

PUBLIC SUBMISSION

Received: May 29, 2025 Tracking No. nb9-hyfj-27ix Comments Due: May 28, 2025 Submission Type: Web
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Docket: NSF-2025-OGC-0001
NITRD_FRDOC_0001

Comment On: NSF-2025-OGC-0001-0001
Request for Information: Development of a 2025 National Artificial Intelligence Research and Development Strategic Plan

Document: NSF-2025-OGC-0001-DRAFT-0188
Comment on FR Doc # 2025-07332

Submitter Information

Organization: Online Learning Consortium

General Comment

See attached file(s)

Attachments

Comment on_ Request for Information (RFI) on the National Artificial Intelligence Research and Development Strategic Plan

Comment on: Request for Information (RFI) on the National Artificial Intelligence Research and Development Strategic Plan (NSF-2025-OGC-0001)

Submitted by: Jennifer Mathes, Ph.D., CEO, Online Learning Consortium

Date: May 29, 2025

I. Comment Summary

As CEO of the Online Learning Consortium, I appreciate the opportunity to provide input on the 2023 update to the *National Artificial Intelligence Research and Development Strategic Plan*. The Plan reflects a strong foundation for advancing U.S. leadership in AI and includes important strategies for safety, innovation, and economic competitiveness.

My comments focus on an area that warrants greater strategic emphasis in future updates: the application of AI in K–12 education, higher education, and workforce development. These domains are foundational to preparing the next generation of AI users, developers, and policymakers, yet remain underdeveloped in the current strategic framework. I encourage OSTP to expand the Plan to include more concrete R&D priorities and federal coordination mechanisms that support the responsible and effective integration of AI into learning systems and training infrastructures.

II. Recommendations for Strengthening the Strategic Plan

1. Establish a Federal Strategy for Advancing AI in Education Systems

AI is fundamentally reshaping how we teach, learn, assess, and credential knowledge. Yet, the current Plan approaches education largely through the lens of workforce preparation, without fully acknowledging the broader role that education systems play in fostering AI fluency and informed engagement from an early age. To address this gap, the Plan should elevate education as a distinct domain of innovation, recognizing its central role in shaping how individuals come to understand, evaluate, and interact with AI technologies throughout their lives.

Many educators remain uncertain—or even apprehensive—about the role AI may play in the future of teaching and learning. These concerns are understandable, particularly in the absence of clear guidance, training, and evidence-based examples of how AI can be used effectively and responsibly in educational settings. It is therefore essential that federal R&D efforts not only focus on student-facing tools but also equip educators and institutional leaders with the resources and support structures they need to make informed decisions about AI integration.

To support this broader vision, I recommend the inclusion of a dedicated strategy focused on AI across all levels of education, including:

- AI-enhanced instructional tools: Support for R&D into tools that use AI to adapt content to student learning needs, offer real-time feedback, support intelligent tutoring systems, and automate routine instructional tasks such as grading and feedback.
- AI for instructional design: Research into how AI can support instructional designers and faculty in optimizing course sequencing, identifying learning gaps, and recommending pedagogical approaches based on learner data.
- Decision-support systems for educators and leaders: R&D on AI dashboards and analytics that assist school administrators, faculty, and instructional coaches in making data-informed decisions to support learner progress and improve program design.
- Evaluation frameworks for educational AI: Development of consistent benchmarks, standards, and research protocols for measuring the effectiveness and reliability of AI systems used in learning contexts.

This strategy should also explore how to scale AI-powered solutions across digital and traditional learning environments while ensuring alignment with national, state, and local academic performance goals. It must support cross-sector collaboration between education institutions, AI developers, and public agencies to ensure tools are designed with instructional relevance and operational feasibility in mind.

2. Advance Applied AI R&D for K–12 Classrooms and Educator Readiness

In parallel with a national strategy for AI in education, the Plan should support targeted, applied R&D efforts that address the specific instructional and operational needs of K–12 educators. K–12 education is essential not only for long-term workforce development but also for cultivating the civic awareness and technological literacy necessary to navigate an AI-driven society. Despite this, the 2023 Plan lacks sufficient attention to how federal R&D can support the development and integration of AI-powered tools specifically designed for primary and secondary school settings.

Federal investment should prioritize practical applications that enable effective use of AI within classrooms and teaching workflows. Recommended areas of focus include:

- Development of AI-powered curriculum tools that support foundational understanding of computational thinking, pattern recognition, and logic in early education.
- Professional development programs to prepare educators at all levels to effectively and confidently use AI-enabled platforms and to evaluate the reliability and pedagogical soundness of AI applications in their classrooms.
- Safe classroom AI tools for content moderation, real-time learning diagnostics, and lesson plan optimization.
- R&D into classroom support platforms that leverage AI to help teachers manage dynamic, real-time instructional needs in blended or technology-rich learning environments.

These initiatives should emphasize usability, instructional alignment, and adaptability across different school settings. Research should be grounded in practical classroom applications and aligned with curriculum standards, assessment frameworks, and the operational realities of state and local education systems, with particular attention to the unique challenges faced by underserved and under-resourced communities.

3. Expand Research into AI-Supported Online and Hybrid Learning Models

AI has played a central role in scaling online and hybrid education models, especially since the COVID-19 pandemic. However, the Plan does not adequately address how AI can improve learning outcomes, retention, and engagement in digital environments. I recommend:

- Investments in adaptive learning platforms that dynamically adjust content difficulty and pacing based on learner performance patterns.
- Research into AI-powered formative assessment systems that identify learning gaps and provide targeted interventions.
- Improvement of learner engagement models using natural language processing and sentiment analysis to detect student disengagement or confusion during online sessions.
- Advancements in AI-driven instructional coaching tools for faculty and course developers to iterate and improve their course designs based on learner data.

This area of R&D should also include mechanisms for integrating AI tools into common LMS platforms and supporting their use in asynchronous, competency-based, and modular learning formats.

4. Enhance Federal Support for AI-Driven Workforce Development

Workforce development must address not only technical AI roles but also the broader ecosystem of workers who will interface with AI across all sectors. The Plan briefly references retraining but lacks sufficient detail on modern training models that leverage AI itself. Recommendations include:

- Support for AI-enabled job training platforms that tailor content to learner profiles and local labor market data, accelerating pathways into high-demand fields.
- Development of simulation-based learning environments using AI to

provide scenario-based skills training in sectors such as healthcare, manufacturing, and logistics.

- AI integration into apprenticeship and credentialing programs, including automated skills validation, digital portfolios, and smart assessments.
- R&D into scalable, AI-supported modular learning models that allow for incremental credentialing (e.g., microcredentials) and allow learners to upskill or reskill without enrolling in full degree programs.

These efforts should be aligned with federal agencies involved in labor, commerce, and economic development and supported by interagency pilot programs.

5. Build AI Infrastructure and Standards for Education-Focused Applications

Just as the Plan outlines the importance of testbeds, datasets, and benchmarks in domains like healthcare and defense, similar infrastructure should be prioritized for education. Specifically:

- Creation of secure, anonymized educational datasets that can be used for AI model training, particularly for adaptive learning and intelligent tutoring systems.
- Standardized benchmarks for AI education tools to evaluate reliability, effectiveness, and transparency in instructional applications.
- Federally coordinated open-source AI libraries for education, similar to those used in the scientific research community.
- Support for AI development environments optimized for learning analytics, digital credentialing, and instructional use cases.

By creating a structured ecosystem for AI in education and workforce development, the federal government can support innovation while maintaining rigor, security, and interoperability.

III. Conclusion

To strengthen the nation's global leadership in AI, future versions of the *National Artificial Intelligence Research and Development Strategic Plan* should more fully integrate education and training systems as pillars of AI R&D. AI has the potential not only to transform economic sectors but also to reshape how people learn, teach, and acquire skills throughout their lives.

Federal R&D investments over the next 3–5 years should explicitly include priorities and funding for education-specific applications of AI. This will accelerate the development and adoption of AI tools that improve learning outcomes, streamline instructional design, support lifelong learning, and foster system-wide improvements in how knowledge is created and transferred.

Thank you for the opportunity to contribute this feedback. I welcome future dialogue to support the design of R&D strategies that prepare all Americans to thrive in an AI-enhanced future.

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