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What Have We Learned about Students' ICT Use? A Systematic Review of Its Relationships with Learning Outcomes

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Abstract

Evidence on whether students' ICT use supports learning remains inconsistent. This systematic review examines how ICT use among pre-primary, primary, and secondary students relates to academic and affective outcomes, considering the type, purpose, intensity, and context of ICT use. PRISMA-guided searches in Scopus, Web of Science, ERIC, and APA PsycINFO identified 11,308 records; 7,311 remained after duplicate removal, and 91 studies were eligible. Preliminary findings are based on 50 studies coded to date. Internet/online use was examined in 36 studies, computers/laptops in 27, and mobile devices/tablets in 13. ICT use involved schoolwork ($n = 35$) and entertainment or media consumption ($n = 34$); categories overlapped. Academic achievement was examined in 48 studies; six included affective outcomes. Moderate, limited, or balanced use was positively related to academic outcomes in 16 studies and to affective outcomes in one, whereas higher or excessive use was negatively related to academic outcomes in 30 studies and affective outcomes in two. Subject- or curriculum-aligned use showed positive relationships to academic outcomes in 10 studies; while general school-based use showed negative relationships in 18, indicating that frequency of use at school was not equivalent to pedagogically aligned use. Gaming, leisure, or entertainment use was positively related to academic outcomes in 17 studies and affective outcomes in one, but negatively related to academic outcomes in 22 studies and affective outcomes in four. Findings appear to depend less on frequency alone than on what students do with technology, how intensively and where they use it, and how it is pedagogically integrated.

Keywords: Academic Achievement; Affective Outcomes; Digital Activities; Educational Technology; School-Age Populations