

Chapter 10


Digital Citizenship in Primary Education: Project–Based Learning for Developing 21st Century Skills

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ABSTRACT

This action research investigates the impact of project-based learning (PBL) on the development of digital citizenship and 21st-century skills among 8–9-year-old Greek primary students. Grounded in the DigComp 2.1 framework and the 4Cs (collaboration, communication, critical thinking, and creativity), the study explored how ICT lessons could foster responsible, engaged, and digitally literate learners. Pre- and post-intervention questionnaires, the researcher’s diary, and classroom observation were used. Findings indicate a significant improvement in students’ awareness of digital safety, respectful online behavior, and ethical use of technology. Group activities such as poster creation and digital storytelling enhanced collaboration and creativity, while role-based teamwork improved critical thinking, communication, and social skills. Gender disparities observed prior to the intervention were reduced by

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the end. The findings support the integration of inclusive, experiential, and reflective digital education practices in primary curricula. Supplementary materials (charts and student-produced content) are included to illustrate the outcomes.

1. INTRODUCTION

Education today is being reshaped by the accelerating pace of digital transformation, prompting educators to rethink not only how students learn but also what it means to be an engaged, ethical, and empowered participant in the digital world. As artificial intelligence, algorithmic personalization, and hybrid learning environments become increasingly embedded in daily life, students must be equipped with simply normative knowledge. They need to develop transversal competencies—such as critical thinking, collaboration, and responsible digital engagement—that enable them to adapt, participate, and thrive in complex sociotechnical systems (UNESCO, 2023; European Commission, 2022a). The emphasis has thus shifted from memorizing content to cultivating digital citizenship, civic agency, and 21st-century skills as essential learning outcomes in primary education (Vuorikari et al., 2022). Today’s learners are expected not only to acquire knowledge, but also to develop a diverse set of cognitive, socioemotional, and digital competencies that enable them to navigate, contribute to, and critically evaluate the digital environments they inhabit (European Commission, 2019), something that has been intensified by the impact of the Covid-19 pandemic (Pliogou et al., 2023).

In this context, Digital Citizenship (DC) has emerged as a key educational priority. Defined as the ability to participate safely, responsibly, and ethically in digital environments, DC extends beyond technical skills to encompass critical thinking, empathy, online behavior, and an understanding of digital rights and responsibilities (Ribble, 2011). The concept is closely linked to the broader academic and popular discourse around media literacy, data protection, cyberbullying prevention, and the ethical use of technology (Choi, 2016). As digital interactions increasingly mediate students’ relationships, identities, and learning experiences, schools have an essential role to play in guiding children toward becoming informed, engaged, and ethical digital citizens (Livingstone et al., 2017).

Concurrently, the need to develop 21st-century skills—including critical thinking, collaboration, creativity, communication, and digital literacy—has been strongly emphasized by various international organizations. The Organization for Economic Co-operation and Development (OECD) underscores these competencies as essential for learners to navigate uncertainty and contribute meaningfully to society in the digital age (OECD, 2022). Similarly, the European Commission has placed 21st-century skills at the core of its Digital Education Action Plan and the European

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