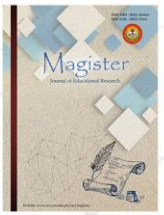

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REVIEW ARTICLE

Establishing a Comprehensive Digital Citizenship Evaluation Framework for Social Studies Education (CDE-FSSE): A Systematic Review

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Abstract

The study developed a Comprehensive Digital Citizenship Evaluation Framework for Social Studies Education through a thorough literature review that defined digital citizenship, highlighted its significance, and addressed current assessment limitations. Forty-six research articles from academic journals, books, and reports sourced from Google Scholar and the Directory of Open Access Journals were reviewed. Key dimensions of digital citizenship were identified and synthesized through thematic analysis, resulting in a framework that encompassed digital rights and responsibilities, digital literacy and fluency, digital etiquette and ethics, digital identity and reputation, digital privacy and data protection, cyberbullying and harassment, digital access and inclusion, digital cultural competence, and digital citizenship in online communities. Each dimension was operationalized by defining specific variables and indicators, guiding future research, curriculum development, and policy formulation. This framework aims to promote responsible digital behavior and empower individuals to navigate the digital world ethically within social studies education. Future research should focus on validating the evaluation framework, conducting long-term studies, evaluating intervention impacts, and exploring emerging aspects of digital citizenship.

Keywords: *Digital Citizenship, Social Studies Education, Evaluation Framework, Digital Literacy, Systematic Literature Review*

1. Introduction

Technology in the classroom has become more widespread in the digital age, changing how students interact with and learn from information. As digital technologies continue to influence our society,

it is critical that educators equip students with the information and abilities needed to navigate the digital world appropriately. People must practice "digital citizenship," or the responsible use of technology, in order to interact with the digital world in an ethical and useful way (Napal Fraile et al., 2018; Miguel-Revilla et al., 2020; Mirra et al., 2022). Teachers are becoming more aware of the value of digital citizenship in social studies teaching to promote civic engagement, foster moral behavior online, and hone critical thinking abilities (Choi, 2016). However, assessing digital citizenship within the social studies curriculum remains challenging. Today's assessment methods often lack a solid theoretical framework that addresses all relevant facets of digital citizenship (Buchholz et al., 2020).

Digital citizenship refers to individuals' responsible and ethical use of technology as they engage with the digital world. It encompasses a wide array of skills and behaviors required to participate in digital spaces, including understanding rights and responsibilities, practicing safe online behaviors, navigating online environments with etiquette, and recognizing the impact of one's digital identity (Cortesi et al., 2020). In education, digital citizenship becomes particularly crucial as it provides students the framework to critically analyze online information, participate in digital communities constructively, and protect their digital privacy and data. For social studies teachers, digital citizenship is vital because it aligns with the broader objectives of fostering civic engagement and critical thinking. It equips students with the digital literacy needed to thrive in an increasingly interconnected and digital society. As social studies traditionally emphasize civic responsibility, community participation, and ethical decision-making, digital citizenship is a natural extension of these goals, helping educators prepare students for the complexities of the digital age (Heath, 2018).

Despite the growing awareness of the importance of digital citizenship in social studies education, there remains a significant gap in how this concept is assessed and integrated into curricula. While numerous studies have identified various dimensions of digital citizenship, there is a lack of a cohesive and comprehensive framework that synthesizes these dimensions in a way that applies to social studies education. Current assessment methods focus on isolated aspects of digital citizenship, such as digital literacy or online safety, without addressing the interconnectedness of all relevant dimensions. Moreover, there is a dearth of tools that allow educators to systematically evaluate students' competencies in digital citizenship

across multiple dimensions. This study aims to address this gap by developing a robust theoretical framework that integrates the key elements of digital citizenship, allowing for a more holistic approach to assessment and curriculum development in social studies education.

The main goal of this project is to create a theoretical framework that covers the essential elements of digital citizenship in the context of social studies. With this framework, instructors can evaluate students' digital citizenship behaviors and skills in an all-encompassing and methodical manner. This study hopes to advance social studies teaching, and the subject of digital citizenship makes it significant. A comprehensive theoretical framework for measuring digital citizenship in the context of social studies can be beneficial for curriculum development, instructional strategies, and the implementation of digital citizenship policies. This research provides a framework for assessing digital citizenship competencies, which can assist educators in better cultivating responsible digital citizens who can navigate the intricacies of the digital world. Lawmakers should also be aware of this research because it can help develop regulations that make teaching students about digital citizenship in the classroom easier. Governments may help create an atmosphere that protects people's online rights, values diversity, and promotes a civil and responsible digital culture by strongly emphasizing digital citizenship in social studies curricula. This study explored several key questions to address the research topic and achieve the stated objectives. First, it identifies the key dimensions of digital citizenship within social studies. Next, it investigates how these dimensions can be quantified and made operational within a theoretical framework. The study also examines the connections and interactions between the various facets of digital citizenship. Finally, it explores how the proposed theoretical framework can enhance the teaching and learning of digital citizenship in social studies education.

2. Literature Review

2.1 Conceptualizing Digital Citizenship

This crucial idea is defined and conceptualized in various ways in the literature on digital citizenship. The widely accepted definition of digital citizenship is the responsible use of technology, which includes the attitudes, abilities, and knowledge required to traverse the digital environment successfully. It entails exercising digital literacy and fluency, acting ethically online, and being aware of one's rights and

obligations (Cortesi et al., 2020; Fernández-Prados et al., 2021; Tapingkae et al., 2020). However, digital citizenship goes beyond a person's behavior in virtual environments. It also covers broader societal issues, including promoting digital inclusiveness and access, protecting personal information, and cultivating a sense of cultural competency in the digital sphere. The literature explores the nuanced facets of digital citizenship, recognizing that it involves technological competencies and social, ethical, and cultural components (Buchholz et al., 2020).

Over time, as technology has been increasingly integrated into our daily lives, the concept of digital citizenship has evolved. Digital citizenship was primarily concerned with internet security and safety, focusing on protecting oneself from online threats (Al-Zahrani, 2015). However, as digital technology advanced and societies became more interconnected, our conception of digital citizenship expanded to include a larger range of competencies. Research shows that digital citizenship has evolved into moral decision-making, media literacy, computer literacy, and critical thinking. Scholars and educators understood how important it was to give individuals the tools to engage with digital content critically, use the internet responsibly, and participate in online communities. Consequently, "digital citizenship" has evolved from focusing exclusively on safety to including a wide range of competencies necessary in the digital era (Cortesi et al., 2020).

2.2 Importance of Digital Citizenship in Social Studies Education

Digital citizenship is crucial to teaching social studies because it raises students' civic engagement. In the digital age, social media platforms and online discussion boards have become more significant spaces for political discourse and public participation. By honing their digital citizenship skills, students can engage in democratic processes, have knowledgeable conversations, and encourage social change. Social studies education provides an appropriate framework for developing civic involvement and a sense of social responsibility because it strongly emphasizes these skills (Heath, 2018).

Students who receive instruction in digital citizenship within a social studies classroom are more equipped to handle media and think critically. In an era of information overload and the dissemination of misleading information, students need to be able to evaluate digital content and recognize reliable sources of information critically. By improving their media literacy, students may study and assess digital

media, identify biases, and understand how media messages affect society. They may, therefore, produce and consume digital information with intelligence and judgment (Milenkova & Lendzhova, 2021).

Being ethically upright when using the internet is essential to digital citizenship. The ideal environment for encouraging moral behavior online is provided by social studies education, which covers moral reasoning, ethical dilemmas, and ethical decision-making frameworks. Understanding the ethical implications of their actions in digital environments helps students develop a sense of responsibility, empathy, and respect for others. This promotes the growth of a positive online community characterized by diversity, sensitivity to the digital world, and a commitment to upholding one's online rights and obligations (Harrison & Polizzi, 2021). Students who study social studies with an emphasis on digital citizenship acquire vital digital literacy competencies and skills, which are becoming more and more valuable in society and the job. As technology continues to impact a wide range of industries and sectors, proficiency with digital tools, online platforms, and working in digital settings becomes increasingly important. Students gain the competencies necessary to thrive in the digital era by integrating digital citizenship instruction into social studies curricula. This raises their chances of success in the future and guarantees that they are prepared for the needs of the twenty-first-century workforce (Gazi, 2016). Social studies education that emphasizes digital citizenship gives students the chance to interact with a variety of global viewpoints and cultures. Students can cooperate on international initiatives, meet people from diverse backgrounds, and learn more about global challenges by using internet platforms. Digital citizenship education encourages empathy, tolerance, and respect for different points of view by promoting international understanding. This develops global citizens who can function in and make a contribution to an increasingly interconnected world (Breitkreuz & Songer, 2015).

Integrating digital citizenship into social studies curricula facilitates addressing digital inequalities and closing the digital divide. Educators may reduce disparities in digital access and engagement and strengthen marginalized communities by providing students with digital tools, skills, and knowledge. Digital citizenship-focused social studies education can promote digital inclusion by ensuring all students have an equal opportunity to gain the skills, information, and abilities needed to participate meaningfully in the digital world (Buchholz et al., 2020).

2.3 Existing Measurement Approaches in Digital Citizenship

The literature on measuring digital citizenship identifies several methods and instruments now used to evaluate students' digital citizenship proficiency. The objective, breadth, and measuring methodologies of these assessment approaches differ. Several frequently employed methods consist of:

a. Self-perception and self-evaluation of students' digital citizenship behaviors and skills are the foundation of self-report surveys. Using multiple-choice or Likert-scale questions, these questionnaires often ask students about their knowledge, attitudes, and behaviors linked to digital citizenship. Though self-report surveys are constrained by potential biases, social desirability, and subjective interpretations, they offer insightful information about students' perspectives (Alordiah & Chenube, 2023; Alordiah & Ossai, 2023; Nordin et al., 2016).
b. Direct observation of pupils' actions in virtual settings requires observational evaluations. Teachers and academics watch how students communicate online, create digital content, and follow digital etiquette. Although this method offers more unbiased information about students' actual behaviors, it might be constrained by the time-consuming nature of observations and any biases among the observers (Al-Abdullatif & Gameil, 2020).
c. Students use particular assignments or projects to exhibit their digital citizenship abilities to pass performance-based exams. Assigning tasks like digital content creation, online conversation participation, online source analysis, and risk assessment is possible. Although this method makes it possible to assess students' skills more authentically, it can be difficult to standardize and may take time and money (Ossai & Alordiah, 2024; Mahadir, 2021).
d. Checklists and rubrics offer formalized standards for assessing students' proficiency in digital citizenship. These resources provide precise metrics and benchmarks for the various facets of digital citizenship. Although checklists and rubrics provide a methodical and uniform approach to evaluation, they can be subjective and fail to fully represent the nuance and complexity of students' digital citizenship activities (Lauricella et al., 2020).

Although the current assessment methods offer a significant understanding of students' digital citizenship abilities, they have

drawbacks. Some typical objections and restrictions are as follows: Many current initiatives concentrate on particular aspects of digital citizenship, including online safety or digital literacy. However, they lack a thorough framework that addresses all pertinent aspects. This dispersion makes it difficult to evaluate students' overall digital citizenship competencies (Buchholz et al., 2020). Some current metrics are based on subjective criteria or ad hoc indications and thus lack a solid theoretical basis. This reduces the assessment's validity and reliability and impedes the growth of a comprehensive understanding of digital citizenship (Jeong & Joo, 2023). Current assessments frequently emphasize evaluating students' knowledge and abilities while ignoring digital citizenship's moral and social aspects. This restricted focus could ignore crucial elements like responsible digital leadership, digital rights, and online empathy (Ji et al., 2023). Numerous metrics currently used were created within particular cultural contexts, which may have limited their usefulness and applicability in other contexts. A more culturally sensitive approach is required to consider the cultural variances in digital citizenship behaviors and practices (Harris & Johns, 2021). The lack of standardization in current digital citizenship assessment methods makes comparing outcomes between various studies or contexts difficult. The employment of disparate assessment techniques, standards, and scoring schemes partly causes the lack of uniformity in assessing digital citizenship competencies. This makes it more difficult to make insightful comparisons and spot trends or patterns in how students develop their digital citizenship (Schulze et al., 2015). Many current assessments evaluate digital citizenship abilities at a certain moment, offering a glimpse of students' abilities and conduct. Digital citizenship, however, is a dynamic idea that changes as digital surroundings and technology advance. Longitudinal assessment techniques are required to monitor students' progress toward digital citizenship over an extended period and record changes and advancements in their competencies (Xu et al., 2019).

2.4 Theoretical Perspectives for Measuring Digital Citizenship in Social Studies

Based on research by academics such as Lev Vygotsky, socio-constructivist theory highlights the significance of social interactions and cooperative learning in knowledge development. This idea emphasizes how social interaction and cultural surroundings shape people's understanding and application of digital citizenship (Jamero, 2019; Prasetiyo et al., 2023). Socio-constructivist theory holds that social

learning happens when people actively engage in social activities, such as online conversations and digital communities (Johnson, 2014).

When socio-constructivist theory is used, critical thinking and collaborative learning are key to assessing digital citizenship. Engaging in cooperative problem-solving activities, online forums, and group projects can give students valuable knowledge on responsible and productive usage of digital surroundings. Understanding the cultural context in which digital citizenship is practiced is also necessary for evaluating students' adherence to cultural norms, values, and ethical standards in their online interactions.

Digital literacy frameworks offer a theoretical foundation for understanding the skills, viewpoints, and knowledge necessary for responsible digital citizenship. Among the subjects covered by these frameworks are social-ethical literacy, media, information, and technology. They prioritize the development of critical thinking skills, media literacy, and the ability to ethically evaluate and create digital content (Tinmaz et al., 2023). By including frameworks for digital literacy in the theoretical framework for measuring digital citizenship, researchers can ensure that students' competencies in digital citizenship are fully evaluated. Assessing students' information literacy skills might involve examining their ability to find, interpret, and utilize digital information. Assessments of students' media literacy may focus on their capacity to identify prejudices, assess media messages critically, and understand how media influences society. Technological literacy assessments can gauge students' comfort level with digital tools and platforms, while social-ethical literacy examinations can examine students' understanding of digital rights, obligations, and ethical decision-making (Choi et al., 2017; Örtegren, 2022).

3. Methods

3.1 Research Design

This study employs a systematic literature review (SLR) design to develop a comprehensive theoretical framework for evaluating digital citizenship within the context of social studies education. The SLR approach was selected because it allows for a structured synthesis of existing research. It provides a clear pathway for identifying, analyzing, and synthesizing relevant studies on digital citizenship and social studies instruction (Tadlaoui-Brahmi et al., 2022). This method follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses

(PRISMA) guidelines to ensure a rigorous and transparent review process. The review focuses on theoretical development by integrating various conceptual frameworks and empirical findings on digital citizenship.

3.2 Data Sources and Selection Process

The primary databases utilized in this study were Google Scholar and the Directory of Open Access Journals (DOAJ). These platforms were chosen for their extensive coverage of peer-reviewed academic literature, books, and digital citizenship and social studies education reports. The two databases are free to access, which makes them available for under-developing countries like Nigeria. The systematic search was performed using a combination of search terms, including "digital citizenship," "social studies education," "digital literacy," and "evaluation frameworks."

The inclusion criteria for the selection of articles were as follows:

- Peer-reviewed articles and books published within the last ten years.
- Publications specifically addressing digital citizenship, digital literacy, evaluation frameworks, or social studies education.
- Research providing theoretical insights, empirical data, or practical applications relevant to digital citizenship evaluation in education.

Table 1
PRISMA framework for the study

Phase	Description	Records
Identification		
Databases searched	Google Scholar	n = 1,014
	DOAJ	n = 214
Total records		n = 1,228
Duplicates removed		n = 155
Records after duplicates		n = 1,073
Screening		
Records screened		n = 1,073
Records excluded (title/abstract)		n = 718
Non-English records removed		n = 70
Records eligible for full-text review		n = 285

Eligibility	
Full-text articles assessed	n = 285
Full-text articles excluded	n = 239
Eligible articles for inclusion	n = 46
Inclusion	
Studies included in qualitative synthesis	n = 46

3.3 Article Selection Process

The article selection process followed the PRISMA framework, involving four key phases: Identification, Screening, Eligibility, and Inclusion, as shown in Table 1 (Liberati et al., 2009; Moher et al., 2009).

Identification: The initial search on Google Scholar yielded 1,014 results, while DOAJ produced 214 results. A total of 1,228 articles were identified.

Screening: Duplicates were removed (n=155), reducing the total to 1,073 articles. Articles were then screened for relevance based on titles and abstracts. Non-English articles (n=70) and articles that did not focus on digital citizenship or social studies education were excluded, resulting in 285 articles.

Eligibility: A review was conducted on the remaining articles, during which 239 were excluded due to lack of empirical or theoretical relevance. This phase reduced the selection to 46 articles that met all inclusion criteria.

Inclusion: Finally, 46 articles were included in the qualitative synthesis, and a thematic analysis was done. This provided the foundation for the development of the digital citizenship evaluation framework.

4. Results

4.1 Demographic information

Figure 1
Number of Articles Based on the Year of Publication

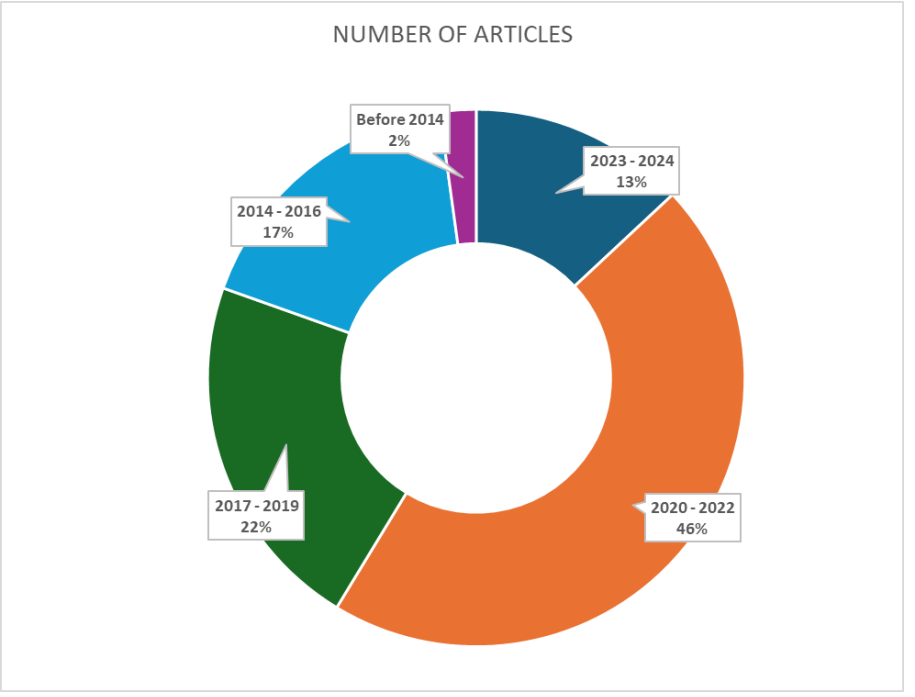


Figure 1 presents a detailed analysis of the research landscape surrounding digital citizenship in social studies education over different time frames. 46 research articles were meticulously reviewed, drawing insights from academic journals, books, and reports. The data reveals a notable concentration of articles, accounting for 46%, published during the period from 2020 to 2022, reflecting a significant upsurge in scholarly attention to the subject. Furthermore, the distribution of articles across the other periods, with 13% published between 2023 and 2024, 22% between 2017 and 2019, 17% between 2014 and 2016, and 2% before 2014, showcases a consistent academic interest in digital

citizenship within the realm of social studies education. A few of the key ideas covered in this study are illustrated in Figure 2.

Figure 2
Concepts Discussed in this Paper

Figure 3
Number of Articles Based on Area of Focus

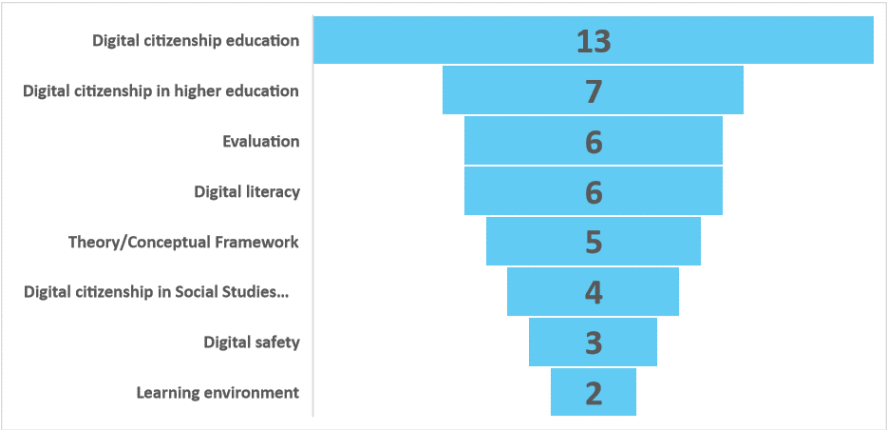


Figure 3 delineates the distribution of articles across various areas related to digital citizenship within the context of social studies education. The study meticulously reviewed a total of 46 research articles sourced from reputable academic journals, books, and reports. The data showcases a predominant focus on digital citizenship education, with 13 articles dedicated to this area. Additionally, the table highlights the significance of digital citizenship in higher education, evaluation practices, digital literacy, theoretical frameworks, and digital safety, each represented by 7, 6, 6, 5, and 3 articles, respectively. Moreover, the exploration of digital citizenship within social studies education is evident through 4 articles. The table also underscores the relevance of digital citizenship in shaping the learning environment, as evidenced by two articles in this area. This comprehensive breakdown provides valuable insights into digital citizenship research's diverse dimensions and applications, offering a roadmap for further exploration and advancement in this critical field.

4.2 Thematic Analysis of the Key Dimensions of Digital Citizenship

4.2.1 Digital Rights and Responsibilities

The primary objective of the digital rights and responsibilities dimension is to comprehend and protect individuals' rights and obligations in the digital realm. In addition to intellectual property, it necessitates knowledge of copyright laws, fair use, and responsible use of digital resources. Assessing students' knowledge of digital rights and responsibilities may involve looking at how well they know copyright rules, how well they can cite sources, and how aware they are of the ethical ramifications of using and sharing digital content (Al-Abdullatif & Gameil, 2020; Emejulu & McGregor, 2019)

4.2.2 Digital Literacy and Fluency

Digital literacy and fluency encompass the skills and knowledge needed to effectively access, evaluate, and create digital content. This component evaluates students' search and evaluation skills for information on the internet and their ability to critically analyze media messages and use digital tools and platforms for communication, collaboration, and content creation. One way to assess students' learning outcomes is by evaluating their ability to conduct online research, locate trustworthy sources, work effectively in groups, and

communicate digitally (Polizzi, 2020; Tejedor et al., 2020; von Gillern et al., 2022; Yue et al., 2019).

4.2.3 Online Safety and Security

The primary objective of the online safety and security dimension is to protect people's personal information and to ensure their safety in digital environments. Assessing students' knowledge of online risks, their ability to identify and respond to threats, and their practices for protecting personal information online can all be used to gauge how well they understand online safety and security. It may also involve testing pupils' understanding of cybersecurity best practices and their capacity for responsible online behavior (Zulqadri et al., 2022).

4.2.4 Digital Etiquette and Ethics

Digital etiquette and ethics refer to the proper conduct and moral principles expected in digital interactions. This dimension involves assessing students' knowledge of digital etiquette norms, their ability to communicate responsibly and politely online, and their understanding of the moral dilemmas associated with digital environments. Examples of evaluation strategies include the ability of students to engage in positive online discussions, their understanding of cyberbullying and preventative actions, and their awareness of ethical dilemmas related to sharing digital content and privacy (Al-Abdullatif & Gameil, 2020).

4.2.5 Digital Identity and Online Reputation

Digital identity and online reputation education focus on students' understanding of their digital footprint and how their online behaviors affect their reputation. Evaluating students' understanding of online privacy settings, their adeptness at managing their digital identities, and their familiarity with strategies for maintaining a positive online reputation are some ways to gauge their awareness of digital identities and online reputations. It might also entail evaluating how well students understand how their online behavior could affect their chances in the future (Babić et al., 2014).

4.2.6 Digital Privacy and Data Protection

The digital privacy and data protection component focuses on people's abilities to protect their personal information and control privacy settings in digital contexts. Measuring students' knowledge of privacy laws, their ability to make informed decisions when sharing

personal information online, and their data security protocols are ways to assess their understanding of digital privacy and data protection. It may also involve assessing students' understanding of data privacy regulations and their ability to recognize and respond to potential privacy infractions (Pangrazio & Sefton-Green, 2021; Sideri et al., 2019).

4.2.7 Cyberbullying and Digital Harassment

Harmful acts and abuse that people may encounter in digital settings are referred to as cyberbullying and digital harassment. Students' comprehension of the various types of online harassment, their capacity to identify and address instances of cyberbullying, and their familiarity with tactics for fostering a welcoming and safe online community can all be evaluated as part of the assessment process for their knowledge and awareness of cyberbullying and digital harassment (Brandau et al., 2021; Englander et al., 2017).

4.2.8 Digital Access and Inclusion

Ensuring fair access to digital technologies and encouraging inclusivity in digital environments are the main goals of digital access and inclusion. Students' awareness of digital disparities and inequalities, familiarity with bridging these gaps, and comprehension of the significance of inclusive behaviors in digital communities can all be evaluated when assessing their grasp of digital access and inclusion (Roberts & Hernandez, 2019).

4.2.9 Digital Cultural Competence

The capacity to interact politely and successfully in digital environments with people from different cultural backgrounds is known as digital cultural competency. Evaluating students' comprehension of cultural norms and practices in various online communities, their capacity for cross-cultural communication and collaboration, and their awareness of the possibility of cultural misunderstandings and conflicts in digital interactions are some ways to gauge their level of digital cultural competency (Xu et al., 2019).

4.2.10 Digital Citizenship in Online Communities

This factor concerns people's capacity to engage in responsible and constructive online community participation. Student's ability to participate in positive online dialogues, their comprehension of the value of empathy and respect in digital interactions, and their familiarity

with tactics for advancing digital citizenship values within online communities are all factors that can be considered when assessing their digital citizenship in online communities (Buchholz et al., 2020).

Conceptualizing Indicators and Variables for Each Dimension in the Comprehensive Digital Citizenship Evaluation Framework for Social Studies Education (CDE-FSSE).

Identifying specific elements or behaviors within each dimension that may be measured and observed is necessary in conceptualizing indicators and variables for each dimension when establishing a theoretical framework for evaluating digital citizenship (Table 2).

Table 2

Assessment Methods for Measuring the Dimensions in Digital Citizenship

Dimension	Indicators	Variables	Data Collection Method/Assessment Method
Digital Rights and Responsibilities	- Knowledge of copyright laws and fair use	- Level of knowledge of copyright laws and fair use,	Assessment tests
	- Understanding of intellectual property rights	- Level of Understanding of intellectual property rights	Assessment tests
	- Awareness of responsible online behavior	- Frequency of citing sources appropriately in digital content creation	Self-report surveys
	- Adherence to ethical standards in online interactions	- Adherence to ethical standards in online interactions.	Self-report surveys
Digital Literacy and Fluency	- Information retrieval skills	- Accuracy and efficiency of information retrieval, measured by successful searches and time taken	Performance assessments
	- Media analysis and interpretation abilities	- Depth of media analysis, measured by the ability to identify biases and interpret media messages	Performance assessment or assessment test
	- Proficiency in digital communication and collaboration	- Level of proficiency in digital communication and collaboration tools.	performance assessments

Online Safety and Security	- Understanding of online threats and risks	- Awareness and recognition of online threats.	Scenario-based assessments
	- Knowledge of privacy settings and data protection	- Proper utilization of privacy settings.	Self-reported data
	- Awareness of online safety practices	- Adoption of safe online behaviors.	Self-report surveys
Digital Etiquette and Ethics	- Understanding of digital etiquette norms	- Knowledge of digital etiquette norms.	Self-report surveys
	- Ability to communicate respectfully online	- Assessment of respectful and responsible online communication skills	Performance assessments
	- Awareness of ethical considerations in digital environments	- Awareness and understanding of ethical dilemmas.	Scenario-based assessments
Digital Identity and Online Reputation	- Understanding of digital footprints and online reputation	- Awareness and recognition of digital footprints.	Self-report surveys
	- Ability to manage and curate digital identity	- Ability to effectively manage and curate digital identity.	Self-reported online profiles
	- Awareness of the impact of online actions on reputation	- Understanding of the consequences of online actions on reputation.	Scenario-based assessments
Digital Privacy and Data Protection	- Knowledge of privacy policies and regulations	- Knowledge and understanding of privacy policies and regulations.	Assessment tests
	- Ability to make informed decisions about sharing personal information online	- Self-reported data on decision-making regarding personal information sharing	Self-reported data
	- Practices for safeguarding personal data	- Adoption of practices for data protection.	Self-report surveys

Cyberbullying and Digital Harassment	- Awareness of different forms of online harassment	- Knowledge and recognition of different forms of cyberbullying.	Self-report surveys
	- Ability to recognize and respond to cyberbullying incidents	- Ability to identify and respond to cyberbullying incidents.	Scenario-based assessments
	- Understanding of strategies to prevent and address digital harassment	- Awareness and understanding of prevention and intervention strategies.	Self-report surveys
Digital Access and Inclusion	- Awareness of digital divides and inequalities	- Knowledge and recognition of digital divides and inequalities.	Self-report surveys
	- Knowledge of strategies to bridge digital gaps	- Knowledge of strategies to bridge digital gaps.	Assessment tests
	- Understanding of the importance of inclusive practices in digital communities	- Understanding of inclusive practices in digital communities.	Self-report surveys
Digital Cultural Competence	- Ability to engage respectfully with diverse cultures online	- Assessment of respectful engagement with diverse cultures online.	Scenario-based assessments
	- Knowledge of cultural norms in different online communities	- Knowledge and understanding of cultural norms in online communities.	Self-report surveys
	- Awareness of potential cultural misunderstandings and conflicts	- Awareness and recognition of potential cultural misunderstandings and conflicts.	Scenario-based assessments
Digital Citizenship in Online Communities	- Ability to engage responsibly and positively in online communities	- Assessment of responsible and positive engagement in online communities, measured through self-report surveys	Self-report surveys

- Understanding of the importance of empathy and respect in digital interactions	- Knowledge and understanding of empathy and respect in digital interactions.	Self-report surveys
- Knowledge of strategies for promoting digital citizenship values	- Awareness and recognition of strategies for promoting digital citizenship values.	Self-report surveys

A thorough methodology for gauging digital citizenship along multiple aspects is shown in Table 2. Digital citizenship is the term used to describe various ethical and responsible online behaviors. A collection of factors and indicators was used to evaluate these characteristics.

A significant aspect is "Digital Rights and Responsibilities." It emphasizes knowledge of intellectual property rights, copyright regulations, and appropriate online conduct. Tests measure factors, including familiarity with copyright rules and fair use. In contrast, self-report surveys gauge how frequently sources are appropriately cited while creating digital content.

The second pillar, "Digital Literacy and Fluency," emphasizes developing media analysis skills, information retrieval abilities, and digital communication and teamwork competence. The degree of expertise with digital communication technologies, the depth of media analysis, and the accuracy and efficiency of information retrieval are all tested through performance assessments.

The third component, "Online Safety and Security," concerns privacy settings, online safety procedures, and threat awareness. The ability to identify online risks, use privacy settings, and adopt safe online behaviors are measured through scenario-based examinations and self-report surveys.

The fourth dimension, "Digital Etiquette and Ethics," looks at knowledge of ethical issues, grasp of digital etiquette norms, and polite online communication. Self-report surveys are used to gauge compliance with digital etiquette standards, and performance evaluations are employed to gauge the degree of polite and responsible online communication abilities. Ethical problem awareness and comprehension are assessed via scenario-based evaluations. Scenario-based assessments are data-gathering in which participants are given hypothetical or situational questions about the subject under study.

Participants could be shown situations related to cyberbullying, moral quandaries, or cultural misinterpretations within the digital citizenship framework. After that, they are asked to react to the scenarios by choosing the proper course of action or offering written justifications. Researchers can watch participants' decision-making processes, problem-solving skills, and ethical reasoning in authentic situations by using scenario-based assessments (Buchholz et al., 2020)."Digital Identity and Online Reputation," the fifth dimension, is concerned with managing digital identities, comprehending digital footprints, and being aware of how online behavior affects reputation. Utilizing self-report surveys and scenario-based assessments, variables like the capacity to maintain and curate one's digital identity, identify one's digital footprint, and comprehend the impact of one's online actions on one's reputation are measured.

The sixth dimension, "Digital Privacy and Data Protection," focuses on understanding privacy laws and guidelines, making wise choices about sharing personal information, and adopting safe data protection procedures. Assessment tests, self-reported data, and surveys are used to measure these characteristics in that order.

The seventh dimension, "Cyberbullying and Digital Harassment," delves into understanding tactics to prevent and treat digital harassment and identify and respond to cyberbullying. Self-report surveys and scenario-based assessments are used to test these factors, which include awareness of preventative techniques, knowledge of cyberbullying, and capacity to respond to instances.

The eighth pillar, "Digital Access and Inclusion," evaluates understanding of inclusive practices' importance, familiarity with closing digital gaps, and awareness of digital disparities and inequities. These variables, which include understanding inclusive behaviors, gap-closing strategies, and knowledge of digital divides, are measured by self-report questionnaires and assessment tests.

The ninth pillar, "Digital Cultural Competence," strongly emphasizes recognizing cultural norms in online networks, engaging politely with individuals from other cultures online, and being aware of potential cultural misunderstandings and conflicts. Variables like respectful engagement, grasp of cultural norms, and recognition of potential problems are investigated using scenario-based evaluations and self-report surveys.

The final pillar, "Digital Citizenship in Online Communities," highlights the need for respectful and empathetic communication,

responsible and constructive engagement, and knowledge of how to promote digital citizenship values. Self-report questionnaires are used to examine these traits, which include an awareness of strategies, a knowledge of empathy and respect, and an assessment of responsible engagement.

Various data collecting and assessment techniques are used to guarantee the validity and reliability of the measuring framework. These consist of scenario-based evaluations, self-report questionnaires, performance assessments, and tests. Every method is customized to fit the factors under investigation, enabling a thorough assessment of digital citizenship traits. By employing this approach, researchers may effectively measure and evaluate the various facets of digital citizenship, providing important insights into people's behavior, understanding, and viewpoints in virtual environments.

Figure 4 presents the interconnections among the dimensions of digital citizenship. The relationships between these dimensions and social studies education are as follows:

Digital Rights and Responsibilities: This dimension aligns with Social Studies' focus on civic education, where understanding rights—such as copyright laws—and responsibilities promote informed citizenship in a digital context. This knowledge is crucial for students engaging with and contributing to society through digital platforms.

Digital Literacy and Fluency: The ability to navigate, evaluate, and create information is central to Social Studies education, which emphasizes critical thinking and analysis. Enhancing students' media literacy skills empowers them to participate in democratic processes and engage with diverse perspectives.

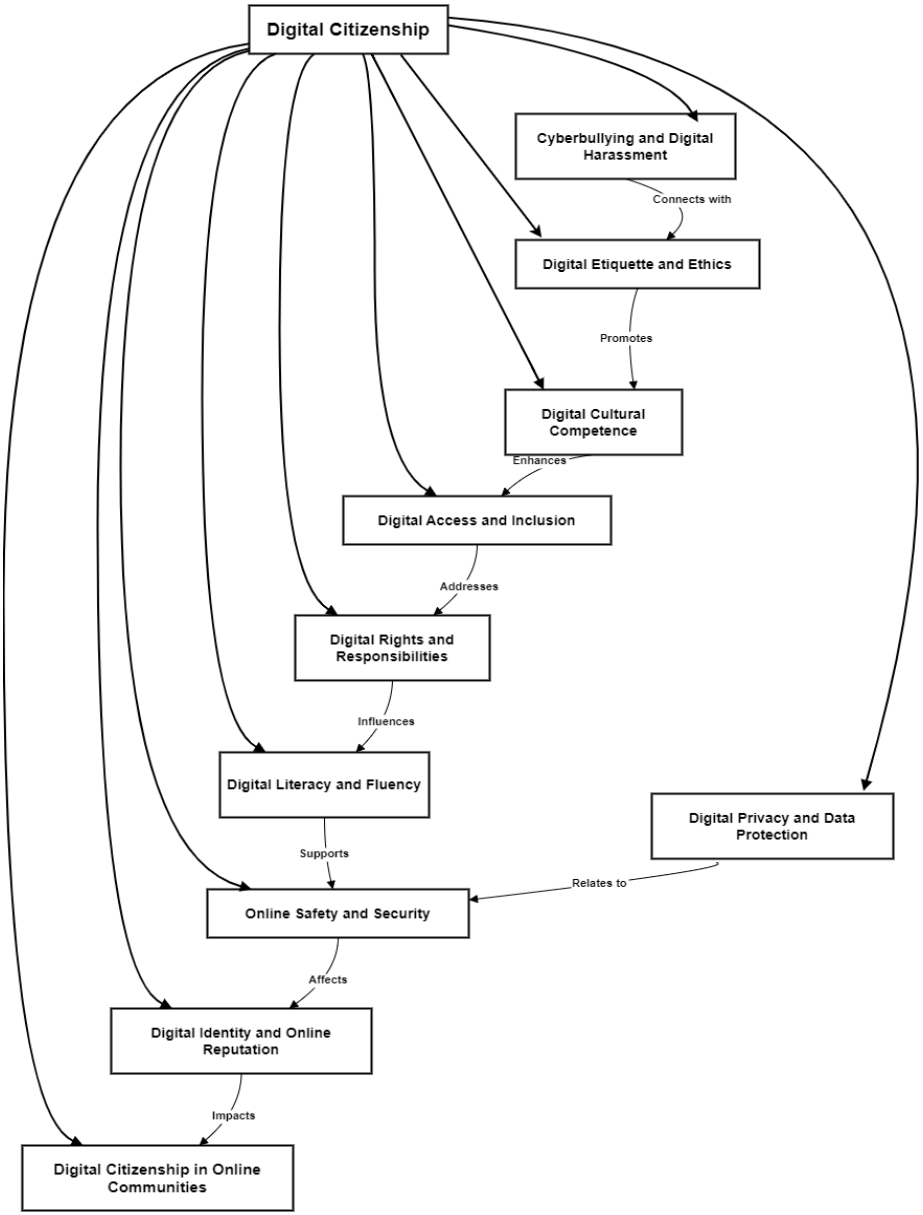
Online Safety and Security: This dimension resonates with the emphasis of social studies on understanding societal structures and values. Teaching students about online safety prepares them to recognize and respond to risks, promoting a sense of agency and responsibility in their digital interactions.

Digital Etiquette and Ethics: As Social Studies seeks to instill values of respect and responsibility, the norms of digital etiquette are equally important in fostering constructive online interactions. This dimension

can be integrated into discussions about community values and ethical behavior in civic life.

Figure 4

Interconnections Among Dimensions of Digital Citizenship



Digital Identity and Online Reputation: Understanding the implications of one's digital footprint is vital for students in today's interconnected world. This aligns with Social Studies' exploration of personal and collective identities and how they shape community interactions.

Digital Access and Inclusion: Addressing issues of equity and access aligns with Social Studies goals of promoting social justice and understanding disparities. This dimension allows for critical discussions about the digital divide and its impact on societal participation.

Digital Cultural Competence: Appreciating diverse cultures is paramount in a globalized world. Social Studies education provides a platform for exploring cultural norms, fostering empathy, and preparing students to navigate multicultural environments respectfully.

Digital Citizenship in Online Communities: This dimension underscores the significance of civic engagement in digital spaces, essential for fostering an inclusive and participatory society. It connects with Social Studies objectives of nurturing informed and active citizens.

Finding Connections and Interactions Between Dimensions in the Comprehensive Digital Citizenship Evaluation Framework for Social Studies Education (CDE-FSSE)

It is crucial to consider how interrelated the many facets of digital citizenship are when examining their interactions and ties with one another. Even though they can be discussed separately, they frequently affect and depend on one another, as shown in Table 3.

Table 3

Relationships and Interactions Among the Dimensions of Digital Citizenship on the Developed Theoretical Framework for Measuring Digital Citizenship

Dimension	Related Dimensions	Nature of Relationship	Examples of Interactions/Influences
Digital Rights and Responsibilities	Digital Etiquette and Ethics	Understanding digital rights informs ethical behavior	Knowledge of copyright laws influences proper attribution in online communication

	Digital Identity and Online Reputation	Understanding rights and responsibilities informs the management of digital identity.	Respecting others' rights in online interactions contributes to a positive online reputation
	Digital Citizenship in Online Communities	Knowledge of rights and responsibilities shapes responsible engagement in online communities	Understanding fair use policies promotes respectful sharing of digital content
Digital Literacy and Fluency	Digital Citizenship in Online Communities	Digital literacy enhances effective participation in online communities	Proficiency in digital communication tools enables collaboration and knowledge-sharing
	Digital Cultural Competence	Digital literacy facilitates understanding and respectful engagement with diverse cultures online	The ability to critically analyze media messages promotes cultural understanding
Online Safety and Security	Digital Etiquette and Ethics	Awareness of online safety practices contributes to ethical behavior online	Knowledge of appropriate online behavior promotes safe digital interactions
	Digital Citizenship in Online Communities	Online safety measures enable responsible engagement in online communities	Recognizing and reporting online threats fosters a safer online environment
	Digital Privacy and Data Protection	Understanding privacy settings and data protection practices enhances online safety	Awareness of potential risks and privacy breaches informs protective measures
Digital Etiquette and Ethics	Digital Rights and Responsibilities	Ethical behavior is informed by understanding digital rights and responsibilities	Respecting intellectual property rights in digital content creation
	Digital Identity and Online Reputation	Ethical online behavior contributes to positive digital identity and reputation	Communicating respectfully in online interactions builds a positive online persona
	Digital Citizenship in Online Communities	Ethical digital etiquette promotes responsible engagement in online communities	Adhering to online community guidelines and norms

Digital Identity and Online Reputation	Digital Privacy and Data Protection	Protecting personal data contributes to maintaining a positive online identity	Safeguarding personal information minimizes risks to digital identity
	Digital Etiquette and Ethics	Ethical behavior influences the perception of online reputation	Engaging in respectful and responsible online communication enhances the reputation
	Digital Citizenship in Online Communities	Online reputation is shaped by responsible engagement in online communities	Active participation and positive contributions build a favorable online reputation
Digital Privacy and Data Protection	Digital Identity and Online Reputation	Protecting personal data safeguards digital identity and reputation	Awareness of privacy settings and data protection measures
	Online Safety and Security	Data protection practices contribute to online safety	Protecting personal information reduces the risk of identity theft or online harassment
Digital Cultural Competence	Digital Literacy and Fluency	Understanding diverse cultures enhances effective digital communication	Cultural sensitivity in online interactions promotes collaboration and understanding
	Digital Citizenship in Online Communities	Cultural competence fosters inclusive practices in online communities	Recognizing and respecting cultural diversity in online discussions
Cyberbullying and Digital Harassment	Digital Citizenship in Online Communities	Prevention and addressing cyberbullying incidents promote safe and supportive online communities	Promoting empathy and intervention strategies to address cyberbullying
Digital Access and Inclusion	Digital Citizenship in Online Communities	Promoting digital access and inclusion for all in online communities	Advocacy for bridging digital divides and ensuring equal opportunities

5. Discussion

The several attributes of digital citizenship are interconnected, which has significant implications for the theoretical framework developed to quantify digital citizenship. Understanding these implications can help develop and refine the framework for a more in-depth assessment of people's digital citizenship behaviors and skills.

The interdependence of the parts suggests that evaluating digital citizenship calls for an all-encompassing approach. This comprehensive assessment can provide a more accurate and in-depth understanding of students' digital citizenship abilities. The framework can thoroughly assess various aspects of digital citizenship since it incorporates a range of factors, such as digital rights and duties, digital etiquette and ethics, digital privacy, and data security, among others. The relationships among the dimensions illustrate how attitudes, skills, and knowledge interact (Milenkova & Lendzhova, 2021). The framework assessed people's comprehension of digital citizenship ideas and their skills and attitudes toward responsible digital activity. This comprehensive evaluation can provide insight into an individual's ability to apply knowledge and cultivate positive attitudes in real-world digital settings. The interplay between the categories emphasizes the importance of considering the external factors that influence digital citizenship (Choi, 2016). The framework accounts for how technological advancements, legal frameworks, and cultural norms influence people's digital experiences. Using a context-sensitive approach, interventions can be tailored to specific situations, and the intricacies of digital citizenship practices can be discovered. The relationships among the categories suggest that people's skills in digital citizenship are developing over time. It should be considered that individuals may progress from a basic understanding of digital rights and responsibilities to more advanced skills in cultural competency, digital etiquette, and privacy protection. A developmental perspective enables tracking progress and developing targeted interventions. Understanding the connections between the traits can help design interventions and educational programs that encourage healthy digital citizenship (Dedebali & Daşdemir, 2019). By identifying the important dimensions and how they interact, researchers can develop therapies that focus on specific areas that need improvement and take advantage of the positive impacts between dimensions.

Developing a comprehensive digital citizenship evaluation tool significantly impacts research in this field. It provides researchers with a tool to carefully assess student's attitudes, actions, and proficiency in areas linked to digital citizenship. This tool could be used in future studies to assess the effectiveness of interventions and educational programs, identify the factors influencing the development of digital citizenship, and investigate the relationships between the various dimensions of digital citizenship.

The assessment tool can help pinpoint areas of research deficiency and prospects for additional digital citizenship studies. Researchers can identify areas where people may have strengths or weaknesses in their digital citizenship behaviors by looking at the data produced by the tool. This could impact future research on particular aspects or characteristics of digital citizenship that merit more investigation, such as the influence of cultural variables or the role of digital literacy in encouraging responsible online behavior. Curriculum experts and instructors can obtain vital insights from the CDE-FSSE when building and executing digital citizenship education. By knowing people's competencies and behaviors in various facets of digital citizenship, educators can tailor their lessons and interventions to focus on particular areas of progress. The CDE-FSSE can also be utilized to evaluate the accomplishment of educational programs and offer guidance for continuous curriculum development advancements.

Digital citizenship may be incorporated into social studies courses using the evaluation tool. Social studies courses can incorporate relevant topics, case studies, and activities by evaluating students' digital citizenship skills. Students will gain a deeper understanding of the moral dilemmas, legal obligations, and responsibilities surrounding the use of digital platforms within the broader context of civic engagement and democratic values, thanks to this integration.

The CDE-FSSE can provide valuable data and statistics to inform the development of digital citizenship laws at various levels. Policymakers can use the instrument's results to identify issues, set goals, and establish guidelines for promoting appropriate online behavior. The tool can also be used to evaluate the effectiveness of policy initiatives and make evidence-based changes to support the development of a society that is in charge of digital media.

The CDE-FSSE results may impact educational institutions and stakeholders in digital citizenship education. Through an awareness of each person's digital citizenship competencies, institutions can design customized tactics, tools, and support systems to promote responsible digital conduct among students and instructors. Stakeholders, such as parents, tech companies, and community organizations, can collaborate on projects that enhance knowledge and skills linked to digital citizenship by utilizing insights from the assessment tool.

While this study offers valuable insights into digital citizenship, several areas need further exploration. First, additional research is necessary to apply and validate the CDE-FSSE tool across more

significant, diverse demographics, assessing its psychometric properties for broader applicability. Second, longitudinal studies are required to track how digital citizenship skills evolve, offering insights into the factors influencing these changes. Third, comparative studies across countries and cultures can highlight differences in digital practices, helping to identify best practices and guide global policy development. Fourth, comprehensive impact evaluations of educational interventions promoting digital citizenship are essential to demonstrate their effectiveness and inform future programs. Finally, as digital technologies evolve, new dimensions of digital citizenship will likely emerge, necessitating further research to understand these changes and their implications for practice and measurement. These steps are critical for advancing the field and ensuring the relevance of digital citizenship education.

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