May 29th, 2025

Stunning breakthroughs in generative artificial intelligence (AI) show the potential of what AI-enabled, research-based advancements in teaching and learning could do. The Alliance for Learning Innovation (ALI) sees great promise in AI to improve education, economic opportunity, and national security. To realize this opportunity and ensure the U.S. remains globally competitive, the nation needs a rigorous and modernized education R&D ecosystem that crosscuts federal agencies.

To realize the potential of AI to promote personalized learning, improve student achievement, and support human flourishing, AI-powered education should be:
● Intentionally designed with evidence-based principles underpinning human learning and motivation;
● Supported by universal design for learning and applicable accessibility laws;
● Developed in collaboration with state and district leaders, parents, educators and communities.

ALI welcomes the opportunity to shape the 2025 National AI R&D Strategic Plan. We believe the 2023 AI R&D Strategic Plan Update was missing an emphasis on two essential strategies that are directly linked to America's competitiveness: 1) K-12 education and 2) workforce pathways. We understand the Trump Administration is committed to utilizing AI to support human flourishing and empowering parents, states, and communities to improve student outcomes, especially in core academic areas like literacy, math, and science.

The Trump Administration's updated AI R&D Strategic Plan should include an emphasis on **empowering parents, states, and communities**. These stakeholders need to understand the best ways that AI can support student learning, across all subjects. States, districts, and educators also need to be better equipped to support using AI effectively across all career pathways and workforce preparation programs, which are essential to America's competitiveness.

<u>Proposed R&D Priorities:</u>
1. **High-potential, high-impact AI research relevant for domains critical to future U.S. competitiveness, including human-AI interaction**
    a. *What are the best ways to support Human-AI Teaming in K-12 education while supporting privacy, security, and responsible use?*
        i. Develop bodies of evidence about how to use AI to:
            1. Drive student learning outcomes in literacy, math, writing, science, and other core subjects like history and social studies.

2. Address K-12 educators' needs to make the profession more sustainable and to enable educators to focus on the human-centered components of education.
        3. Support state and local education leaders to make decisions using data and evidence consistent with what we know about learning and motivation science.
2. **AI research for accelerating fundamental scientific discovery and technological breakthroughs in areas where private-sector investment is insufficient**
    a. *What are the best ways to support Research Translation and Knowledge Mobilization to support AI literacy?*
        i. Gather and disseminate evidence (including context descriptions) of best practices of the use of AI in education to accelerate student mastery and motivation.
        ii. Utilize AI to synthesize research findings, compile meta-analyses, and summarize current bodies of work to surface insights that improve student learning.
    b. *What are the best AI tools to support differentiation and accelerate learning?*
        i. Invest in the development and evaluation of specific tools that:
            1. Help students learn through the use of AI and understand the limits and ethics around use of AI for different purposes.
            2. Use AI to personalize learning, differentiate instruction, and support students with disabilities.
3. **Research on AI systems and education supporting American workers and improving workforce productivity**
    a. *What are the best ways to ensure America's students are ready for high-paying skilled trades and careers, most of which will require AI literacy?*
        i. Develop bodies of evidence about how to use AI to:
            1. Support students to be prepared in AI and other emerging technologies so that they can be prepared for their future careers.
            2. Support pathways to AI and AI-enabled careers, including developing the next generation of AI innovators.
        ii. Invest in the development and evaluation of tools that:
            1. Build and align skills taxonomies and career trajectories to support upskilling and skill development.

Novel Partnerships at Every Stage of Research and Development:
1. **Invest in early-stage AI-powered tools in education**. Federal investments like the Institute of Education Science's (IES) Accelerate, Transform, and Scale (ATS) Initiative and Small Business Innovation Research Program (SBIR) enable the early-stage development of AI-powered educational technologies as they work toward commercialization. The ATS Initiative facilitates interdisciplinary R&D to develop and scale breakthrough solutions in areas where traditional support is insufficient SBIR accelerates the development of research-backed technologies created by small businesses. The private sector is profit-driven and typically focused

on short-term results, so the federal government's sustained support for ATS and SBIR is critical.

2. **Incentivize States, Districts, and Companies to Harness the Benefits of AI for Students.** The Administration could utilize agencies' challenge and prize authority to run AI in education challenges, similar to the [NAEP Automated Scoring Challenge](), part of the modernization effort to incorporate data science and machine learning into operational activities at IES, or the [CTE Challenges](), which are annual challenge series to prepare high school students for rewarding careers and increase access to career and technical education.

3. **Utilize public private partnerships to accelerate advances in AI.** The federal government's "stamp of approval" is critical to building trust among parents, educators, researchers, and leaders in a given research. By publicly partnering with philanthropies, nonprofit and industry, the federal government could lend its credibility and wide reach while outsourcing capacity-intensive efforts to better suited players.

4. **Support research-practice-design partnerships that are embedded in school districts.** The vast majority of technologies designed for schools are either not purchased by school districts, or not used as intended once they are purchased. Partnerships between researchers, designers, and practitioners are essential to identify the most supportive and helpful uses of AI in the classroom.

5. **Scale innovations that work.** One of IES's investments, [the LEARN Network]() is focused on adapting and preparing to scale existing, evidence-based products that have the potential to accelerate students' learning. This has the potential to include an AI priority.

6. **Refresh and Expand Existing Programs to Scale AI R&D in Education.** The Administration could refresh existing R&D programs to better address the needs of parents, states, and communities. For example:
   a. The [AI Institutes Program]() is a partnership with the National Science Foundation (NSF) and IES to focus on research and development of AI-driven innovations to radically improve human learning and education. The AI Institutes could be expanded to address additional challenges.
   b. IES' Accelerate Transform and Scale Initiative (ATS) grant programs, [Education Research and Development Centers: Using Generative Artificial Intelligence to Augment Teaching and Learning in Classrooms (U-GAIN)](), [From Seedlings to Scale (S2S) Program]() and [Transformative Research in the Education Sciences Grants Program]() all have the potential to include AI priorities.

7. **Establish a National Center for Advanced Development in Education (NCADE).** Modeled after the successful Defense Advanced Research Projects Agency (DARPA), this new Center would: (1) Fund informed-risk, high-reward research projects that have the potential to make transformative breakthroughs in AI, career-connected learning, and STEM literacy among other educational opportunities. (2) Facilitate interdisciplinary collaboration, bringing together experts from a diversity of sectors to collaboratively solve complex, real-world problems in education. (3) Use novel funding mechanisms to rapidly deploy dollars to innovators and researchers tackling complex, urgent issues in education.

The [Alliance for Learning Innovation (ALI)](#) brings together more than 90 education nonprofits, philanthropy, and the private sector to advocate for building a better research and development (R&D) infrastructure in education. ALI calls for for increased capacity of education R&D and supports the research and development of evidence-based innovation that centers students and practitioners, improves talent pathways, and expands the workforce needed in a globally competitive world. Please reach out to Sara Schapiro (saras@alicoalition.org), Executive Director of the Alliance for Learning Innovation if there is anything that ALI can do to support the development or implementation of the National AI R&D Strategic Plan.

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