Technological Literacy in the AI Era

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Abstract:

This study examines the transformation of technological literacy in the context of the AI era and proposes a school-based educational framework for its development. Through a comprehensive literature review, it analyzes the evolving definition of technological literacy—from practical tool use to a broader competency encompassing algorithmic thinking, ethical reasoning, and critical understanding of AI systems. Drawing on frameworks such as ITEEA's Standards for Technological Literacy and the DigComp model, the study identifies current barriers including infrastructure gaps, insufficient teacher training, and fragmented curricula.

Key findings highlight that technological literacy must be scaffolded across educational levels: (1) elementary education should focus on basic digital fluency and ethical awareness; (2) middle school should introduce structured AI concepts and data reasoning; (3) high school should engage students in interdisciplinary, project-based learning that critically examines AI's societal implications. The study concludes that integrating AI literacy into school curricula is both essential and achievable, requiring updates in policy, curriculum design, and educator training.

This research contributes a developmental roadmap for cultivating technologically literate, ethically grounded citizens prepared to thrive in an AI-driven society.