of a teacher-student ratio, and school supplies. As educational budgets fall around the world, online learning is being touted as a more cost-effective and more individualized learning experience than the traditional school building. In fact, a meta-analysis conducted in 2009 of over 1000 empirical studies about online learning in K-12 education, as well as higher education, found that students who received some online education performed better on average than those who only received traditional face-to-face schooling access (U.S. Department of Education, 2010).

One form of fully online learning in the elementary environment is the online charter school. In this model, traditional teachers are employed to host online classrooms where students and teachers can connect via online messaging services using text, voice, and video. Students are mailed classroom materials such as the needed pieces of a science experiment and are instructed to complete an independent study of the materials using online learning modules, followed by connecting with other students and their teachers at a specific time using a messaging app. The students then listen to a didactic lesson, and each student follows the teacher's instructions. They are then encouraged to ask questions and even talk individually to each other via online messag-

ing systems. The only difference is that the student does all of this from anywhere in the world, including the home. The authors personally know of a family living on a boat and traveling the world whose children utilize this mechanism of nontraditional schooling. The applications of these worldwide are tremendous as, again, the classroom is reduced to a single, fairly cost-effective tool, a computer.

Little research has been conducted on the effectiveness of these fully online methods of teaching in the secondary school setting, though a review of online college and graduate courses provide promising results dependent on the quality of instruction (Means, Toyama, Murphy, & Baki, 2013). However, as noted in the previous section, these methods continue to keep students connected to educational materials in circumstances where they otherwise would be unable to access educational materials. These digital learning platforms also provide flexibility to the user, which allows students to build educational experiences that meets their needs and promotes learning that fosters their full potential (Art. 29).

Although many school-based professionals think of online learning as a full contrast or replacement of face-to-face instruction, most online learning falls somewhere between and combines various combinations of online and face-to-face instruction (Means et al., 2013). A new buzz word in the education lexicon is *blended learning*, a term describing conditions in which the teacher is an education manager who creates a curriculum and teaches traditionally but supplements traditional learning with management of online learning modules. These online learning tools provide students with learning experiences and track student progress. The blended learning teacher can monitor student progress and support students when they are struggling and can monitor class-wide trends in learning. The success of blended learning programs, however, does not lie solely in data collection but in the ability for students to have greater autonomy within their educational experience. In the 2013 meta-analysis by Means and colleagues, college students indicated that opportunities for learning activities, reflection, and self-monitoring

were the most effective online tools. The meta-analysis also noted that students in blended learning classrooms spent more time learning than their counterparts. The report concludes that the effectiveness of online learning was due to increased learning time, increased ability for collaboration, and student ability to manipulate their learning environment.

While classroom environments fully delivered online are available, blended learning models are gaining far more traction as they can provide both the benefits of online learning and traditional face-to-face learning. Blended learning is unique in that a curriculum is created and managed by a teacher and is implemented via face-to-face and technological affordances. For example, a teacher may introduce a historical theme such as the Second World War, then students complete an online learning module that includes videos, delve into online resources on aspects that most interest them, and then are guided through a project and finally a quiz by their teacher. In this model, the teacher manages and analyzes student data. This means that as a student progresses through a planned curriculum using technology tools, teachers can use precise data to pinpoint where students are struggling and intervene accordingly. Osguthorpe and Graham (2003) suggest that blended learning models have six distinct benefits, including pedagogical richness, access to knowledge, social interaction, personal agency, cost-effectiveness, and ease of revisions. These are reviewed in the following examples:

1. *Pedagogical richness* or the ability to provide many different teaching tools: an example of this is the flipped classroom in a high school or college environment where students review an audio or video recording of a class lecture and spend class time completing an in-depth class project. In an elementary setting, this could mean that the teacher introduces children to a topic and creates an online learning module that the students go through while the teacher walks through the classroom guiding students who are struggling or helping them find unique learning paths.
2. *Access to knowledge*: the Internet is a seemingly endless resource full of information to which students and teachers might not otherwise have access. It is important for teachers to act as guides, providing students with information regarding how to find accurate and needed information.
3. *Social interaction*: blended environments allow for social interaction in a way that purely distance learning does not. In the blended classroom, students can connect with each other, ask questions, and exchange ideas. Via technology, students also can connect with others whom they may never have connected with before, including students in other countries, through collaborative learning opportunities (Anastasiades et al., 2010).
4. *Personal agency*: the blended learning classroom allows students some learning control by offering students opportunities to guide their own learning goals and topics. Due to the need for lower student-to-teacher ratio for effective application, self-directed learning opportunities are more typically practiced in affluent schools (Venezky17, 2000). Blended learning makes student-led learning potentially available to all schools. This is increasingly important as students' abilities to effectively ask questions and research answers are becoming infinitely more important in a world where the amount of available information exceeds what we can teach students in elementary, secondary, and postsecondary school.
5. *Cost effectiveness*: blended learning classrooms are an easy, cost-effective way to address many issues currently facing low-income schools, such as high teacher-student ratios. In classrooms where there are 30 or more children to a teacher, classroom management and the effective use of student level data for teaching is much more difficult. Blended learning classrooms allow teachers to use computers as a learning support and to create small groups within the classroom to address the needs of students struggling or excelling in similar areas.

6. *Ease of revision*: blended learning classrooms are fully teacher led and revised. There are many online tools available for teachers to use, but even more importantly teachers can create materials and projects with relative ease. Furthermore, many available tools come with data-tracking components that allow teachers to monitor student progress and to change the curriculum as needed for the whole class, groups of students, or individual students. This ease of revision allows for more effective differentiated learning strategies.

These six strengths of blended learning programs directly align with three articles of the Convention:

- *Article 28 (Right to an education)* notes that each child has the right to an education that is free and must meet the developmental needs of the child. The ability to access different forms of instruction and increased access to knowledge are both inherent in the blended learning model.
- *Article 17 (Access to information)* notes that each child is to have access to reliable information from a variety of sources in ways that children can understand. Inherent in the blended learning model is teaching the youth how to access age-appropriate material that is reliable, as well as tools to organize, understand, and synthesize this information.
- *Article 29 (Goals of education)* states that every child has the right to an education that will seek to develop the child's personality, talents, and abilities. Blended learning models allow for personal agency or learner control, providing room for students to develop their talents and further their own interests.

Blended learning models merge sectors along a continuum with end points representing two types of teaching: (a) fully distance learning that relies primarily on Internet interactions to provide education and (b) face-to-face learning that views the youth as "empty vessels" to be filled with information. The marriage of these two extremes is a classroom where the teacher devel-

ops a curriculum, differentiates learning by providing students with technological resources to practice and further understand topics, and facilitates identification of smaller groups of students to address unique student needs. In Todd Rose's *The End of Average* (2016), the author makes the case for competency development through student-led learning. He argues that instead of defining educational certificates as standardized curriculum in higher education, students should be allowed to define their own learning pathways by displaying competency in subjects that they might then stack together to build the skills needed to pursue their chosen career pathways and interests. The idea of students displaying competency in needed topics versus earning grades in defined subjects, as Bloom's mastery approach to education intends (Kulik, Kulik, & Bangert-drowns, 1990), can be applied to blended learning. For example, in a classroom of 25 students where each student learns at a different pace, teachers can work to give students a foundation in a subject and allow students to build projects or use learning tools to individualize their learning experiences and assessments.

While most of this chapter has thus far dealt with using technology to address education broadly and particularly establishing the modern classroom, the rest of the chapter delves into specific technological advances to support more traditional school psychology practice, including applications (apps) to support academic interventions and social emotional needs.

Using Technology to Help School Psychologists Promote and Protect Child Rights

While digital mediums offer a range of possibilities for integration into education, digital technologies are a tool nonetheless, and access to the Internet by itself is not enough to promote education (Vanderhill, 2015). Although technology provides practical ways to connect, monitor, advance and improve children's well-being, those options remain useless without facilitation by a professional who understands these tools. As in

Inset 2: Case Study on Promoting Individualized Learning

Two of the authors of this chapter work in a publicly funded charter school where this blended learning model was used in the fifth grade. This case study represents a collaboration between the school psychologist and a fifth grade teacher. One fifth grade math classroom is presented here as a case study for an effective blended learning model. The classroom consisted of 27 ten- to 13-year-old students with varying math ability levels. For this collaboration, students were pulled from whole-group math instructional time to support students struggling with basic math fluency. The teacher and the school psychologist brainstormed solutions and began to use a computer program with all students to teach basic math fluency. This computer program would test each student and match learning modules to their respective levels. The program provided data that the teacher and school psychologist could review to assess student progress. The teacher would lecture for 40 minutes, and then all students would use this program for 20 minutes. However, in this model, students needing further explanation beyond what was provided by the computer program were missed. With 27 students using the same program at the same time, the teacher would rush from student to student in order to answer questions and did not have time to delve into deeper teaching methods with students who needed it. Therefore, the school psychologist and teacher began to use a blended learning module.

Once the teacher and school psychologist chose to use a blended learning model, they sat down and designed what this would look like. The teacher would begin all students on the day's topic, introducing the days' objectives and schedule. Then the teacher would assign students to groups for an hour. In this hour, half the groups would

work on practice problems together with teacher guidance, and the other half would use the computer program to practice basic math competencies. This was a universal process in which all students engaged. For those students who were still struggling and who were failing computer lessons, the school psychologist would provide further support in practicing both their basic math fluency and more complex math problems later. As a result of progress monitoring, adaptations were made the learning program to meet individual needs. As a result of the blended learning program, fifth grade math intervention students had the highest gains of any math intervention group in the school during that year. Furthermore, upon seeing the success of this program, the school applied for and received a technology grant in order to further utilize blended learning in other classrooms.

the case study (presented above, Inset 2), a school psychologist is one person who can facilitate the use of technology to support student and teacher needs. At a more direct service level, school psychologists can help children to navigate and choose from the vast array of available digital resources and teach them to apply them in their daily lives:

Imagine a 10-year-old girl in Paris, bursting into tears after arguing with her best friend during recess. She is hurt because her friend said some offending words, and she is afraid that her friend won't like her anymore. Her parents are at work, and she will only see them later that evening. Her teacher might notice what happened but can't talk to the girl at length and sooth her, because class is about to start. She feels lonely, and vulnerable. She searches the internet for advice, and enters a forum designated for children who are struggling with friendships. At the forum, she tells her story and other children encourage her. The psychologist that supervises the forum also explains that these things happen between friends and that it doesn't mean the friendship is over. The psychologist invites the girl to continue a private chat.

This girl was able to find emotional support on the Internet, facilitated by a mental health professional. Tools such as this are becoming increasingly popular with the advent of text therapy and teletherapy. The above scenario demonstrates some of the possibilities inherent in the Internet, for helping children deal with emotionally laden situations that they encounter in their everyday routine. Without modern technological tools, the same girl might have been upset for a very long time without telling any of the significant adults in her life. She may not have told the adults about her difficulties because she was embarrassed or because nobody noticed that she was upset and asked about it or because she forgot about it by the time an adult asked her about her day. Sometimes that kind of minor emotional difficulty is intensified because the child is dealing with it on her own. In the twentieth century, professional mental health help was only available via the traditional methods, namely face-to-face personal encounter between a child and a professional worker (e.g., psychologist, counsellor, social worker, psychiatrist, therapist). The therapist was situated within the physical environment of the child. However, those traditions have since expanded to include online methods of therapeutic support, which means that students in areas with less access to mental health support can now access them more readily. It is important to note that online methods changed not only the availability and accessibility of therapeutic support but also the position of the children and youth within the patient–therapist relations. Children and youth are empowered via technology since it enables them to place their own application, in their very own words, and ask for help. Traditionally, the parents or teachers usually start the therapeutic process and not the child. By providing professional help online, the child can not only try to solve his or her problem but also become responsible for his or her own quality of life. In short, the professional support via the Internet (psychological and pedagogical) has the potential to promote children’s rights regarding daily survival and to foster a platform for emotional thriving.

The following sections provide some practical tools that school-based mental health professionals might integrate into their practice in order to help support the development of the whole child. These tools promote much of what has been discussed previously in this chapter, including more individualized child-centered support, greater access to support, and support that directly meets child needs. By integrating these technological applications into traditional school-based mental health professional’s practice, we can expand the reach of services and individualized services to each child’s needs.

Navigating Our Way in the Technological Application Forest to Enhance Child and Youth Well-Being at School

In 2017, 2.8 million applications were available at Google Play Store, and 2.2 million applications were available in Apple’s App Store (<https://www.statista.com/topics/1002/mobile-app-usage/>). Those huge numbers reflect the worldwide phenomena of trying to accommodate various human needs via technological solutions. Some of those needs are encountered and dealt with (or ignored) daily at school, for example, children’s learning disabilities or struggle with social skills. The educational staff needs to monitor more closely some children’s behavioral and emotional risk in order to provide early and effective interventions. In many cases, when a student’s academic, social or emotional status is changing for the worse, there is a tendency to hastily turn to immediate action without thinking about the underlying student need. Asking the question “What does this child need help with?” might be very useful. Thus, the fundamental role of mental health professionals, such as school and educational psychologists, is to help the educational staff in this process by using data to guide the intervention. Several technological tools in different domains can assist with data collection to illuminate student needs. Figure 1 illustrates two ways that online tools can be used for intervention: assessment and data monitoring.

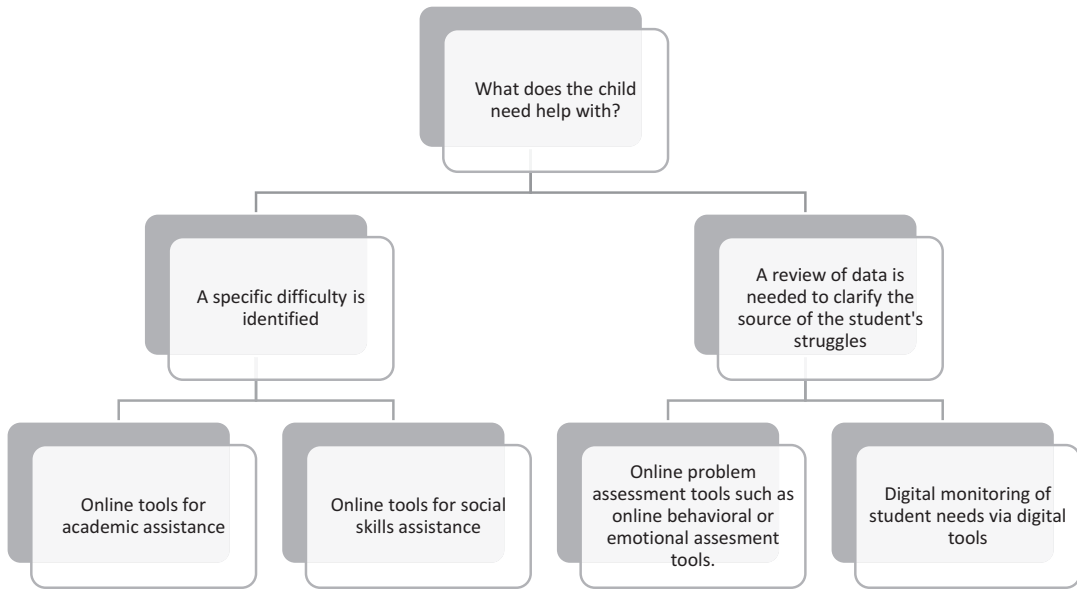


Fig. 1 What does this child need help with?

Online assessment and data monitoring tools To determine the source of a child’s distress, the mental health professional can speak to the child directly and administer a measure to assess and monitor the child’s behavioral and emotional state. Based on knowledge of the child’s functioning in class, accessed through various means (e.g., teacher report, grades, observations, child interview), the school/educational psychologist can evaluate a specific academic, social, or emotional difficulty that needs to be addressed in order to increase a child’s ability to do better. In that case, technology can easily create a wider picture of the relevant concern. For example, the “Daylio” application is a very easy-to-use application that enables students to report their mood by clicking on the relevant facial expression (e.g. bad, good, awful) and report “what have you been up to?” by clicking on small icons such as watching movies, reading, gaming, visiting friends. In addition, the application includes statistics showing average daily mood, longest best day streak, monthly mood chart, and so on. Assessing the “larger picture” of activities and feelings, accompanied by a conversation with the school psychologist, produces a follow-up chart made by the child that

enables the mental health professional to operate with data and recommend a relevant action plan.

Online intervention tools Granting that an assessment was already made, and a specific difficulty was recognized (e.g., reading difficulty or dyslexia), the mental health professional can plan and lead a practical intervention (left side of Fig. 1). Using online methods in the intervention allows the child an active position in his or her own progress, a central part of child rights. In this example of helping a child with reading problems, the school/educational psychologists might consider using software (via computer, tablet, or cellular phone) such as NaturalReader, which enables children to drag and drop a paragraph they struggle to read and hear it read in a pleasant human voice. In this way they can practice independently how to read and not stay behind the class. Though a software program cannot be the only assistance to overcome difficulties, it can be psychologically very beneficial. By practicing in a kid-friendly technological environment, on his or her own time and pace, a child can take more

responsibility regarding handling the specific difficulty.

Using Technology to in a Problem-Solving Model

In this section, we consider some software solutions to common specific difficulties that children encounter, in academic and/or socio-emotional skills. Additionally, we explore an efficient way to look for more applications.

Solutions to Common Specific Difficulties That Children Encounter in Schools

1. *Writing*: spelling mistakes can sometimes indicate dyslexia. Usually, a child avoids telling about reading problems, but writing problems are harder to hide. Writing difficulties can reveal wider problems, both in reading and in writing. Addressing those problems as early as possible could cut short a long route of suffering for many children with overt or hidden learning disabilities. The application suggested here enables children to experience several aspects of the language practices required at schools. A systematic use can be a great help in narrowing and focusing on the difficulty and hopefully identifying the most promising intervention.
 2. *Math*: math becomes a real challenge for most high school students. As a result, some of them may experience stress and anxiety. An easy-to-use application can support classroom learning and for many high school students become a way to decrease stress. [Photomath](#) is an excellent application for those needs. It allows the student to photo an equation and learn all kinds of methods to work with it, such as graphs, posting numbers in the equations, and more.
 3. *Social skills*: many children face difficulties in creating social relationships or understanding expected behaviors in class. They might ask themselves questions such as: how does one get attention in class? How does one plan the schedule at school when attending laboratories or gym classes not in the original schedule? Via any of the available social story applications, children can enrich their knowledge of what is expected of them at certain times. We can monitor the child's progress, and if the child's social skills are developing more slowly than expected with the program, a more extensive work plan can be considered.
- We highly recommend that the school psychologist personally experience technological solutions prior to suggesting those solutions to a child. This makes it easier to explain, to empathize with the student, and to predict points of frustration. By knowing the solution path, a mental health professional can plan relevant milestones and ask the parents and the teacher to join in the process at specific phases where they might be most helpful. When looking for an application to use, consider the following questions:
- (a) *What is the child's age?* Age is an important factor in understanding the current phase of the difficulty (e.g., is the child in the process of reading acquisition, or is he already supposed to have mastered it?). It is also a crucial factor in the child's motivation to use the specific software. For instance, software addressing younger audience (early developmental stage pictures and sounds) might be rejected by older youth.
 - (b) *Do you want to use free apps only?* The web is full of free-of-charge applications. However, sometimes only certain segments of the intervention option are free, and some require payment. In other cases, the application is fully billed and payable.
 - (c) *What is the specific area you want to address? What ability or skill do you want to help the child to develop?* Because of the abundant number of technological options, it is better to target a specific field. If a child is facing arithmetic problems, ask him and/or the teacher specifically what kind of difficulties are of concern and in what phase of the arithmetic competency development. Those questions will make the search much more efficient.

(d) *Do you want the child to use it at school and/or at home?* Some schools do not allow electronic devices, and the use of the proposed technological solution should be at home. According to the goals and constraints, a working plan should be designed.

While we have presented here several useful applications for integration into practice, there are thousands more available. In evaluating applications, it might be useful to follow two parameters: how many downloads/entries does the application/website have? What is the level of satisfaction reported? Applications/websites with a high number of downloads and a high level of satisfaction are preferred.

The Pros and Cons of Using Technology as a Mental Health Professional

Following our review of some applications and websites designated for children and youth, we conclude with a partial review of the pros and cons that could facilitate or hinder the use of the Internet by mental health professionals in schools. The first concept to consider in this endeavor is of course the professional's attitudes toward the use of technology in his/her work. For example, we have learned that many educational and school psychologists have been hesitant to integrate technology in their daily practices (Alkalay & Dolev, 2017). Among the most prevalent reasons for that were ethical issues and the concern that using technology at work "is not psychology." Another important consideration is the accessibility of the technology itself. For example, some languages may only have limited options of applications/websites suitable for the abovementioned purposes. Additionally, the technological infrastructure for the issues of concern might be desolate, thus hindering our professional usage of technology. In relation to using technology in counseling and therapy, some writers argue that because of the possible time and space difference between the therapist and the client in electronic therapy,

it may be more difficult to create the treatment contract and the working alliance, making it more difficult for some clients to commit to the therapy (e.g., Scharff, 2013). Additionally, possible interferences could arise in establishing important features of the treatment, such as face-to-face visibility, which some experts believe would prevent the transmission, detection, and interpretation of important nonverbal cues such as body language and voice qualities (e.g., Ragusea & VandeCreek, 2003). And of course, the Internet itself might present a technical challenge to both the therapist and the client, such as slight delays in voice or sound on one or both sides or disrupted connections during therapy sessions (Amichai-Hamburger, Brunstein Klomek, Friedman, Zuckerman, & Shani-Sherman, 2014).

So why should we make the effort to integrate the Internet into our work supporting children's mental health? A primary reason is that children and youth are "natives" in the digital world, and youth across the world are increasingly accessing the Internet at home, at school, and in their communities. It is only natural that they feel comfortable seeking support via the Internet on topics related to the difficulties they experience (King et al., 2006). Use of the Internet for that purpose may allow them to have direct access to a mental health professional, at any time and any place they need, thus enabling them to more easily and effectively express their genuine unfiltered voice. When a child is using technology to improve his or her condition, he/she is empowered, feeling in control of his/her life, and acquiring a sense of mastery over his/her problem. Additionally, the option of seeking help online via self-aid applications/websites that provide live links to a professional online might be particularly important for specific at-risk populations (e.g., traditional cultures). Those populations embrace the anonymity that the technology provides in order to help themselves. Accordingly, Amichi-Hamburger et al. (2014) proposed that it may be easier for some people to enter online treatment as opposed to traditional face-to-face treatment because it may have less of a stigma associated with it. Additionally, people tend to feel that the Internet is a "secure arena" and

thus lack of face-to-face interaction may increase self-disclosure and honesty. Also, people feel less shame and anxiety online, resulting in a faster transition to an intimate level, compared to traditional settings. Hesitation in approaching a mental health professional might be particularly prominent in minority populations, whereby the close and sometimes small communities hold negative stigmas associated with mental health problems or fear of mainstream government institutions (Cauce et al., 2002).

Another important consideration is that the Internet offers easy and convenient access to up-to-date information and generates opportunities to connect between people while overcoming the limitations of distance and time (Gilat, 2013). This option might be particularly meaningful when taking into consideration that 46% of the world's residents live in outlying areas (World Health Organization, 2015). For children and youth residing in those areas or in countries where the population is thinly spread across peripheral regions, the Internet might present a rare opportunity to receive mental health services. Lastly, worldwide there is a wide gap between the enormous need for mental health services and the actual receiving of such services by those who need it. Kazdin and Blase (2011) argue that despite remarkable advances in psychological research and intervention, most mental health professionals continue to rely on traditional face-to-face methods that offer limited access to mental health services. Thus, the proportion of unmet needs does not diminish. The authors propose that unlike individual therapy or counseling, the Internet and other technologies offer the ability to reach a large swath of people in need of services, thus decreasing the prevalence and incidence of mental illness and related conditions.

In conclusion, the Internet allows exciting opportunities to promote the emotional well-being and mental health of children and youth. A comprehensive survey conducted by Barak, Hen, Boniel-Nissim, and Shapira (2008) indicated that various types of counseling and therapeutic services over the Internet, such as communicating via emails, forums, and chats, are indeed effective in achieving improvement. Thus, we believe

that it is beneficial to integrate the Internet into the mental health professional services and that the Internet is a viable tool to use in counseling and therapy with children and youth. The variety of options to engage in order to enhance pupils' well-being challenges the traditional mental health professionals' methods. The wide range of technological options enable assistance to children and youth with specific difficulties like learning disability and low social skills, as well as with ongoing monitor of children's emotional state. Matching an appropriate solution to the pupil's current state requires identification, as accurate as possible, of the mental health need and a compassionate accompanying of the child toward selecting and using a viable solution. With professional guidance and help in navigating the technology, children can benefit from it much more than when trying to handle it alone.

The integration of technology into the daily work of school and educational psychologists and the psychologists' support and facilitation of the usage of technology by educational teams are in line with the U.N. Convention on the Rights of the Child (Madden et al. 2013). Articles 12–14 deal with children's rights for freedom of expression thought and association, all of which have a bearing on the usage of Internet by children in general and specifically in relation to online psychological support. Specifically, *Article 12* presents children's rights to form his or her own views and the right to express those views freely in all matters affecting the child. *Article 13* specifies the obligation to protect each child's rights to freedom of expression, which includes the freedom to seek, receive, and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing, or in print, in the form of art or through any other media of the child's choice. *Article 14* concerns children's rights to freedom of thought. Complementary to Articles 12–14, *Article 17* emphasizes the important function performed by mass media to ensure that the children's access to information and materials, especially those aimed at the promotion of his or her social, spiritual, and moral well-being and physical and mental health. Thus, the Internet can be used to facilitate those rights by publishing information regarding vari-

ous mental health issues and daily worries that children encounter and by providing children secure and professional platforms to express their worries and consult a mental health professional. Additionally, several articles stress the importance of providing services (including education and mental health services) to all the children. Specifically, *Article 23* emphasizes the obligation that “the disabled child has effective access to and receives education, training, health care services.” Some disabled children have difficulties in the attainment of accessible mental health services. The Internet has the potential to overcome those barriers and to provide the children with mental health services and psychological support at any time from their homes (Gilat, 2013). *Article 24* recognizes the right of the child to the enjoyment of the highest attainable standard of health and declares that “States Parties shall strive to ensure that no child is deprived of his or her right of access to such health care services.” This is an especially challenging goal in peripheral regions, with sparse mental health services. Again, the World Health Organization notes that 46% of the world’s residents live in outlying areas (World Health Organization, 2015). In the United States, roughly half of U.S. counties have no psychologist, psychiatrist, or social worker who can work with children (National Organization of State Offices of Rural Health, 2011). For children and youth residing in those areas or in countries where the population is thinly spread across peripheral regions, telepsychology might present a rare opportunity to receive mental health services. As noted earlier in this chapter, technology is a tool. Therefore, its reach and ability are dependent on how we use it. With careful consideration, technological tools may be used to center the child and bring needed support to help realize child rights across the globe.

Safety Online

One ongoing theme of the Convention is the balance of youth safety with respect for youth autonomy in a way that is developmentally appropriate. For example, the Convention recognizes the right

of each child to remain with his/her parents, unless that situation is dangerous for the child. While this balance is carefully addressed through the Convention, one place it is particularly evident is in Internet use. This chapter has largely advocated for the use of technology to support youth autonomy, access to information, education, and health care. There are many benefits associated with technological advances. However, inherent in this wider access is potentially higher chances of unsafe interactions for youth. For example, about 9% of youth experience unwanted sexual solicitation online, and 11% experience online harassment (Jones, Mitchell, & Finkelhor, 2012). Other ways that children might be made unsafe online include exploitation from for-profit companies, invasion of youth privacy, cyberbullying, or exposure to false information that is touted as true (Fleming, Greentree, Cocotti-Muller, Elias, & Morrison, 2006).

Part of increasing child safety online lies in online companies and moderators always putting children first in developing policy around privacy and participant interactions online (Livingstone, Mascheroni, & Staksrud, 2018). This might require governments taking steps to provide policy or legal guidelines for respecting child rights online. Another aspect of promoting safety for youth online lies in how youth are educated about technology and particularly online spaces. Currently, youth receive little support in navigating online spaces (D’Antona, & Kevorkian, 2010). School psychologists can play an active role in protecting youth’s rights by teaching them about using the Internet, ways to stay safe online by protecting their own privacy, building skills in combating cyberbullying, and learning to identify trusted resources and information (Anastasiades & Vitalaki, 2011; Hope, 2002; Livingstone et al., 2018). School psychologists also can advocate for schools to build such programming into computer or computer science classes or any class that requires students to use online tools. With the rapid increase in Internet use in classrooms, schools would benefit from being intentional about how students are exposed to and taught to use the Internet. Finally, school

psychologists and school personnel in conjunction with parents should find ways to monitor student online use in a way that respects the child's developmental level (Hope, 2018; Livingstone et al., 2018). Schools and parents can install software that limits the types of websites that students can access or the ability of unsolicited ads to reach the youth. These programs can help keep children from inadvertently providing private information online or engaging with websites with content not matched to their developmental levels or that are outwardly malicious (Ybarra, Finkelhor, Mitchell, & Wolak, 2009).

In a recent article (Livingstone et al., 2018), the authors make the argument that youth Internet and technology use is best analyzed not in terms of *how* the youth use the Internet but in the ways in which the youth engage with the world mediated by the Internet. This distinction is important as it shifts the mindsets of adults from one of labeling technology or website content as “good” or “bad” to that of understanding how normal, positive youth development can be supported through technological advances, and the way that risk factors any child might be exposed to can also be encountered online. Therefore, we argue that school psychologists can guide schools and families in guiding the youth to use the Internet in ways that are productive, meaningful, and safe to support positive youth development while simultaneously teaching them how to navigate the world, including technology and the Internet, safely.

Moving into the Future

This chapter only scratches the surface on imagining ways that technology can be integrated in the school setting to help realize child rights. This chapter covered three main potential areas for integrating technology into educational efforts that promote and protect the rights of children. These three areas include increasing access to educational opportunities, promoting individual learning, and facilitating school psychology practice that promoted child rights through the use of technology. Future work might imagine a broader world in which stu-

dents might learn from teachers around the globe, uninhibited by distance and where each child has access not only to educational material but also to quality educational material. Furthermore, technology might bridge economic gaps if education provides students with digital literacy, including skills like computer coding, which are becoming increasingly needed across professions. We are only limited by what we can imagine.

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