From Teaching Digital Citizenship to Cultivating a Culture of Digital Literacy

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Problem of practice:

Our society's dependence on technology is making digital literacy and a learner's ability to regulate their technology use based on that literacy an essential competency. Although there is increasing recognition of the importance of digital literacy, there is less focus on helping learners regulate their technology use. Our work focuses on two main aims: (1) integrating critical forms of individual and collective regulation as part of the digital literacy curriculum, and (2) shifting from teaching about digital literacy to creating a collaborative culture of digital literacy.

Background

In the United States 89% of K-12 classrooms use technology throughout their academic day. (https://career.uconn.edu/blog/2023/12/14/technology-in-education-promoting-student-engagement/) In the United States, 89% of K-12 classrooms use technology throughout their academic day.(https://career.uconn.edu/blog/2023/12/14/technology-in-education-promoting-student-engagement/) As students progress through grade levels, their time with technology increases significantly. The majority of academic activities, such as testing, accessing textbooks, completing assignments, collaborating, and conducting research, take place on internet-based platforms. Many public schools provide their students with 1:1 devices that accompany them home and, in some cases, are equipped with LTE connectivity. This widespread access means that students have 24/7 availability to digital tools, extending their learning beyond the traditional classroom and also often giving them unfettered access to the online world.

In addition to school devices, learners also have access to personal devices that they can use to access social media or play online games. These types of environments can be addictive and have been associated with negative learning and socio-emotional outcomes like increased anxiety, depression, and decreased concentration and attention[1]. However, whether technology use in general has a positive or negative effect depends on how it is used[2]. Thus, as time spent on technology between school and home increases, whether it leads to positive or negative outcomes will depend on learners' ability to understand and regulate technology use.

Given the pervasive role of technology in and out of school, it is more crucial than ever to ensure that we equip learners with both digital literacy skills and their ability to regulate technology use as they progress through their academic careers. Educators are responsible for ensuring learner safety and

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[1] Bozzola, E., Spina, G., Agostiniani, R., Barni, S., Russo, R., Scarpato, E., ... & Staiano, A. (2022). The use of social media in children and adolescents: Scoping review on the potential risks. *International journal of environmental research and public health*, *19*(16), 9960.

McCrae, N., Gettings, S., & Purssell, E. (2017). Social media and depressive symptoms in childhood and adolescence: A systematic review. *Adolescent Research Review*, *2*(4), 315-330.

Ramírez, S., Gana, S., Garcés, S., Zúñiga, T., Araya, R., & Gaete, J. (2021). Use of technology and its association with academic performance and life satisfaction among children and adolescents. *Frontiers in psychiatry*, *12*, 764054.

Wentworth, D. K., & Middleton, J. H. (2014). Technology use and academic performance. *Computers & Education*, *78*, 306-311.

[2] O'Keeffe, G., & Clarke-Pearson, K.; Council on Communications and Media. (2011). The impact of social media on children, adolescents and families. *Pediatrics*, 124, 800–804.

Rashid, T., & Asghar, H. M. (2016). Technology use, self-directed learning, student engagement and academic performance: Examining the interrelations. *Computers in human behavior*, *63*, 604-612.

providing learning experiences that will build their digital literacy. A lack of digital literacy and an inability to regulate technology use can jeopardize students in real-time and create lasting adverse consequences for their future opportunities and the broader community.

We also have many excellent resources to help guide our digital literacy curriculum. One popular resource is the Common Sense Digital Citizenship curriculum, which aims to consider digital literacy from a community perspective.

Over 70% of U.S. schools currently utilize the Common Sense Digital Citizenship curriculum, which is grounded in research and focuses on six key domains of digital literacy. The curriculum includes a range of resources, including lesson slides, handouts, and family engagement materials. While the program provides valuable tools for teaching digital citizenship, its effectiveness can be limited by the time constraints inherent in the typical American classroom.

In many cases, teachers deliver lessons and follow them with quizzes to assess students' comprehension of the concepts. However, this often leads to a one-time exposure to the material, with minimal opportunity for continued discussion. As a result, students may not fully develop the self-regulation skills necessary to apply digital citizenship principles both in their academic and personal lives.

Creating a Culture of Digital Literacy

Educational researchers have long argued for the need to shift from traditional teacher-centered pedagogies that value teacher management of classroom behavior and learning processes to those that value the development of learning communities where students learn to manage themselves[3]. Such learning communities aim to introduce new domain topics as problems for learners to solve through discussion, reflection, and authentic practice[4].

Now, people often discuss authentic practice, but there are varying ideas about what this term means. Therefore, it is essential to unpack what this means in terms of digital literacy as part of in-class discussion and reflection. Let's take the credibility of information as an example. A teacher could address this digital literacy topic by creating a PowerPoint presentation about how unreliable information can be online and discussing essential goals and strategies to ensure that we question the accuracy and credibility of information we read online. Then, students could be tested on this knowledge afterwards to ensure that they remember key problems and strategies associated with this topic. However, this is a more traditional approach that does not allow students opportunities to experience this as a meaningful problem to be solved. Another approach would be to assign a project where learners have to conduct research on a topic

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[3] Brown, A., & Campione, J. (1994). Guided discovery in a community of learners. In K. McGilly (Ed.), Classroom lessons: Integrating cognitive theory and classroom practice (pp. 229–270). Bradford Books.
Rogoff, B., Matusov, E., & White, C. (1996). Models of teaching and learning: Participation in a community of learners. In D. R. Olson & N. Torrance (Eds.), Handbook of education and human development (Blackwell) (pp. 388–415).

[4] Collins, A., Brown, J. S., & Holum, A. (1991). Cognitive apprenticeship: Making thinking visible. American Educator, 15(3), 6–11.
Engle, R. A. & Conant, F. R. (2002) 'Guiding principles for fostering productive disciplinary engagement:Explaining an emergent argument in a community of learners classroom', Cognition and Instruction 20(4): 399–483.
Hickey, D. T. (2022). Productive disciplinary engagement and expansive framing: Randi Engle's situative legacy. *Routledge Resour. Online*.

known to have misinformation and provide a series of links of varying credibility, allowing them to choose which citations they use as evidence, hoping they will make errors. The teacher observes how they discuss and use these sites, making notes for a whole-class reflection. At the end of a class session, the teacher can lead a discussion asking learners about the sources they used and why, prompting them to reflect on credibility and, in this way, introduce related topics and strategies. The class can then decide how their community will ensure credibility and what strategies they want to use to improve their site selection process, helping each other think more critically about the types of online information they use. Going through this process grounds their learning in concrete experiences that provide meaning for why these forms of digital literacy are essential. Moreover, it empowers learners to learn how to regulate aspects of technology use for themselves and how to regulate learning socially, collectively with others, in ways that enhance the sophistication of the community's collective sense-making, how they use technology to enhance learning processes, and the quality of products they produce.

Although such an approach may be desirable, the reality is that it can be a challenging shift for teachers to make for various reasons, including comfort, experience, and a lack of agency to implement it. There is a level of comfort and expertise necessary to create a learner-centered context that is inherent to learning communities. For those whose experience with classroom learning has been in more traditional settings, problem-based, discussion-rich classrooms can feel chaotic and stressful. For example, Barbara Rogoff and colleagues, discussed how new adult facilitators/teachers initially perceived these environments as loud, chaotic, disorganized and without teacher presence. This perception is not surprising since you will have 20 to 30 students all talking at once in their respective groups and doing different things. Teachers accustomed to a traditional model of instruction fail to see that the chatter is meaningful, active, and full of energy. Over time, these adults come to see order and value in the energetic, rich discussions that take place. What is more, they can see just how present the teacher is, guiding, prompting, empowering, connecting, and emotionally encouraging learners.

Given these obstacles, it is necessary to find ways for teachers to gradually initiate the process of making this shift, addressing their time constraints and comfort levels while also attempting to meet the needs of learners. One possibility is to start by seeding ideas within the classroom through the use of authentic learning objects whose purpose is to make underlying thinking processes visible to learners while serving as ongoing visual reminders to teachers and learners about the importance of their ongoing use. The use of these objects builds on a foundation of research about how people learn and the way that objects in our environment can enhance social learning processes[5].

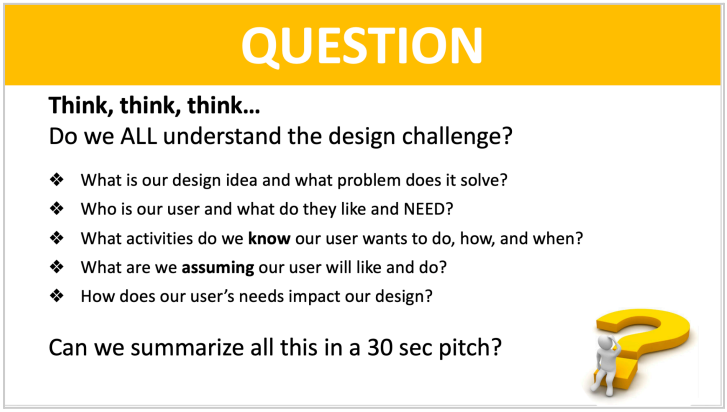
The use of authentic learning objects can be applied in both formal and informal contexts to guide creativity and making in ways that also support higher-order thinking (cite formal and informal work). For example, Borge uses a variety of authentic learning objects in her play-based after-school design

[5] Brown J. S., Collins A., Duguid P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32–42.
Hutchins, E. (1995). *Cognition in the wild* (pp. 26–35). The MIT Press.; Hutchins, E. (2020). The distributed cognition perspective on human interaction. In *Roots of human sociality* (pp. 375–398). Routledge.
Latour, B. (1996). On inter-objectivity. *Mind, culture, and activity*, *3*(4), 228-245.

clubs to help learners think about and internalize design practices and collaborative habits of mind[6]. In her work, she has partnered with K-12 learners and undergraduate students from various design fields to break down the design process into simplified phases, each with key questions that designers should ask themselves at that stage of the design process. Figure 1 shows an example from the Question Phase.

What distinguishes these objects from traditional classroom objects/posters is the purpose they serve during classroom activity. Simply creating posters that unpack critical thinking processes and displaying them in a classroom is not enough to make them authentic learning objects. What makes learning objects authentic is that classroom activities/curriculum necessitate their use, so that teachers consistently refer to them as part of ongoing classroom practice.

Figure 1. Poster from Borge et al.'s (2020) Embedded Design Curriculum that makes design thinking processes visible to learners at the Question Phase of the design process.



In Borge's design club, learners are placed in teams to work on playful design problems. Learners are introduced quickly to the design phases, but they are not required to learn them, nor are they tested on the material. Moreover, Borge and colleagues designed club activities to increase the likelihood of students encountering problems that the community can later address through the use of authentic learning objects. For example, learners are introduced to a design challenge in which they must create an ideal garden for a Lego family. Still, teachers provide learners with minimal information about the family. Teachers give teams a collection of art supplies to begin thinking about how to tackle the problem. They do so knowing that learners are likely to move to designing before thinking about and collecting information about the family, thus making assumptions about their needs. This common design issue can lead to poor design. Nonetheless, teachers do not prevent the problem from occurring. The curriculum is designed to create opportunities for learners to deviate from desired design practices. The teacher observes and notes key team experiences that they can refer to during whole-class reflection.

During whole-class reflection, the teacher prompts learners to discuss their experiences. They call on specific teams and discuss their observations, asking for the learners' perspective and input. The

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[6] Borge, M. & Xia, Y. (2023) Beyond the individual: The regulation and negotiation of socioemotional practices across a learning ecosystem, *Journal of the Learning Sciences*, 32:3, 325-375, DOI: 10.1080/10508406.2022.2157725
Borge, M., Toprani, D., *Yan, S., & *Xia, Y. (2020). Embedded design: engaging students as active participants in the learning of human-centered design practices. *Computer Science Education 40*(1), 47-71. DOI:10.1080/08993408.2019.1688592

Additional resources can be found here:https://sites.psu.edu/mborge/thinkerspaces-design-studios/

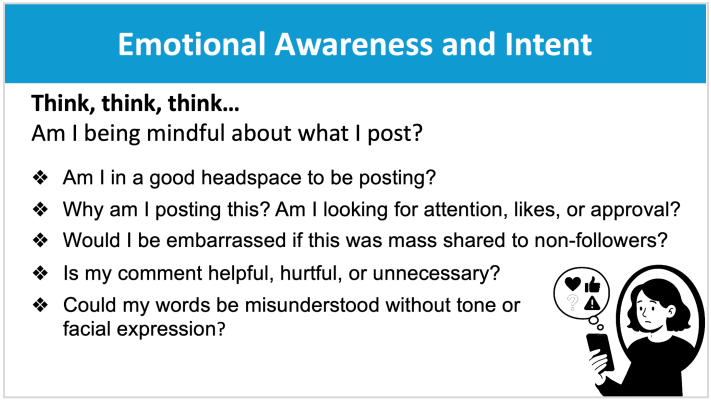
teacher brings attention to problems they see as interfering with meeting the aims highlighted in the authentic learning objects, asking learners if they took the time to consider the listed questions. Allowing learners to explore and make mistakes with digital literacy activities creates concrete experiences that can serve as a foundation for introducing more complex and abstract ideas. So, what makes learning objects authentic is that they can be paired with concrete experiences and consistently used to support ongoing thinking processes. Over time, the language and ideas in these authentic learning objects, alongside the practices and expectations they promote, have been shown to become part of regular classroom talk that learners use to regulate their individual and collective behaviors (Borge & Xia). We want to take a similar approach with Digital Literacy Aims.

As part of this research practice partnership, we worked to unpack one of the digital literacy aims from the Common Sense Digital Citizenship curriculum for 7th grade: Digital footprint and identity. We began by brainstorming all the questions we should ask ourselves before posting anything to a public online platform, drawing on research and practical knowledge. We developed 22 questions, which we then grouped into four larger categories to create four posters (see Figure 2 for an example poster). The four categories are privacy and boundaries, impact and responsibility, emotional awareness and intent, and digital reputation and legacy. For example, the category of emotional awareness and intent has five key questions:

- Am I in a good headspace to be posting?
- Why am I posting this? Am I looking for attention, likes, or approval?
- Would I be embarrassed if this were mass-shared to my non-followers?
- Is my comment helpful, hurtful, or unnecessary?
- Could my words be misunderstood without tone or facial expression?

Each of these questions can be used as an opportunity to delve into deeper topics and abstract theories, such as theories of emotion, interaction, radicalization of perspectives, and the impact of social media on individual and community outcomes. In this way, the learning object can enhance learners' understanding of and approach to online posting practices. More importantly, these questions can be paired with curriculum and teacher practices to provide learners with meaningful experiences that help them make sense of and guide their behaviors.

Figure 2. Example that builds on Borge et al.'s (2020) Curriculum to make digital literacy thinking processes associated with emotional awareness and intent visible to learners.



What use of authentic learning objects could look like in digital literacy practice

For this example, we will focus on a 7th-grade history course where students create social media profiles for historical figures. Each student will select a historical figure of their choice and develop a social media account to portray that person authentically. Throughout the project, students will engage with the authentic learning resources to practice self-regulation as they post on their fictional social media accounts.

During the process, various opportunities for discussion will arise. For instance, if a student posts an image of their historical figure alongside another figure, this could prompt a meaningful conversation. In this scenario, the teacher can guide the student to reflect on whether the historical figure would have had permission to share the photo, the purpose of the post, and whether it aligns with historical accuracy and integrity.

These moments of reflection and guidance will serve as the foundation for class discussions. Over time, they will encourage students to develop a deeper understanding of digital responsibility.

Conclusion

We live in a time when children's lives, behaviors, and experiences are being documented online, meaning that the things they do, the choices they make, and the mistakes they make will live on forever. This new reality can create obstacles for future job placement, advancement, and networking. It can also help or hinder the building and maintenance of social relationships. As a result, digital literacy is becoming a crucial competency for achieving lifelong success. That is why we want to encourage teachers to move beyond covering the digital literacy content and checking a box. We need to work across communities of practice so researchers, teachers, and educational content creators can devise ways to help learners develop the regulatory knowledge and skills necessary to navigate this technological landscape well.

We want to acknowledge the value and utility of Common Sense Digital Citizenship. Our purpose in writing this research-practice brief was not to criticize these valuable resources, but rather to build on and extend them in ways that could provide additional benefits to learners.

We also want to acknowledge the current teaching context, which involves an unreasonable amount of knowledge that teachers are expected to possess and the breadth of topics they are expected to cover, all with decreasing agency and resources. We recognize and appreciate what teachers do, and we understand that sometimes it is necessary to cover a lesson and move on to the next one. Nonetheless, digital literacy and the use of technology are critical knowledge areas that will impact current and future generations. Therefore, we all need to find ways to integrate it more effectively into our ongoing classroom practice.

We need to provide safe spaces where learners can learn about and regulate technology. Where they can explore, fail, and learn from these experiences through guided teacher reflection to develop more profound knowledge and better technological predispositions. These are precisely the types of teaching practices and experiences that AI cannot replicate or surpass. These social, innovative, and learner-centered pedagogies require a human touch, with teachers serving as facilitators working to cultivate a culture of digital literacy.

Additional Notes: *There are four suggested Authentic learning objects and content for Common Sense Education's "Digital footprint and identity" curriculum. Only one was created and discussed in this paper.*

1. Emotional Awareness and Intent

- What is my current mood and am I in a good headspace to be posting?
- Why am I posting this? Am I looking for attention, likes, or approval?
- Would I be embarrassed if this was mass shared to my non-followers?
- Is my comment helpful, hurtful, or unnecessary?
- Could my words be misunderstood without tone or facial expression?

2. Privacy and Boundaries

- Would I be okay with my family, teachers, or future employers seeing this?
- Do I have permission to share what I am sharing?
- Who will see this?
- Am I respecting my own and other's privacy by keeping certain things offline (like personal struggles or private moments)?
- Do I understand that my online actions can affect my real-life relationships?

3. Impact and Responsibility

- Will this post create more negativity or positivity in the world?
- If someone saw this post will they think I am a good person?
- Am I posting at an appropriate time?
- Am I double-checking the information before I share it?
- Do I recognize when a meme, joke, or post could be harmful to others, and am I choosing to avoid or report it?

4. Digital Reputation and Legacy

- What do my social media profiles say about me?
- What do the people/groups I follow show about who I am?
- Will I want to delete this later?
- Am I curating a digital legacy that matches who I want to become?
- How will I feel if my work friends or children see this when I am grown?