

**A PHENOMENOLOGICAL STUDY ON THINKING ABOUT CITIZENSHIP IN THE
DIGITAL AGE BEYOND ANTHROPOCENTRISM**

**UM ESTUDO FENOMENOLÓGICO SOBRE O PENSAMENTO DA CIDADANIA NA
ERA DIGITAL ALÉM DO ANTROPOCENTRISMO**

**UN ESTUDIO FENOMENOLÓGICO SOBRE LA CONCEPCIÓN DE CIUDADANÍA EN
LA ERA DIGITAL MÁS ALLÁ DEL ANTROPOCENTRISMO**



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ABSTRACT: This research examines how citizenship concept in digitized world transcends anthropocentric limits based on the opinions of 46 pre-service social studies teachers. Constructed with phenomenological design, the data of the study was subjected to thematic analysis using MAXQDA software. As a result of the analysis 173 significant codes (f) were obtained, which were structured under four main themes, namely digital subjectivity, non-human stakeholders, algorithmic agency, and post-humanist pedagogy. The findings prove that participants define citizenship through data production and digital footprint to a large extent (f 86 with 50% intensity) whereas they began to see artificial intelligence as a decision-making agent (f 31). This conceptual branching visualized through Word Tree analytic shows that pre-service teachers stand at a mental threshold. In conclusion, it is recommended that social studies curriculum should not be limited to training technical skills but be restructured with a post-humanist pedagogy which encompasses the ethical connection established with machines.

KEYWORDS: Citizenship education. Post-humanism. Pre-service social studies teachers. Critique of Anthropocentrism. Qualitative Phenomenology.

RESUMO: Esta pesquisa examina como o conceito de cidadania no mundo digitalizado transcende os limites antropocêntricos, com base nas opiniões de 46 professores de ciências sociais em formação. Elaborada com um desenho fenomenológico, os dados do estudo foram submetidos a uma análise temática utilizando o software MAXQDA. Como resultado da análise, foram obtidos 173 códigos significativos (f), que foram estruturados em quatro temas principais: subjetividade digital, atores não humanos, agência algorítmica e pedagogia pós-humanista. Os resultados comprovam que os participantes definem a cidadania, em grande medida, por meio da produção de dados e da pegada digital (f 86 com intensidade de 50%), enquanto passaram a ver a inteligência artificial como um agente de tomada de decisão (f 31). Essa ramificação conceitual visualizada por meio da análise Word Tree mostra que os professores em formação se encontram em um limiar mental. Concluindo, recomenda-se que o currículo de estudos sociais não se limite ao treinamento de habilidades técnicas, mas seja reestruturado com uma pedagogia pós-humanista que abranja a conexão ética estabelecida com as máquinas.

PALAVRAS-CHAVE: Educação para a cidadania. Pós-humanismo. Futuros professores de estudos sociais. Crítica ao antropocentrismo. Fenomenologia qualitativa.

RESUMEN: Esta investigación examina cómo el concepto de ciudadanía en el mundo digital trasciende los límites antropocéntricos, basándose en las opiniones de 46 futuros docentes de ciencias sociales. El estudio, diseñado con un enfoque fenomenológico, sometió los datos a un análisis temático utilizando el software MAXQDA. Como resultado del análisis se obtuvieron 173 códigos significativos (f), que se estructuraron en cuatro temas principales: subjetividad digital, actores no humanos, agencia algorítmica y pedagogía poshumanista. Los hallazgos demuestran que los participantes definen la ciudadanía en gran medida a través de la producción de datos y la huella digital (f 86 con una intensidad del 50 %), mientras que comenzaron a ver la inteligencia artificial como un agente de toma de decisiones (f 31). Esta ramificación conceptual, visualizada mediante el análisis Word Tree, muestra que los docentes en formación se encuentran en un punto de inflexión mental. En conclusión, se recomienda que el plan de estudios de ciencias sociales no se limite a la formación de habilidades técnicas, sino que se reestructure con una pedagogía poshumanista que abarque la conexión ética establecida con las máquinas.

PALABRAS CLAVE: Educación para la ciudadanía. Poshumanismo. Futuros docentes de ciencias sociales. Crítica del antropocentrismo. Fenomenología cualitativa.

INTRODUCTION

Twenty-first century witnesses one of the most radical transformations of human history. Digitization, artificial intelligence, big data and algorithmic decision-making mechanisms reshape not only the economic and technological fields, but also social structures, forms of identity, and fundamental concepts such as citizenship (Kumar et al., 2024; Shibuya, 2020). The citizenship conceptualization, which is usually defined within nation-state borders and established through a balance between rights and responsibilities, is under transformation today (Falcke & Peters, 2025). Individuals are not only legal subjects; they are also digital subjects and members of a global interaction network directed by algorithms that produce data in digital platforms (Lin, 2026).

In this study, traditional citizenship is understood as a political and legal condition historically associated with membership in a nation-state, involving rights, duties, participation, and belonging within a defined political community. This understanding is close to classical approaches to citizenship, such as the distinction between civil, political, and social rights, as well as later debates that treat citizenship not only as legal status but also as participation, identity, and social practice. From this perspective, citizenship education has traditionally been concerned with preparing individuals to understand institutions, participate in public life, recognize rights and responsibilities, and act within democratic communities.

Digital citizenship, however, expands this framework. Authors such as Mossberger et al. (2008), Ribble (2015), and Isin and Ruppert (2015) have shown that citizenship in digital societies involves not only access to technological tools, but also participation in online spaces, critical digital literacy, data production, privacy, visibility, platform governance, and responsibility in digitally mediated interactions. Therefore, digital citizenship should not be reduced to technical competence. In educational terms, it requires the formation of citizens capable of critically understanding how digital infrastructures, algorithms, and data systems shape participation, rights, responsibilities, and public life.

This transformation also opens for debate the anthropocentric assumptions that have historically organized citizenship education. Post-humanist approaches, especially in the works of Haraway (1991), Braidotti (2013), Hayles (1999), and Latour (2005), question the idea that human beings can be understood as isolated, autonomous, and superior subjects separated from technologies, environments, and other forms of agency. In this study, post-humanism is not used to deny the centrality of human dignity, democratic responsibility, or educational formation. Rather, it is used as a theoretical lens to examine how human agency is increasingly exercised

through relations with digital technologies, algorithmic systems, ecological conditions, and sociotechnical networks.

Likewise, the concept of algorithmic agency does not imply that artificial intelligence systems are sentient, morally autonomous, or equivalent to human subjects. The term is used analytically to describe the capacity of algorithmic systems to mediate, organize, prioritize, recommend, restrict, or influence human action and public participation. Therefore, the study approaches artificial intelligence as a sociotechnical mediator rather than as a conscious entity. This distinction is particularly important for citizenship education, because future teachers need to help students understand not only how to use digital technologies, but also how these technologies participate in the organization of social life, access to information, visibility, and decision-making.

This transformation in the concept of citizenship shows its most direct impact in the field of education, as citizenship awareness is built not only through legal regulations but also through education processes (Liu et al., 2025; Schulz et al., 2025). Citizenship education has traditionally been concerned with preparing students to participate in public life, understand rights and responsibilities, and engage with democratic communities. In this sense, authors such as Biesta (2011), Westheimer and Kahne (2004), Banks (2004), and Osler and Starkey (2005) emphasize that citizenship education is not limited to the transmission of institutional knowledge, but involves the formation of subjects capable of participation, critical judgment, social responsibility, and democratic action. Social studies courses are therefore one of the fundamental spaces in which students are introduced to democratic values, social engagement, diversity, rights, responsibilities, and public participation.

This study aims to examine from a post-humanist perspective the citizenship perceptions of social studies pre-service teachers. The research is an attempt to display whether pre-service teachers view citizenship as an anthropocentric construct or within a broader framework that also includes non-human elements. It examines how the integration of artificial intelligence and algorithmic systems into decision-making processes affects citizenship understanding and in what direction future approaches to citizenship education are taking shape.

The main reason for picking this topic for research is that studies in the literature on citizenship education are mostly limited to digital citizenship and media literacy, whereas topics such as post-humanist citizenship, algorithmic agents, and non-human subjectivity are not adequately addressed in teacher education context. In this regard, it aims to fill both a theoretical and a pedagogical gap.

From an educational perspective, this gap is significant because teacher education programs are expected to prepare future teachers not only to use digital technologies, but also to interpret their ethical, political, and social implications. As Biesta (2011) argues, democratic education cannot be reduced to qualification or skill acquisition; it must also involve subjectification, judgment, and participation in the public world. Similarly, Westheimer and Kahne's (2004) discussion of different models of the "good citizen" suggests that citizenship education should move beyond responsible individual behavior and include critical reflection on social structures, power relations, and democratic transformation. In the digital age, this also means examining how algorithms, platforms, data systems, and artificial intelligence reshape the conditions of participation and citizenship.

The importance of this study is that it emphasizes the need for civic education to move beyond simply conveying the existing social order and to be structured in a way that can respond to the ethical and philosophical problems of the future (Liu et al., 2025). It is expected that the findings of this study will make contribution to the updating of teacher education curricula, and to the rethinking of the relation between technology, ethics, and non-human agents in citizenship education. From this perspective, the study aims to make an interdisciplinary contribution by opening to debate the direction of citizenship education in the digital era.

The concept of citizenship in the 21st century digital era is going beyond the traditional anthropocentric understanding and being reshaped in interaction with artificial intelligence, algorithms, and non-human agents (Budic, 2025; Gordon, 2026; Suzuki, 2025). However, there is insufficient information on the extent to which social studies pre-service teachers are prepared for this post-humanist understanding of citizenship and how they will reflect this change in their educational processes, which, in turn, creates pedagogical uncertainties as regards the future of citizenship education.

For this reason, the present study is located within the field of citizenship education and teacher education. Its focus is not merely the philosophical redefinition of citizenship in digital societies, but the way future social studies teachers make sense of this redefinition and may later translate it into educational practice. Social studies education has historically been responsible for introducing students to democratic values, social participation, rights, responsibilities, and public life. In the digital age, however, this task also requires critical engagement with datafication, algorithmic mediation, artificial intelligence, ecological responsibility, and the ethical dimensions of human–technology relations. Thus, examining pre-

service teachers' perceptions is relevant because their conceptual understandings may influence how citizenship education is designed, taught, and updated in future curricula.

Within the scope of this study, answers have been sought to the following questions with the purpose of revealing the level at which social studies pre-service teachers understand citizenship from a post-humanist and digital-era perspective:

1. How do social studies pre-service teachers understand the concept of citizenship in the context of digital era?
2. Do pre-service teachers continue to see citizenship as an anthropocentric construct, or do they evaluate it in an expanded framework which also includes non-human elements?
3. How is the citizenship perception of pre-service teachers affected by the participation of artificial intelligence and algorithmic systems in decision-making processes?
4. How are pre-service teachers constructing the citizenship education of the future in line with post-humanist approaches?

METHODOLOGY

This study aims to examine the perceptions of social studies pre-service teachers regarding the concept of citizenship within a post-humanist framework that transcends traditional borders. Qualitative research method was adopted to preserve the depth of data and explore the complicated constructs in the minds of the participants (Haq & Yasin, 2025).

Research pattern

Phenomenology pattern, which focuses on the individual experiences and sense-making processes of the participants, was used in the study. Phenomenology offers the most suitable ground especially to understand how the concept of citizenship is being reshaped by discussions about artificial intelligence and post-humanity (Ferrari, 2026). Using this pattern, the researchers tried to describe the subjective perceptions of pre-service teachers for the new world order intertwined with technology as they are.

Study group and sample

The study group of this research consisted of 46 pre-service teachers studying at Social Studies Teaching program of Atatürk Education Faculty, Near East University. Criterion sampling technique, a purposive sampling method, was used to determine the participants. The primary criterion was taken as pre-service teachers having taken citizenship education course and their familiarity with digital citizenship topics. This preference ensured that the philosophical topics to be discussed (post-humanism, algorithmic rights, etc.) could be interpreted in more depth by the participants.

Data collection process and tools

This research employed multiple data collection tools in data collection process in accordance with qualitative research design. Data was collected using a semi-structured interview form which was developed by research after obtaining the views of field experts to ensure scope and construct validity. The interview form consists of open-ended questions to explore perceptions of social studies preservice teachers regarding the concept of citizenship, as well as their opinions on anthropocentric approaches, evaluations on the integration of artificial intelligence and algorithmic systems into decision-making processes, and their views on post-humanist citizenship understanding.

The interview protocol was organized around four conceptual axes: traditional and digital citizenship, anthropocentric and non-anthropocentric understandings of citizenship, algorithmic mediation in decision-making processes, and implications for citizenship education. Participants were first invited to explain their own understanding of citizenship without receiving a closed theoretical definition. This procedure was adopted in order to preserve the phenomenological focus on participants' meaning-making processes. After their initial answers, the researcher used neutral prompts and examples when clarification was necessary, such as digital identity, data traces, recommendation algorithms, automated decision-making systems, environmental stakeholders, and artificial intelligence in public or educational contexts.

Participants were explicitly allowed to state that they were unfamiliar with a concept or unable to answer a question. Such moments of hesitation or unfamiliarity were not treated as failures in the interview process, but as relevant data for understanding how pre-service teachers position themselves in relation to emerging debates on citizenship education. Therefore, the interviews examined both spontaneous perceptions and reflective elaborations produced during

the interaction. This methodological choice is consistent with the phenomenological orientation of the study, since the aim was not to test participants' mastery of theoretical terminology, but to understand how they experience, interpret, and pedagogically imagine citizenship in a digitally mediated society.

In addition to assessing their existing knowledge, the questions were structured to urge the participants to conduct speculative and philosophical deliberation on possible future scenarios including the rights of artificial intelligence and the concept of non-human agents. Interviews took 30 to 45 minutes on average and were voice-recorded based on the approval of the participants. Later the recordings were transcribed and prepared for analysis process. In addition to the interviews, brief demographic forms were applied to the participants in order to determine their main characteristics, through which data on their department, grade level and digital technology experiences were collected. All the obtained texts were used in thematic analysis and conceptual network (Word Tree) analytic.

Analysis and visualization of the data

Computer-assisted qualitative data analysis software (CAQDAS) can enhance the grounded theory method by supporting data coding and data analysis (Frieze & Unterpertinger, 2026). The analysis was conducted in two stages. The coding process combined inductive and theoretically informed procedures. In the first cycle, codes were generated from participants' own statements, with attention to recurring meanings, metaphors, uncertainties, and examples used to define citizenship. In the second cycle, these initial codes were grouped in relation to the theoretical framework of the study, especially the distinctions between traditional citizenship, digital citizenship, algorithmic mediation, non-human stakeholders, and post-humanist pedagogy. This procedure allowed the analysis to remain grounded in participants' narratives while also connecting the findings to broader debates in citizenship education, digital citizenship, and post-humanist theory.

The first stage was the thematic analysis. After transcription, the recorded data were coded using an inductive approach and themes related to post-humanist theory (i.e. anthropocentric resistance, digital subjectivity) were created. The second stage was conceptual network analysis (Word Tree). The Word Tree technique was used to see the context in which participants used the concept of citizenship and in which directions this concept branched out mentally. This visualization method was preferred with the purpose of embodying the hidden relations in the data and to improve the objectivity of the analysis (Cook et al., 2025). In short,

computer-assisted qualitative analysis methods were used in this study to analyze the citizenship perceptions of the educators of the future from a post-humanist perspective, and Word Tree technique was employed to visualize conceptual networks and to increase the objectivity of the data.

The role of the researcher and ethical considerations

Due to the nature of qualitative research, the researcher has played an active role in the process of collecting and interpreting data. However, the researcher used bracketing technique in analysis process to ensure that his/her biases in a philosophically dense topic such as post-humanism would not overshadow the data. In other words, the researcher set aside his/her theoretical expectations and made an effort to focus on the participants' original statements.

Validity and reliability

In order to improve the reliability of the study, obtained findings were re-shared with the 46 pre-service teachers who took part in the research and participants' approval was sought. In addition, random interview texts were analyzed by a different field-expert researcher to ensure consistency in the coding process and inter-coder consensus was calculated. Usage of visual tools such as Word Tree in analysis stage allowed for the evidence-based and transparent presentation of the findings.

FINDINGS

Data obtained from the interviews conducted with 46 social studies pre-service teachers display that the concept of citizenship is structured in the minds of the participants in the form of a multi-layered and dynamic network instead of a unidimensional structure. MAXQDA analysis conducted on the statements of the users clearly showed that citizenship as a concept has gone beyond its traditional borders and evolved towards digital and post-humanist realms. Data obtained from the interviews was subjected to thematic analysis using MAXQDA software.

Table 1.*Themes, subcategories, and frequency distribution obtained from qualitative data analysis*

Main codes (Themes)	Sub-codes (Categories)	Frequency (f)	Number of participants (n)
Digital subjectivity	Data generation, Digital footprint, Social media identity	86	24
Expanded Framework	Ecosystem rights, Non-human stakeholders, Internet of Things	42	11
Algorithmic Agency	Artificial intelligence decisions, Algorithm ethics, Autonomous systems	31	7
Educational Transformation	Posthumanist pedagogy, Hybrid curriculum, Techno-ethics	14	4
TOTAL		173	46

Note. The Author.

The distribution of 173 codes does not represent the totality of participants' beliefs, but indicates the relative recurrence of certain meanings in their narratives. Therefore, the frequency of codes should be interpreted as evidence of thematic emphasis rather than as a direct measure of agreement or intensity. The predominance of the theme "digital subjectivity" suggests that pre-service teachers most frequently associated citizenship with data production, digital traces, online visibility, and participation in networked environments. This finding is educationally relevant because it indicates that future teachers already perceive citizenship as something shaped by digital practices, even though they may not yet have a fully developed pedagogical language to address this transformation in the classroom.

The second theme, post-humanist threshold and expanded boundaries (f 42) represent the gray area where the participants begin to break away from their traditional citizenship patterns (Gordon, 2026; Ferrari, 2026). These codes, which are repeated 42 times, show that nature rights and non-human stakeholders began to infiltrate the citizenship debate (Tan, 2025; Budic, 2025). Number of codes is lower than digital subjectivity, indicating that this topic is a

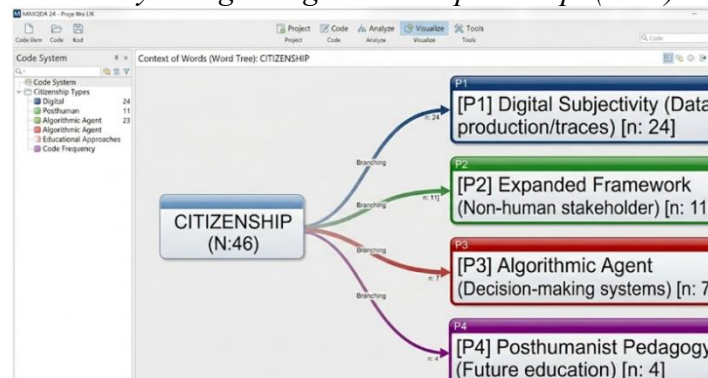
‘newly discovered territory’ which is strongly debated. The third theme is algorithmic agency was emphasized 31 times by the participants, this theme underlines that they see artificial intelligence as an agent beyond being a mere instrument (Cook et al., 2025; Suzuki, 2025). Despite the fact that the share of this theme in 173 codes remained at 18%, it is observed that these codes generally co-occur with the concepts of ethical concerns and responsibility, which shows that the participants include machines into the citizenship equation, but have reservations about the legal gaps that it could result (Gordon, 2026; Achella, 2026). The fourth theme obtained from the study is regarding educational pedagogy. The lowest code density is found here (f 14), which is the most honest result of the research. Pre-service teachers define the new world perfectly (f 86) and have ethical concerns (f 31); however, they have not yet formulated enough how they are going to convey this situation to the classroom (Frieze & Unterperntinger, 2026; Haq & Yasin, 2025). This low figure displays that the curriculum should be updated with a post-humanist pedagogy, which is included in the recommendations section of the article.

Findings obtained from Word Tree analyses

Word Tree analysis was conducted to display the semantic connections between keywords in the interview texts and their usage frequencies. This analysis demonstrates in a concrete way the four basic themes (P1, P2, P3 and P4) that stand out in the citizenship interpretations of pre-service teachers and their relative weights in the data-set. Figure 1 presents the hierarchical structure and conceptual branching that emerged at the end of the analysis process:

Figure 1.

MAXQDA 24 Word Tree Analysis regarding Citizenship Concept (N 46)



Note. The Author.

The conceptual branching in Figure 1 displays that pre-service teachers are positioned at a mental threshold when defining the concept of citizenship. When the data of 46 participants

are examined, this conceptual network expanded to four different directions, each representing the unique themes that reflect the sense-making patterns of the participants for citizenship. The most intense focal point is the digital subjectivity theme (n=24). These pre-service teachers do not view citizenship only as “casting a vote on the election day”; rather, they define it as a concept shaped by the data they produce and their presence on digital platforms (Lin, 2026; Liu et al., 2025; Kumar et al., 2024). The second branch is the questioning of anthropocentric definition (n=11); this group tends to see nature, ecosystems, and advanced technological structures as stakeholders in the social contract instead of viewing citizenship solely as a document specific to humans (Budic, 2025; Suzuki, 2025; Gordon, 2026).

The third theme is algorithmic agent, which is represented by the question “who is our interlocutor?” (n=7). In this context, participants locate artificial intelligence not only as an instrument but also as an agent which affects decision-making processes, and they question the hybrid links established between citizenship and technology by asking “If my decisions are guided by an algorithm, against whom will I defend my rights as a citizen?” (Cook et al., 2025; Achella, 2026; Ferrari, 2026). Finally, the most extreme and visionary branch of the network is the theme directed towards post-humanist pedagogy (n=4). In this theme, participants argue that social studies curriculum should go beyond the “how does e-government work?” level and recommend a post-humanist pedagogy which debates creating an ethical bond with artificial intelligence and post-human beings (Frieze & Unterpertinger, 2026; Haq & Yasin, 2025; Tan, 2025). These findings display that pre-service teachers reinterpret the concept of citizenship based on a traditional anthropocentric framework as well as from digital and post-humanist perspectives (Suzuki, 2025; Budić, 2025; Kumar et al., 2024).

Findings regarding the interviews with pre-service teachers

In-depth interviews held with pre-service teachers in the research clearly demonstrates that the concept of citizenship began to go beyond its previous, familiar boundaries. The findings reached based on the narratives of the participants are as follows: The pre-service teachers gave the following responses to the question “How do pre-service teachers make sense of the citizenship concept in the context of digital era?”

“For me, the concept of citizenship is not only carrying an identity card anymore; it’s about the traces I leave on digital platforms, my interaction with algorithms, and how ‘visible’ I am in this network.” (P32).

The statements of Participant 32 reveal that the concept of citizenship has gone beyond its traditional definitions and reflect the novel dimensions introduced by the digital era. This participant does not see citizenship as limited by official identity and legal status anymore; instead, they define it as a multidimensional concept which includes presence on digital platforms, interactions with algorithms, and online visibility. This interpretation reinforces digital subjectivity perspective and displays that citizenship is shaped by the relations established by individuals with digital communities and data ecosystems beyond physical boundaries (Lin, 2026; Liu et al., 2025; Kumar et al., 2024). Therefore, the opinions of P32 offer essential evidence that citizenship has to be reinterpreted within a modern context and highlight the importance of digital citizenship.

“Traditional definition of citizenship is not sufficient in this era; now we are all ‘digital subjects’. Our rights and responsibilities are reshaped at every point where we produce data, not only in the physical world.” (P10).

The view offered by Participant 10 strongly emphasizes that the concept of citizenship has evolved in the digital world. This participant argues that traditional definitions of citizenship are limited to only the physical and legal dimensions, whereas every individual as a digital subject today is reshaping their rights and responsibilities through their online interactions. This viewpoint implies that citizenship has been enriched with new dimensions such as data production and visibility in digital networks (Achella, 2026; Suzuki, 2025). The comments made by P10 reveal the importance of developing an awareness for digital citizenship in the context of modern education and provides academic support to the necessity for pre-service teachers to consider the perspective of digital subjectivity when understanding citizenship.

“I experience citizenship as part of a global network society instead of remaining within the borders of nation-state. Although I am here physically, my citizenship practices have gained mobilization in the digital universe.” (P12).

According to the opinions of Participant 12, the concept of citizenship has transcended beyond nation-state centered views. The participant does not view citizenship merely as an identity limited by physical location and national borders; on the contrary, he/she defines it as based on the experience of being an active member of a global network society. This emphasis on the fact that despite being at a certain location physically, citizenship experiences take a flexible and constantly changing shape in the digital environment, clearly displays the multi-layered and dynamic structure of digital citizenship. This line of argument reinforces the importance of digital citizenship and post-humanist approaches in modern educational research

by demonstrating that pre-service teachers consider the context of digital subjectivity and global networks when interpreting citizenship (Budić, 2025; Gordon, 2026; Ferrari, 2026).

Do pre-service teachers continue to see citizenship as an anthropocentric construct, or do they evaluate it in an expanded framework which also includes non-human elements? The views of the participants are summarized below:

“In the past we were just talking about the rights of human beings, but now we are living in a world where artificial intelligence is guiding our decisions. For this reason, I feel that we should include non-human stakeholders in our definition of citizenship.” (P8).

This participant’s opinion is a strong reflection of the transformation in citizenship concept. The participant emphasizes that traditional definitions of citizenship focus only on human beings, whereas in today’s world where non-human agents such as artificial intelligence affect our decision-making processes, this approach is clearly inadequate. This perspective shows that citizenship is not only a relationship of rights and responsibilities between human beings, but that technology and other non-human elements should also be included in the social contract (Gordon, 2026; Budić, 2025; Ferrari, 2026). The statements of Participant 8 display that pre-service teachers adopt a post-humanist and extended viewpoint when redefining citizenship.

“Although the idea that 'citizenship equals human being' is still dominant in my mindset, in this age when technology is integrated with humanity, I see that the boundaries of this concept is extended and the anthropocentric structure is breaking.” (P11).

The opinions provided by Participant 11 clearly reveal the transition in the citizenship understanding of pre-service teachers. The participant argues that the equation ‘citizenship = human’ is still dominant in his/her mindset; however, he/she states that in today's world, where technology is increasingly intertwined with human life, it has been realized that the boundaries of the concept of citizenship are expanding and that the traditional anthropocentric approach is no longer sufficient (Suzuki, 2025; Tan, 2025). This viewpoint shows that citizenship is not restricted to the rights and responsibilities between humans; rather, technological agents and non-human elements should be included within the framework of this concept.

“Citizenship today is not only related to the responsibilities of people for each other; it has become a post-humanist field of interaction where technology, algorithms, and even ecosystem interplay.” (P26).

Participant 26 claims that the concept of citizenship has evidently moved beyond the conventional anthropocentric boundaries. This participant does not see citizenship as the mere

relationship of rights and responsibilities between people; instead, he/she defines it as a post-humanist area of interaction where technology, algorithms and ecosystem are included (Achella, 2026; Suzuki, 2025). This opinion of the participant shows that modern citizenship is intertwined with digital and ecological contexts in a multi-layered fashion and that pre-service teachers approach the conceptual framework not only from an anthropocentric perspective, but also from a broader and hybrid viewpoint.

“We used to think citizenship as unique for humans, but today algorithms are managing our lives more than ourselves. If a software makes a decision instead of me, we have to admit that it is also a ‘part’ of this system, which makes it a stakeholder.” (P44).

Participant 44 underlines that citizenship understanding is not a concept that only belongs to human beings anymore. This participant argues that our lives are increasingly guided by algorithms and suggests that these software programs, which influence our decisions, should also be seen as part of the citizenship system, that is, as a kind of stakeholder (Cook et al., 2025; Achella, 2026). This standpoint highlights the impact of technology on citizenship and shows that pre-service teachers adopt an extended perspective which takes non-human elements into consideration.

The opinions of pre-service teachers reveal that the citizenship approach has transcended the traditional anthropocentric framework. The participants do not view citizenship as limited to rights and responsibilities between humans anymore, and emphasize that non-human elements such as artificial intelligence, algorithms and ecosystem are also a part of this concept (P8, P26, P44). Some pre-service teachers still hold the belief that “citizenship = human”; yet they realize that these boundaries are expanded due to the constant integration of technology with life and that traditional approach is no longer sufficient (P11). In general, pre-service teachers interpret citizenship from a digital, ecological and post-humanist perspective and assess the concept within a wider, hybrid framework (Budić, 2025; Gordon, 2026; Ferrari, 2026; Suzuki, 2025; Tan, 2025).

The opinions of pre-service teachers regarding how the integration of artificial intelligence and algorithmic systems into decision-making processes affects their citizenship approaches are discussed below. The pre-service teachers gave the following responses to the question “How is the citizenship perception of pre-service teachers affected by the participation of artificial intelligence and algorithmic systems in decision-making processes?”.

“When an algorithm makes a decision on my behalf, or shapes the public sphere, I feel that I am losing control of my citizenship rights. This situation confronts me with the harsh reality of a world where humans are not the only agents anymore.” (P37).

Participant 37 underlined that citizenship is not a relationship of rights and responsibilities which is established only between human beings. The participant feels that when an algorithm decides on his/her behalf or affects the public sphere, he/she loses control on citizenship rights. This is an indication of a reality where not only humans, but technological actors are also effective in the World (Cook et al., 2025; Gordon, 2026).

“Lines of responsibility become blurred when artificial intelligence systems are integrated into decision-making mechanisms. Rather than being an individual act of will, citizenship looks like a ‘hybrid process of agents’ jointly produced by humans and software.” (P23).

Participant 23 clearly demonstrated the changes experienced in citizenship and responsibility approach. The participant claimed that with the inclusion of artificial intelligence systems to decision-making processes, responsibility no longer falls on a single person; instead, citizenship becomes a hybrid process co-produced by human beings and software (Achella, 2026; Suzuki, 2025). This viewpoint shows how technology transforms citizenship practices and that pre-service teachers adopt a wider perspective which takes non-human actors into consideration as well.

“Algorithmic systems are not just tools; they are now actors of social life. This situation changes my perception of citizenship, because now, when defending our rights, we also have to deal with a set of codes.” (P4)

Participant 4 emphasizes that algorithmic systems are no longer passive tools; instead, they are active agents of social life. The participant argues that this development has changed the perception of citizenship and that defending one’s rights now requires interacting not only with people, but also with codes and algorithms (Ferrari, 2026; Lin, 2026). This view reveals that pre-service teachers take into consideration technology as an active stakeholder when interpreting citizenship and that digital interaction has transformed the understanding of responsibilities and rights.

These findings display that the citizenship perception of pre-service teachers is not limited to the rights and responsibilities between people and that artificial intelligence and algorithmic systems are also actively integrated into the process. Participants highlight that the responsibilities and rights approach have gained a more hybrid and shared nature with the

inclusion of technological actors in decision-making mechanisms (Cook et al., 2025; Achella, 2026; Gordon, 2026). This situation proves that digital interactions can shape the citizenship experience and that pre-service teachers approach modern citizenship with a wider perspective including both human and non-human elements.

The opinions of participants as regards the question “How are pre-service teachers constructing the citizenship education of the future in line with post-humanist approaches?” are given below.

“In future’s citizenship education, we must teach students not only how to use e-government services, but also how to live with artificial intelligence in an ethical setting. Social studies curriculum must cover this philosophical transformation.” (P29).

This statement highlights that citizenship education must not be limited to teaching technical skills. Today, it is certainly important for students to be able to use digital tools such as e-government services; however, as technology rapidly changes, topics such as ethics, responsibility and social impacts that come to the agenda especially with artificial intelligence must also be covered by education (Frieze & Unterpertinger, 2026; Cook et al., 2025). From this perspective, it can be said that social studies courses should no longer be an instrument to only transfer knowledge: it is necessary to support students in being trained as individuals who are aware, inquisitive, and capable of making ethical decisions in the digital world. Such upgrading of the curriculum to cover this philosophical transformation will make contribution to students becoming more responsible and conscious citizens in the society of the future.

“Citizenship education must go beyond the rights on paper. We must build a post-humanist pedagogical model which is based on the balanced relationship of human beings and non-human beings.” (P2).

This statement implies that citizenship education should not be limited to teaching the rights and responsibilities written in books. People today are living nested with nature, animals and technology. For this reason, instead of an anthropocentric viewpoint, an approach should be developed which teaches how to set a balanced relationship with all living things and the environment (Tan, 2025; Suzuki, 2025). The post-humanist pedagogical model mentioned here is based on the view that human beings are not superior to nature and that they are a part of an entirety alongside nature, animals, and even technology. In other words, students should not only consider the question “what are my rights?”, but also “what are my responsibilities towards the nature, other living beings, and technology?”. In short, this view argues that citizenship education should be reorganized with a wider perspective and that students should be trained

as individuals with higher consciousness towards nature, other living things, and the world at large.

“An education that focuses solely on the human beings will not be sufficient for training the citizens of the future. We have to instill a sense of citizenship which sees technology as a subject, with high ethical and technological awareness.” (P37).

This expression underlines that today’s citizenship education needs to change. An education that focuses solely on human beings is not adequate any more as technology has become an indispensable part of our lives. For this reason, it is essential to raise students to be technologically conscious, ethically thinking, and responsible individuals (Achella, 2026; Ferrari, 2026). In short, citizenship education must aim to raise individuals who can understand technology and use it properly.

DISCUSSION AND CONCLUSION

The findings of this study demonstrate that social studies pre-service teachers do not view the concept of “citizenship” in an anthropocentric and fixed framework anymore. Majority of the 46 participants defined citizenship based on data production and digital traces, which shows that it is a fluid experience rather than a spatial sense of belonging. This situation, in turn, supports the view that digital citizenship is not only a technical skill but a phenomenon that shapes the existence of an individual. Some participants expand the concept of citizenship to cover non-human elements; viewing ecosystems and algorithms as stakeholders in the social contract indicates a post-humanist perspective. In addition, algorithmic agent awareness shows that citizenship is related not only to the legal bonds established with the state, but also ethical connections established with the machines.

From the perspective of teacher education, this is one of the most relevant findings of the study. The low frequency of codes related to post-humanist pedagogy suggests that participants are more able to recognize the transformation of citizenship than to translate this recognition into educational practice. This finding can be interpreted in light of Biesta’s (2011) distinction between qualification, socialization, and subjectification: teacher education may be preparing students to understand digital tools and social norms, but not necessarily to exercise pedagogical judgment in relation to emerging ethical and political dilemmas. It also resonates with Westheimer and Kahne’s (2004) argument that citizenship education should not be limited to producing personally responsible citizens, but should also foster participatory and justice-

oriented forms of citizenship. In this sense, the difficulty of imagining pedagogical practices around artificial intelligence, algorithmic mediation, and non-human stakeholders reveals a curricular gap in social studies teacher education.

In this context, the scarcity of post-humanist pedagogical approaches should not be interpreted as a secondary result, but as one of the most important educational findings of the study. The participants appear to recognize the sociotechnical transformation of citizenship more easily than they are able to imagine how this transformation should be addressed pedagogically. This suggests a gap in teacher education programs: discussions on digital citizenship may still be focused on safe, responsible, and efficient use of technologies, while less attention is given to algorithmic power, datafication, artificial intelligence ethics, ecological interdependence, and the political implications of platform-mediated participation. Therefore, the findings point to the need for citizenship education to move from a merely instrumental approach to digital technologies toward a critical, ethical, and curricular approach.

In conclusion, the study suggests that pre-service social studies teachers are positioned in a transitional conceptual field. They do not completely abandon traditional citizenship, since rights, responsibilities, and belonging to a political community remain relevant. However, they increasingly associate citizenship with data production, online presence, algorithmic mediation, ecological responsibility, and human–technology relations. This indicates that citizenship education in the digital age cannot be limited to the transmission of legal concepts or to the technical use of digital tools. It should also include critical reflection on how digital infrastructures shape participation, visibility, rights, and responsibilities.

The study also shows that the main challenge for teacher education is pedagogical translation. Although participants recognize the importance of artificial intelligence and algorithms in contemporary society, fewer of them are able to formulate how these issues should be addressed in social studies education. For this reason, teacher education programs should create curricular spaces in which future teachers can discuss digital citizenship, algorithmic mediation, artificial intelligence ethics, ecological responsibility, and post-humanist critiques of anthropocentrism in relation to concrete classroom practices.

FINAL CONSIDERATIONS

Based on the findings, social studies teacher education programs should approach digital citizenship as a curricular and democratic issue, not merely as a matter of technical competence.

Following Biesta (2011), citizenship education should contribute not only to qualification, but also to students' capacity for judgment, democratic participation, and ethical responsibility. Following Westheimer and Kahne (2004), it should also move beyond the formation of merely responsible technology users and include participatory and justice-oriented approaches to digital society. Therefore, teacher education should include case studies, ethical dilemmas, classroom simulations, and curriculum analysis involving algorithmic recommendation systems, artificial intelligence in education, automated public services, digital identity, misinformation, data privacy, and platform governance.

In practical terms, teacher education programs may include case studies, ethical dilemmas, curriculum analysis, and classroom simulations involving algorithmic recommendation systems, automated public services, artificial intelligence in education, digital identity, and online participation. Such activities can help pre-service teachers transform abstract debates on citizenship, technology, and post-humanism into pedagogical practices appropriate for social studies education.

Finally, citizenship education should preserve its commitment to human dignity, democratic responsibility, and social justice while also preparing students to understand the non-neutral role of technologies in contemporary life. A post-humanist contribution to citizenship education, therefore, should not mean replacing the human subject with machines, but critically examining how human agency, rights, and responsibilities are reshaped in relation to digital systems, ecological interdependence, and sociotechnical networks.

REFERENCES

- Achella, S. (2026). Networked humanity: An enactivist paradigm for aligning humans, nonhumans, and machines. *Topoi*, 1–11.
- Banks, J. A. (Ed.). (2004). *Diversity and citizenship education: Global perspectives*. Jossey-Bass.
- Biesta, G. (2011). *Learning democracy in school and society: Education, lifelong learning, and the politics of citizenship*. Sense Publishers.
- Braidotti, R. (2013). *The posthuman*. Polity Press.
- Budić, M. (2025). Beyond anthropocentrism? AI, moral responsibility, and the shifting boundaries of the moral community. In *International Scientific Conference: Social Aspects of the Application of Artificial Intelligence and Transhumanism* (pp. 62–63). Institute of Social Sciences and Research and Development Institute for Artificial Intelligence of Serbia.
- Cook, D. A., Ginsburg, S., Sawatsky, A. P., Kuper, A., & D'Angelo, J. D. (2025). Artificial intelligence to support qualitative data analysis: Promises, approaches, pitfalls. *Academic Medicine*, 100(10), 1134–1149. <https://doi.org/10.1097/ACM.00000000000006134>
- Falcke, S., & Peters, F. (2025). Rescaling citizenship: Revisiting debates on territory, rights, and membership. *Journal of Ethnic and Migration Studies*, 51(20), 5213–5240. <https://doi.org/10.1080/1369183X.2025.2550109>
- Ferrari, R. (2026). The postsocialist posthuman: Gregor Samsa's Chinese futures in Li Jianjun's *The Metamorphosis*. *Theatre Survey*, 67(1), 59–88. <https://doi.org/10.1353/tsu.2026.a980367>
- Friese, S., & Unterperntinger, E. (2026). CAQDAS and the grounded theory method. In G. Hadley & A. Bryant (Eds.), *Grounded theory in action* (pp. 23–35). Edward Elgar Publishing. <https://doi.org/10.4337/9781035321919.00008>
- Gordon, J. S. (2026). *The robot rights manifesto*. Palgrave Macmillan.
- Haq, M., & Yasin, N. (2025). Qualitative, quantitative, and mixed methodology paradigms. *Journal of Practical Studies in Education*, 6(6), 1–15. <https://doi.org/10.46809/jpse.v6i6.144>
- Haraway, D. J. (1991). *Simians, cyborgs, and women: The reinvention of nature*. Routledge.
- Hayles, N. K. (1999). *How we became posthuman: Virtual bodies in cybernetics, literature, and informatics*. University of Chicago Press.
- Kumar, S., Verma, A. K., & Mirza, A. (2024). *Digital transformation, artificial intelligence and society: Opportunities and challenges*. Springer.

- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press. <https://doi.org/10.1093/oso/9780199256044.001.0001>
- Lin, J. C. (2026). Negotiating global citizenship and nationalism: Shifting paradigms in Hong Kong's global citizenship education. *European Journal of Education*, 61(2), e70553. <https://doi.org/10.1111/ejed.70553>
- Liu, J., Shadiev, R., & Cao, M. (2025). Effects of digital citizenship educational game on teenagers' learning achievement, motivation, cognitive load, and behavioral patterns. *Education and Information Technologies*, 30(11), 15817–15870. <https://doi.org/10.1007/s10639-025-13399-7>
- Osler, A., & Starkey, H. (2005). *Changing citizenship: Democracy and inclusion in education*. Open University Press.
- Schulz, W., Ainley, J., Fraillon, J., Losito, B., Agrusti, G., Damiani, V., & Friedman, T. (2025). *Education for citizenship in times of global challenge: IEA International Civic and Citizenship Education Study 2022 international report*. Springer.
- Shibuya, K. (2020). *Digital transformation of identity in the age of artificial intelligence*. Springer.
- Suzuki, S. (2025). Human transformation and generative universality: Rethinking citizenship in the posthuman age. *Paragrana*, 34(2), 281–291.
- Tan, K. H. (2025). *Reconceptualizing moral agency and stakeholder rights in socio-economic systems: A framework for including non-human entities while preserving human dignity and democratic accountability*. PhilPapers. <https://zenodo.org/records/17667742>
- Westheimer, J., & Kahne, J. (2004). What kind of citizen? The politics of educating for democracy. *American Educational Research Journal*, 41(2), 237–269. <https://doi.org/10.3102/00028312041002237>

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