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General Comment

See attached file(s) for NC DPI Office of Digital Teaching and Learning

Attachments

Office of Science and Technology AI Policy Recommendations

Transforming K-12 Education: A Strategic Priority

Subject: Office of Digital Teaching & Learning: North Carolina Department of Public Instruction Response to Request for Information on the 2025 Development of a National Artificial Intelligence Research and Development Strategic Plan (Docket ID No. NSF-2025-OGC-0001)

The Office of Digital Teaching and Learning at NCDPI supports a national R&D agenda that reframes K-12 education as a critical national artificial intelligence (AI) R&D priority to secure long-term leadership in an AI-driven economy. We submit this response to help inform the 2025 National Artificial Intelligence (AI) Research and Development Strategic Plan. We believe education must not be treated as a secondary application area, but as a foundational pillar—central to the plan's design, priorities, and implementation. The nation's ability to responsibly develop, deploy, and lead in an AI-driven future depends on an education system that cultivates AI literacy, ethical understanding, and adaptable skills for every learner. While the National AI R&D Strategic Plan: 2023 recognizes the importance of workforce preparation, it falls short of addressing the fundamental transformation needed in our educational system to prepare students for an AI-powered future.

This policy brief recommends elevating K-12 AI education to a strategic priority within the National AI R&D Strategic Plan through three interconnected shifts:

1. **Transforming Educational Infrastructure:** Moving beyond narrow "Trustworthy AI" to building comprehensive AI-enabled learning environments that fundamentally reimagine how education is delivered through comprehensive educator professional development in AI Literacy across all grades and curriculum areas;
2. **Ensuring Universal Access:** Providing every student with the necessary computing resources through per-pupil compute allowances and upgraded infrastructure to access AI tools regardless of socioeconomic status or zipcode; and
3. **Shifting Pedagogical Approaches:** Replacing industrial-era, product-oriented education with student-centric approaches like Project-Based Learning (PBL) and Learning Portfolios that develop creativity, critical thinking, and problem-solving skills.

These recommendations will strengthen the AI talent pipeline, ensure equal access to opportunities to participate and excel in the AI economy, and sustain U.S. leadership in AI R&D and innovation in an increasingly competitive global landscape.

The Case for Change: K-12 Education as an AI Strategic Priority

The 2023 National AI R&D Strategic Plan acknowledges the need for AI workforce development, but lacks a comprehensive focus on building an AI-literate populace or transforming K-12 education from outdated models built for the Industrial Age to forward-thinking models that were built for the Intelligence Age. Strategy 7 of the 2023 plan ("Better Understand the National AI R&D Workforce Needs") mentions exposing students at all levels to AI and data science, but fails to address the importance of infused AI literacy or the fundamental redesign needed in our educational approaches.

Our education models remain heavily dependent on high-stakes assessments that continue to prioritize industrial-era skills. Our whole educational and assessment system is mired in teaching and assessing these skills, which will not serve our students or our nation in the future. We need more than minor policy

adjustments; we need a whole paradigm shift that reinvisions education for a world in which intelligence is prolific and easily accessible. This will require vision and leadership from the national and state governments.

Global Competition

Global competitors are moving aggressively. China has announced integration of AI throughout primary and secondary curricula, aiming to cultivate innovation and problem-solving skills¹. Similarly, the UAE, South Korea, and other nations have prioritized and even mandated AI literacy education in K-12 education in recent months. Other nations are also leading in ensuring equal access to powerful AI tools. In late May 2025, the UAE announced that all its citizens will have access to ChatGPT Plus. In February 2025, Estonia provided ChatGPT to all its schools. The United States cannot maintain leadership if education is not prioritized in the national R&D plan. This is not only an education imperative but a national security and economic competitiveness issue, with global AI investment predicted to contribute \$15.7 trillion to the global economy in 2030².

The AI Education Gap

Recent data highlight the urgency of this shift. In the 2025 AI in Education Report by Carnegie, AI usage in classrooms surged, with 79% of K-12 teachers reporting using AI tools, with 70 percent using them 'always' or 'often'. This shows a significant trend upward from just 24% in 2023. Furthermore, 'Lack of Training' and support is the second biggest concern of educators, second only to 'Students Using AI for Cheating'³. Additionally, 75% of K-12 students reported using AI for schoolwork in 2024, up from 37% the previous year⁴.

This grassroots adoption is happening unevenly and often without guidance. While about half of school districts nationwide had provided some training on AI to teachers by fall 2024, low-income districts lag significantly.⁴ This threatens to widen existing educational disparities unless federal leadership addresses these gaps. In light of these facts, we respectfully make these strategic recommendations:

1. Elevate K-12 AI Education as a Distinct Strategic Priority

The National AI R&D Strategic Plan should explicitly designate K-12 education transformation as a core strategic priority, not merely a component of workforce development.

The 2025 National AI R&D Strategic Plan should acknowledge the following:

- **AI is accelerating rapidly:** The exponential pace of advancement requires education systems to be agile, forward-thinking, and equipped to adapt swiftly.
- **AI literacy is foundational:** Just as reading and digital fluency became essential, understanding AI's capabilities, limitations, and ethical implications is now a core component of civic, academic, and economic participation.
- **Education systems are the backbone of national AI readiness:** Schools, colleges, and universities are the most powerful infrastructure we have to prepare the next generation for an AI-integrated world. Every student, regardless of geography or background, must have access to the knowledge, tools, and opportunities needed to thrive and contribute meaningfully and ethically in this new era.

¹ Reuters, "China to Rely on Artificial Intelligence in Education Reform Bid," (Reuters, 17 Apr. 2025).

² PricewaterhouseCoopers, *Sizing the Prize: What's the Real Value of AI for Your Business and How Can You Capitalise?* (PwC, 2017).

³ Carnegie Learning, *The State of AI in Education 2025: Key Findings from a National Survey* (Carnegie Learning, 2025)

⁴ Cengage Group, "2024 in Review: AI & Education," (Cengage Group, 20 Dec. 2024).

- **Educator Involvement is essential:** It is not just beneficial but essential that educators—those who understand both the science of learning and the complexities of real classrooms—are at the forefront of AI integration. Their leadership is critical to ensuring that educational AI is built on a foundation of equity, effectiveness, and deep understanding of human development.

To ensure the National R&D Plan prioritizes education, OSTP should:

- Establish clear goals and research priorities specific to K-12 AI education
- Create a cross-agency initiative (involving NSF, Department of Education, and educators) specifically for AI-driven education R&D
- Develop mechanisms to ensure research findings directly inform K-12 curriculum and program development in an abbreviated timeframe, allowing American education institutions to remain current and relevant in an AI-driven world.

2. Build Transformative Learning Infrastructure

Federal R&D investments should support a comprehensive transformation of educational delivery systems:

- Fund development of AI-enabled curricula through competitive grant programs to ensure all students attain AI Literacy, grounded in student-centric, forward-thinking pedagogy
- Support the creation of AI tutoring systems and adaptive learning platforms that provide personalized learning experiences
- Establish partnerships with AI companies to provide AI Learning sandboxes where researchers and educators can pilot AI applications with real classrooms across the country
- Ensure all schools have funding to invest in high-quality, ongoing professional development to help educators build the skills they need to adapt to this transformative technology.

3. Ensure Universal Access to AI Tools and Computing Resources

To prevent widening digital divides, federal initiatives should guarantee computing access for all learners:

- Establish a modern analog to the E-Rate program specifically for AI infrastructure that ensures a per-pupil compute allowance for each K-12 learner to use approved AI learning apps and cloud services
- Provide matching grants for districts to upgrade classroom devices capable of running advanced AI programs
- Fund design challenges for developing low-bandwidth, resource-efficient educational AI models that can run on affordable hardware

4. Research and Promote Innovative Pedagogical Approaches

Federal research investments should specifically investigate and promote pedagogical models that move beyond passive information transfer to build the durable human skills students need in the Intelligence Age:

- Support research and educator training on Project-Based Learning (PBL) approaches that use hands-on, real-world AI projects to engage students and build durable skills while also ensuring curriculum mastery
- Investigate the use of Learning Portfolios as alternatives to traditional assessments, providing richer evidence of skill development and meta-analysis of the learning process

- Develop "process-based" metrics and analytics for evaluating skills like creativity, collaboration, critical thinking, and self-directed learning
- Pilot "21st century report cards" that include qualitative and quantitative data on durable skills (creativity, collaboration, communication, critical thinking, empathy, learner's mindset, personal responsibility, ethics) with a growth mindset.

5. Develop the AI Education Workforce

To execute this transformation, educators need substantial support:

- Fund teacher professional development not only on AI literacy, but also on transformative pedagogical approaches
- Support the creation of new career roles (such as AI coaches, PBL specialists) within K-12 education
- Support the establishment of state-level training centers, online courses, and certifications in AI pedagogy
- Support research on best practices for teachers to integrate AI while maintaining student inquiry and originality

6. Establish Policy and Guidance for Safe AI Deployment

While shifting focus toward transformative infrastructure, we must still embed trustworthiness within educational AI:

- Work with Congress to update student data privacy laws (e.g., FERPA) for AI tools
- Develop standards for data privacy protection and transparency in AI educational software
- Fund R&D on AI ethics, specifically in classroom contexts
- Create federal certifications for AI educational products to ensure they meet safety and bias criteria

Conclusion

The 2025 National AI R&D Strategic Plan must broaden its scope to prioritize the transformation of K-12 education and include AI Literacy and of K-12 education as a strategic priority. By implementing the shifts outlined the United States can cultivate a generation ready to thrive alongside intelligent machines. This is a long-term investment is on par with any in AI research as it ensures the talent pipeline and public readiness that secures U.S. leadership into the future. By adopting these recommendations, federal agencies will send a powerful message that the United States intends to develop the most advanced AI technologies and empower all its people to leverage those technologies creatively, ethically, safely, and confidently.

It is time to build an AI-ready education system that secures America at the forefront of global competitiveness and human flourishing in the decades ahead. We can no longer afford for education to be just an afterthought in our innovation strategy. Education needs to be the foundation.

Sources

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