DIGITAL CITIZENSHIP

Introduction

Today's students must be prepared to thrive in an increasingly global and digital society.[1] Knowing how to use technology safely, responsibly, and critically (that is, being a good digital citizen) has become a necessity for modern society.[2]

In the upcoming 2022-2023 school year, a Hanover Research (Hanover) member district will be emphasizing the role of digital citizenship with its teachers, parents, and students. More specifically, the district needs to educate these groups around the appropriate use of technology for education and the role of digital citizenship for students.

To support this effort, the member has partnered with Hanover to conduct research around the current recommendations for technology use and digital citizenship for students. In the following research brief, Hanover reviews definitions and key components of digital citizenship, and provides guidelines on how to teach and promote students' digital citizenship skills. In addition, this research brief provides guidelines on the effective use of technology in and outside the classroom.

Recommendations

Based on this research, Hanover recommends that districts:

- **Incorporate digital citizenship into everyday grade-level or departmental curriculum.** Digital citizenship needs to be integrated throughout all core curricular areas, starting in the early elementary grades, and continuing through high school;
- **Consider both the amount and the type of screen time when establishing rules for technology use**. Certain types of screen time (e.g., educational) may not be harmful and can in fact help improve student learning outcomes and well-being; and
- **Conduct a professional development needs assessment** to gather information about teachers' perceptions and comfort level with the use of technology, and to identify professional development needs for technology integration.

Key Findings

- **A top priority for education policy makers and practitioners is supporting students to participate safely, effectively, and responsibly in today's digitalized world.** Schools need to equip students with the knowledge and skills to participate fully in our increasingly technological world. Moreover, digital citizenship is essential for cyberbullying prevention, online safety, and digital health and wellness.
- **Screen time is not the only screen exposure variable to consider when establishing rules for technology and media use. Screen use also matters.** Research shows that educational screen time (e.g., using a computer for homework) is associated with positive educational outcomes. In contrast, excessive passive screen use (e.g., watching TV) has mostly detrimental effects on students' health and educational outcomes.
- **Successful technology integration into the classroom requires teachers that are proficient in using technology**. However, according to the most recent National Education Technology Plan by the US Department of Education, almost half of teachers believe that they need more training on effective ways to integrate technology in their teaching.

Digital Citizenship

Digital citizenship is a topic of increasing importance in today's digitalized world. Moreover, it is a topic of high relevance for policy makers and practitioners in the field of education.[3] The following sections present common definitions and key elements of digital citizenship and provide guidelines on how to teach and promote digital citizenship skills.

Digital Citizenship Defined

Definitions of digital citizenship vary across reports and studies, but most refer to a range of skills and behaviors regarding technology and internet use. For example, the Council of Europe defines digital citizenship as "the ability to engage positively, critically and competently in the digital environment, drawing on the skills of effective communication and creation, to practice forms of social participation that are respectful of human rights and dignity through the responsible use of technology."[4] The International Society for Technology Education describes digital citizenship as "being active citizens who see possibilities instead of problems, and opportunities instead of risks as they curate a positive and effective digital footprint."[5]

The Association for the Advancement of Computing in Education defines it as "the ability to use technology safely, responsibly, critically, productively, and civically."[6]

Technology and internet use are embedded in every aspect of students' lives, making digital citizenship awareness and skills essential for their personal, educational, and professional future.[7] **Students should be taught to use technology in a safe, responsible, respectful manner so they can make the best choices online and participate fully in an increasingly technological world**.[8] Moreover, teaching students digital citizenship is essential for cyberbullying prevention, online safety, and digital health and wellness .[9]

Elements of Digital Citizenship

The seminal book *Digital Citizenship in Schools* identifies **nine foundational elements of digital citizenship, namely online etiquette, access, law, digital literacy, commerce, communication, security, health and welfare, and rights and responsibility.**[10] These elements can be considered general areas of behavior with respect to appropriate and responsible technology use. As illustrated in Figure 1, the nine elements are grouped into three guiding principles: Respect, Educate, and Protect, which are three important touchstones for everyone who interacts in the online space.[11]

Figure 1: Nine Elements of Digital Citizenship

RESPECT (YOURSELF/RESPECT OTHERS)	**Etiquette**. Understanding appropriate code of conduct and procedures when using digital devices.
	Access. Understanding who has access to technology and the limitations and consequences to those who have limited access to technology.
	Law. Understanding legal rights and restrictions related to the online world (e.g., copyright laws).
EDUCATE (YOURSELF/ CONNECT WITH OTHERS)	**Digital Literacy.** Teaching and learning how to use technology in its many forms.
	Commerce. Making safe and informed decisions when purchasing or downloading materials online
	Communication. Making appropriate decisions when communicating through the different modes and mediums of digital technology.
PROTECT (YOURSELF/ PROTECT OTHERS)	**Security.** Understanding and being aware of malware attacks and how to prevent them.
	Digital Health and Welfare. Maintaining technological practices to promote physical and psychological wellness (e.g., balancing screen time and screen use).
	Rights and Responsibility. Understanding of the requirements and freedoms extended to everyone in a digital world.

Source: *Digital Citizenship in Schools*[12]

Teaching Digital Citizenship

The nine elements of digital citizenship described above provide general guidelines about what technology users need to know to be safe and informed digital citizens. However, they are not by themselves enough to prepare students for success in the digital world. For that to happen, these nine elements need to be implemented into the daily life of students.[13]

To aid in this implementation process, the International Society for Technology in Education (ISTE) has developed the Four-Stage Cycle of Technology Integration, illustrated in Figure 2. This cycle helps students reflect on how they use technology, what they are doing correctly, and what they need to work on.[14]

Figure 2: Four-Stage Cycle for Teaching Digital Citizenship

Source: *International Society for Technology in Education*[15]

Parents and teachers can use this model to discuss technology issues with their children or students. The following are some directions for how each stage can be implemented:[16]

- **Stage 1: Awareness.** Students need to learn and be aware of what is and is not appropriate when using technology.
- **Stage 2: Guided Practice.** Students need to have opportunities to use technology under the guidance of their teachers. Students may make mistakes during this phase and need support. Schools should be a safe place where students can explore and investigate with technology.
- **Stage 3: Modeling and Demonstration.** Students need to see that their teachers follow the behaviors of a good digital citizen. Teachers should model ethical and appropriate technology use for their students.
- **Stage 4: Feedback and Analysis.** Adults need to provide constructive feedback on how students should use the technologies at the school as well as out in society. Students analyze why they should use technologies in a certain way.

M**astering the competencies for digital citizenship requires an understanding of the technology tools as well as the**

ability to make good decisions about the use of them in daily life.[17] Besides the stated resources and activities, educators can help children develop digital citizenship skills by using open educational resources such as the Common Sense Education's Digital Citizenship curriculum and the Student Technology Standards from the ISTE (also known as "ISTE Standards").

Benefits and Risks of Technology

Research suggests both benefits and risks of technology and media use for children and teenagers.[18] Figure 3 lists benefits and risks of media use for children and adolescents 5 through 18 years, as outlined by the American Academy of Pediatrics.[19]

Figure 3: Potential Benefits and Risks of Technology

BENEFITS	RISKS
▪ Exposure to new ideas ▪ Knowledge acquisition ▪ Increased opportunities for social contact and support ▪ Raised awareness of current events and issues ▪ Brings closer family and friends that are separated geographically ▪ Opportunities for promoting community participation and civic engagement ▪ Opportunities for collaboration with others on assignments and projects	▪ Negative health effects on weight and sleep ▪ Exposure to inaccurate or inappropriate content ▪ Exposure to unsafe content and contacts ▪ Compromised privacy and confidentiality ▪ Decreased interest in offline or "real life" relationships ▪ Cyberbullying

Source: American Academy of Pediatrics[20]

Teachers and parents must work together to help students understand the benefits and risks associated with technology use. Moreover, parents and teachers need to provide students with the tools and knowledge to mitigate the potential negative consequences.[21]

Screen Time Recommendations

Parents and educators often express concern about the amount of time children and adolescents spend each day looking at digital screens. A 2022 nationally representative survey by the *EdWeek Research Center* finds that 88% of educators feel that students' learning challenges increase as screen time increases. Further, 80% of educators report that heightened screentime has a negative effect on student behavior.[22]

Parents also worry about the negative impact of screen time on their child's well-being. A survey from the American Psychological Association (APA) finds that 48% of parents struggle to regulate their child's screen time, and 58% worry

about the influence of social media on their child's physical and mental health.[23] Further, a survey by the C.S. Mott Children's Hospital reveals that over 70% of parents consider overuse of social media/ screen time as a top child health concern. [24]

Concerns of educators and parents are not unfounded. A body of evidence suggests that excessive screen time has detrimental effects on children's health and academic achievement.[25] However, new evidence also suggests that **certain types of screen time may not be harmful and may actually enhance student learning outcomes and well-being.**[26] A 2019 study categorizes children's screen time into five types: social (e.g., social media), passive (e.g., TV), interactive (e.g., video games), educational (e.g., computer for homework), or "other." The study compares the effects of the different types of screen time on children's physical health, psychological outcomes, and educational outcomes. Findings show that **educational screen time is associated with positive educational outcomes and higher persistence**, with no negative consequences for other outcomes. In contrast, passive screen time (e.g., watching TV) has mostly detrimental effects (e.g., poorer health outcomes, lower educational outcomes).[27]

In addition to the type of screen time, the duration of screen exposure is also an important variable to consider when establishing rules for technology and media use. Several studies suggest that **moderate amounts of screen time use may benefit children's mental well-being and academic performance** (compared with very low or very high amounts of screen time).[28] The American Academy of Pediatrics[29] and the World Health Organization[30] provide the following guidelines with respect to screen time exposure for children:

- **For children 2 to 5**, limit screen time to **one hour per day** of high-quality programming.
- **For children 6 and up**, establish **consistent limits on the time** spent using media **and the types of media**.

Additionally, the American Academy of Child and Adolescent Psychiatry provides the following recommendations:[31]

- Turn off all screens during family meals and outings.
- Learn about and use parental controls.
- Turn off screens and remove them from bedrooms 30-60 minutes before bedtime.

An important point to note is that the screen time recommendations mentioned above do not differentiate between different types of screen time. **More and more researchers argue that screen use is more important than screen time.**[32] In this respect, the Family Online Safety Institute (FOSI) argues that "school, interactive or collaborative games, opportunities to communicate or virtually hang out with friends, and video chat with family are

all time using technology but are viewed as healthier ways to use devices than passively watching a screen for hours."[33]

Appropriate Technology Use

While technology has some potential drawbacks, when used appropriately, technology has the potential to provide many positive effects for students both in and out of the classroom.[34] The following sections outline advantages of using technology and provide guideline on the effective use of technology at school and at home.

Technology Use at School

Technology, particularly educational technology, has the potential to accelerate, amplify, and expand students' learning.[35] However, educational technology is not transformative on its own. As the North Central Regional Educational Laboratory (NCREL) notes, educational technology "requires the assistance of teachers who integrate technology into the curriculum, align it with student learning goals, and use it for engaged learning projects."[36]

Educational technology elicits both positive and negative teacher perceptions.[37] Teachers who feel negatively about technology are more likely to avoid using digital learning tools for teaching.[38] Thus, **developing a school culture that embraces technology is central to its successful integration**.[39] According to the most recent National Education Technology Plan by the US Department of Education, almost half of teachers desire more training in using technology effectively.[40] This finding points to the importance of **identifying and supporting teachers' needs regarding technology integration**.[41]

The NCREL lists the following elements of successful technology integration in schools:[42]

- a connection to student learning
- hands-on technology use
- variety in learning experiences
- curriculum-specific applications
- collegial approaches to learning
- active participation of teachers
- technical assistance and support
- administrative support
- adequate resources
- continuous funding
- built-in evaluation

In addition, the US Department of Education Office of Technology provides four guiding principles for effectively using technology in the classroom (see Figure 4).[43]

Figure 4: Guiding Principles for Using Technology in The Classroom

Guiding Principle 1	Technology—when used appropriately—can be a tool for learning.
Guiding Principle 2	Technology should be used to increase access to learning opportunities for all students.
Guiding Principle 3	Technology may be used to strengthen relationships among parents, families, educators, and students.
Guiding Principle 4	Technology is more effective for learning when adults and peers interact or co-view with young children.

Source: US Department of Education [44]

Finding effective and creative ways to use technology in school settings can enhance students' motivation and learning.[45] Other advantages of technology use in the classroom include:[46]

- Provides students with easy access to information and fun opportunities to practice what they learn.
- Enables students to explore new subjects and deepen their understanding of difficult concepts, particularly in STEM.
- Accommodates multiple learning styles (e.g., visual, auditory).
- Allows personalized learning and gives students more choice over what and how they learn and at what pace.
- Helps capture learners' attention by tapping into their interests and passions.
- Facilitates instant feedback for students and teachers.
- Encourages collaboration among students.

Educational technology can also help teachers save time and enhance their instructional practices. Based on a 2020 survey of 1,461 PreK-12 teachers and administrators, the following are the most impactful educational technology tools:[47]

Figure 5: Teacher Picks for Best Tech Tools

EDTECH TOOL	DESCRIPTION
Learning Management Systems (LMS) such as Canvas, Schoology, and Google Classroom	Software applications that help create, manage, organize, and deliver training content.
Slido	An interactive app that allows participants to ask questions and then upvote others.
Gimkit	A game-show platform that allows teachers to create question sets that students can answer over and over while competing against each other.

Mural	A collaborative app that allows teachers, students, and other contributors to write on virtual sticky notes and then organize and reorganize them in real time.
Screencastify	A screen recording extension that teachers and students can use to record, edit, and share videos from their devices.
Prezi	A presentation software that offers teachers another tool to capture short lectures, explanations, or other content in a visually appealing and personal way.
Pear Deck	A Google Slides add-on that allows teachers to make slides interactive and collect feedback immediately.
EdPuzzle	A web-based tool that allows teachers to make video clips interactive by requiring student responses.
Flipgrid	A video discussion app that students can use to submit digital projects and receive peer and teacher feedback.
Parlay	A software that visually tracks student responses in a discussion web.

Source: Edutopia [48]

Technology Use at Home

Parents play a vital role in helping their children develop safe and responsible habits for technology use. According to the American Psychological Association (APA), when establishing family guidelines for technology use, **parents should not just focus on the amount of screen time their child spends on digital media but should also consider the content of that media and the context in which their child is using it**.[49] Further, the APA offers the following recommendations for parents:[50]

- **Do not overreact**. Do not set overly restrictive limits or send the message that technology is something to fear. Instead, focus on teaching healthy habits to your child.
- **Teach kids about technology from a young age.** Discuss with your child the benefits of technology as well as the risks. These conversations should be ongoing and should become more detailed as your children get older.
- **Use your judgment.** Consider the context when establishing your family's rules for technology use. For example, if your child is doing research for a school paper, that computer time should not necessarily count as his or her only screen time for the day.
- **Protect bedtime.** Consider restricting the use of phones, tablets, and computers at least 30 minutes before bed.
- **Pay attention**. Have open, honest discussions about what sites and types of content are off-limits. Explore software to filter or restrict access to content that's off-limits.
- **Teach good online behavior**. Talk to you children about the importance of being respectful in their digital interactions.
- **Discuss digital decision-making.** Have conversations with your child about how to evaluate authenticity and accuracy online. Explain why they should not download unfamiliar programs, click on suspicious links, or share personal information on unknown apps or websites.
- **Foster real-life friendships.** Help your child develop social skills and nurture his or her real-life relationships.
- **Learn more**. Technology changes quickly. Visit the Family Online Safety Institute and Common Sense Media to keep tabs on the changing tech landscape.

Caveat

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