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Submitter Information

Organization: Center on Reinventing Public Education

General Comment

Please see the attached comment from the Center on Reinventing Public Education

Attachments

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Response to the Federal Register’s 2025 National AI Research and Development (R&D) Strategic Plan

Center on Reinventing Public Education

May 2025

In the *2025 AI R&D Strategic Plan Request for Information*, the National Science Foundation invites perspectives on research directions that will sustain American leadership in artificial intelligence. The Center on Reinventing Public Education (CRPE), a research organization that studies systems and policies in public K-12 education, argues that advancing AI within education systems is not only an urgent research frontier but also the foundation for cultivating the talent pipeline that will power tomorrow’s breakthroughs and global leadership.

CRPE researches how public education systems attempt—and often fail—to enact durable change and innovation in schools. We apply this lens to understanding AI adoption in education. We lead national studies of the state AI policy landscape, districts at the forefront of AI implementation (“early adopters”), and higher education efforts to advance AI. We also convene thought leaders in policy, research, school systems, and edtech to develop a national research agenda for AI and the future of education.

While educational AI investments and research typically focus on supply-side questions (quality edtech tools, etc.), CRPE recommends that a national AI R&D agenda also focus on demand: the conditions necessary to ensure AI adoption is systemic, effective, and swiftly integrated into our public schools, ensuring a strong workforce equipped to lead in a future that AI will inevitably shape.

State of AI in Schools: Current AI Conditions in Public Education to Inform a National R&D Agenda

A national R&D agenda must address entrenched challenges and opportunities to realize the full potential of AI-enabled transformation and to scale research impact. Our [national AI landscape research](#) reveals five critical insights:

- **Widespread gaps in literacy and training require attention.** Only [half of the districts](#) surveyed reported offering professional development in AI this fall. There’s also a notable economic gap: 67% of low-poverty districts reported providing training for teachers on AI use, compared to 39% of high-poverty

districts. Meanwhile, most colleges of education [lack dedicated AI coursework](#) or pedagogical frameworks, limiting new teachers' readiness to integrate AI into instruction.

- **Early progress is leadership-driven.** [Superintendents and boards who champion AI](#) are the farthest along in AI adoption—they connect it to their strategic vision and create a culture of innovation and permission to experiment. School leaders who support piloting AI-driven strategies are also farthest along in teacher buy-in and pilot development..
- **Policy and partnership are critical enablers.** [Ambiguities in student data privacy laws](#) often stall tool adoption and research partnerships. At the same time, well-connected intermediaries—regional service agencies, subject-matter associations, and nonprofit partners—have proven invaluable for coordinating local implementation and facilitating iterative evaluation. Scale and widespread uptake can occur more quickly without bureaucratic barriers and rigidities.
- **Districts lack data integration resources.** It's not a coincidence that early adopters boast integrated tech departments that connect vision to school implementation. Data incompatibility across legacy systems [prevents AI strategies from being fully realized](#). School systems need access to seamless, longitudinal analytics and capacities to analyze data and engage in real-time experimentation without hindrance.
- **Rigid, incoherent, and outdated learning models limit the transformational impact of AI, even for systems at the forefront of early adoption.** AI tools layered onto broken delivery systems are still ineffective. AI can help enable a new future, but it requires a new vision of learning. Fixed schedules, seat time requirements, funding restraints, and many other decades-old challenges risk thwarting AI implementation progress if not addressed alongside an AI-facing research agenda.

Strategic Recommendations for NSF Investment

CRPE recommends that NSF focus on funding initiatives that balance AI tool development with systemic transformation for both research and knowledge dissemination:

Prioritize investments in rapid cycle evaluations and studies that:

- **Inform quality purchase and use decisions:** Assess student achievement, engagement, and non-academic outcomes of AI learning tools.
- **Understand context and implementation.** Build knowledge on implementation challenges and solutions, policy, and politics. Document where policy conditions are inhibiting large-scale uptake and quality.
- **Inform the goal of integration and coherence.** Assess how AI tools can work in concert with other tools and elements of effective learning delivery.
- **Invest in Policy and data standards research:** Prioritize studies to clarify procurement processes, modernize privacy frameworks, and create interoperable data architectures foundational to scalable AI deployments.

Invest in knowledge management and dissemination:

- **Open-source toolkits:** Develop blueprints and repositories of best practices, leveraging national networks for knowledge dissemination.
- **AI and education research consortium:** Convene researchers, practitioners, technology developers, and policymakers to co-design evaluation protocols, ethical guardrails, and longitudinal knowledge management.
Evidence-to-implementation pipelines: Translate pilot discoveries into practical implementation guides, policy briefs, and scale-up studies, with dedicated dissemination funding.
- **Innovation zones:** Support state- or district-level policy waivers that grant autonomy for rapid-cycle experimentation in curriculum, staffing, and accountability models.

By weaving together rigorous AI research and systemic education transformation, NSF can expedite advances in both AI tools and AI conditions, while building a robust, high-capacity pipeline of future AI innovators.