

Digital Citizenship Education and Democratic Participation among University Students: The Mediating Role of Digital Civic Engagement

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Abstract

As civic and political life becomes increasingly digital, universities must prepare students to acquire the skills that are necessary for meaningful participation in democracy. This study examined the relationships among Digital Citizenship Education (DCE), Digital Civic Engagement (DCEng), and Democratic Participation (DP) among university students, with particular attention to the mediating role of DCEng. The study used a quantitative cross-sectional survey design and the data were collected from 430 undergraduate students who were selected using stratified random sampling from three public universities. The proposed relationships were subsequently tested using the Partial Least Squares Structural Equation Modelling (PLS-SEM) method which was carried out with the help of SmartPLS 4. The measurement model showed acceptable internal consistency reliability and convergent validity with composite reliability values > 0.85 and average variance extracted values > 0.50 . Structural results revealed significant positive relationships between DCE and DP ($\beta = 0.284$, $p < .001$), DCE and DCEng ($\beta = 0.582$, $p < .001$), and DCEng and DP ($\beta = 0.435$, $p < .001$). DCE also mediated the effect of DP through DCEng, which was significant ($\beta = 0.253$, 95% CI [0.198, 0.312], $p < .001$) and accounted for 47.1% of the total effect, suggesting partial mediation. The results highlight the need to connect digital citizenship education with organized opportunities for civic engagement to turn digital competence into meaningful civic involvement among college students.

Keywords: Digital Citizenship Education, Digital Civic Engagement, Democratic Participation, Digital Literacy, Higher Education, Pls-Sem, University Students

1. INTRODUCTION

The current public sphere has become a space defined by ubiquitous Internet access, social media platforms and algorithmic communication networks. Digital channels are no longer the secondary means of communication for university students, but rather the main space for political socialisation, news consumption and civic mobilisation (Battista & Mangone, 2025; Boulianne, 2020). Digital platforms have reduced the barriers to civic action and allow students to organize, disseminate information and mobilize support in unprecedented ways (Kahne & Bowyer, 2019). Meanwhile, these platforms feed young citizens into algorithmic echo chambers, political polarization, state surveillance, and ubiquitous disinformation, and pose urgent questions concerning the education of young people to become responsible actors in a digital democracy (Alodat et al., 2023; Mihailidis & Viotty, 2017). Given these dynamics, it is no surprise that universities are making Digital Citizenship Education (DCE) a growing focus of pedagogical response.

DCE emphasizes the critical literacy skills necessary to engage with digital information ecosystems, to comprehend digital rights and responsibilities, to engage in safe and ethical online discourse, and to use digital tools for social justice (Choi, 2016; Ribble & Park, 2022), unlike traditional civics instruction. DCE, therefore, is not only a technical-skills curriculum, but a normative one that aims to produce citizens who are digitally literate and who can make sense of credible information, and engage in constructive dialogue with the contested public issues (Gleason & von Gillern, 2018). Similarly, the participation of university students in the democratic process is changing. Typical measures of institutional engagement, such as voter turnout and party membership, suggest that engagement with formal institutions has varied or dropped, but students are increasingly engaged in non-institutionalised, digitally-centred engagement such as online petitioning, policy advocacy, hashtag activism, and web-based community organising (Kahne et al., 2016). Therefore, it is important that these emerging democratic modes are connected to DCE in order to understand how Higher Education can produce informed, active, and ethically oriented citizens who will help to shape public life on- and offline (Kalev et al., 2025; Zembere & Mberi, 2025).

Although digital technologies are widely used by university students, there is still a significant disconnect between their technical expertise and civic skills. While young adults are generally considered to be 'digital natives' with high levels of technological competency, there is evidence that many young people are not yet media literate enough to distinguish information from misinformation, understand privacy risks and interact constructively in hostile online political spaces (UNESCO, 2023). The connection between digital education and democratic behavior is still ambiguous. Some scholars have argued that digital literacy education mostly results in passive consumption of information or "slacktivism", and that the exposure to digital information without any explicit pedagogical attention to civic agency and ethics can lead to cynicism, political fatigue or radicalisation (Emejulu & McGregor, 2019).

More critically, there is no structural empirical models that assess the relationship between the components of digital citizenship education and the whole of democratic participation, both in the digital and offline political sphere, and whether there are intermediate processes, such as digital civic engagement, that act as structural bridges between the two (García-Galera et al., 2022). Higher education institutions can only invest in superficial digital skills training if they are not able to understand these pathways and develop long-term democratic participation. To do this, this study examines the structural relationship between Digital Citizenship Education and Democratic Participation among university students with special attention to the role of Digital Civic Engagement as a mediation.

The specific objectives are to:

1. examine the direct effect of Digital Citizenship Education on Democratic Participation.

2. examine the effect of Digital Citizenship Education on Digital Civic Engagement.
3. examine the direct effect of Digital Civic Engagement on Democratic Participation.
4. measure the mediating effect of Digital Civic Engagement in the relationship between Digital Citizenship Education and Democratic Participation.

Similarly, the study aims to answer four research questions:

1. Does Digital Citizenship Education have a direct impact on Democratic Participation among university students?
2. How well does Digital Citizenship Education predict Digital Civic Engagement?
3. What is the difference that Digital Civic Engagement makes to overall Democratic Participation?
4. Is there a mediation effect between Digital Civic Engagement and Democratic Participation in the relationship between Digital Citizenship Education?

The following hypotheses were developed from these questions:

H1: Digital Citizenship Education has a positive and statistically significant direct effect on Democratic Participation.

H2: Digital Citizenship Education has a positive and statistically significant direct effect on Digital Civic Engagement.

H3: Digital Civic Engagement has a positive and statistically significant direct effect on Democratic Participation.

H4: Digital Civic Engagement significantly mediates the relationship between Digital Citizenship Education and Democratic Participation.

2. LITERATURE REVIEW

Digital Citizenship Education (DCE) is a comprehensive pedagogical approach that focuses on developing critical digital literacy, online communication ethics, digital rights and security awareness, and the ability to use technology for democratic participation and social responsibility (Choi, 2016; Ribble & Park, 2022). Digital Civic Engagement (DCEng) refers to voluntary online actions that people take to respond to public issues, engage in online community organizing, sign petitions, or discuss public policy using Internet-based platforms (Kahne & Bowyer, 2019). Democratic Participation (DP) refers to both individual and collective activities that seek to shape governance, policy and the democratic process, whether institutional (e.g. voting, contacting representatives) or extra-institutional (e.g. advocacy campaigns, online protest) (Boulianne, 2020).

Current understandings of digital citizenship have broadened the notion of media literacy to focus on both the critical assessment and the active production of digital media (Gleason & von Gillern, 2018). Students with critical media skills are better equipped to assess the credibility of sources, understand how to identify misinformation and avoid algorithmic echo chambers, which is a cognitive ability that is essential to informed political decision-making and active engagement in public discourse (Mihailidis & Viotty, 2017; UNESCO, 2023). Much of the empirical research that has linked DCE to civic outcomes is based on this literacy-to-participation pathway.

The shift of political discourse to the online world has also reduced traditional barriers to participation for young people, enabling students to organise micro-activism, spread awareness about local issues and engage directly with elected politicians (Kahne et al., 2016). For these digital interactions to lead to meaningful political engagement, however, users need to be ethically grounded and have civic self-efficacy, which can be developed through explicit teaching of digital citizenship, not as a side effect of

other activities (Emejulu & McGregor, 2019).

These theoretical statements are supported by empirical evidence. Kahne and Bowyer (2019) found that teaching about the production and dissemination of digital content had a significant impact on youth's participation in online civic engagement and their ability to evaluate the accuracy of political claims. Zembere & Mberi, (2020) found that digital citizenship skills positively affect university students' political cynicism and participation in online deliberative forums and student governance. Emejulu and McGregor (2019) also found that critical digital education helps marginalised youth to engage in rights-based advocacy and democratic organising through digital technologies and García-Galera et al. (2022) found a positive correlation between formal learning of digital skills and active participation in digital protest and institutional voting among European university populations.

Broader meta-analytic evidence lends further support to a positive digital media–participation link. Boulianne (2020) reviewed over 300 studies from 50 countries over the last 20 years, and found that the relationship between digital media use and civic and political engagement was becoming more positive, from small to substantial effect sizes. However, the connection between this engagement specifically and formal democratic participation, and the pedagogical function of digital citizenship education to support this connection, is relatively under-theorized in the higher education environment (Choi, 2016).

The study is based on Bandura's Social Cognitive Theory (1986) and the Participatory Culture Framework (PCF) by Jenkins et al. (2009). According to Social Cognitive Theory, human behaviors are influenced by a triadic model of behavior, which includes self-efficacy beliefs, cognitive processes, and environmental inputs. DCE provides students with the pedagogical content of the environment and the cognitive tools, digital skills and rights awareness that students draw on; while students practise these tools online, they develop their digital civic self-efficacy, or their confidence in their ability to create social change using digital media (Bandura, 1986). The Participatory Culture Framework adds to this by describing the impact of low barriers to online artistic and civic participation on encouraging young people to become active rather than passive participants in democratic dialogue (Jenkins et al., 2009). These frameworks collectively indicate that DCE fosters internal digital skills and capacities that, when put into practice, can lead to digital civic engagement and ultimately to broader democratic engagement.

3. METHODOLOGY

3.1 Research Design and Study Setting

The study used a quantitative and cross-sectional survey design to explore the structural relationships of Digital Citizenship Education, Digital Civic Engagement and Democratic Participation. The study was carried out in three public universities, with respondents from a variety of academic disciplines to achieve a wide representation of undergraduate students.

3.2 Population, Sample and Sampling Procedure

The students in the three universities who were enrolled in undergraduate programs across the Humanities/Social Sciences, STEM, and Business/Law faculties were the target population. Stratified random sampling was applied to guarantee the proportionality of the sample by faculties. 450 questionnaires were sent out and 430 were fully completed and usable (95.5% usable).

3.3 Instrument Development and Measurement

A structured, closed-ended questionnaire was used to collect data, which was rated with a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Digital Citizenship Education was assessed using 8 items adapted from existing scales of digital literacy and digital civics. Digital Civic Engagement was

assessed using six items that measured how often and how strongly people engage in community advocacy, create content about politics, and use digital petitioning. Democratic Participation was assessed using 7 items focusing on formal voting intentions, political involvement offline, advocacy campaigns and policy engagement.

3.4 Validity and Reliability Procedures

The construct validity and reliability were evaluated according to the guidelines of PLS-SEM. Standardised outer loadings were used to assess indicator reliability, Cronbach's alpha and Composite Reliability (CR) were used to assess the internal consistency reliability, and Average Variance Extracted (AVE) was used to assess the convergent validity. The Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio were used to test the discriminant validity.

3.5 Data Collection and Ethical Considerations

The data were gathered using self-administered questionnaires that were sent to the consenting undergraduate students. The respondents were informed about the purpose of the study, the right to withdraw at any stage of the study and the confidentiality and anonymity of the responses before the data collection process began and participation was voluntary. Ethical approval and institutional consent were received prior to the survey.

3.6 Data Analysis

A two-stage approach was adopted to analyse the data, which involved Partial Least Squares Structural Equation Modelling (PLS-SEM) using SmartPLS 4. Indicator reliability, internal consistency, convergent and discriminant validity were first examined on the measurement model. The structural model was then assessed for path coefficients, coefficient of determination (R^2), statistical significance through bootstrapping (5,000 sub-samples), predictive relevance (Q^2), and the mediation of Digital Civic Engagement with Variance Accounted For (VAF).

4. RESULTS

4.1 Respondent Characteristics

A total of 430 students from three public universities (Humanities/Social Sciences, STEM and Business/Law faculties) were selected for the final sample, reflecting the stratified sampling frame described in section 3.2. This distribution allows for generalisation of the results to the main disciplines within the sampled institutions.

4.2 Measurement Model

The measurement model had good convergent validity and internal consistency reliability. The standardised factor loadings were all above 0.70, the AVE values were all above 0.50, and the reliability indices (CR and Cronbach's alpha) were all above 0.80 for the three constructs shown in table 1.

Table 1. Measurement Model Summary

Construct	Items	Loading Range	Cronbach's α	CR	AVE
Digital Citizenship Education (DCE)	8	0.735–0.868	0.898	0.920	0.622

Digital Civic Engagement (DCEng)	6	0.748–0.880	0.887	0.914	0.639
Democratic Participation (DP)	7	0.729–0.865	0.905	0.925	0.638

Discriminant validity was confirmed with all HTMT values staying below the conservative value of 0.85, and the square root of all the constructs' AVEs being greater than the cross-correlations between the constructs.

4.3 Structural Model

The structural model explained 33.9% of the variance in Digital Civic Engagement ($R^2 = 0.339$) and 42.8% of the variance in Democratic Participation ($R^2 = 0.428$). Overall model fit was good as shown by the Standardized Root Mean Square Residual (SRMR = 0.054).

4.4 Hypothesis Testing

The significance of the structural paths was tested with 5,000 sub-samples of the data by bootstrapping. The three direct hypotheses were confirmed as shown in table 2.

Table 2. Structural Path Coefficients and Hypothesis Testing

Hypothesis / Path	β	SD	t-value	p-value	Decision
H1: DCE → DP (direct)	0.284	0.048	5.916	< .001	Supported
H2: DCE → DCEng	0.582	0.036	16.166	< .001	Supported
H3: DCEng → DP	0.435	0.044	9.886	< .001	Supported

4.5 Mediation Analysis

A bootstrapping procedure with 5,000 resamples was used to evaluate mediation as depicted in table 3, at a 95% bias-corrected confidence interval. The indirect effect of DCE on DP through DCEng was significant ($\beta = 0.253$, 95% CI [0.198, 0.312], $p < .001$). To test H4, the Variance Accounted For (VAF = Indirect Effect ÷ Total Effect × 100) was calculated, which showed the Digital Civic Engagement partially mediates the relationship between Digital Citizenship Education and Democratic Participation, supporting H4, with a VAF of 47.1%.

Table 3. Mediation Analysis (Indirect Effect)

Pathway	Direct Effect	Indirect Effect	95% CI	VAF (%)	Type
DCE → DCEng → DP	0.284	0.253	[0.198, 0.312]	47.1	Partial

5. DISCUSSION OF FINDINGS

5.1 DCE and Democratic Participation

The significant direct effect of DCE on DP ($\beta = 0.284$) supports H1, and indicates that critical digital literacy, privacy awareness and digital communication ethics provide cognitive confidence for students to participate in political processes. By understanding how digital platforms work, it seems that feelings of alienation and online intimidation, which otherwise could deter participation, are reduced, supporting Choi's (2016) conceptualisation of digital citizenship as being participatory.

5.2 DCE and Digital Civic Engagement

The high correlation between DCE and DCEng ($\beta = 0.582$) confirms H2 and suggests that students who are taught about digital citizenship are active in seeking out online civic spaces, engaging in digital petitioning, engaging in policy forums, and creating civic media products. This result is consistent with Kahne and Bowyer (2019), who demonstrated that teaching students the skills of producing and disseminating digital content was highly effective in boosting political engagement via digital media later in the year.

5.3 Digital Civic Engagement and Democratic Participation

The results confirmed the impact of DCEng on DP ($\beta = 0.435$) and thus the hypothesis H3 is accepted as online civic practice leads to more general civic engagement. The online advocacy experience is found to foster civic self-efficacy and organizational skills that translate into offline civic engagement, including voting, policy advocacy, and community campaigning, which supports Boulianne's (2020) meta-analytic results that online advocacy leads to increased civic engagement.

5.4 Mediating Role of Digital Civic Engagement

DCEng has a VAF of 47.1%, which means that it acts as a significant partial mediator for H4. Active digital civic practice is the channel and amplification of the impact of DCE on democratic participation. DCE supplies the cognitive tools that are necessary to support long-term democratic participation, and DCEng offers the experiential training ground that maintains long-term democratic participation, in line with the Social Cognitive Theory pathway of environmental input, to self-efficacy to behaviour (Bandura, 1986).

5.5 Theoretical and Practical Implications

Theoretically, the results build on Bandura's (1986) Social Cognitive Theory and Jenkins et al. 's (2009) Participatory Culture Framework by empirically establishing a structural pathway from digital citizenship instruction to digital civic self-efficacy and practice, to democratic participation. In practice, digital literacy training should not be an objective in itself, but should be coupled with purposeful civic engagement activities like e-parliaments, digital advocacy projects, online policy forums, etc. to ensure that cognitive competence translates to sustained civic engagement (Emejulu & McGregor, 2019).

6. CONCLUSION

This study shows that Digital Citizenship Education is a strong predictor of university students' democratic participation, both directly and, more importantly, indirectly, via the intervening pathway of digital civic engagement. DCE instruction has a positive impact on translating learning into active online civic practice, and this in turn has a significant impact on students' involvement in institutional and extra-institutional democratic processes. Technical digital literacy alone is not enough, as digital civic engagement represents 47.1% of the overall impact of DCE on democratic participation, higher education must foster critical digital agency and offer structured opportunities for civic practice to advance from digital competence to meaningful civic action. The results of this research provide the ground for curricular reform by incorporating algorithmic literacy, misinformation resilience, digital rights awareness, and digital activism

into general education, and by establishing digital civic spaces for students in institutions, including student-led e-parliaments and online policy forums, in which students can practise digital governance. Academic faculty development to prepare faculty to engage in critical online discussion and in collaborative civic problem-solving would further strengthen this pathway. The findings from this study should be extended to other institutional and national contexts, and longitudinal designs should be employed to account for causal ordering, and to investigate other intervening or moderating processes such as political trust or algorithmic scepticism that may help to explain the effects of digital citizenship education on democratic life in a digital public sphere.

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