The Eurasia Proceedings of
Educational & Social Sciences (EPESS)
ISSN: 2587-1730

The Eurasia Proceedings of Educational and Social Sciences (EPESS), 2025

Volume 46, Pages 41-50

IConETE 2025: International Conference on Education in Technology and Engineering

Design Thinking and Digital Civilization: Strategies for Building Civic Skills in Digital Transformation

Elda Dwi Pratiwi
Indonesia University of Education

Leni Anggraeni
Indonesia University of Education

Amiza Rezika
Indonesia University of Education

Andrie Hasugian
Indonesia University of Education

Mariyani Arthami
Indonesia University of Education

Abstract: The purpose of this study is to examine civic education strategies in building digital civility amid the emergence of various innovations such as Artificial Intelligence (AI) and the Internet of Things (IoT) in the 21st century. This study uses a qualitative method with a literature review approach to provide a strong theoretical foundation and enrich the researcher's understanding of the issues being studied, as well as to serve as material for further research. Data collection was carried out by reviewing credible books, journals, articles, and research reports. Data analysis was conducted in three stages, namely data reduction, data presentation, and conclusion drawing. The results of the study show that civic education still lacks the ability to foster digital civility among citizens. Design thinking strategies are needed to foster critical thinking, creativity, and problem-solving skills amid the challenges of the digital age, with the following stages: i) Empathies: foster awareness of digital citizenship; ii) Define: formulate issues of digital citizenship; iii) Ideate: generate ideas in the form of innovative solutions to overcome digital problems; iv) Prototype: create digital citizenship education products; v) Test: test products in communities or schools, evaluate their impact, and conduct critical reflection. This research is expected to contribute significantly to the development of a Digital Citizenship Education strategy to realize smart and good digital citizenship among students.

Keywords: Civic education, Civic skills, Design thinking, Digital civilization, Digital transformation

Introduction

The advent of Artificial Intelligence (AI), the Internet of Things (IoT) and automation has brought significant changes and challenges to the world of education. Technological advances have changed patterns of communication, interaction and ways of obtaining information, requiring the world of education to be adaptive and innovative in preparing human resources that are relevant to the needs of the times. According to a report by Writer Buddy, an AI writing tool website that analyses statistics on AI tool usage and global traffic behaviour in using AI-based sites, Indonesia ranks third as the country with the most AI users, with 1.4 million visits (Ningsih, 2022), as shown in Figure 1.

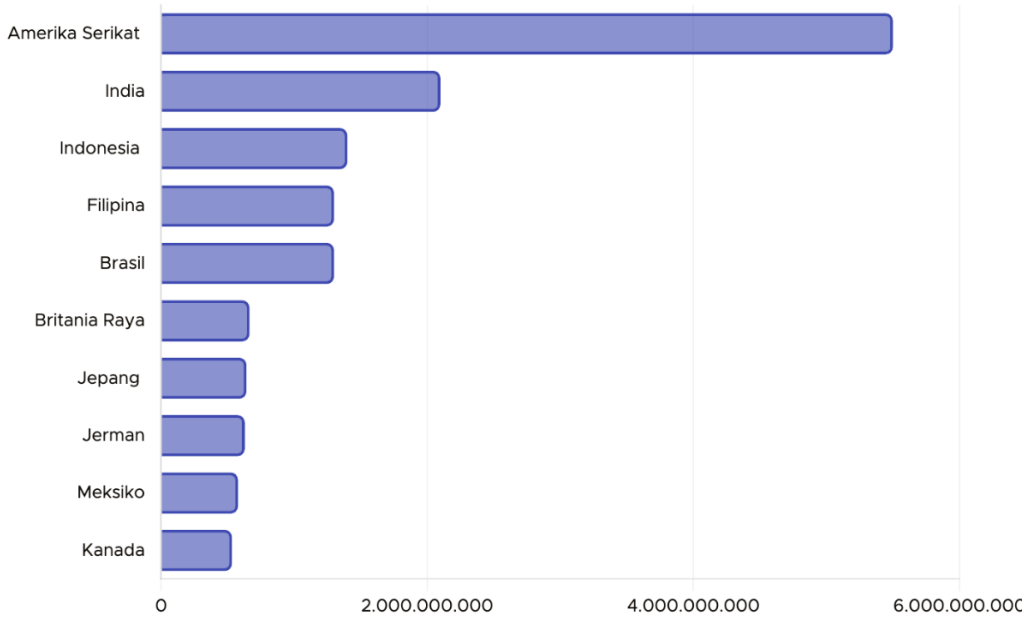

Figure 1. List of the 10 countries with the highest AI usage
Source: Writer Buddy

The massive use of digital technology, internet access and artificial intelligence has led to the importance of digital ethics for citizens who can build digital civility. Empirical studies show that AI significantly influences the digital ethics of citizens, presenting both opportunities and challenges, including: 1) transparency and accountability; 2) privacy and cybersecurity; and 3) algorithmic bias and discrimination (Muhlhoff, 2023; Kumar et al., 2025; Ali et al., 2025). In addition, problems that pose a threat in the digital space are often carried out by teenagers, such as cyberbullying, creating inappropriate content, spreading hoaxes, hate speech, and spreading other people's privacy (Ningsih, 2022). These issues pose a challenge for 21st-century citizenship education to prepare citizens to take responsibility as global citizens.

Giddens and Sutton (2021) in their theory of globalization state that education in the global era must prepare students to think globally and act locally. In line with this, citizenship education is important in fostering democratic values and civic responsibility in a pluralistic society (Kaelan, 2014). Citizenship education is a subject that continues to evolve in response to changes in society, and its content is influenced by various elements (Japar, 2020). According to Kaelan and Zubaidi (2010), the study of civic education is rooted in various academic disciplines whose examination and development require contributions from various fields of knowledge, such as political science, law, philosophy, history, economics, public administration, and cultural studies. In Indonesia, civic education studies are aimed at educating Indonesian citizens to be intelligent, skilled, and have good character, guided by the principles of Pancasila and the 1945 Constitution (Nurwardani et al., 2016).

Along with the rapid digital transformation expanding the concept of global citizenship, challenging Citizenship Education around the world must be able to prepare citizens as civilized global and digital citizens. The availability of information technology and the Internet poses challenges to understanding how to create new learning environments where students are now connected with teachers from around the world (Barbour & Reeves, 2009; Peng & Li-Wei, 2009). The challenges of the 21st century require an education system that promotes creativity, critical thinking, collaboration, communication and other skills needed for the future (Triyanto, 2024). The development of artificial intelligence technology in the 21st century has important implications for the world of education. First, education and research related to AI development are needed to meet the need for fast human services (Adam, 2018). Second, there needs to be a revolution in learning and curriculum, which leads to learning not only through robot tutors, but also priorities a deep understanding of literacy and how various world systems work (Liao et al., 2018). Thus, AI can be designed to support the education and learning process without neglecting human values.

Civic education, as a core activity that carries out the mission of character education, plays an important role in building civilized digital citizenship. The moral crisis in the digital age poses a challenge for Civic Education to adapt to developments in digital technology by preparing citizens to be global citizens with good and smart digital citizenship. Digital citizenship includes responsible online behavior norms, as well as habits and actions that affect the ecology of digital content and online communities (Digdoyo, 2018). Therefore, the current learning strategies

for citizenship education must be the answer to the challenges of digital citizenship and global citizenship. According to Joyce and Calhoun (2024), effective learning strategies are those that can adapt to the learning environment and be responsive to the developmental stages of students. Furthermore, Freiberg and Driscoll (2005) emphasize that learning strategies must be sensitive to context and responsive to the characteristics of learners. Supporting this view, a study by Sabat (2021) revealed that adaptive electronic learning environments, which tailor instructional content to students' learning styles, significantly improve engagement and learning outcomes.

Effective learning in the context of the 21st century requires a more in-depth and comprehensive approach to the student learning process. Piaget's (2005) and Vygotsky's (1978) constructivist theories emphasize that knowledge is not passively transmitted but actively constructed by individuals through interaction with their environment and reflection on their experiences. Innovative strategies in Civic Education learning are needed to overcome the implementation of learning that has faced several obstacles, namely that it is often considered uninteresting, trivial, boring, teacher-centered, delivered through lectures, the development of a culture of memorization and textbook-based learning, and the process of transferring knowledge and attitudes to students related to the process of personality formation is often neglected (Setiawan, 2014). Previous research has revealed that civic education learning has not been optimal in strengthening students' digital citizenship, due to the lack of utilization of digital space by students who are in fact digital natives (Capuno et al., 2022). Therefore, innovative digital civic education learning strategies that are relevant to the needs of students are required.

Design thinking is a learning approach that focuses on a human-centered approach to problem solving, prioritising creativity, empathy and collaboration. This approach enables learners to tackle complex civic issues while enhancing creativity, empathy and critical thinking. (Razzouk & Shute, 2012). The design thinking model is needed to develop innovative and effective problem-solving skills. Meanwhile, strengthening digital citizenship is necessary to reinforce the quality of individual behavior when interacting in the virtual world, especially on social media, by demonstrating responsible behavior in accordance with applicable norms and ethics (Ribble M, 2007). This study aims to explore in depth: (1) the concept of Design Thinking, (2) the concept of global citizenship in digital transformation, and (3) the design of a teaching strategy for Civic Education (PKn) based on design thinking and digital civility as an innovative strategy for learning Civic Education in digital transformation. Therefore, this study is expected to offer strategic solutions to the challenges faced in teaching Civic Education to build digital competence and literacy amid digital transformation.

Method

This study utilized a qualitative method with a library research approach, which is a research method that aims to combine information and materials from relevant sources in libraries, such as books, journals, documents, notes, or previous research reports. Data collection through various relevant literature was carried out by reading, recording, and processing information from reliable sources (Hadi et al., 2021; Hardani et al., 2020). This approach was chosen because it provides a strong theoretical basis and enriches the researcher's understanding of the issues being studied, as well as providing material for further research. The researchers used Publisher or Perish and Vos Viewer to facilitate the search for relevant data and identify current research trends related to the research topic.

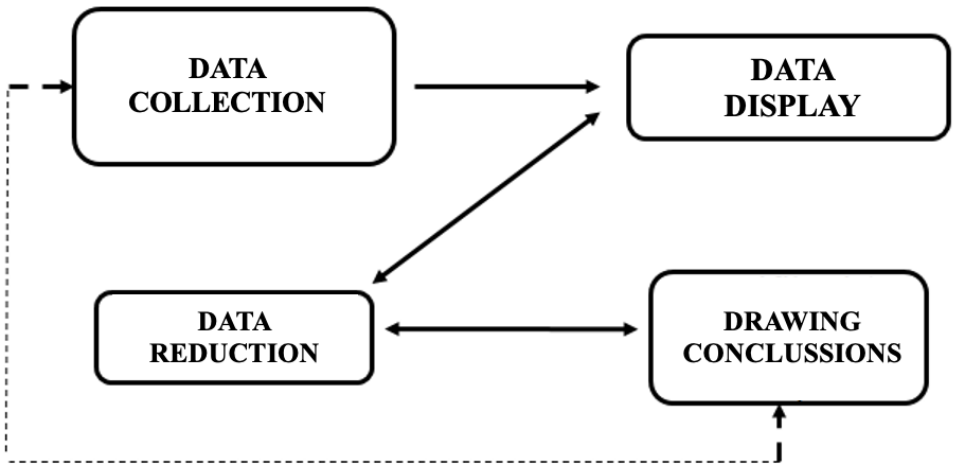

Figure 2. Stages of data analysis
Source: Creswell (2013)

Data analysis in this study was conducted using a technique developed by Miles and Huberman, which consists of three main stages: data reduction, data presentation, and verification (Creswell, 2013), as shown in Figure 2. The first step, data reduction: at this stage, relevant information from the collected literature was selected, coded, and categorized according to the research objectives. During the data reduction process, irrelevant or excessive data is removed while emphasizing important patterns and themes. The second step, data presentation: at this stage, the reduced data is systematically organized into tables, thematic charts, and matrices to facilitate a clearer understanding and comparison of the main findings. The third step is drawing conclusions and verification: at this stage, careful interpretation of the presented data is carried out. To ensure the validity and consistency of the findings, triangulation is used by cross-referencing various sources, concepts, and theoretical frameworks.

Results and Discussion

Digital Citizenship Transformation

Digital transformation initially described the shift from traditional business practices to business practices using digital technology (Gurbaxni & Dungkle, 2019). This transformation quickly spread to various areas of life, which in turn required the world of education to be adaptive in preparing human resources relevant to the needs of the times. In line with Giddens' (2006) theory that social structures, including politics, economics, and culture, are dynamically interconnected, this transformation often drives broader social change. As revealed by Inglehart and Welzel (2005), modernization brings about changes in social values, which in turn influence key institutions such as education. Digital innovation has the power to complement, enrich, and transform education, as well as the potential to accelerate progress towards sustainable development goals for education by providing universal access to learning (Reinartz et al., 2019). Thus, education is undergoing a broad digital transformation to meet the needs of the younger generation and their digital future.

Pakphan et al. (2020) highlight the importance of deploying digital technology to advance national and international aspirations for lifelong education and learning. These digital transformation measures encompass pedagogy, curriculum, assessment, social care and learning organizations. Previous research conducted by Pangrazio and Sefton Hijau (2021) identified three contemporary normative responses to these complex issues, namely digital citizenship, digital rights and digital literacy. This means that these three concepts must work together if a good society is to flourish.

Meanwhile, the concept of digital citizenship has been highlighted in various studies. Studies on digital citizenship among researchers have also been conducted globally since 2015 (Richardson et al., 2021). Ribble (2008) was the first pioneer to introduce the importance of digital citizenship by focusing on nine elements that summaries behavior and responsibility in the use of technology. Digital citizenship is a conceptual framework that explains how individuals should use information and communication technology (ICT) ethically, responsibly, safely, and effectively in social and civic life in the digital age. In education, there are several key features for making students digital citizens in order to achieve the goals of 21st-century digital citizenship. These key factors are student learning and academic achievement, the student environment and behavior, and student life outside the school environment. Ribble and Bailey (2007) listed nine areas of behavior for shaping digital citizenship under these three keys (see Figure 3).

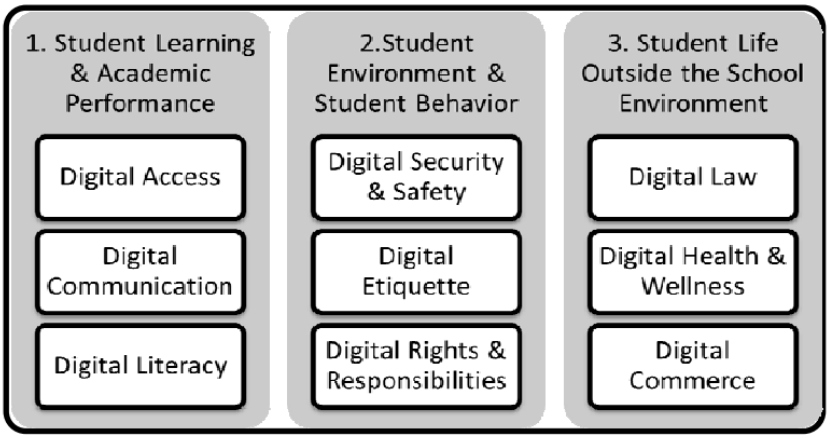

Figure 3. Elements of digital citizenship
Source: Ribble (2008)

First, the aspect of Student Learning & Academic Achievement consists of three elements, namely: a) Digital Access: full electronic participation in society. b) Digital Communication: electronic information exchange. c) Digital Literacy: the process of teaching and learning about technology and its use. Second, the aspect of Student Environment & Student Behavior consists of three elements, namely: a) Digital Security (self-protection): electronic precautions to ensure safety. b) Digital Ethics: standards of electronic behavior or procedures. c) Digital Rights & Responsibilities: freedoms granted to everyone in the digital world. Third, the aspect of Student Life Outside the School Environment consists of three elements, namely: a) Digital Law: electronic responsibility for actions and deeds. b) Digital Health & Well-being: physical and psychological well-being in the digital technology world. c) Digital Commerce: electronic purchase and sale of goods.

Digital transformation, which expands the scope of citizenship to digital citizenship, presents opportunities for active and open participation. However, it also poses serious challenges related to literacy, ethics, and inclusion. Therefore, in capturing the opportunities of digital transformation, citizenship education must evolve from a normative approach towards more contextual learning. This requires the integration of digital literacy, the strengthening of digital ethics, and the use of innovative learning methods that encourage students to actively interpret learning and apply it both in the real world and in the digital space with ethics and responsibility as civilized citizens.

Design Thinking as a 21st Century Learning Approach

Digital education is required to evolve and adapt in line with developments in digital technology (Triyanto, 2020; Zohriah, 2023). To prepare the future generation to be able to face the pace of development, strategies and learning methods are needed that can train students' critical thinking skills (Ahmatika, 2023; Nuryanti et al., 2018). One approach that is considered relevant in responding to the challenges and needs of the current curriculum is the design thinking method, due to its ability to adapt to the dynamics and urgency of change in the world of education (Apocalypse & Jorente, 2022; Yang, 2018). Based on previous studies conducted by Brown (2009) and Liedtka and Ogilvie (2019), design thinking is understood as a problem-solving method that focuses on empathy, idea exploration, prototyping, and testing processes. This approach provides opportunities for students to design meaningful solutions that are appropriate to the context of the problem. Furthermore, design thinking also helps students deal with complex citizenship issues, while encouraging the development of creativity, empathy, and critical thinking skills (Razzouk & Shute, 2012).

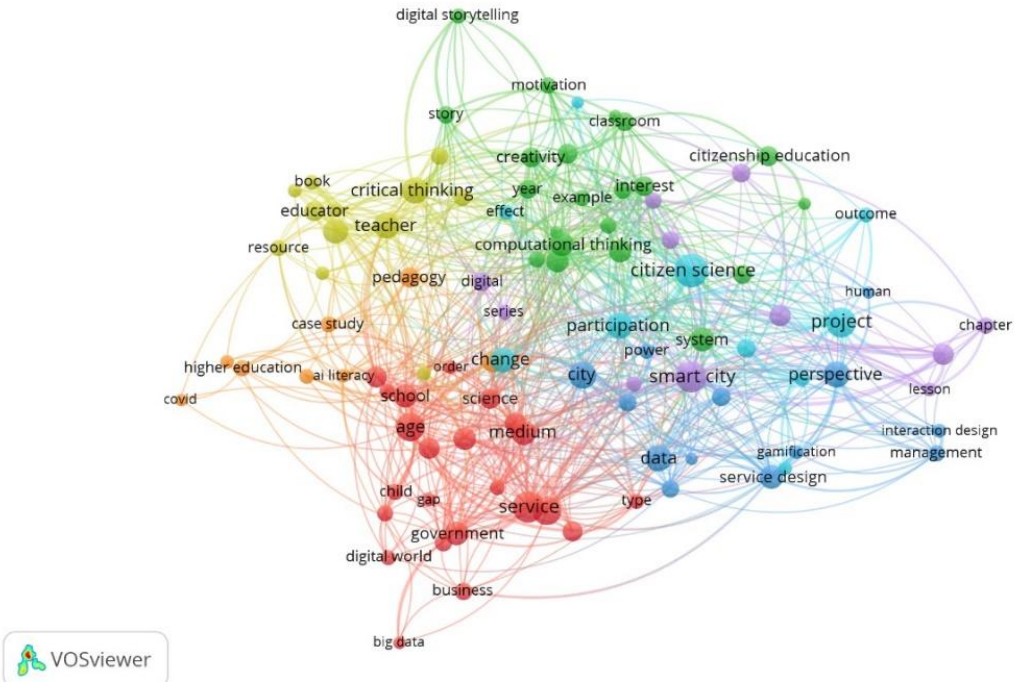

Figure 4. Vos Viewer analysis result

In the world of education, the design thinking method is still relatively new because it has not been widely implemented. This method is a process that includes context analysis, exploration, idea and solution development,

and creative thinking, which as a whole has an impact on the cognitive, creative, and practical aspects of students (Mauliya & Wulandari, 2021). Design thinking places students at the centre of innovation in education, as this approach focuses not only on the preparation of teaching materials, but also on the creation of a learning environment that stimulates creativity and problem-solving skills (Benefita, 2022; Winata et al., 2022). Based on data obtained from Publish or Perish by entering relevant keywords from 500 search articles, which were then analysed using Vos Viewer Analysis, there is still minimal research in education that discusses the design thinking method in education (see Figure 4). The trend regarding the topic of design thinking is relevant to topics related to the digital era. Therefore, this design thinking strategy is relevant to be developed as a digital citizenship learning strategy.

Design thinking, which is rooted in the creative thinking movement through design thinking, has been predicted by several experts. As stated by Edward de Bono, design thinking is a form of thinking that differs from traditional thinking approaches. While conventional thinking emphasises pattern recognition through analysis, assessment, and logic, design thinking is rooted in the creation of new patterns. In this case, creative thinking is an important element in design thinking. Therefore, it should be positioned on par with critical thinking in education, rather than being considered a mystical, innate ability that cannot be taught (de Bono, in (Bown, 2009). Meanwhile, according to Mads Soegaard, design thinking is an iterative process in which individuals or design teams seek to understand user needs, clarify assumptions, and reinterpret problems with the aim of finding alternative strategies or solutions. The main characteristic of this approach is its human-centred nature, where every step in the design process originates from and is aimed at fulfilling human needs (Husein, 2018).

The design thinking stages developed by Stanford University consist of five steps, namely: (1) empathy; (2) definition; (3) ideation; (4) prototyping; and (5) testing (Bender, 2020). The first step is to gather information through a deep understanding of user needs (empathise stage). After that, the define stage is carried out by formulating the information obtained into a number of main problems. These problems are then developed through various creative and innovative ideas in the ideate stage. Next, a prototype is created to produce the best solution from the ideas that have been developed. Finally, this process is concluded with the test stage, which involves testing the prototype that has been created and obtaining input and feedback from users. The steps of design thinking can be seen in Figure 5.

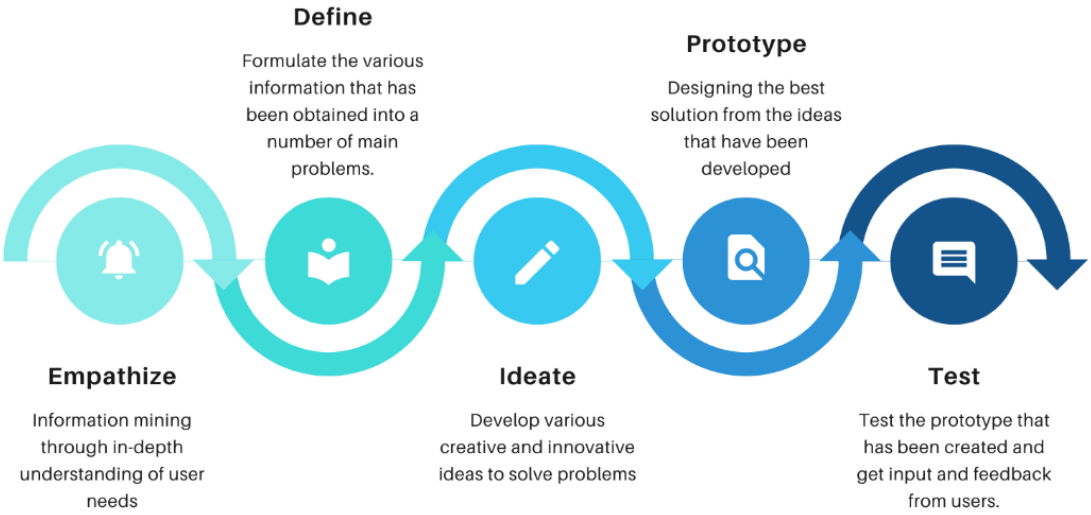

Figure 5. Design thinking process

The design thinking process is the answer to 21st century educational innovation, which demands methods that are in line with the skills required in this century. According to the Meteriti Group and North Central Regional Educational Laboratory, 21st century skills are divided into four main categories, namely: digital-age literacy, inventive thinking, effective communication, and high productivity (Lemke, 2003). Meanwhile, Griffin and Care formulate 21st-century skills into four aspects: First, individuals need to develop a certain way of thinking. Second, it is important for a person to be able to communicate effectively and work in a team. Third, the use of the right tools and mastery of knowledge and information technology literacy are key to getting the job done. Fourth, individuals are expected to be responsible citizens by participating in social and governmental life, having cultural awareness and competence, and continuously improving their career skills. In general, these various definitions emphasise the importance of mastering skills such as creativity, innovation, curiosity, intelligence, and adaptability (Mayasari et al., 2016).

Designing Design Thinking and Digital Civilization Strategies in Learning Global Citizenship Education

In facing digital transformation that has broad implications for digital citizenship, it is necessary to transform the learning strategy of Civic Education that can improve the digital competence and civility of citizens. This is in line with experiential learning theory, which emphasises that education must be rooted in meaningful experiences that connect learning to the real-world context (Dewey,1986). Without the relevance of learning strategies to the real context of citizenship development, the curriculum fails to maintain critical and participatory citizenship, which is an important goal of citizenship education. Furthermore, Joyce and Calhoun (2024) suggest that effective strategies are those that not only address teaching objectives but can also adapt to the learning environment and be responsive to students' developmental stages. In the context of Civic Education, as stated by Widiyanto (2017), flexible and diverse teaching strategies are very important to address the various objectives of Civic Education, particularly in preparing students to become active and responsible citizens in a diverse society, especially in today's digital era where people are rapidly connected to one another.

The design thinking and digital citizenship approach strategy is expected to be a strategic solution to address the challenges of digital transformation in the 21st century. Design thinking in building the digital civility of citizens is designed as a strategy that can be used in Citizenship Education to encourage student-centred learning by fostering creativity, critical thinking, and real-life application without marginalising digital civility. The process of integrating design thinking and digital civility into Citizenship Education learning can be carried out through the following five main stages:

First, *Empathise:* Fostering Digital Citizenship Awareness. This stage encourages students to gain a deep understanding of the lives of citizens in the digital age, including challenges related to ethics, privacy, cyber security, and hate speech. Through discussions, case studies, or interviews with digital communities, students are required to empathise with the various experiences of users in the digital space.

Second*, Define*: Formulating Digital Citizenship Issues. After gathering various perspectives, students are invited to identify and clearly formulate citizenship issues that arise in the digital world. These formulations must reflect the real challenges faced by society, such as disinformation, social media ethics, or the digital divide.

Third, *Ideate*: Generating Innovative Solutions. In this stage, students are trained to think divergently and generate various ideas for solutions to the issues that have been defined. Brainstorming, mind mapping, or other creative techniques are used to stimulate solutions that are creative, contextual, and provide real solutions.

Fourth, *Prototype*: Create Digital Citizenship Education Products. Selected ideas are developed into prototypes, in the form of tangible products such as educational videos, digital modules, social media campaigns, or learning applications. These prototypes serve as a medium for communicating the values of digital citizenship to a wide audience.

Fifth, *Test*: Evaluating and Conducting Critical Reflection. The developed prototypes are tested on communities or educational institutions. Through this stage, students can obtain feedback, evaluate the impact of the solutions created, and critically reflect on the process for further improvement.

Through these stages, the integration of design thinking in Citizenship Education not only enriches learning strategies but also fosters critical, creative, and civilised digital citizens. This approach is an important foundation for building an educational ecosystem that is relevant to the challenges of the digital age in order to realise good digital citizenship among students.

Conclusion

This study reveals the concept of design thinking, digital citizenship transformation, and 21st-century citizenship education learning strategies that combine design thinking and digital literacy concepts. Rapid digital transformation requires strategic changes in citizenship education learning in order to foster citizens' digital literacy and competence. The design thinking approach, integrated with digital citizenship values, offers strategic solutions to address these challenges. Through the five stages of design thinking: Empathise, Define, Ideate, Prototype, and Test, students are not only encouraged to understand and critically formulate digital issues, but are also required to produce innovative solutions and apply them in real-world contexts. This approach reinforces student-centered learning, fosters creativity and reflective thinking, and strengthens values of civility in an increasingly massive digital space. Thus, the integration of design thinking in Civic Education is key to shaping

active, critical, and responsible digital citizens in the 21st century. In its implementation, it is important to prepare educators and infrastructure that support learning transformation, so that it can respond to the needs of students in accordance with the context of the times.

Recommendations

This study provides important insights for various stakeholders to develop education policies that are adaptive to digital and global transformations, particularly in Civic Education, which carries the mission of character education for the nation. However, this study has limitations because its findings are theoretical and have not been empirically tested in the classroom. Therefore, the researchers recommend future studies involving empirical testing, such as experimental or action research methods, to validate and develop relevant learning approaches for various levels of education amid the digital citizenship transformation.

Scientific Ethics Declaration

* The authors declare that the scientific ethical and legal responsibility of this article published in EPESS journal belongs to the authors.

Conflict of Interest

* The authors declare that they have no conflicts of interest

Funding

* This research was supported by the Ministry of Finance of the Republic of Indonesia.

Acknowledgements or Notes

* The researchers would like to express their deepest gratitude to the Education Fund Management Institute

*(LPDP/Indonesia Endowment Fund for Education) under the Ministry of Finance of the Republic of Indonesia as the sponsor for their master's studies, and the support for this paper and publication.

References

Adam, J. B. (2018). The fourth industrial revolution and education. *South African Journal of Science, 114*(5-6).

Ahmatika, D. (2023). Peningkatan kemampuan berpikir kritis siswa. *Jurnal Handayani, 4*(2), 8.

Ali, S., Wang, J., & Leung, V. C. M. (2025). AI-driven fusion with cybersecurity: Exploring current trends, advanced techniques, future directions, and policy implications for evolving paradigms–A comprehensive review. *Information Fusion*, 102922.

Apocalypse, S. M., & Jorente, M. J. V. (2022). The design thinking method and information science research. *Encontros Bibli, 27*, e87281.

Barbour, M. K., & Reeves, T. C. (2009). The reality of virtual schools: A review of the literature. *Computers & Education, 52*(2), 402–416.

Bender-Salazar, R. (2023). Design thinking as an effective method for problem-setting and needfinding for entrepreneurial teams addressing wicked problems. *Journal of Innovation and Entrepreneurship, 12*(1), 24.

Brown, T. (2009). *Change by design: How design thinking creates new alternatives for business and society.* Harper Business.

Capuno, R., Suson, R., Suladay, D., Arnaiz, V., Villarin, I., & Jungoy, E. (2022). Digital citizenship in education and its implication. *World Journal on Educational Technology: Current Issues, 14*(2), 426-437.

Creswell, J. W. (2013). *Research design: Pendekatan penelitian kualitatif, kuantitatif, dan mixed.* Yogyakarta: Pustaka Pelajar.

Dewey, J. (1986). Experience and education. *The Educational Forum, 50*(3), 241–252.
Digdoyo, E. (2018). Kajian isu toleransi beragama, budaya, dan tanggung jawab sosial media. *JPK (Jurnal Pancasila dan Kewarganegaraan), 3*(1), 42–59.
Freiberg, H. J., & Driscoll, A. (1992). *Universal teaching strategies.* Allyn and Bacon. Retrieved from https://books.google.co.id/books?id
Giddens, A., & Sutton, P. W. (2021). *Essential concepts in sociology*. John Wiley & Sons.
Hadi, A., Asrori, & Rusman. (2021). *Penelitian kualitatif: Studi fenomenologi, case study, grounded theory, etnografi, biografi*. Purwokerto: CV. Pena Persada.
Hardani, A., Andrani, H., Ustiawaty, J., Utami, E. F., Isitiqomah, R. R., Fardani, R. A., Sukmana, D. J., & Auliya, N. H. (2020). *Metode penelitian kualitatif & kuantitatif*. Yogyakarta: Pustaka Ilmu.
Husein, A. S. (2018). *Metode design thinking untuk inovasi*. UB Press. Retrieved from https://books.google.co.id/books?id
Inglehart, R., & Welzel, C. (2005). *Modernization, cultural change, and democracy: The human development sequence*. Cambridge University Press.
Japar, D. (2020). *Media dan teknologi pembelajaran PPKn.* Surabaya: Jakad Publishing.
Joyce, B., & Calhoun, E. (2024). *Models of teaching*. Taylor & Francis.
Kaelan, & Zubaidi, A. (2010). *Pendidikan kewarganegaraan untuk perguruan tinggi*. Yogyakarta: Paradigma.
Kaelan. (2014). *Pendidikan pancasila*. Yogyakarta: Paradigma.
Kumar, A. B., Sanjaya, K., & Saleem, M. (2025). Justice in the age of algorithms: Ensuring transparency, accountability, and fairness in AI-driven legal systems. In *Artificial ıntelligence in peace, justice, and strong ınstitutions* (pp. 191-210). IGI Global Scientific Publishing.
Lemke, C. (2003). *enGauge 21st century skills: Digital literacies for a digital age*. North Central Regional Education Lab.
Liao, Y., Loures, E. R., Deschamps, F., Brezinski, G., & Venâncio, A. (2018). The impact of the fourth industrial revolution: A cross-country/region comparison. *Production, 28*, e20180061.
Liedtka, J., & Ogilvie, T. (2019). *Designing for growth: A design thinking tool kit for managers*. Columbia University Press.
Mauliya, A., & Wulandari, S. (2021). Empathy dan design thinking dalam inovasi manajemen pendidikan Islam di era disruptif. *Paedagogia*: *Jurnal Pendidikan, 10*(1), 13-32.
Mayasari, T. (2016). Apakah model pembelajaran problem-based learning dan project-based learning mampu melatihkan keterampilan abad 21? *Jurnal JPFK, 2*(1), 48–55.
Microsoft Indonesia. (2020). *Civility, safety & interaction online.* Retrieved from https://pskp.kemdikbud.go.id.pdf.
Mühlhoff, R. (2023). Predictive privacy: Collective data protection in the context of artificial intelligence and big data. *Big Data & Society*, *10*(1), 20539517231166886.
Ningsih, H. W. (2022). *Kasus pelanggaran etika bersosial media pada remaja pertengahan akibat kurangnya pengetahuan*. Kompasiana. Retrieved from https://www.kompasiana.com
Nurwardani, P., Saksama, H. Y., Winataputra, U. S., Budimansyah, D., Sapriya, Winarno, Mulyono, E., & Prawatyani, S. J. (2016). *Pendidikan kewarganegaraan untuk perguruan tinggi*. Direktorat Jenderal Pembelajaran dan Kemahasiswaan.
Nuryanti, L., Zubaidah, S., & Diantoro, M. (2018). Analisis kemampuan berpikir kritis siswa SMP. *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan, 3*(2), 155-158.
Pakpahan, A., et al. (2020). *Pengembangan media pembelajaran*. Medan: Yayasan Kita Menulis.
Pangrazio, L., & Sefton-Green, J. (2021). Digital rights, digital citizenship and digital literacy: What's the difference? *Journal of New Approaches in Educational Research, 10*(1), 15–27.
Peng, L.W., & Li-Wei. (2009). *Digital science games' impact on sixth and eighth graders' perceptions of science*. Ohio University.
Piaget, J. (2005). *The psychology of intelligence.* Routledge.
Razzouk, R., & Shute, V. (2012). What is design thinking and why is it important? *Review of Educational Research, 82*(3), 330–348.
Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of Research in Marketing, 26*(4), 332–344.
Ribble, M., & Bailey, G. (2007). *Digital citizenship in schools*. DC: ISTE.
Richardson, J. W., Martin, F., & Sauers, N. (2021). Systematic review of 15 years of research on digital citizenship: 2004–2019. *Learning, Media and Technology, 46*(4), 1–17.
Sabbagh, M. A. (2021). Adaptive e-learning environment based on learning styles and its impact on development students' engagement. *International Journal of Educational Technology in Higher Education, 18*, 51.
Setiawan, D. (2014). Pendidikan kewarganegaraan berbasis karakter melalui penerapan pendekatan pembelajaran aktif, kreatif, efektif dan menyenangkan. *Jurnal Pendidikan Ilmu-Ilmu Sosial, 6*(2), 61–72.

Triyanto. (2020). Peluang dan tantangan pendidikan karakter di era digital. *Jurnal Civics: Media Kajian Pendidikan Kewarganegaraan, 17*(2), 175–178.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Widiyanto, D. (2017). Pembelajaran toleransi dan keragaman dalam pendidikan Pancasila dan kewarganegaraan di sekolah dasar. *Prosiding Konferensi Nasional Kewarganegaraan III*, 109–115.

Winata, C., Anisha, D., Shaputra, D. A., Putri Lubis, L. F., Bintang, N. D., & Ningsih, S. R. (2022). Strategi perencanaan pendidikan di era globalisasi. *Jurnal Pendidikan dan Konseling (JPDK), 4*(5).

Yang, C.-M. (2018). Applying design thinking as a method for teaching packaging design. *Journal of Education and Learning, 7*(5), 52–60.

Author(s) Information

Elda Dwi Pratiwi
Indonesia University of Education (Universitas Pendidikan Indonesia), Setiabudi Street. 229th, Bandung, Indonesia
Contact e-mail: *eldadwipratiwi@upi.edu*

Leni Anggraeni
Indonesia University of Education (Universitas Pendidikan Indonesia), Setiabudi Street. 229th, Bandung, Indonesia

Amiza Rezika
Indonesia University of Education (Universitas Pendidikan Indonesia), Setiabudi Street. 229th, Bandung, Indonesia

Andrie Hasugian
Indonesia University of Education (Universitas Pendidikan Indonesia), Setiabudi Street. 229th, Bandung, Indonesia

Mariyani Arthami
Indonesia University of Education (Universitas Pendidikan Indonesia), Setiabudi Street. 229th, Bandung, Indonesia

To cite this article:

Pratiwi, E. D., Anggraeni, L., Rezika, A., Hasugian, A., & Arthami, M., (2025). Design thinking and digital civilization: strategies for building civic skills in digital transformation. *The Eurasia Proceedings of Educational and Social Sciences (EPESS), 46,* 41-50.