

Digital Citizenship Inequality in Resource-Constrained Educational Systems: Evidence from Primary Schools in Thailand

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Research Overview:

Digital inequality remains a major global issue in education, especially in resource-constrained contexts. This study examines how differences in school resources shape digital citizenship among primary students. It provides empirical evidence and proposes a framework to explain how institutional conditions influence students' development of digital competencies.

Purpose of Study:

This study aims to examine the level of digital citizenship among upper primary school students and to explore how school size, as an indicator of resource distribution, relates to differences in digital citizenship outcomes. In addition, it seeks to clarify how structural conditions shape students' digital development.

Research Methods:

The sample consisted of 370 students in Grades 4–6, selected through stratified random sampling from schools of different sizes to ensure proportional representation across varying institutional contexts. School size was used as a key stratification variable, reflecting differences in resource availability and learning environments. Data were collected using a validated questionnaire based on Ribble's digital citizenship framework, which encompasses multiple dimensions of responsible and effective technology use. The instrument demonstrated high internal consistency ($\alpha = .996$), indicating strong reliability for measuring students' digital citizenship. Prior to analysis, the data were screened for completeness and distributional assumptions. Given that the data did not fully meet parametric assumptions, non-parametric statistical techniques were employed. Descriptive statistics were used to examine overall levels of digital citizenship, while the Kruskal–Wallis H test was conducted to identify differences across school sizes. Where significant differences were found,

Bonferroni-adjusted pairwise comparisons were performed to control for Type I error and to determine the direction of differences among groups.

Results and Discussion:

The findings indicate that students' overall digital citizenship is at a moderate level, suggesting that while students demonstrate basic competencies in digital contexts, there remains substantial room for further development. More importantly, the results reveal clear and statistically significant disparities across school sizes. Students in larger schools consistently demonstrate higher levels of digital citizenship compared to their counterparts in medium-sized and small schools. This pattern reflects not only differences in access to digital tools but also broader variations in the quality of digital learning environments.

These disparities extend beyond simple issues of access and point to underlying structural differences in digital infrastructure, instructional support, and opportunities for meaningful technology integration in learning. Schools with greater resources are more likely to provide stable internet access, adequate digital devices, and instructional practices that incorporate technology in purposeful ways. In contrast, resource-constrained schools often face limitations that restrict students' exposure to and engagement with digital learning, thereby affecting the development of digital competencies.

The results suggest that school-level resource conditions play a critical role in shaping students' digital development. In particular, differences in resource availability appear to function as a mediating mechanism linking broader structural conditions to student outcomes. This implies that digital citizenship is not solely determined by individual ability or motivation but is significantly influenced by the learning environment and institutional context in which students are situated. In this sense, disparities in digital citizenship can be understood as a reflection of systemic inequalities within the education system.

Building on these findings, the study proposes the Digital Citizenship Inequality Framework (DCIF), which provides a conceptual explanation of how structural differences in school resources influence students' digital citizenship. The framework emphasizes the role of institutional conditions as a key factor shaping learning outcomes, shifting the focus away from purely individual-level explanations. By highlighting the interaction between structural constraints and learning opportunities, the DCIF offers a more comprehensive understanding of how digital competencies are developed in real-world educational settings.

Furthermore, the findings contribute to the broader global discussion on educational equity by demonstrating how digital inequality continues to affect students in resource-constrained systems. These results are particularly relevant in developing and transitional

contexts, where disparities in resource allocation remain a persistent challenge. The study underscores the need for targeted policy interventions that address structural inequalities, including investments in digital infrastructure, support for teacher capacity development, and the creation of equitable access to technology-rich learning environments.

In practical terms, the findings suggest that improving digital citizenship requires a systemic approach that goes beyond individual skill development. Educational stakeholders should consider both resource distribution and instructional quality when designing interventions aimed at enhancing digital competencies. The insights from this study may be transferable to other contexts facing similar challenges, offering guidance for policymakers and educators seeking to reduce digital divides and promote inclusive digital citizenship education in an increasingly digitalized world.

Keywords: digital citizenship, digital inequality, educational equity, primary education, resource-constrained systems