



# Psychometric properties of the Digital Citizenship Values Scale for high school students

DAdel Sayed Abbady<sup>1\*</sup>, Ahmed Ali Teleb<sup>2</sup>, Adel Mohammed Elsadek<sup>3</sup>, Salem Mohammed Ali Al-Shehri<sup>4</sup>

<sup>1</sup>Department of Psychology, College of Education, King Khalid University, Abha, KSA. <sup>2</sup>Department of Psychology, College of Education, King Khalid University, KSA. <sup>3</sup>Department of Mental Health, College of Education, Aswan University, Egypt. <sup>4</sup>Department of Curricula and Teaching Methods, College of Education, King Khalid University, KSA.

Corresponding author: Adel Sayed Abbady (Email: adel\_abbady@kku.edu.sa)

## Abstract

With the increasing integration of digital technologies in education, the need to cultivate responsible digital citizenship among students has become a crucial aspect of modern learning environments. This study aimed to develop and validate a scale to measure digital citizenship values among high school students, focusing on its psychometric properties. The scale was designed based on a comprehensive review of the literature, incorporating three main dimensions: Respect Values, Educational Values, and Protection Values. A sample of 201 high school teachers from Saudi Arabia participated. Data were analyzed using SPSS 26.0 and AMOS 25.0 to assess the scale's validity, reliability, and factor structure. Confirmatory Factor Analysis (CFA) confirmed the three-factor structure, with excellent model fit indices ( $\chi^2/df = 2.44$ , RMSEA = 0.05, CFI = 0.93, TLI = 0.92, GFI = 0.91, AGFI = 0.90). The scale demonstrated high reliability, with Cronbach's alpha values of 0.90 for Respect Values, 0.91 for Educational Values, 0.93 for Protection Values, and 0.94 for the total scale. These findings confirm the scale's validity and reliability, making it a useful tool for measuring digital citizenship values in high school students. The study emphasizes the need to integrate digital citizenship into curricula and lays the groundwork for future research.

Keywords: Digital citizenship values, High school students, Psychometric properties.

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### **1. Introduction**

Digital citizenship is an integral part of the educational process, as it contributes to raising awareness among students, teachers, and parents about how to use technology effectively and responsibly. It is not limited to technical skills alone but also includes fostering critical thinking, developing social values, and guiding usage toward achieving goals that benefit society. Through education, a generation can be prepared to leverage technology in building their nation while adhering to the values and principles that ensure its optimal use across various fields.

The education policy in the Kingdom of Saudi Arabia has emphasized that the ultimate goal of education is to prepare students to be active contributors in building their society, taking responsibility for serving and defending their nation. This policy also seeks to instill Islamic values in students, develop their knowledge and skills, and strengthen their sense of belonging to their homeland, while deepening their connection to its roots and timeless values [1].

Indeed, spreading the culture of digital citizenship in our societies through education, school, and university programs has become a fundamental aspect of life and an urgent necessity that must be implemented in collaboration with civil society initiatives, educational and awareness projects, and media institution programs. This is essential to protect our communities from the negative impacts of technology and promote its optimal use, particularly by contributing to the development of the national digital economy [2].

The concept of digital citizenship refers to the responsible and appropriate use of modern technology in interactions with others. This involves promoting positive behaviors and combating undesirable conduct in digital interactions, while establishing proper methods to guide and protect all users, particularly children and youth [3]. It also encompasses an individual's ability to participate in the digital society, aiming to identify the correct path to guide and safeguard users across all age groups. This is achieved by encouraging acceptable behaviors and rejecting unacceptable ones in digital interactions, fostering a digital citizen who contributes to their nation's progress and strives for its advancement [4].

The goal of digital citizenship is raising awareness among individuals in general, and high school students in particular, about their rights and responsibilities regarding societal issues, resisting negative ideas, and practicing the safe and responsible use of information technology, It seeks to cultivate generations capable of engaging with the information revolution and its technologies in a positive and secure manner [5].

Digital citizenship is grounded in a set of fundamental principles that form its value and operational framework. First, digital equality, which aims to achieve fairness in providing digital infrastructure for all and ensuring equal digital rights, with a focus on supporting electronic access as a cornerstone of growth and prosperity. Second, digital rights and responsibilities which require digital citizens to uphold their digital rights and exercise their responsibilities to ensure the proper use of technology, thereby enhancing individual productivity and active participation in the digital society. Finally, digital citizenship and culture enable every individual to become a cultural producer and participant in digital creativity through modern technologies. This expands the scope of cultural work and makes it accessible to all without discrimination, fostering diversity and openness in cultural creativity [6-8].

Digital citizenship is built on nine core values divided into three groups: values of respect, which focus on respecting oneself and others in the digital environment, including responsible technology use and avoiding the infringement of others' rights; values of education, which involve developing digital communication skills, digital literacy, and e-commerce to enhance effective interaction with technology in accordance with ethical and legal standards; and values of protection, which aim to safeguard individuals from digital risks, such as protecting personal data, promoting digital health and safety, and ensuring digital security through effective measures for user safety. These values are essential to ensuring the safe and beneficial use of technology in education and the digital community [2, 4, 5, 9].

Global trends in digital citizenship are divided into three main directions. The first focuses on integrating digital citizenship into educational systems, as seen in some U.S. states like Massachusetts, which enacted laws against cyberbullying, and Missouri, which established digital competency standards. In Tennessee, for example, teachers are required to train students in digital citizenship, while California introduced laws regulating online harassment. Texas also developed educational social networks to enable teachers to teach appropriate digital behaviors. The second direction involves developing standards for digital citizenship education, as demonstrated by Indiana University, which created a framework containing core standards for the safe and ethical use of technology. Finally, the third direction includes establishing educational electronic networks and training teachers to integrate technology into curricula and teach digital citizenship in secondary schools, ensuring the promotion of digital citizenship culture among students [10-13].

The second direction in digital citizenship focuses on mainstreaming its teaching to students while training parents and teachers under a comprehensive national plan, as seen in Australia. In 2010, the state of New South Wales launched an online digital citizenship program, providing teachers and parents with resources to explain digital concepts and teach students safe internet behaviors. The program was piloted in five schools, and evaluations demonstrated its effectiveness in improving students' online behavior and increasing their knowledge. The program covered key areas such as digital behavior, digital footprint, digital relationships, digital health and safety, digital law, and digital financial literacy. Students were also trained in the safe and ethical use of technology, with an emphasis on collective responsibility as part of the values of a digital citizen [12, 14-18].

The third direction in digital citizenship focuses on studying internet safety issues, as seen in France. In France, cybersecurity issues are integrated into information and communication technology (ICT) curricula, as well as some other courses. The internet safety topics included in the program cover a wide range of important subjects, such as communicating with strangers, safe use of mobile phones, online cyberbullying, issues related to downloading content and copyright, online privacy concerns, and safe online behavior [19].

The concept of digital citizenship has been extensively studied in various educational contexts, with researchers exploring its dimensions, impact, and implementation strategies. Below is a synthesis of key studies that provide a foundation for understanding digital citizenship and its relevance to this research.

Dotterer et al. [20] conducted a study aimed at promoting digital citizenship among students across different educational stages in the United States, with a particular focus on youth. Using a descriptive approach, the researchers administered a 24item questionnaire to 204 high school students. The findings revealed that teaching digital citizenship significantly enhances digital literacy and the ability to navigate the digital space. Additionally, it provides youth with a strong ethical framework, emphasizing the importance of integrating digital citizenship into educational curricula.

Jones and Mitchell [5] examined the adherence of middle and high school students in northern New England to respectful behaviors and civic engagement online. Employing a descriptive survey methodology, the researchers applied a scale measuring respectful behaviors and civic engagement to a sample of 979 students. The results indicated that females exhibited more respectful behavior online compared to males. However, the study also noted an overall decline in respectful behaviors and online civic engagement, highlighting the need for targeted interventions to foster positive digital interactions.

In a study by Nordin et al. [21], the practice of digital citizenship among Malaysian university students was explored. A questionnaire based on five criteria was administered to 391 students. The findings revealed that the practice of digital citizenship was at a moderate level, with "digital security" ranking as the most prominent criterion. Interestingly, the study found no significant differences between genders in the practice of digital citizenship, suggesting that digital citizenship behaviors are consistent across male and female students.

Martin et al. [22] investigated teachers' awareness and assessment of their students' level of digital citizenship. A sample of 107 teachers from various educational levels in Philadelphia, USA, participated in the study. Using a descriptive methodology and a questionnaire, the researchers found that students' understanding and grasp of digital citizenship skills were generally low. Furthermore, no statistically significant differences were observed based on school level or teachers' specialization, indicating a widespread need for improved digital citizenship education across all educational contexts.

During the COVID-19 pandemic, Hassan [23] conducted a study to promote digital citizenship values among high school students in Saudi Arabia, particularly through distance learning and e-learning. A random sample of 3,591 male and female students from Dammam and Khobar participated in the study. Using a descriptive survey methodology, the findings revealed that high schools play a significant role in fostering digital citizenship values, with the value of "respect" ranking highest (average score of 3.90). The study emphasized the importance of schools in raising awareness about digital privacy and safety during the pandemic.

Lu and Gu [24] explored the level of awareness of digital citizenship values among female high school students in Gaza during the COVID-19 pandemic. A descriptive analytical approach was adopted, and a sample of 460 female students was selected through stratified random sampling. The results showed a high level of awareness (84.34%), with "digital etiquette" ranking first (88.10%) and "digital access" ranking eighth (77.08%). No significant differences were found based on study track or grade level, except for digital literacy, where students in the literary track outperformed others.

Fernández-Prados et al. [25] reviewed ten definitions and nine scales related to digital citizenship, identifying two main conceptions: digital competencies and critical, activist aspects. The researchers replicated and compared three scales with 366 university students, finding that the scales did not measure the same construct due to differing dimensions. The study called for the inclusion of an "online activism" dimension and emphasized the need for international consensus on a unified definition and dimensions of digital citizenship to develop a reliable measurement tool.

Highlighting the role of digital media and literacy in contemporary communication, Milenkova and Lendzhova [26] emphasized their importance for social inclusion and professional competence. Using focus groups and document analysis, the researchers analyzed social reactions to digital media during the COVID-19 pandemic. The study concluded that digital media literacy was crucial for navigating global crises, aiding social understanding, and supporting individual practices during the pandemic.

In a meta-analysis, Lu and Gu [24] reviewed 46 studies on adolescent digital citizenship, identifying demographic, individual, and psychological factors as key predictors of digital citizenship levels. Internet self-efficacy emerged as the strongest predictor, followed by computer self-efficacy, social media experience, and Internet skills. The study also found that digital citizenship education had a moderate effect on reducing negative online behavior, suggesting the need for improved educational programs.

von Gillern et al. [27] developed the Teachers' Perceptions of Digital Citizenship Scale (T-PODS) to examine educators' views on digital citizenship. Using confirmatory factor analysis (CFA), the researchers validated a 14-item, four-factor model, including digital ethics, participation and engagement, informed citizens, and civic know-how. The T-PODS tool provides a valuable resource for exploring educators' perceptions of digital citizenship over time and across contexts.

Finally, von Gillern et al. [28] explored the perspectives of 111 preservice teachers on media literacy and digital citizenship. Through essay responses, the researchers identified key themes, revealing a blend of empowerment and protectionist approaches to media and digital engagement. The study highlighted the interconnectedness of media literacy and digital citizenship, emphasizing the importance of teaching these concepts together for effective learning outcomes.

The reviewed studies collectively underscore the importance of digital citizenship in modern education. They highlight the role of schools, teachers, and educational policies in fostering digital citizenship values, particularly in the context of rapid technological advancements and global challenges such as the COVID-19 pandemic. While some studies emphasize the need for improved digital literacy and ethical frameworks, others call for standardized definitions and measurement tools to assess digital citizenship effectively. These findings provide a strong foundation for the current study, which aims to develop and validate a scale to measure digital citizenship values among high school students.

In light of the rapid technological advancements and the increasing reliance on digital tools in education, the concept of digital citizenship has emerged as a crucial element in modern learning environments. Digital citizenship encompasses not only technical skills but also ethical behavior, critical thinking, and responsible use of technology. Despite its importance, there is a lack of standardized tools to measure digital citizenship values, particularly among high school students. Existing studies have highlighted the need for reliable and valid scales to assess digital citizenship, as well as the role of educational institutions in promoting these values. This study aims to fill this gap by developing and validating a scale to measure digital citizenship values among high school students, with a focus on its psychometric properties.

#### 1.1. Hypotheses

Based on the literature review and previous studies, the following hypotheses are proposed:

 $H_{1:}$  The scale will exhibit strong construct validity, with Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) confirming the three-factor structure (respect, education, and protection) of digital citizenship values.

 $H_2$ : The Digital Citizenship Values Scale will demonstrate high reliability, as measured by Cronbach's alpha, indicating internal consistency among its items.

### 2. Materials and Methods

### 2.1. Participants

The study sample consisted of 201 high school teachers from the Asir region in Saudi Arabia, selected through stratified random sampling. This approach ensured representation across different schools and demographic characteristics, providing a diverse and reliable sample for the study. Participants were informed that their involvement was voluntary, and data collection was conducted ethically, with a focus on maintaining confidentiality and anonymity.

#### 2.2. Instruments

#### 2.2.1. Digital Citizenship Values Scale

The Digital Citizenship Values Scale was developed through a comprehensive review of literature on digital citizenship values, incorporating studies by Snyder [15], Heath [17], Dotterer et al. [20], Nordin et al. [21], Hassan [23], and Lu and Gu [24]. These studies provided a strong theoretical foundation for identifying and categorizing digital citizenship values. The scale was designed to measure digital citizenship values among high school students. It aligns with the values and leadership principles of the Kingdom of Saudi Arabia, emphasizing the importance of responsible and ethical behavior in the use of online resources across social, economic, and educational fields. The scale defines digital citizenship as a set of rules and behaviors that govern an individual's actions and determine their eligibility and responsibility in the optimal use of various online resources.

Item generation involved developing an initial pool of 45 items derived from the identified dimensions and sub-values of digital citizenship. Care was taken to ensure that the items were clear, concise, and specifically relevant to high school students. These items were systematically categorized into three main areas, each comprising three sub-values, to ensure a thorough and balanced assessment of digital citizenship values. The first area, Respect Values, includes Digital Access, Digital Etiquette, and Digital Law. The second area, Educational Values, covers Digital Communication, Digital Culture, and Digital Security. The scale was developed through a rigorous process, beginning with a literature review to define digital citizenship in alignment with Saudi Arabia's cultural and educational context, followed by item generation, expert review for content validity, pilot testing to refine the scale, and finalization to ensure clarity, relevance, and psychometric quality. This structured approach ensures the scale's reliability and validity in measuring digital citizenship values among high school students.

#### 2.3. Procedures

Participants were clearly informed that their involvement in the study was entirely voluntary. Data were collected using an online survey distributed through Google Forms to ensure ease of access and maximize response rates among the teachers. All participants voluntarily consented to participate without any form of compensation or incentives. The survey included detailed instructions to guide participants through the process, ensuring clarity and consistency in responses. Confidentiality and anonymity were maintained throughout the data collection process, with no personally identifiable information being collected. The online format allowed participants to complete the survey at their convenience, contributing to a higher response rate and reducing potential biases associated with in-person data collection methods. This approach ensured ethical compliance and facilitated efficient data collection for the study.

### 2.4. Data Analysis

The data were analyzed using SPSS 26.0 and AMOS 25.0 to assess the scale's validity, reliability, and factor structure. Confirmatory Factor Analysis (CFA) was used to validate the scale's dimensions, ensuring that the proposed three-factor model (Respect, Education, and Protection Values) was appropriately tested. Reliability was assessed using Cronbach's alpha to evaluate the internal consistency of the scale's items.

### 3. Results

 $H_{1:}$  The scale will exhibit strong construct validity, with Exploratory Factor Analysis (CFA) and confirmatory factor analysis (CFA) confirming the three-factor structure (respect, education, and protection) of digital citizenship values.

### 3.1. Construct Validity

The content validity indices were evaluated by a panel of 13 expert jurors, comprising faculty members specializing in psychology, curricula, and teaching methods from various Saudi universities. Each expert independently assessed the clarity and relevance of the questionnaire items. Feedback was collected on three key aspects: (1) the linguistic clarity of the scale, (2) the alignment of each item with its designated dimension, and (3) suggestions for modifications to ensure the scale effectively meets the study's objectives. Based on the experts' evaluations, several revisions were proposed, primarily focusing on rephrasing specific items to improve their clarity and relevance while preserving the original content and intent of the scale.

### 3.2. Exploratory Factor Analysis (CFA)

Factor analysis of the scale items was conducted using the principal components method, and the axes were rotated using the "Varimax" rotation method, as shown in Table 1.

Items	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 5
ReV1	0.11	0.51	0.20	0.05	0.00	0.35
ReV2	0.19	0.76	0.15	094-	0.01	0.24
ReV3	0.01	0.72	0.07	124-	0.03	0.13
ReV4	0.19	0.72	0.19	005-	011-	0.37
ReV5	0.12	0.62	0.12	0.16	031-	0.21
ReV6	0.05	0.88	0.05	0.03	0.04	142-
ReV7	0.12	0.88	0.06	0.05	0.06	191-
ReV8	0.15	0.89	0.02	0.07	050-	063-
ReV9	0.10	0.88	0.08	0.02	0.01	293-
ReV10	0.19	0.85	0.10	0.08	011-	020-
ReV11	0.10	0.86	0.12	0.05	0.05	0.06
ReV12	0.16	0.64	0.04	0.09	0.01	0.20
ReV13	0.05	0.86	0.03	0.11	001-	0.21
EduV1	0.84	0.15	0.04	0.06	040-	0.06
EduV2	0.74	0.06	0.07	0.17	0.09	0.23
EduV3	0.89	0.16	0.11	052-	0.02	0.11
EduV4	0.90	0.13	0.03	036-	0.01	0.03
EduV5	0.85	0.04	0.03	0.17	014-	0.02
EduV6	0.87	0.19	0.06	042-	0.01	047-
EduV7	0.74	0.13	0.05	0.33	0.12	0.17
EduV8	0.80	0.07	0.09	0.22	023-	132-
EduV9	0.83	0.18	0.00	069-	055-	124-
EduV10	0.59	008-	0.01	0.24	0.12	0.18
EduV11	0.65	0.09	0.06	0.22	0.04	0.02
EduV12	0.23	0.13	0.05	0.01	0.03	0.46
EduV13	0.27	0.04	0.04	0.40	0.42	0.05
EduV14	0.26	0.12	003-	0.43	0.05	066-
ProV1	0.03	0.06	0.78	071-	0.24	0.23
ProV2	0.04	0.10	0.83	0.08	0.11	089-
ProV3	0.08	0.06	0.79	104-	0.26	0.16
ProV4	011-	0.09	0.85	0.08	0.05	0.02
ProV5	0.06	0.07	0.83	041-	0.06	0.05
ProV6	0.02	0.12	0.85	0.06	0.04	039-
ProV7	0.10	0.08	0.88	029-	0.03	0.10
ProV8	0.05	0.12	0.88	0.06	0.02	0.00
ProV9	0.11	0.08	0.83	022-	0.03	0.08
ProV10	026-	0.04	0.81	0.07	0.07	150-
ProV11	0.05	0.04	0.52	0.07	0.87	040-
ProV12	0.02	0.02	0.55	0.04	0.88	0.03
variance	21.65	21.07	19.34	5.68	4.44	3.43
Eigenvalues	8.44	8.22	7.54	2.22	1.73	1.34

 Table 1.

 Exploratory Factor Analysis (EFA) for the Digital Citizenship Values Scale

Note: Items in **bold** have a loading > .5. Items in italic load primarily between the indicated measure and factor but have a loading of < .5. All loadings are rounded. Domain Respect Values are latent indicators of ReV, Domain Educational Values are latent indicators of EduV, and Domain Protection Values are latent indicators of ProV.

The results indicated that all items loaded onto three factors with eigenvalues greater than one, explaining 75.62% of the total variance. Consequently, the final version of the scale consisted of 36 items.

### 3.3. Confirmatory Factor Analysis (CFA)

The data were analyzed using AMOS 25.0 to test the hypothesized model, which consisted of three factors. The Maximum Likelihood Estimation (MLE) method was applied to assess the factor loadings, as illustrated in Table 2 and Figure 1.



**Figure 1.** Path Diagram of confirmatory factor analysis.

The results showed that all factor loadings were statistically significant (p < 0.05), supporting the validity of the proposed model.

Table	2
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Confirmator	y Factor A	Analysis	(CFA)	) Model l	Fit	Indices	and	Eva	luatio	m
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Indicator	Value	Evaluation
$\chi^2/df$	2.44	Acceptable (less than 3)
RMSEA	0.05	Acceptable (less than 0.08)
CFI	0.93	Excellent (greater than 0.90)
TLI	0.92	Excellent (greater than 0.90)
GFI	0.91	Acceptable (greater than 0.90)
AGFI	0.90	Acceptable (greater than 0.80)

As illustrated in Table 2, the results of the confirmatory factor analysis (CFA) model fit indices demonstrate an excellent fit of the proposed model to the data. The  $\chi^2$ /df value of 2.44 is well within the acceptable range (less than 3), indicating a good balance between model complexity and fit. The RMSEA value of 0.05 further confirms a close fit (less than 0.08). Additionally, the CFI (0.93) and TLI (0.92) values are both excellent (greater than 0.90), providing strong evidence for the model's validity. The GFI (0.91) and AGFI (0.90) values are also acceptable (greater than 0.90 and 0.80, respectively), suggesting that the model effectively explains the variance in the data. Overall, these results robustly support the adequacy and reliability of the proposed model [28].

 $H_{2:}$  The Digital Citizenship Values Scale will demonstrate high reliability, as measured by Cronbach's alpha, indicating internal consistency among its items.

To verify the hypothesis, the Digital Citizenship Values Scale was applied to a sample of participants belonging to the target group of the study. Data was collected from the participants using the scale, ensuring adherence to ethical research procedures, such as obtaining participants' consent and ensuring the confidentiality of their data. The researchers analyzed the data using a statistical software (SPSS) to calculate Cronbach's alpha, assessing the internal consistency among the scale's items as illustrated in Table 3.

#### Table 3.

Cronbach alphas and interclass correlation coefficients of Digital Citizenship Values.

Subscales of Digital Citizenship Values	Cronbach alphas		
Respect Values	0.90		
Educational Values	0.91		
Protection Values	0.93		
Total Digital Citizenship Values	0.94		

Table 3 presents the Cronbach's alpha and interclass correlation coefficients for the Digital Citizenship Values scale and its subscales. The results indicate excellent internal consistency, with Cronbach's alpha values of 0.90 for Respect Values, 0.91 for Educational Values, and 0.93 for Protection Values. The total scale also demonstrates high reliability, with a Cronbach's alpha of 0.94. These values, all exceeding the threshold of 0.70, confirm the strong reliability and internal consistency of the scale and its subscales, supporting their use in measuring digital citizenship values.

#### 4. Discussions

The findings indicate that the Digital Citizenship Values Scale is a reliable and valid tool for measuring digital citizenship values among high school students. The scale's three dimensions, respect, education, and protection, align with the theoretical framework of digital citizenship. The results also highlight the importance of integrating digital citizenship education into school curricula to foster responsible technology use.

The results of the Confirmatory Factor Analysis (CFA) indicated that the proposed model consists of three main factors (Respect Values, Educational Values, and Protection Values), which align with the theoretical framework built based on previous literature. The model fit indices suggest that the model has a good fit to the data, with the  $\chi^2$ /df value (2.44) being less than 3, indicating a good balance between model complexity and fit. Additionally, the RMSEA value (0.05) was within the acceptable range (less than 0.08), confirming a close fit of the model. The CFI (0.93) and TLI (0.92) values were excellent (greater than 0.90), strongly supporting the model's validity. Finally, the GFI (0.91) and AGFI (0.90) values were acceptable (greater than 0.90 and 0.80, respectively), suggesting that the model effectively explains a significant portion of the variance in the data. These results robustly support the constructive validity of the proposed model.

The reliability analysis using Cronbach's alpha showed that the scale has high reliability. The Cronbach's alpha values for the subscales were as follows: Respect Values (0.90), Educational Values (0.91), and Protection Values (0.93). The overall Cronbach's alpha value for the entire scale was 0.94, which is excellent and exceeds the minimum acceptable threshold (0.70). These results confirm that the scale has high internal consistency among its items, supporting its use as a reliable tool for measuring digital citizenship values.

When compared to previous studies, the findings of this research are consistent with earlier research that emphasized the importance of digital citizenship education. For example, Hassan [23] highlighted the significant role that schools play in promoting digital citizenship values, particularly during the COVID-19 pandemic in Saudi Arabia. Similarly, studies in other countries, such as those conducted in Australia and the U.S., have underscored the importance of integrating digital citizenship into educational systems [12, 19]. This study adds to the existing body of research by providing a reliable and valid scale specifically designed to measure digital citizenship values among high school students.

The findings emphasize the need for schools to adopt a comprehensive approach to teaching digital citizenship, especially given the rapid advancements in technology and the increasing digital transformation in education. The study provides evidence that the three dimensions of digital citizenship, respect, education, and protection, are vital in fostering responsible technology use among students. This suggests that it is not only important to equip students with technical skills but also with ethical guidelines to help them engage with the digital world in a safe, responsible, and productive manner.

### **5.** Conclusion

The overall results of the study strongly support both hypotheses, confirming the proposed model's high construct validity through Confirmatory Factor Analysis (CFA), which validated the three-dimensional structure (Respect Values, Educational Values, and Protection Values). Additionally, the scale demonstrated high reliability, making it a suitable tool for measuring digital citizenship values among high school students.

This study developed and validated the Digital Citizenship Values Scale for high school students, demonstrating its reliability and validity in measuring digital citizenship values. The scale's three dimensions, Respect, Education, and Protection, align with the theoretical framework of digital citizenship, emphasizing responsible technology use, ethical behavior, and safety. The findings suggest that integrating digital citizenship education into school curricula is crucial for preparing students to navigate the digital world responsibly and ethically.

The study contributes to the growing body of research on digital citizenship and provides valuable insights for educators, policymakers, and researchers. By offering a reliable tool for measuring digital citizenship values, this research highlights the importance of fostering these values in students to ensure their positive and safe engagement with technology.

### 6. Limitations

There are some limitations in this study that should be taken into consideration. First, the study was applied to a specific sample of high school students in Saudi Arabia, which may limit the generalizability of the results to other cultural or educational contexts. Second, the study relied on self-reported data, which may be subject to biases such as social desirability. Additionally, a cross-sectional design was used, limiting the ability to infer causal relationships between variables. The scale also focused on three main dimensions (Respect, Education, and Protection) and did not include other dimensions such as digital activism or digital creativity. Finally, rapid technological changes may render some aspects of the scale irrelevant over time, necessitating regular updates.

Regarding future directions, the scope of research could be expanded to include larger and more diverse samples in terms of regions, age groups, and educational levels to generalize the findings. Longitudinal studies could also be conducted to understand how digital citizenship values evolve over time. Additional dimensions such as digital activism and digital creativity could be explored to enhance the comprehensiveness of the scale. Furthermore, the scale could be validated in different cultural and educational contexts to assess its suitability for diverse populations. It is also important to study the perspectives of teachers and parents on digital citizenship to understand how these values are taught in educational and home environments. Finally, future research could explore the impact of digital citizenship programs on students' academic and digital behavior, as well as the development of educational policies that support the integration of these values into curricula.

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