Situating Citizenship Online: Digital Citizenship in the Context of the Cyber Life Framework

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Abstract

Coming to understand technology in schools—its educational uses and larger implications—has often been an ad hoc endeavor. Approaches to technology often have been reactive. The broader context of technology reactiveness plays out beyond school walls. Indeed, Helberg (2021) argues there exists a grey war in which autocratic regimes actively fight democracies for control of the world-wide technology infrastructure and the political and economic realities such control would allow them to influence. In that grey war, Helberg (2021) argues democracies are not proactively addressing the threats posed by autocracies. How education systems create cultures around technology has the potential to impact the approaches democracies take regarding the broader context of technology. This paper introduces the Cyber Life Framework. Built on three touchpoints of information literacy, technology skills, and cybersecurity & cyber safety, the framework is a guide for schools and school systems to proactively create a culture of online responsibility. Once the framework is introduced, particular attention is paid to aspects of digital citizenship implicated by the framework.

Keywords: citizenship, Cyber Life Framework, cyber safety, cybersecurity, digital citizenship, education, information literacy, technology skills

Situating Citizenship Online: Digital Citizenship in the Context of the Cyber Life Framework

Multiple definitions exist for digital citizenship (Isin & Ruppert, 2020; Pangrazio & Sefton-Green, 2021; Saputra & al Siddiq, 2020; and Searson et al., 2015). Three understandings of digital citizenship appear in the literature: (a) being responsible online and engaging in cyber safety activities (e.g., Pangrazio & Sefton-Green, 2021; Perez, 2017; Saputra & al Siddiq, 2020; and Searson et al., 2015); (b) being the citizen of a nation-state who interacts with government online (e.g., Pangrazio & Sefton-Green, 2021); and (c) being the citizen of a digital world, of cyberspace (e.g., Isin & Ruppert, 2020; Pangrazio & Sefton-Green, 2021). My shorthand for being responsible online and engaging in cyber safety activities is *being good online*.

Interestingly, Westheimer and Kahne (2004) share a tripartite conceptualization of citizenship within the context of democratic education. This conceptualization leads to three types of citizens: (a) "the *personally responsible citizen*," (b) "the *participatory citizen*," and (c) "the *justice-oriented citizen*" (Westheimer & Kahne, 2004, p. 239, emphasis in the original). These conceptualizations are roughly analogous to the three definitions of digital citizenship. Whereas Westheimer and Kahne's (2004) personally responsible citizen is characterized by specific character traits (i.e., "honesty, integrity, self-discipline, and hard work" [p. 241]), being good online requires specific skills and competencies (Searson et al., 2015). Westheimer and Kahne (2004) understand participatory citizenship as a more active, yet traditional, conception of citizenship. Being a citizen of a nation-state who engages with government digitally is a traditional view of political citizenship updated for the internet age (Isin & Ruppert, 2020). Justice-oriented citizenship identified by Westheimer and Kahne (2004) is associated with strong democracy and is a socially active version of citizenship (Lambert, 2016). Among the definitions

of digital citizenship, being a citizen of cyberspace provides a transformative understanding of political digital citizenship.

Definitions notwithstanding, digital citizenship does not exist in isolation. Digital citizenship is informed by digital literacy (Saputra & al Siddiq, 2020). Moreover, Singh (2008) asserts, "Information overload and ICT [information and communications technology] lead to info-stress and techno-stress among the information seekers. IL [information literacy] provides elbow support during these stressful moments" (p. 14). At the heart of information literacy is understanding the nature of information online. Gurak (2001) argues for a critical stance toward online information. November (2008, 2012a, 2012b) explores the nature of a critical stance when evaluating online information. Moreover, Zhu et al. (2019) indicate that ICT (e.g., technology skills) self-efficacy is a predicator of information literacy ability. Whereas information literacy is a proactive stance toward online information, cybersecurity strategies are employed to intercept and mitigate online threats. At the level of the individual, cyber safety provides a structure for online interactions guided by a conscious effort to protect personal information and ensure physical safety. Such cyber safety considerations are contained in the digital citizenship components of student technology standards (Tex. Admin. Code; International Society for Technology in Education [ISTE], 2018). The inter-related nature of these concepts (i.e., digital citizenship, information literacy, technology skills, cybersecurity, and cyber safety) supports an integrated understanding of online participation, or cyber life.

The Cyber Life Framework was developed to conceptualize such an integrated understanding of online participation. The elements, or touchpoints, of the framework are information literacy, technology skills (e.g., ICT), and cybersecurity & cyber safety. The reader is directed to Figure 1 for a visual representation of the Cyber Life Framework. The purpose of

this paper is (a) to describe the development of the Cyber Life Framework, (b) relate the Cyber Life Framework touchpoints to relevant literature, (c) assess the appropriateness of the relationships advanced among those touchpoints, and (d) situate digital citizenship as a component of the framework.

Problem Statement

The geopolitical power struggles of our time are technological rather than military (Helberg, 2021). We have advanced so far in our pursuit of machine learning that technical concerns have become social concerns and social concerns have become technical (Christian, 2020). According to Lynch (2019), "Merely searching the internet convinces people they know more than they do—even about things they haven't yet researched" (p. 28). Gurak (2001) argues people accept information published online without question or investigation. More than accepting information, though, information shared online can be used to manipulate. For instance, McCulloch (2019) describes Cambridge Analytica's use of personal data, obtained from Facebook, to target voters in attempts to influence elections.

Changes to practices online are often a reaction to an identified danger. Often these changes happen after the danger has impacted an individual or an organization. This has been true in schools, but the broader context of technology reactiveness plays-out beyond school walls (or networks). Indeed, Helberg (2021) argues a grey war exists through which autocratic regimes actively fight democracies for control of world-wide technology infrastructure and the political and economic realities such control would allow them to influence. In that grey war, Helberg (2021) asserts democracies fail to proactively address threats posed by autocracies. Rather, democracies are locked in a cycle of responding to threats.

Purpose of the Study

The purpose of this qualitative exploratory study was to describe the development of the Cyber Life Framework. The further purpose was to (a) relate the Cyber Life Framework touchpoints to relevant literature, (b) assess the appropriateness of the relationships advanced among those touchpoints, and (c) situate digital citizenship as a component of the framework. As such, the following central research question and associated research subquestions were addressed in the present study.

Research Questions

Creswell (2013) asserts the nondirectionality of qualitative research questions. Further, a central research question supported by a small number of subquestions guide qualitative studies (Creswell, 2013). The present study was guided by the following central research question: What is the Cyber Life Framework and how can digital citizenship be represented within that framework? Subquestions were: (a) How was the Cyber Life Framework developed?; (b) How are elements of the Cyber Life Framework represented in the relevant literature?; (c) How does the relevant literature support or contradict the relationships advanced among the elements of the Cyber Life Framework?; and (d) How does digital citizenship situate within the Cyber Life Framework?

Significance of the Study

Understanding the interactions between the touchpoints of the Cyber Life Framework can aid understanding of teaching toward living in a technology-rich world. In particular, understanding digital citizenship, in its various definitions, can provide a link between learning and living beyond the classroom. Mackey and Jacobson (2011) highlight the "transient, collaborative, and free-flowing" nature of social media (p. 62). Being connected is a continuous experience which does not necessarily require a person to be online (Isin & Ruppert, 2020). Moreover, the always-on connection is increasingly guided by algorithms (Christian, 2020; Lynch 2019; Pangrazio & Sefton-Green, 2021). The algorithmic nature of online decisions and presentation of information "raises critical challenges to what it means to be an informed, engaged and active citizen" (Pangrazio & Sefton-Green, 2021, p. 19).

In looking to schools to help us understand these critical challenges and possible reactions to them, Zhu et al. (2019) remind the reader that teenagers form their identities in relation to other technology users. Building a culture of online responsibility informed by digital citizenship as understood through the theoretical framework of the Cyber Life Framework provides a meaningful way to understand digital culture and online content. Such an understanding supports a move from reactive technology use and decision-making to critical assessments of online content informed by an integrated view of living in a technology-rich world—living a cyber life.

Methods

Autoethnography and literature review were employed as methods in this two-part qualitative exploratory study. The separate parts of the study were undertaken sequentially such that part one was completed before part two began. The first part of the study addressed the following research subquestion: How was the Cyber Life Framework developed? In this first part

of the study, autoethnographic techniques (Adams et al., 2022; Keleş, 2022; Poulos, 2021) were used to describe the process of developing the Cyber Life Framework. The second part of the study was undertaken using literature review as methodology (Onwuegbuzie & Frels, 2016; Snyder, 2019) to answer the remaining research subquestions. The subquestions addressed in the second part of the present study were: (a) How are elements of the Cyber Life Framework represented in the relevant literature?; (b) How does the relevant literature support or contradict the relationships advanced among the elements of the Cyber Life Framework?; and (c) How does digital citizenship situate within the Cyber Life Framework?

Part One: Autoethnography

With foundations in phenomenology and narrative research (Poulos, 2021), autoethnography can be used to explore a phenomenon from the perspective of an individual researcher. By providing autobiographical information in the autoethnography, researchers can effectively engage their audience (Keleş, 2022). In contrast, it is a misconception to understand autoethnographers as focused exclusively on personal experience. Autoethnography takes into account the individual in relation to society (Adams et al., 2022; Poulos, 2021). Moreover, "autoethnography is a relational, rather than an individual, practice" (Adams et al., 2022, p. 11). Even so, in a study of 40 autoethographic articles published in journals related to applied linguistics Keleş (2022) determined "personal narrative based on memory work constituted the primary, if not the only data source in multiple single-authored autoethnographies" (p. 462).

In the first part of this study, the researcher describes through autoethnography the development of the Cyber Life Framework. As such, he shares a narrative of both his experience working in public education and how that experience focused his understanding of instructional technology such that he developed the framework. Using memory and notes (e.g., Keleş, 2022;

Poulos, 2021), the author functioned as research instrument in the first part of this study. In sharing autobiographical information (Keleş, 2022) and analyzing that information in terms of social relations over time (Adams et al., 2022; Poulos, 2021), the author engaged in a process "to explicitly bring together the personal and the political" (Adams et al., 2022, p. 1). In the present study, *political* is understood in terms of political relationships (i.e., citizenship) rather than in terms of *partisan politics*.

Lack of generalizability is a limitation of autoethnography. By definition, the autoethnographer is examining phenomena from the vantage point of personal experience. Puolos (2021) argues that autoethnographers insist on writing "from their own point of view" (p. 28). The first part of this study employs the researcher's point of view to describe his experience as an educator and instructional technology expert. That description is, and can only be, limited to his experience and his conceptualization of that experience. Said differently, other educators and instructional technology experts have different experiences and may conceptualize them in different ways.

Part Two: Literature Review as Methodology

In the second part of this study, literature review is employed as method to respond to three research subquestions. Literature reviews have become the most common way of identifying knowledge (Onwuegbuzie & Frels, 2016; Onwuegbuzie & Weinbaum, 2017). They are more than a means of summarizing literature (Onwuegbuzie & Frels, 2016; Onwuegbuzie, Leech, & Collins, 2012). While literature reviews often precede the study proper, they can be an end in themselves (Onwuegbuzie & Frels, 2016).

By understanding literature related to information literacy, technology skills, cybersecurity, and cyber safety, it is hoped the Cyber Life Framework can be placed within research traditions in those areas. The framework is an attempt to understand these concepts and their role in schools and education more broadly. It is further hoped the framework is a new contribution to the literature. Additionally, a review of the literature related to digital citizenship engages that concept as part of the Cyber Life Framework, situating citizenship online.

Method within this review of related literature is exploratory in nature—seeking to confirm, revise, or deny the assumptions underlying the Cyber Life Framework and the relationship between digital citizenship and that framework. As such, this literature review takes an integrative approach. Representing the broadest type of literature review, an integrative literature review allows for the use of diverse methodologies (Onwuegbuzie & Frels, 2016). According to Snyder (2019), the integrative literature review "should preferably generate a new conceptual framework or theory" (p. 336). A purpose of the literature review related to emerging topics is the development of theoretical models (Snyder, 2019). Moreover, integrative literature reviews serve this purpose. Through assessment, critique, and synthesis of the literature, integrative literature reviews allow new perspectives to emerge (Snyder, 2019). As such, these literature reviews "should *not* be descriptive or historical" (Snyder, 2019, p. 336, emphasis in original).

In integrative literature reviews, transparency of the article selection process is important (Onwuegbuzie & Frels, 2016; Snyder, 2019). Onwuegbuzie and Frels (2016) indicated narrative literature reviews seldom make the article selection process explicit. In contrast, systematic literature reviews should be replicable and include a detailed discussion of the process for article inclusion (Onwuegbuzie & Frels, 2016). Conceived as an integration of systematic and narrative

literature reviews, integrative literature reviews, as mentioned above, allow for diverse methodologies (Onwuegbuzie & Frels, 2016). In this review of the literature, the search process is identified. Systematic criteria for article inclusion are not identified.

As in the autoethnographic portion of the study, the researcher is the research instrument when conducting a literature review (Onwuegbuzie & Frels, 2016). The researcher develops search criteria, makes decisions about article inclusion and exclusion, and determines perspectives regarding analysis. Lack of replicability is a limitation of literature review as methodology in the present study. Without criteria for including and excluding articles from the study, other researchers cannot replicate the study.

Results

The present study was guided by the following central research question: What is the Cyber Life Framework and how can digital citizenship be represented within that framework? Through autoethnography and literature review, the researcher answers that central research question by first addressing each of the following research subquestions in turn: (a) How was the Cyber Life Framework Developed?; (b) How are elements of the Cyber Life Framework represented in the relevant literature?; (c) How does the relevant literature support or contradict the relationships advanced among the elements of the Cyber Life Framework?; and (d) How does digital citizenship situate within the Cyber Life Framework? The first research subquestion was addressed in the first part of the study; results of which are reported below under the heading *Part One: Development of the Cyber Life Framework*. Subsequent research subquestions were addressed in the second, and sequential, part of the study. Results of the second part of the study are reported below under the heading *Part Two: The Cyber Life Framework in Context*.

Part One: Development of the Cyber Life Framework

The first part of the present study addressed the research subquestion: How was the Cyber Life Framework developed? As discussed above, the researcher employed autoethnography as method for this portion of the study. As such, first person will be used to report the results of this part of the study (Keleş, 2022; Poulos, 2021).

Journey Toward Understanding

By way of introduction, I share that the Cyber Life Framework is intended to provide a structure within which technology use and learning in schools can be understood. As previously, the reader is directed to Figure 1 for a visual representation of the Cyber Life Framework. In this instance, digital citizenship has been situated in the framework along the line anchored by information literacy and cybersecurity & cyber safety. The Framework is intended to offer a theoretical framework for the use of technology in schools and the development of students who live and learn in an increasingly digital world. A world, moreover, where "social media comes to be an extension of the human body" (Saputra & al Siddiq, 2020, p. 157).

Initially developed from my lived experience, the Cyber Life Framework represents over two decades of informed practice in education and instructional technology. Claiming autoethnographic methods, I actively use writing in the this first part of the study to make sense of my experience (Poulos, 2021). Coming to fruition during my transition (i.e., within the first month serving in the position) into a technology directorship, the Framework recalls my work as a first-year teacher, campus technology specialist, professional developer, university faculty member, instructional technology coordinator, school administrator, and technology director.

My Journey

I have heard new teachers called baby teachers. Walking into the beginning of the year professional development at the start of my first year of teaching, I was certainly that. I entered the profession through alternative certification. Teaching on an emergency permit, I began my first job in education having taken no education courses and without experience student teaching. I was raw. I was a baby teacher to be sure.

As with many teachers recalling their first year, I see bits-and-pieces of my inaugural season of teaching. One thing I recall is walking into the band hall as a never-yet-been-in-the-classroom teacher having been asked to share with the staff of veterans—including some of my former teachers—about creating digital presentations. In this case, I talked about PowerPoint. The bulk of the meeting escapes my memory. It has been more than two decades since I participated in that first meeting, but I still see the hulking Macintosh computer connected to a projector which was balanced atop a stool. I have fleeting recollections of portraits from the Civil War downloaded from the internet and a remarkably clear vision of an erupting volcano as part of the presentation I shared that day.

Clicking the mouse to advance the slides, I nervously shared a remarkably simple presentation with my colleagues. Those Civil War portraits represented social studies and the volcano, science. I have no idea how other content areas were represented. I think the volcano holds a particularly vivid place in my memory for the reaction it received from one of the teachers—my colleague. The diminutive, veteran science teacher commented on science being more than volcanoes. In fact, that is the only comment I remember. From anyone. I do not know if I did a good job or was perceived to have done a good job. I don't recall if I left the rest of the faculty in awe or in desperate need for something else to consider.

The year was 1998, and I remember that science teacher's comment. From that first presentation through today, I have been involved professionally in instructional technology. Growing beyond the baby teacher stage, I have taken on many roles—always somehow linked to instructional technology. Relying on those experiences and inspired by my recent move to a technology director position, I created the Cyber Life Framework. In truth, the initial draft of the framework emerged during a solitary brainstorming session sitting at my desk in my new office. Leading a department responsible for finance software and student information systems as well as instructional technology and virtual learning, I needed a mental model—a theoretical framework—to guide me in my role. To provide full disclosure, I am too new to the position at this writing to know how (or if) that framework will, in fact, guide me in my role.

Newness notwithstanding, the brainstorm began in a significantly smaller place: creating a presentation as part of a technology director certification program. I thought I would create a professional learning opportunity focused on the people factors associated with cybersecurity and cyber safety. I was, and am, convinced this aspect of cybersecurity is short-changed in organizational cybersecurity efforts. In fact, Chang (2022) includes professional learning in her five key controls for protecting against ransomware in school districts.

The brainstorming, though, rapidly moved from cybersecurity to a larger, more comprehensive approach to living a cyber life in schools and beyond. Reflecting on my multifarious experiences and referring to the immediate needs experienced on a campus, I identified isolated elements of understanding limiting how educators, in my experience, collectively teach about learning and living in a technology-rich world. The Cyber Life Framework was born.

In its initial iteration, the three touchpoints of the framework were: (a) information literacy, (b) cybersecurity, and (c) cyber safety. As presented in this paper, the framework is revised to rely on information literacy, technology skills, and cybersecurity & cyber safety as its three guiding touchpoints. Together, the touchpoints explain and facilitate interaction intended to develop a culture of online responsibility. My specific interest here is also to situate digital citizenship within that framework. The interest relative to digital citizenship comes, immediately, from the initial focus of the framework on cybersecurity and cyber safety. Additionally, I grabbed onto digital citizenship as a concept for this study based on my undergraduate study of political science and my dissertation work related, in part, to the characterization of *citizenship* in social studies curriculum standards in Texas (i.e., Lambert, 2016).

It's strange, but the development of the Cyber Life Framework reminds me of my interest in Greek mythology in my youth. The framework emerged as if Athena from the head of Zeus. It is the rapidity of the framework's development that necessitates my hesitation to suggest that, even now, the Cyber Life Framework exists in final form. The framework rests on the foundation of over two decades of contemplation and practice in education and instructional technology, but the drafting occurred over a few days. Hesitancy seems appropriate. I offer the Cyber Life Framework, then, as a starting point for discussion. Indeed, the second part of this study is used to begin that discussion through review of relevant literature. That literature review, divided according to three remaining research subquestions, comprises the section below: *Part Two: The Cyber Life Framework in Context*.

Part Two: The Cyber Life Framework in Context

Developing a framework based on lived experience is one thing. Attempting to engage that framework as a theoretical model requires connections to extant literature in the areas the

framework is intended to explain. To that end, related literature is reviewed. The review is divided into three sections thus: (a) Cyber Life Framework and Touchpoints in the Related Literature; (b) Relationships Advanced Regarding Cyber Life Framework Touchpoints; and (c) Situating Digital Citizenship Within the Cyber Life Framework. The sections, in turn, address the following research subquestions: (a) How are elements of the Cyber Life Framework represented in the relevant literature?; (b) How does the relevant literature support of contradict the relationships advanced among the elements of the Cyber Life Framework?; and (c) How does digital citizenship situate within the Cyber Life Framework.

Cyber Life Framework Touchpoints in the Related Literature

Serving as touchpoints anchoring the Cyber Life framework, the elements of the framework are information literacy, technology skills, and cybersecurity & cyber safety. Each of these elements, individually, is the subject of a body of literature. As such, the literature related to each element is addressed in turn. In reviewing the literature, the following research subquestion is addressed: How are elements of the Cyber Life Framework represented in the relevant literature?

Information Literacy.

Searches for studies of information literacy most typically return results related to library science. Three particularly relevant studies were identified searching Academic Search Complete for *information literacy* and *education* (i.e., Mackey & Jacobson, 2011; Nisha & Varghese, 2021; and Zhu et al., 2019). Additional studies and books were identified for inclusion in this review from reference lists of studies identified in the search.

Information literacy is a vital skill in a technology-rich world (Mackey & Jacobson, 2011). Information is an important part of changing world economies (Zhu, et al., 2019). Lynch

(2019) sees an information culture that "has become so corrupt as to tolerate and encourage self-deceptive attitudes toward truth and evidence" (p. 37). At the same time, the ability to *google it* has perpetuated a false sense that what can be found has been found (Lynch, 2019; Mackey & Jacobson, 2011). Further, "today's information-literate individual must be able to recognize and appropriately synthesize conflicting viewpoints" (Mackey & Jacobson, 2011, p. 73).

Even young children (e.g., four and five-year-olds) routinely access the internet (Edwards et al., 2018). At that age, and through age eight, many children refer to the internet by the device they are using to access it (e.g., computer or tablet); they are unaware of the true nature of the internet (Edwards et al., 2018). By implication, even the youngest students need information literacy skills. These might start with an understanding of the nature of the internet.

For older students and adults, technology has impacted the nature of information literacy skills needed. Mackey and Jacobson (2011) insist expectations related to finding information have changed in a technology-rich world. Moreover, Lynch (2019) addresses the dangers of personalization of information through online algorithms. "When the only facts you receive are those tailored to fit your biases, you are a ripe target for manipulation" (Lynch, 2019, p. 32). Furthermore, Mackey and Jacobson (2011) identify increasing difficulty in determining information sources and author expertise, especially with the rise of social media.

Proponents of cyberliteracy (e.g., Gurak, 2001) advance a critical stance toward information—including information found through social media (Mackey& Jacobson, 2011). Moreover, information-literate individuals understand information across technologies (Mackey & Jacobson, 2011). November (2008; 2012a; 2012b) introduces multiple strategies used by information-literate students to validate online information. As such, November (2008, 2012a; 2012b) foregrounds the place of technology skills in supporting the acquisition and application

of information literacy.

Technology Skills.

A well known and widely consulted expert on instructional technology and information literacy, November (2008) presents technology skills for use by students and teachers, especially as a means of validating online information. Among these skills are employing advanced search techniques in internet search engines, analyzing characteristics of web sites, and using the structure of uniform resource locators (URLs) (i.e., web addresses) to find web resources from specific countries. November (2008, 2012b) advocates actively teaching technology skills to students.

In contrast, in a study of teenage users of computer games and social media Appel (2012) assumes acquisition of computer literacy (i.e., technology skills) happens unintentional through computer use. Appel's (2012) assumption notwithstanding, Choi et al. (2021) assert ability to use the internet does not necessarily follow from technology availability. Further, Zhu et al. (2019) indicate the quality of ICT use matters more than frequency of use for building ICT self-efficacy and interest. ICT self-efficacy and interest, in turn, contribute to the development of student information literacy (Zhu et al., 2019). Moreover, "frequent ICT use does not necessarily imply beneficial ICT usage" (Zhu et al., 2019, p. 260).

Cybersecurity & Cyber Safety.

Searches for (a) *cybersecurity* and *education* and (b) *cyber safety* and *education* returned eight and five relevant studies respectively. Of these, three studies were selected for initial review (i.e., Buchanan et al., 2017; Edwards et al., 2018; and Searson et al., 2015). Reference lists from selected studies were used to identify additional documents for review.

Edwards et al. (2018) insists cyber safety education for young children is an urgent need.

In a focus group study of 33 teenagers in Australia, Buchanan et al. (2017) found that participants understood having a digital footprint negatively; they were unaware of methods to manage digital footprints positively. It is likely assertions like those of Edwards et al. (2018) and claims of student lack of knowledge along the lines of Buchanan et al. (2017) support a focus on efforts related to cyber safety and digital citizenship along the lines of *being good online* as mentioned in the introduction to this paper. Moreover, Searson et al. (2015) argue that digital citizenship refers to behavior, and educators and policymakers "across the world are dedicated to moving such behavior in a positive direction and guiding children toward the safest environments possible" (p. 730).

Relationships Advanced Regarding Cyber Life Framework Touchpoints

Whereas the previous section was used to discuss information literacy, technology skills, and cybersecurity & cyber safety in terms of literature specific to those terms, this section is used to explore the implications of relevant literature relative to relationships among those touchpoints advanced through the Cyber Life Framework. As such, this section pertains to the following research subquestion: How does the relevant literature support or contradict the relationships advanced among the elements of the Cyber Life Framework? As illustrated in Figure 1, the Cyber Life Framework connects the three touchpoints along three sides of a triangle.

The touchpoints of the Cyber Life Framework connect such that *information literacy* relates across one side of the triangle with *cybersecurity & cyber safety* and across another side of the triangle with *technology skills*. The third side relates *technology skills* to *cybersecurity & cyber safety*. It is of note for the present study that *digital citizenship* is situated along the side of the triangle anchored by *information literacy* and *cybersecurity & cyber safety*. Digital citizenship will be addressed in more detail in the next section of this literature review. The

touchpoints sit in their various positions to indicate a relationship among them along the lines that form the sides of the triangle.

The nature of the relationship between information literacy and technology skills (e.g., ICT) is best understood through Mackey and Jacobson's (2011) proposed metaliteracy. They argue for a reframing of information literacy as a metaliteracy comprised of multiple literacies including digital literacy, media literacy, visual literacy, and information fluency. Moreover, Mackey and Jacobson (2011) argue information literacy is "the essential framework that informs and unifies additional literacy types" (p. 76). The idea of a metaliteracy is supported by Nisha and Varghese (2021) when they assert that ICT is critical to creating and disseminating knowledge. Mackey and Jacobson (2011) further integrate ICT into the proposed metaliteracy when they argue ICT includes the technical considerations of digital literacy. Within the context of information literacy, as noted above, Zhu et al. (2019) assert that self-efficacy and interest relative to ICT contribute to information literacy in students.

Buchanan et al. (2017) and Searson et al. (2015) advance a conceptualization of cyber safety that relies on understanding information and using that knowledge to protect oneself online. In fact, Buchanan et al. (2017) assert that students do not understand the positive possibilities of an online footprint. Moreover, November (2008) proposes the need for web literacy (e.g., information literacy) as a tool for understanding information online and thus contributing to one's safety in a digital environment. Further research is required to discover implications in the literature for the proposed relationship between technology skills and cybersecurity & cyber safety.

Situating Digital Citizenship Within the Cyber Life Framework

Digital citizenship is not conceptualized as one of the three touchpoints of the Cyber Life

Framework. Rather, it is understood within the context of the framework to be situated somewhere along the line between information literacy and cybersecurity & cyber safety. Stated another way, the nature of digital citizenship is interpreted as drawing from understandings of information literacy as well as from understandings of cybersecurity & cyber safety. In this section of the literature review part of the study, relevant literature is used to address the following research subquestion: How does digital citizenship situate within the Cyber Life Framework?

The value of situating digital citizenship within the Cyber Life Framework is the integration of multifarious approaches to technology instruction into a coherent conception of a cyber life. Searson et al. (2015) indicate that "models that weave digital citizenship, digital literacies and innovative educational practices in formal school settings are critical" (p. 739). Of the 12 relevant articles identified through an Academic Search Complete search for *digital citizenship*, three studies were used for initial review (i.e., Öztürk, 2021; Pangrazio & Sefton-Green, 2021; and Saputra & al Siddiq, 2020). Building on the studies found through a database search, additional relevant literature was identified using the reference lists in the three studies identified for initial review.

To understand the nature of digital citizenship, it helps to grasp its possible definitions. Prior to exploring digital citizenship in the research literature, definitions of the term are reviewed in terms of two sets of instructional technology standards: (a) the Texas Essential Knowledge and Skills (TEKS) for Technology Applications and (b) International Society of Technology in Education (ISTE) student standards. Within educational settings, digital citizenship is often understood as being good online. In Texas, required digital citizenship curriculum standards—as part of the larger Technology Applications TEKS—in kindergarten

through eighth grade are focused on concerns like intellectual property, privacy, digital etiquette, and acceptable use policies (Tex. Admin. Code). Student standards developed by ISTE (2018) address digital citizenship in similar terms. Students are expected to focus on cultivating digital identities, engaging in safe behavior online, respecting intellectual property, and maintaining digital privacy and security (ISTE, 2018).

Whereas understandings of digital citizenship are similar across student standards, competing definitions of digital citizenship emerge in the research literature. Öztürk (2021) asserts that principles of digital citizenship are like those of traditional citizenship and that "citizenship takes place within a community and includes both rights and responsibilities" (p. 32). Pangrazio and Sefton-Green (2021) describe this understanding of digital citizenship as leading to a didactic instructional approach. The understanding of digital citizenship previously described (i.e., Öztürk, 2021) is dominant in education, other definitions of digital citizenship are found in the literature. Pangrazio and Sefton-Green (2021) identify conceptions of citizenship as both (a) "being a citizen of the digital" and (b) citizenship in the traditional sense of a citizen of a nation-state (p. 17). Further, Isin and Ruppert (2020) define digital citizenship as being a citizen of the digital world, that is of cyberspace.

For purposes of this discussion, definitions associated with the dominant educational definition of digital citizenship are considered. To situate digital citizenship within the Cyber Life Framework, it is important, as Knight (2018, 2022) says, to identify a clear picture of reality. The immediate reality most closely associated with the Cyber Life Framework is that of schools. Within this reality, skills and competencies are essential to understanding digital citizenship (ISTE, 2018; Öztürk, 2021; Perez, 2017; Saputra & al Siddiq, 2020; Searson et al., 2015; Tex. Admin. Code). Digital security (Öztürk, 2021), digital literacy (Saputra & al Siddiq,

2020), and protecting intellectual property (ISTE, 2018; Tex. Admin. Code) are among the skills and competencies associated with digital citizenship. Pangrazio and Sefton-Green (2021) consider digital literacy foundational to digital citizenship. Further, digital rights cannot be claimed by individuals who are not digitally literate (Pangrazio & Sefton-Green, 2021).

Associations of digital citizenship having been discussed, it remains to consider the relationship between information literacy and digital citizenship. If digital citizenship is appropriately situated within the framework, a relationship must exist between information literacy and digital citizenship. With such a relationship, digital citizenship would clearly lie between information literacy and cybersecurity & cyber safety within the Cyber Life Framework.

According to Mackey and Jacobson (2011), information literacy was initially conceived to prepare engaged citizens. Similar to information literacy, digital literacy is composed of a set of abilities for understanding, evaluating, and using information (Saputra & al Siddiq, 2020). The purpose of digital literacy abilities is to communicate and interact with others (Saputra & al Siddiq, 2020). Searson et al. (2015) identify digital citizenship with participatory culture. In contrast, Pangrazio & Sefton-Green (2021) link digital literacy to individual action and digital citizenship to a group. Indeed, group belonging “lies at the heart of digital citizenship” (Pangrazio & Sefton-Green, 2021, p. 24).

Additionally, this conception of digital citizenship includes a focus on developing skills related to respecting intellectual property, cultivating a digital footprint, and participating positively online (Tex. Admin. Code; ISTE, 2018). When defined in this way, digital citizenship combines elements of a critical stance toward information (e.g., responsible use of information and respecting intellectual property) with an emphasis on cyber safety (e.g., cultivating a digital

footprint and participating positively online). As such, digital citizenship lies on the side of the framework identified by the line between information literacy and cybersecurity & cyber safety.

Discussion

This sequential two-part qualitative exploratory study was guided by a central research question, to wit: What is the Cyber Life Framework and how can digital citizenship be represented with that framework? To answer the central research question, four research subquestions were independently addressed. Those research subquestions were: (a) How was the Cyber Life Framework developed?; (b) How are elements of the Cyber Life Framework represented in the relevant literature?; (c) How does the relevant literature support or contradict the relationships advanced among the elements of the Cyber Life Framework?; and (d) How does digital citizenship situate within the Cyber Life Framework?

Reported results emerged from autoethographic (Adams et al., 2022; Keleş, 2022; Poulos, 2021) and literature review as methodology (Onwuegbuzie & Frels, 2016; Snyder, 2019) portions of the study. Using autoethnographic methods, the researcher described his development of the Cyber Life Framework and shared the touchpoints associated with that framework. Literature review was employed (a) to understand how the elements of the framework are represented in the literature; (b) to determine if relevant literature supports or contradicts relationships advanced by the framework; and (c) describe how digital citizenship situates within the Cyber Life Framework.

By considering a small number of research subquestions (Creswell, 2013), a response to the central research question is formulated. The response, in sum, is: the Cyber Life Framework is a representation of an integrated approach to teaching, learning, and living in a technology-rich world. The representation is based on three touchpoints (i.e., information literacy, technology

skills, and cybersecurity & cyber safety) developed from the lived experience of one instructional technology professional (i.e., the author) with more than 20 years of education and instructional technology experience. Digital citizenship is situated within the framework as an integration of information literacy and cybersecurity & cyber safety.

Implications

As the literature review portion of this study demonstrates, significant links emerge in the literature among information literacy, technology skills, and cybersecurity & cyber safety. Many links between information literacy and cybersecurity & cyber safety pass through digital citizenship. Too, digital citizenship emerges from the presence of digital technologies in all aspects of the lives of citizens (Saputra & al Siddiq, 2020).

Situating digital citizenship within the Framework, and thus citizenship online, is an initial step in developing a broader context of technology instruction in schools and of technology use in schools and beyond. Indeed, "neither digital citizenship, digital rights nor digital literacy by themselves can prepare individuals adequately. These three concepts must work in concert if a 'good' society can flourish" (Pangrazio & Sefton-Green, 2021, p. 25). The present study was consciously conceived as an initial exploratory study. As such implications of the study include the need for further research.

Recommendations for Further Research

Multiple recommendations for further research emerge from the present study. First, the short period of time between conceptualization of the Cyber Life Framework and the author's employment as a technology director limited consideration of the impact of the framework as a guide for engaging in that role. Further work in this area is warranted either by the author or by others similarly situated as school district technology directors.

Additional recommendations for further research relate to expanding the scope of this initial exploratory study. One avenue of research relates to identifying other concepts, similar to digital citizenship, that fit within the Cyber Life Framework and would expand the utility of the framework as a guide for educational practice. Initially, this work might include situating components of standards documents (e.g., Technology Applications TEKS; ISTE student standards) within the framework. Further review of relevant literature, especially as relates to cybersecurity & cyber safety, could expand the understanding of framework touchpoints within the literature. Moreover, continued development of the Cyber Life Framework would benefit from additional work to understand the interactions between the touchpoints of the framework: (a) information literacy, (b) technology skills, and (c) cybersecurity & cyber safety. It is instructive to follow the example of Mackey and Jacobson (2011) when they argue for a comprehensive understanding of information and other forms of literacy. Consideration of the Cyber Life Framework as an evolving concept, much as Pangrazio and Sefton-Green (2021) view digital literacies as skills and practices that evolve over time, has the potential to expand the impact of the framework as a tool for educators and instructional technology leaders.

Conclusion

In this paper, the Cyber Life Framework was introduced as the interaction of information literacy, technology skills (e.g., ICT), and cybersecurity & cyber safety. Initially developed through an examination of the author's lived experience in public education and instructional technology, the touchpoints of the framework have been revised once prior to this paper due to exploration of relevant literature. After describing the development of the Cyber Life Framework, relevant literature was reviewed and the place of digital citizenship within the context of the Framework was examined. Finally, implications of the research were examined

and recommendations for further research were made.

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Figure 1

The Cyber Life Framework, including Digital Citizenship