

15 School-Based Initiatives Promoting Digital Citizenship and Healthy Digital Media Use

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Supporting adolescents toward healthy digital media use and digital citizenship more broadly “takes a village” (Hollandsworth et al., 2011). Chapters in this volume have touched on different aspects of digital media use and adolescent mental health, pointing to the importance of clinical intervention. Schools are another crucial entry point for delivery of support and prevention of future mental health difficulties. Educators have considerable reach to a captive audience of youth. Examining why, what, and how they teach students about digital media use and well-being is vital. In this chapter, we review leading K–12 digital media curricula that aim to teach students how to lead healthy digital lives. We outline the content and pedagogical approaches present in these materials and distill a set of learning goals apparent across curricular resources: critical awareness, self-reflection, and behavioral change. Given the relative absence of external evaluations of school-based interventions, we draw on relevant research to suggest both promising directions and key questions for future research.

Why do schools take on healthy digital media use and digital citizenship more broadly as a topic of instruction and intervention? At least four distinct drivers are arguably at play: problems, parents, precedent, and policies. First, *problems*: Digital and social media are meaningful venues for young people’s learning and lives beyond the classroom (Ito et al., 2020). As adolescents use apps for peer connection, there are meaningful upsides but also inevitable conflicts. Conflicts that start online routinely spill over into schools, creating problems educators must solve through reactive sanctions, proactive classroom lessons, or both (Hinduja & Patchin, 2011). Other problems that educators feel pressed to solve include in-school device misuse, distraction, and inattention in class due to media-linked sleep deprivation (e.g., Klein, 2020; Sparks, 2013).

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Second, *parents* are searching for support as they raise the first generation of digital youth (Palfrey & Gasser, 2011). They may turn to schools for guidance, or even demand that schools intervene when issues like digital drama or cyberbullying cases involve their children and fellow students. Third, *precedent*: in many schools, there is a long history of teaching relevant topics, including media literacy, news and information literacy, and health and wellness. Teachers of these topics have naturally (even if reluctantly) had to incorporate digital media into their class content in order to keep it relevant. Fourth, *policies*: The above factors have triggered school device policies to which enrolled students must consent, especially in schools with one-to-one laptop or tablet programs. However, schools are not the only policy drivers. Increasingly, schools themselves are subject to state policies that suggest or even mandate teaching of digital topics (Media Literacy Now, 2020; Phillips & Lee, 2019). For example, in 2019, the state of Texas passed legislation requiring school districts to incorporate digital citizenship (defined as “appropriate, responsible, and healthy online behavior”) into curricula and instruction (Media Literacy Now, 2020, p. 12).

In sum, *problems*, *parents*, *precedent*, and *policies* create a demand for resources to support digital citizenship and healthy digital media use. Comprehensive curricula and other resources for schools emerged in the 2000s in response, initially with a focus on internet safety and then with the expanded purview and framing of “digital citizenship” (Cortesi et al., 2020). While these curricula center on the Internet and social media, they build on a longer tradition of media literacy education (MLE). MLE has long advocated competences for informed and critical reflection about media. Through MLE, students develop a core recognition that media messages are constructed and a related understanding of the persuasion techniques used in ads and other mass media (Hobbs, 2010). Now expanded to encompass “the digital,” contemporary MLE spans skills and knowledge for critical reflection about digital content (i.e., posts produced by others and oneself) as well as traditional mass media content. Protection and empowerment are dual motivations for digital and media literacy education: building essential literacies to protect youth from potential risks (e.g., harm to their psychological well-being) and empower them to leverage media benefits (e.g., for learning, social connection) (Hobbs, 2017).

Digital citizenship encompasses all of the skills for participation in a digital world – personally, socially, and civically – including essential “new media literacies” (Cortesi et al., 2020; Jenkins, 2009). Mike Ribble and Gerald Bailey, who were among the first to use the term *digital citizenship*, named digital health and wellness as a key aspect of digital citizenship in the first edition of their book, *Digital Citizenship in Schools* (2007). At the time, they emphasized physical health and framed the topic in relation to protection from harms like carpal tunnel, poor posture, and eye strain through improper ergonomics. Ribble and Bailey also referenced psychological well-being and

internet addiction, which they acknowledged as “another aspect of digital safety that has not received the attention it deserves” (p. 32).

Psychological well-being is no longer at the margins of discussions about digital life. In recent years, technology overuse and psychological well-being have been a steady focus in both public discourse and academic research. These topics have also been a source of considerable debate among researchers. As discussed throughout this volume, research currently converges around a recognition that young people are differentially susceptible to digital media impacts (See Subrahmanyam & Michikyan, Chapter 1 in this volume; Valkenburg, Chapter 2 in this volume). Individual, social, and contextual risk factors present in adolescents’ offline lives are often mirrored or amplified as they use digital media. For example, adolescents who have mental health challenges, those who are victimized, those who have limited family resources, and those who are surrounded by more offline violence in their communities all face digital risks that can impact their health and well-being (e.g., see Nesi et al., 2019; Odgers, 2018; Patton et al., 2016; Underwood & Ehrenreich, 2017). And yet, digital media use can also reduce or mitigate offline risk (Ito et al., 2020). Youth who are ostracized *offline* can find supportive community connections and resources for coping and recovery *online*.

The design features of technologies also shape their use in ways that matter for adolescent health and well-being. Today’s apps and devices are designed with features that are intentionally tested, iterated, and deployed to hold users’ attention (Center for Humane Technology, 2020a). For example, social media apps provide an endless stream of intermittent rewards (Alter, 2017; Center for Humane Tech, 2020a, 2020b). Features like infinite scrolling remove natural stopping cues. Default push notifications interrupt other activities. And metrics like Snapchat streaks capitalize on social reciprocity. These features leverage psychological vulnerabilities to create powerful habits loops and even, in some cases, behavioral addictions (Alter, 2017).

Although individual youth are differentially vulnerable to these design tactics, from a developmental standpoint all adolescents are in a position of vulnerability given their sensitivity to social feedback and peer acceptance (Steinberg, 2014). At the same time, the neural bases for impulse control are still developing (Dahl, 2004; Tamm et al., 2002). Thus, contemporary adolescents are in a precarious position: the rewards social media offer are compelling *and* their capacities for self-regulation are not yet fully mature. Given that avoiding digital technology all together is neither desirable nor practical, learning how to use it in ways that promote rather than diminish health and well-being is arguably crucial. Schools represent an opportune context for this learning given their reach to a wide audience of youth and the frequent role of schools (whether realized or aspirational) in providing guidance related to matters of health and well-being (e.g., health class and drug and alcohol prevention efforts).

Digital Citizenship and Related Curricula for School-Based Approaches

To examine existing school-based approaches to support healthy digital technology use, we conducted a two-phase review of available curricula. First, we identified and reviewed leading digital citizenship programs and lessons (Table 15.1). Second, we conducted a closer examination of curricular resources identified in Step 1 that addressed healthy digital habits.

In the first phase of our review, we identified 20 relevant programs through (1) Google search, (2) consultation with experts, (3) review of educator resource “round ups” (e.g., via Edutopia), and (4) a recent comprehensive report on digital citizenship frameworks and approaches (Cortesi et al., 2020). With one exception (Center for Humane Technology), all programs we reviewed are framed as curricula, lessons, and/or classroom resources designed for use in K–12 school contexts. All are described as resources for supporting digital media use, often under the label of “digital citizenship.” We did not examine programs related to coding or computer science skills, nor did we focus on programs that incorporate but do not center technology use (for example, programs focused on self-harm and suicide prevention that may also cover the role of online communities).

In Table 15.1, we outline for each program (as of Fall 2020) the structure and format of resources, target grade levels, fee structure, and whether each program provides explicit instruction on the following common digital citizenship topics: cyberbullying and drama; identity expression and digital footprints; information quality and news literacy; privacy and safety; sexting; friendship and communication; violent and/or explicit content; and healthy digital habits.

All of these topics are relevant to healthy digital media use and individual well-being. A few examples: Cyberbullying is linked to poor psychosocial functioning, increased likelihood of self-injury, and poor physical health, as well as diminished academic performance (Kowalski et al., 2014). Certain types of sexting are associated with internalizing problems (depression/anxiety) and risky sexual health behaviors, particularly for younger adolescents (Mori et al., 2019). Self-expression and digital footprints are intertwined with identity development, which is a key task of adolescence and healthy psychosocial development for all youth (Davis & Weinstein, 2017). Depressed adolescents also report online self-expression practices like oversharing, “stressed posting,” and disclosing their own mental health issues (Nesi et al., 2019; Radovic et al., 2017). These practices may amplify short-term risks (e.g., because they contribute algorithmic inputs that suggest an interest in depressogenic or triggering content) and create lasting digital footprints with sensitive mental health information. Graphic, violent content in video games and pornography is a persistent focus of adult concern, though causal impacts on youth health and behavior remain a source of contention among researchers (Anderson, 2003; Ferguson, 2020; Gentile, 2011; Kohut & Štulhofer, 2018).

Table 15.1 (cont.)

Program	Resource structure	Target grade levels	Fee structure	Topics addressed ¹								
				Cyber-bullying, drama	Identity, dig. footprints	Info. quality, news literacy	Privacy, safety	Sexting	Communi-cation, Friendship	Violent and/or explicit content	Digital habits, media balance	
Digital Citizenship+ Resource Platform (Berkman Klein Center at Harvard University)	Resource library of lessons, infographics, videos, podcasts, and guides spanning 17 topics	6–12	Free									
Digital Citizenship Collection (BrainPOP)	20 self-guided, interactive online lessons; curriculum for grades 3–5 provides additional lesson supports and sequencing for a selection of these lessons	3–12	Paid subscription									
Digital Citizenship (Digital Futures Initiative)	3 lessons (1 lesson per grade for grades 7–9) each touching briefly on a range of digital topics; required educator training course	7–9	Free									
Digital Literacy & Citizenship Curriculum (Google & iKeepSafe)	Curriculum of 3 workshop lesson plans	6–8	Free									

DQ (DQ Institute)	8-week self-directed online digital citizenship course via an interactive adventure game that builds and scores “Digital IQ”	3–6	Free basic plan, paid premium plan								
Human Relations Media	Collection of 19 streamable videos with corresponding teacher guides, each on a different topic related to social media and youth	K–12	Paid (each video purchased separately)								
InCTRL (Cable Impacts Foundation)	7 lessons, each on a different topic	4–8	Free								
Media Education Lab (University of Rhode Island)	Resource library with an assortment of media literacy lesson guides, curricula, and multi-media resources (e.g., podcasts, magazines)	Not specified	Includes both free and paid resources								
Media Lessons and Resources (MediaSmarts, Canada’s Centre for Digital and Media Literacy)	Resource library with 50+ lessons searchable by grade level and/or topic	K–12	Free								

Table 15.1 (cont.)

Program	Resource structure	Target grade levels	Fee structure	Topics addressed ¹							
				Cyber-bullying, drama	Identity, dig. footprints	Info. quality, news literacy	Privacy, safety	Sexting	Communication, Friendship	Violent and/or explicit content	Digital habits, media balance
Screenshots Curriculum (Media Power Youth)	Curriculum of 9 lessons organized as 3 units with corresponding podcast, videos, and PowerPoints (note: Media Power Youth's after-school program was not included in this review)	6–8	Free and paid options	■	■	■	■	□	■	■	□
NetSmartz (National Center for Missing & Exploited Children)	Four PowerPoint-based lessons on online safety (one each per grades K–2, 3–5, 6–8, 9–12); animated video series with lesson activities for K–3 (Into the Cloud); 3 elementary e-books with discussion guides	K–12	Free	■	■	■	■	■	■	■	□
News Literacy Project	E-learning platform (Checkology) with 13 lessons and other resources for teaching news literacy, including misinformation	4–12	Free	□	■	■	□	□	□	■	□

<i>The Digital Citizenship Handbook for School Leaders: Fostering Positive Interactions Online</i> (Ribble & Park, 2019)	Book with a framework and progression chart that outlines 9 elements of digital citizenship and corresponding classroom activities	K–12	Free tip sheet; book available for purchase	Dark grey	Dark grey	Dark grey	Dark grey	Light grey	Dark grey	Light grey	Dark grey
Internet Safety (The Safe Side)	Week-long curriculum with 5 lessons (designed to be taught 1 per day) and an accompanying YouTube video	K–3	Free	Dark grey	Light grey	Dark grey	Dark grey	White	Dark grey	Dark grey	Dark grey
Talks and Guidelines for Families & Educators (Center for Humane Technology)	Video-recorded presentation on persuasive technology; “Take Control” tech tips and strategies	Not specified; likely most relevant for 6–12	Free (video of recorded talk available on Vimeo); paid guest speaker talks	Dark grey	Dark grey	Dark grey	Light grey	Light grey	Dark grey	Dark grey	Dark grey
White Ribbon Week	4 week-long curriculum units with 5 lessons each; designed for a whole-school approach where school takes on 1 topic per year, 1 lesson per day	K–5	Paid (each unit purchased separately)	Dark grey	Dark grey	Dark grey	Dark grey	White	Dark grey	Dark grey	Dark grey

Notes: Shading key: *dark grey* = designated topic, covered in depth; *light grey* = topic mentioned or covered to some extent; *white* = not covered based on our review of resources.

¹These topics reflect common categories based on our review and may not align exactly with the terminology used within a particular resource. In some cases, multiple topics are covered within the context of a particular unit or lesson.

Available school-based programs that address topics relevant to adolescent well-being vary considerably in their approaches. Some programs provide brief coverage of a topic, while others offer multiple lessons for a deeper dive. Some have one resource set that is designed for applicability to students across multiple grade levels, while others are grade differentiated. Programs that have resources framed as applicable across multiple grade levels include: The Center for Humane Technology, which currently has a single signature video-recorded presentation and related technology tips and strategies; Google's Be Internet Awesome curriculum, which has a collection of lessons that are all framed as best-suited for students in grades 2–6; and White Ribbon Week, which also uses the same lessons across a grade band (in their case, all elementary school grade levels). Other programs are grade differentiated: Common Sense Education, for example, has different lessons aligned to every year of school from kindergarten through 12th grade and CyberWise has lessons for each year of middle school. Across programs, some lessons are structured around a lecture-style presentation while others are interactive and use discussion questions, writing prompts, or hypothetical scenarios to engage students through more constructivist approaches (where learners actively make meaning of content and their personal connections to it). Most have mixed-media elements and a few have their own full-fledged online games (e.g., Be Internet Awesome, Common Sense Education, and DQ). Nearly all of the programs have educator tips, guides, or resources to support teaching and several have comprehensive professional development training (e.g., webinars, courses, and certification programs).

Even a brief review of the lessons also reveals considerable variation in how different programs approach the same topic. For example, with respect to cyberbullying, programs vary in how much time they allot to the topic (e.g., is cyberbullying a passing mention or the focus of multiple lessons?); in pedagogical approaches (e.g., do teachers provide students with strategies for dealing with cyberbullying and/or ask students to come up with their own ideas?); and – perhaps most crucially – in both implicit and explicit messages about the topic (e.g., are students primarily encouraged to be *allies* who stand with targets or to be *upstanders* who stand up to aggressors?). Each topic area listed in Table 15.1 could reasonably be the focus of a full review to examine these key messages and approaches and how they map to existing research. Given our focus in this chapter on healthy media use, we conducted a review of lessons that aim to promote healthy digital habits (i.e., those in the far-right column of the table, which is outlined and labeled “Digital Habits, Media Balance”).

A Closer Look at School-Based Lessons to Promote Healthy Digital Habits

The second phase of our review was a more focused examination of resources from across these programs that aim to promote healthy digital habits. To our

knowledge, none of these lessons has yet been systematically evaluated. We therefore provide a descriptive review of what the available lessons teach about healthy technology use and how they approach this aim. All of the lessons we reviewed on healthy digital habits emphasize one or more of the following learning goals: (1) critical awareness of design features and/or psychological principles that shape technology use; (2) self-reflection on personal digital media use; and (3) strategies for behavioral change. In the following sections, we review these learning goals in turn. We provide examples of how each learning goal is approached in lessons about healthy digital media use, discuss how and why it might help promote healthy media use, and outline relevant questions for future research to build an evidence base for school-based approaches.

Critical Awareness of Design Features and Psychological Principles

One recurring aim of lessons designed to promote healthy digital media use is critical awareness and understanding. These lessons metaphorically pull back the curtain and reveal to students how digital features and design can powerfully intersect with psychological processes to shape technology experiences. Lessons from all but one program included an emphasis on this kind of critical awareness. Examples include teaching students:

- how platforms harness data to push *tailored content* and *targeted ads* based on interests and browsing history;
- how features like *infinite scroll* and *auto-play* intentionally remove friction to make for seamless ongoing use;
- how *metrics*, especially “likes” and “streaks,” play off motives related to social status and instincts for social reciprocity;
- how social media contributes to *highlight reels* that are ripe for social comparison and contribute to a common experience of feeling bad when scrolling through a social media feed;
- how social media apps and gaming platforms leverage *variable rewards* much in the same way as casino slot machines to create a compelling unconscious reward structure;
- how social networks can function as *echo chambers* that distort perceptions;
- how *misinformation* is presented in ways that look real and promote circulation;
- how to recognize *active versus passive uses* of technology, which seem to differentially impact well-being; and
- how digital features like notifications and/or content like pornography activate *dopamine reward circuits*.

How and why might this kind of learning promote healthy digital media use? In traditional media literacy education, students learn that media messages are constructed, and they learn to recognize and analyze techniques that influence

persuasion (National Association for Media Literacy Education, 2007). Critical thinking is seen as key to “liberating the individual from unquestioning dependence on immediate cultural environment” (Brown, 1998, p. 47). A meta-analysis of 51 traditional media literacy interventions indeed found significant positive effects on students’ knowledge and critical understanding (Jeong et al., 2012). More recent experimental research demonstrated that teaching adolescents about “addictive” social media designs and their harmful effects can prompt enduring awareness of design features. It can also motivate young people’s interest in regulating their social media use and in learning relevant strategies (Galla et al., 2021).

Jeong and colleagues’ meta-analysis of traditional media literacy interventions indicated that: a) passive teaching approaches (e.g., lecture-style) and interactive approaches (e.g., discussion, role playing, games) were both effective, b) that lessons could be successfully delivered by peers or by expert instructors, and c) interventions with a greater number of sessions tended to have larger effect sizes. These insights may prove relevant for curricula aiming to promote healthy digital media use. That is, students may similarly benefit from learning how digital tools and content are constructed and how these constructions influence perception and persuasion. While varied pedagogies and lesson contexts hold potential value, repeated lessons are likely more effective than isolated “one-and-done” approaches. That said, these are still open questions for research on digital habits interventions, and especially so given emerging evidence related to the value of single-session interventions for mental health (Schleider et al., 2020). Further questions include: Do passive versus interactive approaches change learning outcomes related to critical awareness about digital media? Which formats (expert instruction, peer-based, etc.) are most effective? Further, in terms of content, which digital design features and principles are most relevant to include in curricula? And more generally, there is the crucial question of efficacy: Does teaching for critical awareness indeed impact students’ digital technology experiences and – if so – how?

Available digital media lessons aim to help students identify features that unconsciously drive their technology use. In addition to building students’ knowledge, recognizing these features and design tactics may also motivate their desires to take action toward more control. However, critical understanding alone is likely an insufficient catalyst for behavioral change. Jeong et al.’s (2012) meta-analysis indicated that media literacy interventions seemed to have greater effects on knowledge-related outcomes than on behavior-related outcomes. Relatedly, research from behavioral economics suggests that even when people know a strategy is being used to “nudge” their behavior, this knowledge does not remove its effect (e.g., Bruns et al., 2018). Thus, lessons designed to impact healthy digital media use are likely wise to include a focus on critical understanding, but such understanding may prove insufficient to successfully reroute digital habits.

Self-Reflection about Personal Digital Media Use

Self-reflection is a second prominent learning goal in lessons that target healthy digital media habits. This is driven by fundamentally interactive (rather than lecture-based) activities that typically direct students to consider some aspect of their personal digital media use. In existing lessons within the digital citizenship programs we reviewed, self-reflection ranged from open-ended brainstorming about personal tech habits to the use of more templated tools for logs and tracking. Such tools differ in both structure and in the focal behaviors they prompt students to consider. For example, CyberCivics provides a “Time Tracker” template where students log every activity (including but not limited to technology use) from morning until night and note the time spent, in minutes, on each activity. Students then bring their trackers to class, total their time on different activities, and use the data to make observations about their “digital diets.” InCTRL has a “24/7” log for tracking total technology time each day for a week. White Ribbon Week uses a circle graph divided into 24 slices where students shade in the number of hours they spend on different activities and then discuss what it means to “balance” a day. Common Sense has a “Media Choices Inventory” (embedded in a 7th-grade lesson), which prompts students to reflect on their media use from the prior day: “What media did you use?” “When did you use it?” (e.g., morning), “How much time did you spend?” (in minutes), and “How did you feel?” MediaSmarts offers a “Media Diary” where students fill out a checklist each day for a week to indicate “What I did using screen media” by checking boxes that correspond to digital activities like entertainment, keeping in touch, seeing what people are doing, posting or browsing photos, online learning, and music. Students simultaneously keep a separate “Mood Diary” focused on tracking, for each day, how they “experienced my different relationships and connections today” and then “How I felt today” overall. Other self-reflection lessons do not include logging tools but take approaches like directing students to take stock of all current digital habits and how each habit makes them feel (Common Sense, “Digital Habits Check-up”), or completing a “Digital Stress Self-test” to notice problematic digital habits (Media Smarts, “Dealing with Digital Stress”).

The aforementioned lessons share an emphasis on promoting healthy digital media use by building students’ awareness of their own technology habits. Keeping a media-use diary is an established approach in traditional media literacy education (Hobbs, 2010). As Hobbs describes, “record-keeping activities help people keep track of media choices and reflect on decisions about sharing and participation, deepening awareness of personal habits” (p. 23). In the context of digital media, negative outcomes from technology use are often mediated by negative experiences people have while using technology (e.g., social comparison, FOMO; Burnell et al., 2019). Noticing and disrupting negative digital experiences may therefore serve a protective function.

Recognizing, for example, that browsing Instagram before bed is contributing to anxious thoughts or that TikTok is a source of unwanted distraction during homework time can set the stage for making different choices. In this vein, Carrier and colleagues (2018) argue for *digital metacognition* as a relevant digital-age coping practice. They argue that critical self-reflection facilitates digital metacognition, which involves thinking intentionally and strategically about one's technology choices. Self-reflection tools that help students draw links between specific digital activities and corresponding emotional reactions ostensibly support digital metacognition. At the same time, research is clear that *how* young people use technology is more important than simply *how much* they use (Reeves et al., 2020). Self-reflection lessons that place heavy emphasis on logging screen time without further differentiation (e.g., of how time is spent or what emotions it evokes) may therefore prove less effective.

These are, for the most part, hypotheses rather than conclusions. That said, one cluster randomized controlled trial of a school-based intervention in German schools showed promising results of a media intervention anchored in self-reflection that was designed to build metacognition related to online gaming activities (Walther et al., 2014). Future research should examine the specific curricular features that support effective digital self-reflection lessons: Does it make a difference if students reflect generally about digital habits versus if they track technology use? If tracking technology use is effective, what is the optimal duration for tracking (e.g., one day, one week) and what, specifically, should students be prompted to track (e.g., time spent, activities, emotional reactions)? How can curricula prompt both a light-bulb-type recognition of digital experiences and, crucially, support dispositional tendencies toward ongoing digital metacognition? Given that young people's cognitive capacities for self-reflection develop over time, it may also be important to explore how different kinds of self-reflective activities align with students' ages and developmental stages.

Behavioral Change for Healthy Digital Habits

Naturally, the end goal of much curriculum is behavioral change outside of the classroom: helping students establish and maintain healthy technology use in their real lives. Nearly all of the existing lessons we reviewed urge "balance" as a key aim. Some lessons utilize metaphors to concretize the finite nature of time and/or help students consider ways to balance technology with other activities or priorities. The Center for Humane Technology uses an "empty glass" metaphor to guide students' thinking about the activities they use to fill their time. iKeepSafe uses the idea of a "rock garden of our life" to help students prioritize time spent on important "boulders" (career goals, friends) and "pebbles" (school work), and "grains of sand" (screen time). MediaSmarts uses the metaphor of a "media diet" with older students (this metaphor is also used by CyberWise); for younger students, the concept of

balance is conveyed through an equally divided pie chart that has separate portions students fill out for active time, learning time, and screen time.

One way in which lessons try to help students achieve balance is through intention-setting activities. These involve making commitments that help bound screen time and facilitate other priorities and activities. Templates guide students in making “pledges” about their technology use (e.g., DQ Institute and iKeepSafe) or to work with their parents/guardians on “family media agreements” (e.g., Common Sense). Lessons also seek to support healthy habits in students’ lives outside of the classroom by teaching specific behavioral strategies. On-device strategies include, for example:

- using apps to track and manage screen time;
- adding browser extensions that support focused study time;
- unfollowing or muting social media accounts that evoke negative reactions;
- switching phone screens to grey scale;
- turning off push notifications; and
- trying to prioritize active rather than passive activities on social media.

Off-device strategies include practices like:

- putting phones out of sight before bed;
- using a “phone stack” when hanging out with friends to reduce digital distractions during face-to-face socializing;
- scheduling screen time and screen-free time in advance;
- keeping a personal inventory of favorite offline activities (e.g., basketball, coloring, yoga) to refer back to; and
- identifying self-soothing and/or active nondigital activities that relieve boredom or sadness.

Another avenue toward behavioral change is scaffolding more deliberate personal challenges in which students actually try out strategies or plans that change their typical media habits. These challenges take the form of instructor-prompted digital media breaks (CyberWise, “Social Media Vacation”; MediaSmarts, “Disconnection Challenge”; Digital Future Initiative, “Digital Time Out”) and student-designed experiments to change a specific digital habit of their choice (Common Sense Education, “Digital Habits Check-Up”; White Ribbon Week, “Device-Free Zone”). Memorable heuristics like rhymes, acronyms, and thinking routines are used in some lessons to encourage retention of key principles. Examples include Common Sense’s “pause, breathe, finish up” saying to help younger students wrap up their technology use and Digital Future Initiative’s D framework “4 C’s” (Count to ten, Consider possible consequences, Careful with moods and emotions, Check for advice).

We still have much to learn about whether, how, and why these approaches actually enable healthy digital media behaviors. Technology pledges and agreements are one type of intervention that warrants focused study. On the one hand, these tools may facilitate proactive planning that supports digital

metacognition and establishes valuable boundaries, in addition to catalyzing conversations between youth and their parents/caregivers. Research on rule-setting related to technology use is mixed, though, and generally suggests that compliance (or a lack thereof) is shaped by the *content* of the rules and young people's *relationships* with the adults who are designing, implementing, and enforcing those rules (e.g., Hiniker et al., 2016; Kesten et al., 2015). Technology limits handed down from adults can be ineffective or outright backfire (Samuel, 2015). Further, research on student pledges related to honor codes suggests that asking students to simply make a one-time pledge to follow a preconstructed set of principles is insufficient (LoSchiavo & Shatz, 2011). The idea that students will make commitments about their technology use and then simply follow through on those plans may also overlook the impacts of persuasive design features (Alter, 2017), social pulls and pressures, and developmental changes as students get older. Likely, the value of pledges and media agreements depends on how they are developed and then used. Relevant, too, is the aforementioned experimental research, which demonstrated that education about persuasive tech design features – presented alongside messages about autonomy and social justice – can boost adolescents' motivation to self-regulate social media use (Galla et al., 2021). Yet these experiments also underscore that motivational changes are no guarantees of lasting behavioral change (Galla et al., 2021).

Learning behavioral strategies may build digital agency and support self-regulation. Agency and efficacy – which both involve competence, confidence, and control – are inherently linked to psychological well-being (e.g., Bandura, 1989). Students have *digital agency* when they can control and manage their personal uses of technologies (Passey et al., 2018). The strategies embedded in existing lessons arguably add “friction” to disrupt typical routines and unwanted, automatic behaviors – a crucial principle of habit change (Clear, 2018). For example, strategies like using a phone stack create friction against the habit of instinctively checking messages during a dinner with friends; disabling push notifications reduces the otherwise ongoing diversion of attention that can derail focus during study time. However, it is not clear whether the strategies advocated in current lessons cover the most relevant approaches used by savvy youth. A key area for future research is identifying behavioral strategies that adolescents are already using and/or which resonate with their authentic device struggles and self-identified values and goals. Relatedly, what paves the way from learning about a strategy in class to trying it outside of the classroom, and to deploying it on a routine basis?

Digital Citizenship Education: State of the Field

Above, we describe a suite of potentially promising pedagogies keyed to three crucial learning goals for supporting healthy digital habits. In Figure 15.1, we distill these three distinct learning goals of existing digital habits lessons and

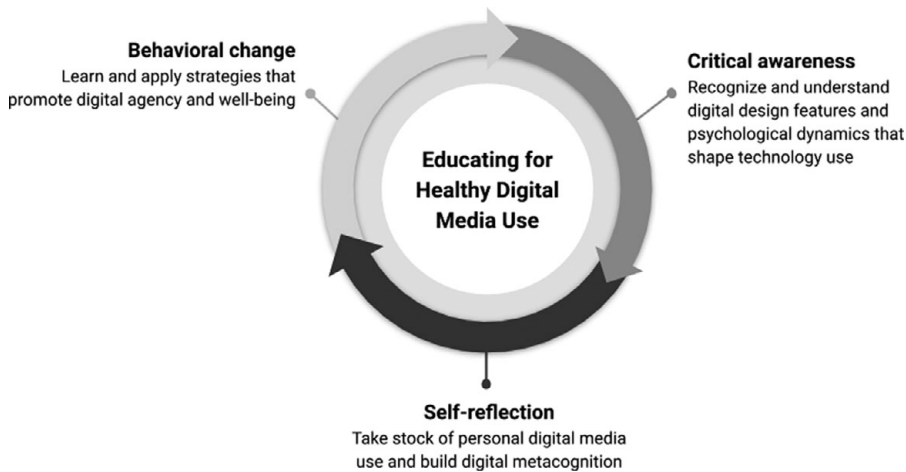


Figure 15.1 *Educating for healthy digital media use: three core learning goals*

propose a cyclical relationship among them. Although we developed this model based on our review of lessons that target digital habits and media balance, it holds broader relevance for other aspects of technology use – such as online sharing and digital footprints. This model may offer a guide for assessing digital citizenship lesson content and pedagogies.

These three focal aims – *critical awareness*, *self-reflection*, and *behavioral change* – likely have relevance beyond school settings, too, and particularly for mental health professionals who work directly with youth. Consider, for example, a teen whose struggle with depression appears to be exacerbated by social comparison on social media (Nesi & Prinstein, 2015). Building critical awareness could begin with discussion of the ways social media feeds can function as highlight reels that invite comparison (Weinstein, 2017). Self-reflection might then involve engaging the teen in a process of self-identifying whether and when this pattern holds in their personal media use: Are there specific accounts that lead them to compare themselves to others in ways that erode their mood or well-being? This self-reflection step could include building digital metacognition so that they begin to self-monitor and recognize when comparative thinking comes up in their everyday media use. Behavioral change could be supported through active strategies, like curating their social media feed(s) by unfollowing accounts that spark toxic comparison and adding accounts that encourage recovery and spark inspiration.

Returning to the context of school-based efforts, our review confirms overall that there are a number of available resources designed for digital citizenship and the intended promotion of healthy digital habits. Many of these resources are free, well-developed materials that are ready for immediate use and accompanied by detailed guidance for facilitators. Educators who are

interested in promoting healthy digital media use will likely have little trouble finding relevant supports. What is less clear at this point is whether available resources actually achieve their intended aims and, more generally, which pedagogical approaches are effective and for whom.

We caution, too, that research about digital citizenship topics themselves (e.g., young people's experiences with digital drama, sexting pressures, news and civic life, and creating healthy digital habits) is rapidly evolving and extremely relevant to the content of classroom lessons. Notably, in some cases, research consensus is hard won. Ongoing debates about the interpretations of evidence regarding impacts of technology use on mental health are a relevant example. It is understandable, then, that creators of school programs might struggle to distill the latest empirical research into clear, age-appropriate instructional content and classroom materials. In reviewing the digital habits lessons, we saw at least three instances of decisive curricular messages that are arguably misaligned with current research: (1) using the language of "addiction" to characterize everyday media habits; (2) describing a causal relationship between media activities and mental health issues (e.g., depression, anxiety, suicide risk); and (3) emphasizing total screen time without any attention to the types of digital activities that comprise that time. In addition to including potentially problematic messages, we noted examples of simplistic and likely ineffective instructional approaches (e.g., just telling all students "Don't compare yourself to others on social media") (see Weinstein, 2017 for context on why this approach may fall short). We also observed in some lessons a clear implication that offline activities are inherently more worthwhile than any online activities.

Researchers must also attend to different methods of implementation for school-based interventions. As we have touched on above, research should go beyond analysis of curricular content to consider details like where (e.g., advisory, health class, social studies, whole school assembly), how often (e.g., "one and done" versus multiple lessons across a semester or year), and who facilitates (e.g., classroom teacher, guidance counselor, expert guest speaker, peer mentor). A further question about interventions for healthy digital media use is *by whom and for whom*. Who decides what constitutes healthy versus unhealthy use, particularly given that youth use technologies in ways that reflect dramatically different offline circumstances and access to resources (Ito et al., 2020; Odgers, 2018)? Who actually receives digital citizenship interventions and in which ways do such interventions "meet them where there are" versus miss the mark?

There remain persistent and pernicious inequities across US education (e.g., Jencks & Phillips, 2011; Reardon, 2011). The recent example of remote learning during the COVID-19 pandemic provided yet another illustration of the ways in which young people differentially experience learning on a day-to-day basis in ways that set them up for stark differences in learning, health, and well-being outcomes (MacGillis, 2020). Unsurprisingly, educational

inequities play out in the context of technology-related education in ways that disproportionately impact black, Latino, and low-income youth (Watkins & Cho, 2018). A puzzle relates to who is responsible for attending to equity concerns when it comes to teaching digital topics. Should consideration of vulnerable students, and specific vulnerabilities, be “baked into” digital citizenship curricula and associated teacher supports? Or should programs leave it to teachers to make relevant adaptations for their students – whether they be students who have constrained resource access those who face learning challenges, those who have known mental health challenges, or any other number of relevant vulnerabilities? These questions are key for research, relevant to policy, and consequential from an ethical standpoint.

Other School-Based Approaches for Supporting Healthy Digital Media Use

Notably, digital citizenship curricula are but one approach to supporting healthy digital media use. The literature also suggests considerable advantages to integrating internet safety into already well-established and evidence-based programs that address related off-line harms (see Finkelhor et al., 2020 for discussion). This integrative approach recognizes the considerable overlap between offline and online behaviors and corresponding intervention strategies. For example, as Finkelhor et al. (2020) describe, cyberbullying co-occurs with offline victimization and well-established prevention strategies for bullying hold relevance for cyberbullying (e.g., norm-setting about acceptable versus hurtful behaviors, teaching de-escalation strategies, discussing bystander support). Educational interventions that integrate cyberbullying with offline bullying appear effective based on meta-analytic review (Gaffney et al., 2019). Finkelhor and colleagues argue that internet addiction/overuse is another topic best addressed through integration with existing interventions, specifically those that promote mental and physical health for high-risk youth, for example, by developing self-control, time management skills, and parental mediation.

Schools can also model or promote digital citizenship and healthy digital media use beyond the classroom lesson format. Additional venues for extra-curricular, school-based interventions – all of which are potentially relevant to digital citizenship – include whole school assemblies, peer-to-peer mentoring programs, and family engagement events. Acceptable use policies also set overarching guidelines and expectations for at-school technology use and/or the use of school-provided devices. These policies may bear resemblance to the aforementioned use-related “pledges” and represent another school channel for communicating messages and values about technology use.

Conclusion

Today's digital technologies are designed with compelling features that contribute to their allure. These apps and devices are created to capture and hold people's attention: designed and iterated to be "irresistible" (Alter, 2017). Youth readily use these tools, though technologies are rarely created with young people's healthy development front of mind. For adolescents, normative developmental drives and vulnerabilities contribute to heightened interest in the affordances digital media provide, from peer feedback to immediate rewards in gaming and on social media. While debate continues about the specific nature and mechanisms by which screen activities impact mental health, there is little question that digital media use should be a standard component of discussions about youth well-being.

As prior chapters in this handbook address, young people with particular mental health challenges may use digital media in ways that mirror or amplify risks. Clinical intervention represents an important avenue for providing these youth with targeted support. Yet questions about promoting healthy digital media use are widely relevant, and arguably merit attention with any and every young person who uses digital tools. Schools are a natural context for interventions particularly as they increasingly provide students with access to devices and encourage or require digital media use for learning. Our review documents a range of digital citizenship curricula and related resources to guide school-based intervention. These resources vary in their focal topics and in their approaches to those topics, as well as in terms of their formats, target grade levels, fee structures, and messaging. Across lessons that specifically target healthy digital habits, we observed three common learning goals: (1) building critical awareness so that students recognize and understand psychological dynamics and digital affordances that shape technology use; (2) scaffolding self-reflection that prompts students to take stock of their current digital media use and build digital metacognition; and (3) supporting behavioral change through strategies that promote digital agency and well-being. While programs often cover one or two of these learning goals, there is potential power in a three-pronged approach. Overall, relevant research suggests these aims and their corresponding approaches are good bets for supporting healthy digital media use. But, at present, we do not have a sufficient evidence base to guide decision-making about school-based interventions for promoting healthy digital media use. What works, for whom, and under what circumstances? Which topics, messages, and approaches align with current research on digital life and adolescent mental health/well-being? To what extent and how should school-based digital citizenship interventions be designed with an explicit equity lens?

All told, school-based interventions offer tangible ways to reach and support young people. Moving toward a set of well-developed *and* evidence-based curricular resources for digital media use will provide vital direction for the field.

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