

ICT Competency and Performance of Junior High School Students: A Thematic Review of Literature

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Abstract: This review synthesizes existing literature on Information and Communication Technology (ICT) competency and performance among junior high school students, with emphasis on foundational skills, communication, ethics, productivity tools, and contextual factors such as socioeconomic status, internet connectivity, and device access. Drawing from international and local studies, the review highlights ICT as a multidimensional construct essential for academic success and future employability. Findings reveal that ICT competency is shaped by both individual skills and external conditions, while performance-based assessments provide authentic measures of technological proficiency. Despite significant progress in integrating ICT into education, gaps remain in addressing socioeconomic disparities, ensuring equitable access to devices and connectivity, and embedding ethical digital citizenship into curricula. This review underscores the importance of holistic ICT education and recommends future research on intervention strategies, longitudinal impacts, and culturally responsive ICT frameworks.

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I. INTRODUCTION

➤ Background Context

ICT has become a cornerstone of modern education, enabling learners to access information, collaborate digitally, and develop skills necessary for participation in a knowledge-based society. UNESCO (2018, 2023) emphasized ICT competency as a critical enabler of educational quality and equity. For junior high school students, ICT education is particularly crucial as it lays the foundation for higher-level digital literacy and professional readiness.

➤ Scope and Purpose

This review focuses on literature addressing ICT competency and performance among secondary-level learners. It covers foundational ICT skills, communication, ethics, productivity tools, and contextual influences such as socioeconomic status, internet connectivity, and device access. Studies outside the scope of junior high school or those unrelated to ICT performance are excluded.

➤ Thesis Statement / Objective

The review aims to critically analyze existing research on ICT competency and performance, identify thematic patterns, highlight gaps, and propose directions for future inquiry relevant to junior high school education.

II. METHODOLOGY

➤ Search Strategy

Databases such as ScienceDirect, ERIC, and Google Scholar were consulted using keywords: *ICT competency*, *digital literacy*, *junior high school students*, *ICT performance assessment*, *computer ethics*, and *educational technology*.

➤ Selection Process

Studies were included if they:

- Focused on ICT competency or performance among secondary school students.
- Addressed contextual factors (e.g., socioeconomic status, internet access, device type).
- Were published between 2010–2025.

Exclusion criteria: studies focusing solely on higher education, non-ICT subjects, or non-empirical reports.

➤ ICT Fundamentals and Digital Literacy

Reichert et al. (2020) highlight that ICT literacy extends beyond basic computer operations, encompassing information management and problem-solving. Hatlevik et al. (2015) found that students with strong ICT fundamentals achieved higher academic outcomes, underscoring the importance of embedding ICT basics in curricula.

➤ *Information and Communication Skills*

Alkan and Meinck (2016) reported that frequent use of technology for communication enhances computer and information literacy. Effective information management skills are crucial for navigating online learning environments and fostering collaboration.

➤ *Computer Ethics and Security*

UNESCO (2018) highlighted the need for digital citizenship education to address privacy, intellectual property, and cybersecurity. Ethical awareness ensures responsible participation in digital communities, a dimension often overlooked in ICT instruction.

➤ *Productivity Tools: Word Processing, Spreadsheets, and Multimedia*

Fernando and Bual (2025) and Bongalos & Accad (2025) demonstrated that structured instruction in productivity applications significantly improves technological skills and academic performance. These competencies prepare students for both higher education and workplace demand.

➤ *Contextual Factors Influencing ICT Competency*

- **Device Access:** Tondeur et al. (2011) found that laptops and desktops provide richer ICT learning opportunities compared to smartphones.
- **Internet Connectivity:** Stable internet access enhances digital literacy, while poor connectivity limits skill development.
- **Economic Status:** Scherer & Siddiq (2019) revealed that students from higher socioeconomic backgrounds exhibit stronger ICT competencies due to better access to resources.

➤ *Performance-Based Assessment*

De Witte & Rogge (2015) argued that demonstration-based assessments provide authentic measures of ICT proficiency. Practical tasks such as document creation and multimedia presentations better capture students' real-world technological abilities compared to written exams.

III. CONCLUSION AND RECOMMENDATIONS

➤ *Summary of Main Findings*

ICT competency is multidimensional, encompassing foundational skills, communication, ethics, and productivity applications. It is shaped by contextual factors such as device access, internet connectivity, and socioeconomic status. Performance-based assessments are more reliable indicators of ICT proficiency than traditional exams.

➤ *Significance*

This synthesis highlights the importance of holistic ICT education that integrates technical skills, ethical awareness, and equitable access. It contributes to the discourse on preparing junior high school students for digital citizenship and future employability.

➤ *Future Research*

Future studies should:

- Explore intervention strategies to bridge socioeconomic gaps in ICT competency.
- Conduct longitudinal research on the sustained impact of ICT education.
- Develop culturally responsive ICT frameworks tailored to diverse educational contexts.

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