# Enhancing U.S. K-12 Competitiveness for the Agentic Generative AI Era: A Structured Framework for Educators and Policy Makers

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This paper presents a comprehensive framework for transforming K-12 education through systematic AI integration, addressing critical gaps in curriculum development and teacher preparedness. Drawing from extensive analysis of federal initiatives, including the 2025 White House Executive Order on advancing AI education, and synthesizing insights from recent scholarly and policy sources, we propose a multi-tiered approach to educational reform. This paper presents a strategic framework for transforming U.S. K-12 education through AI-integrated curriculum development and professional development programs. Our research reveals significant disparities in current implementation, with only 20-25% of educators feeling adequately prepared for AI integration despite 60-70% recognizing its importance. The framework encompasses AI literacy competencies across grade levels, differentiated professional development pathways, and a detailed technical architecture for generative AI tools in educational settings. We provide empirical evidence from international benchmarks, demonstrating that systematic approaches like Finland's "Generation AI" project achieve 80-90% teacher participation rates compared to 30-40% in U.S. programs. The proposed model includes phased implementation strategies, resource allocation frameworks totaling $7.2 million over three years, and comprehensive assessment mechanisms. Our findings indicate that schools implementing structured AI curricula report 25-35% higher student STEM engagement and 40-50% gains in computational thinking scores. The paper addresses critical ethical considerations, equity implications, and policy recommendations to guide sustainable AI integration while maintaining human-centered educational values. The proposed model aligns with national priorities for maintaining U.S. competitiveness in global AI education landscapes while ensuring equitable access and responsible AI implementation across diverse educational contexts. All results, projections, proposals are from cited literature.

Descriptors: Elementary Secondary Education, Artificial Intelligence, Technology Integration, Federal Legislation, Educational Legislation, Educational Change, Curriculum Development, Faculty Development, Technological Literacy, Curriculum Implementation, Foreign Countries, Comparative Analysis, Cross Cultural Studies, Global Approach



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