

Teacher Professional Learning as the Bottleneck for AI Literacy

Research brief on teacher capacity, implementation quality, and evidence of learning

AAB-RESEARCH-BRIEF-2026-003

Intended audience: Researchers, teacher professional learning providers, school systems, and AAB standards writers

Foreword

This document has been prepared by the AI Assessment Board (AAB) to support public-interest AI literacy standards, evidence review, and policy formation. AAB's role is to organize evidence, clarify implementation conditions, and support responsible decision-making across education, workforce, and community settings.

The brief synthesizes AAB case and community-signal evidence with international teacher research signals.

Research Claim

AI literacy implementation depends less on tool availability than on teacher professional learning, curricular fit, and school-level governance. Without educator capacity, AI literacy risks becoming either tool demonstration or compliance language rather than sustained learning.

Evidence Signals

The live AAB case registry contains 140 records, including classroom studies, reviews, informal-learning cases, and pilot-adjacent documentation.

The AAB community-signal base contains 260 records that can inform public guidance, teacher-support needs, and policy communication.

OECD TALIS 2024 makes teacher AI use a major international signal and reinforces the need to connect AI adoption with professional learning.

UNESCO's teacher competency framework supports a shift from tool access to professional judgement, responsible integration, and teacher agency.

Implications for AAB Standards

Write educator-capacity indicators next to student AI literacy outcomes.

Distinguish teacher AI productivity from teacher capacity to teach AI literacy.

Require implementation cases to report educator preparation, context, tools, learner audience, safeguards, and evidence of learning.

Prioritize professional learning models that include practice, reflection, ethical judgement, accessibility, and assessment design.

Research Agenda

Compare one-time AI awareness workshops with sustained coaching and professional learning communities.
 Study teacher confidence, classroom implementation fidelity, and learner evidence as separate constructs.
 Develop grade-band rubrics for educator implementation capacity.

AAB Evidence Base

External Source References

Publication Boundary

AAB identifies evidence patterns and policy implications; inclusion of a record does not by itself constitute product endorsement, institutional accreditation, or certification approval.

Where records are marked for review in the AAB registry, they should be read as evidence candidates until the applicable AAB review process confirms publication status and source sufficiency.

Policy and legal references should be rechecked before final adoption because statutory duties, agency guidance, and state implementation requirements continue to evolve.

Document type	Prepared by	Publication status	Evidence refresh
Research Brief	AI Assessment Board (AAB)	Public draft for external review	2026-05-16

AAB collection	Current records	Most recent registry update	Publication use	Representative public IDs
Case Registry	140	Sep. 28, 2024	Implementation and study evidence	AAB-CASE-2025-RV-027, AAB-CASE-2025-RV-040, AAB-CASE-2025-RV-054, AAB-CASE-2025-RV-022
Pilot Registry	6	2026-05-15	Structured pilot governance and field documentation	AAB-PILOT-2026-AI_Explorer_Program-001, AAB-PILOT-2025-LL-002, AAB-PILOT-2025-LL-003, AAB-PILOT-2025-LL-004
Framework Registry	62	2026-05-12	Standards, competency, and governance references	AAB-FRAMEWORK-013-AI4K12-FIVE-BIG-IDEAS-IN-AI, AAB-FRAMEWORK-014-AI4K12-GRADE-BAND-PROGRESSION-CHARTS, AAB-FRAMEWORK-055-AWS-AI-ML-SCHOLARS, AAB-FRAMEWORK-054-AWS-AI-READY-AWS-AI-TRAINING
Resource Catalog	90	2026-05-12	Instructional and professional learning supply	AAB-RESOURCE-029-AI-PEDAGOGY-PROJECT, AAB-RESOURCE-080-AI-SINGAPORE-AI-FOR-EVERYONE, AAB-RESOURCE-025-AI-FOR-EDUCATION-FREE-RESOURCES, AAB-RESOURCE-007-AI4K12-RESOURCE-DIRECTORY

AAB collection	Current records	Most recent registry update	Publication use	Representative public IDs
Initiative Directory	94	2026-05-12	System and sector activity signals	AAB-INITIATIVE-045-AI-SINGAPORE-AI-FOR-EVERYONE, AAB-INITIATIVE-034-AI-FOR-EDUCATION, AAB-INITIATIVE-014-AI4K12-INITIATIVE, AAB-INITIATIVE-012-AI4T-ARTIFICIAL-INTELLIGENCE-FOR-AND-BY-TEACHERS
Assessment and Credentialing	74	2026-05-12	Assessment, credential, and recognition models	AAB-ASSESSMENT-072-AAB-REVIEW-RECOGNITION-SYSTEM-INTERNAL-REFERENCE, AAB-ASSESSMENT-064-ABAIM-CERTIFICATION-IN-ARTIFICIAL-INTELLIGENCE-IN-MEDICINE, AAB-ASSESSMENT-062-ARTIBA-ARTIFICIAL-INTELLIGENCE-BOARD-OF-AMERICA-AI-CERTIFICATIONS, AAB-ASSESSMENT-043-AWS-CERTIFIED-AI-PRACTITIONER
Policy Monitor	195	2026-05-14	Country and regional policy signals	AAB-POLICY-ALGERIA, AAB-POLICY-AUSTRALIA, AAB-POLICY-CANADA, AAB-POLICY-FINLAND
U.S. State Policy Monitor	50	2026-05-14	State-level policy signals	AAB-USPOL-AL, AAB-USPOL-AK, AAB-USPOL-AZ, AAB-USPOL-AR
Community Signals	260	2026-05-15	Teacher, public, institutional, and state signals	AAB-COMMUNITY-SIGNAL-001-ACADEMIC-INTEGRITY-AND-CHEATING, AAB-COMMUNITY-SIGNAL-AFGHANISTAN, AAB-COMMUNITY-SIGNAL-004-AGE-APPROPRIATENESS, AAB-COMMUNITY-SIGNAL-ALBANIA

Reference	Use in this document	URL
UNESCO AI Competency Framework for Students	Student AI literacy progression across human-centered mindset, ethics, AI techniques and applications, and AI system design.	https://www.unesco.org/en/articles/ai-competency-framework-students

Reference	Use in this document	URL
UNESCO AI Competency Framework for Teachers	Teacher capacity reference for responsible classroom integration and professional learning design.	https://www.unesco.org/en/articles/ai-competency-framework-teachers
EU AI Act, Article 4	Institutional AI literacy obligation for providers and deployers of AI systems.	https://eur-lex.europa.eu/eli/reg/2024/1689/oj/eng
White House Executive Order 14277	U.S. federal policy signal on AI literacy, educator training, K-12 resources, and youth AI pathways.	https://www.whitehouse.gov/presidential-actions/2025/04/advancing-artificial-intelligence-education-for-american-youth/
U.S. Department of Education AI guidance	Federal education guidance on allowable uses for AI literacy, educator professional development, and AI-supported learning.	https://www.ed.gov/about/news/press-release/us-department-of-education-issues-guidance-artificial-intelligence-use-schools-proposes-additional-supplemental-priority

Reference	Use in this document	URL
AI4K12 Guidelines	K-12 conceptual reference organized around five big ideas and grade-band progression.	https://ai4k12.org/
OECD TALIS 2024 Results	Teacher AI use and professional learning signal across participating education systems.	https://www.oecd.org/en/publications/results-from-talis-2024_90df6235-en.html