MTDA and Artificial Intelligence

Thoughtful Innovation in Teaching, Learning, and Systems

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About This Document

This briefing is our public-facing document focused on the work of MTDA and its Frontier Learning Lab regarding generative artificial intelligence. Initially created to update our board, we believe it offers value to a broader audience as the Lab continues to enhance our understanding of this rapidly advancing technology.

You can access the latest version of this document by going to https://mtda.link/aibriefing.

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Executive Summary

Montana Digital Academy (MTDA) has been actively monitoring and engaging with generative artificial intelligence (AI) since late 2022. The rapid acceleration of AI development and adoption has raised essential questions for teaching, learning, governance, provisioning, and student data privacy, particularly in **rural and small-school contexts**.

MTDA's posture has been **deliberate rather than reactive**. Instead of rushing to adopt tools, the organization has focused on understanding how AI intersects with **learning science, Montana's legal and ethical obligations, and the realities of K–12 education**. Our current approach is best described as *measured engagement*: learning actively, piloting cautiously, and building internal capacity while avoiding premature, large-scale implementation.

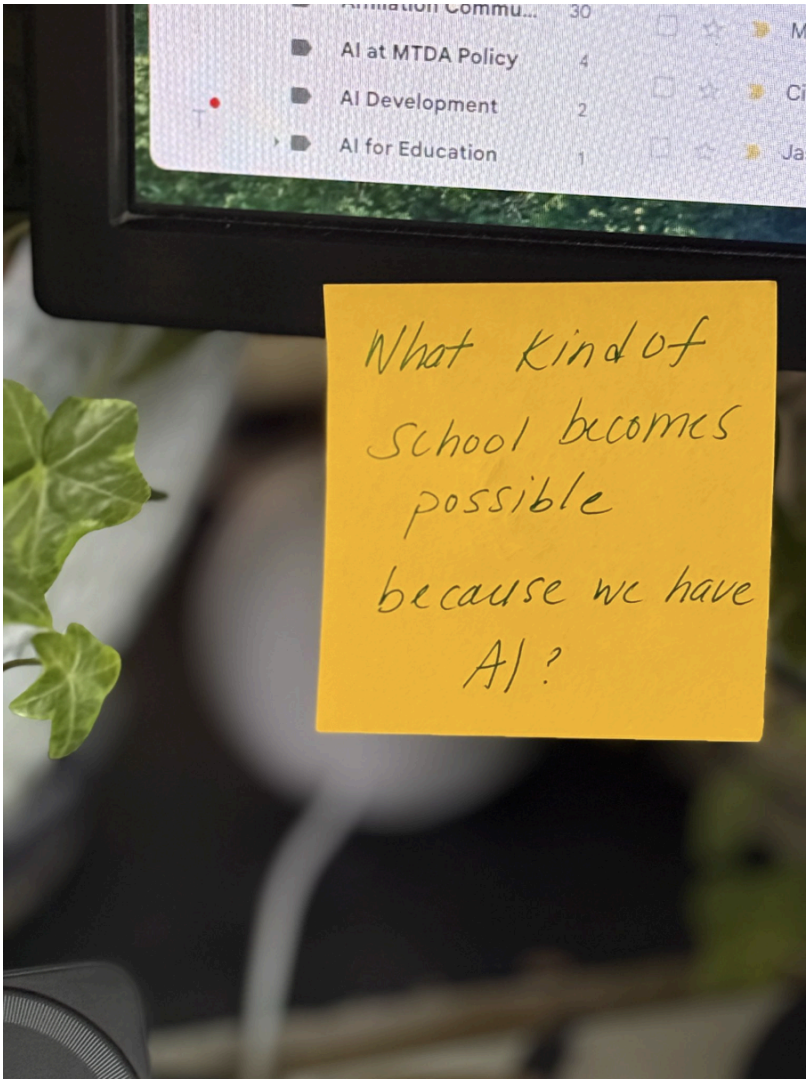
When used thoughtfully and under **strong human oversight**, AI may support several critical educational goals. These include improving instructional responsiveness through differentiated explanations and practice, **increasing teacher effectiveness** by serving as a planning and drafting assistant, **reducing administrative burden**, providing **supplemental tutoring and targeted support**, and improving **accessibility for students with disabilities**. MTDA views AI as an **enabler of these goals… *not* a solution in itself**.

MTDA is equally clear-eyed about the risks. These include **misalignment with learning science**, the rapid pace of technological change, **commercialization pressures**, bias and inaccuracy in AI-generated outputs, **student data privacy and security concerns**, and the risk of **over-reliance on automation**. Addressing these concerns is central to MTDA's approach and informs decisions about adoption and scale.

Internally, MTDA has focused on **professional learning and staff capacity**, a careful review of its **distance learning model**, and the development of **Project GeoNova**, a framework that uses AI to *augment*—[purposeful emdash] not automate—curriculum design through human-in-the-loop processes and quality controls. MTDA has also focused on a tool-inclusive approach to applying AI fluency skills across platforms to reduce hype and ground in actual value add to productivity and analysis workflows.

Externally, MTDA's work is coordinated through the **Frontier Learning Lab**, which provides professional learning, safe exploration opportunities, **centralized vendor vetting**, and **resource-sharing strategies** designed to reduce risk and increase equitable access for rural and small districts.

MTDA is not "all in" on artificial intelligence. The organization is committed to a **measured, Montana-specific middle path**; one that balances opportunity with responsibility and positions MTDA as a **steady, trusted guide** as AI in all its forms becomes a more permanent part of the educational landscape.



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The Big Picture

Montana Digital Academy (MTDA) has been monitoring the emergence of generative artificial intelligence (AI) since the public release of ChatGPT in November 2022. Since then, **the pace of AI development, public awareness, and commercial adoption has increased rapidly,** eclipsing that of any technological innovation affecting education in the past century, including the Internet itself.

MTDA's posture has been deliberate and observant rather than reactive. Instead of rushing to adopt tools, we have focused on **understanding how these technologies intersect with established research on teaching and learning, our student data privacy obligations, and the day-to-day realities of K–12 classrooms**, especially in rural and small districts across Montana.

Our approach is best described as "AI centrism." "AI centrism" means neither rejection nor acceleration, but deliberate engagement grounded in instructional purpose, governance, and risk management. Both internally and externally, decisions about the use of professional AI are evaluated through three questions: is it ***safe***, is it ***specific***, and is it ***responsible***?

We focused on *measured engagement*: we actively learn, run small pilots where appropriate, and build internal expertise while avoiding premature, broad implementation. We recognize that these technologies introduce real risks, and we will not ignore them. At the same time, we believe the possible benefits deserve careful evaluation, particularly where AI may improve responsiveness, accessibility, and educator support for **our North Star: Montana students.**

Most Likely Benefits of AI (When Used Carefully)

MTDA recognizes several areas where AI may provide meaningful benefit when implemented thoughtfully and under strong human oversight:

- **Personalizing instruction for students, including differentiated explanations, practice, and pacing.** AI tools can support teachers in generating multiple explanations, examples, and practice pathways aligned to varied student needs without requiring separate lesson redesigns for each learner. When used carefully, this can help teachers respond more effectively to differences in readiness, background knowledge, and learning pace while maintaining consistent instructional goals.
- **Increasing teacher effectiveness by serving as a cognitive and planning assistant.** AI can assist educators with idea generation, lesson craft, assessment design, and feedback scaffolding, reducing cognitive load while preserving professional judgment. In this role, AI functions as a support tool rather than a decision-maker, allowing teachers to focus their expertise on instructional quality and student relationships.
- **Reducing time spent on administrative and clerical tasks, allowing educators to focus on instruction and relationships.** Many educators spend significant time on repetitive tasks such as documentation, formatting, data organization, and routine communications. AI can help streamline these workflows, freeing up time for teachers to focus on direct instructional planning, student support, and collaboration.
- **High-impact tutoring and targeted support, particularly for remediation and acceleration.** AI-powered tools can provide additional practice, feedback, and guided support outside of class time, supplementing (but ***not replacing***) teacher-led instruction. This is especially valuable for students who need targeted remediation or accelerated learning opportunities that may be difficult to provide consistently at scale.
- **Improved accessibility and special education support, including scaffolding, accommodations, and adaptive content.** AI can assist in generating accessible materials, alternative representations of content, and scaffolded supports aligned with individual student needs. When paired with professional oversight, these tools can help expand access to learning for students with disabilities while supporting compliance with accessibility standards.

Our current working understanding is that AI is best approached as an enabler of critical educational goals and strategies rather than a solution in itself. MTDA supports the movement toward more personalized and proficiency-based learning models, but these approaches often demand significant time from teachers, institutional capacity, and technological knowledge and ability. Thoughtful use of AI raises an essential question for schools: what kinds of learning environments become possible when educators are supported by tools that reduce friction, expand capacity, and preserve human judgment at the center of teaching and learning?

Key Concerns and Risks

MTDA is equally clear-eyed about the risks associated with AI in education and approaches adoption with intentional restraint and professional judgment:

- **Balancing learning science with tool availability, *ensuring that pedagogy drives technology, not the reverse***. MTDA does not support adopting AI tools simply because they are new or widely marketed. Given the number of unresolved questions around instructional efficacy, ethics, and long-term impact, learning science and clearly defined instructional goals must remain the primary drivers of any implementation decision.
- **The speed of technological development often outpaces policy, research, and training.** AI tools evolve at a pace that can overwhelm even dedicated technology staff, with new platforms and capabilities emerging weekly. This rate of change increases the risk of fragmented adoption, inconsistent practice, and insufficient professional learning if not managed deliberately.
- **Commercialization pressures, particularly tools designed primarily for data capture or profit rather than learning.** Many AI products entering the education space are driven by commercial incentives that may not align with instructional quality, equity, or student well-being. MTDA remains cautious about tools that prioritize engagement metrics, data extraction, or vendor lock-in over demonstrable educational value.
- **Bias, accuracy, and hallucinations in AI-generated outputs.** AI systems can produce responses that are incomplete, misleading, or biased, often without clear signals to users. Without strong human oversight and critical evaluation, these limitations pose risks to instructional accuracy and student understanding.
- **Student data privacy and security, especially as tools become more deeply integrated.** As AI tools increasingly connect to student information systems and instructional platforms, the potential consequences of data misuse or exposure grow significantly. MTDA treats privacy and security compliance as foundational requirements rather than secondary considerations.
- **Over-reliance on automation can undermine critical thinking if not carefully managed.** While AI can support efficiency and access, excessive or uncritical reliance on automated systems risks reducing opportunities for student reasoning, reflection, and productive struggle. MTDA emphasizes AI use that reinforces—rather than replaces—human thinking and instructional intent.

Addressing these concerns is central to MTDA's cautious, research-informed approach to AI, ensuring that innovation proceeds responsibly, ethically, and aligned with Montana's educational values.

MTDA will not adopt AI systems that replace instructional judgment, require student data beyond what is educationally necessary, or pressure districts to implement prematurely.

MTDA Internal Focus: Distance Learning and AI

Internally, MTDA has concentrated on three primary areas:

Professional Learning and Staff Capacity

MTDA has prioritized sustained professional learning and internal capacity-building to ensure staff understand both the **capabilities *and* limitations** of generative artificial intelligence in educational settings. Rather than focusing solely on tool-specific training, **this work emphasizes foundational understanding of how AI systems function**, where they perform well, and where they introduce risk or uncertainty.

Internal and external learning opportunities are designed to help educators and staff critically evaluate AI outputs, recognize issues related to bias, accuracy, and unwarranted confidence, and make informed decisions about instructional use. **These conversations are ongoing and adaptive, reflecting the rapidly evolving nature of AI technologies rather than treating training as a one-time event.**

Central to this work is MTDA's emphasis on **human-in-the-loop** models, in which educators remain the primary instructional decision-makers and AI serves a bounded, transparent support role. This approach reinforces professional judgment, maintains accountability, and **ensures instructional decisions remain grounded in learning science, ethical considerations, and the lived realities of students and teachers.**

Review of MTDA's Learning Model

MTDA recognizes that our environment, a distance learning model, encountered generative AI earlier than many traditional settings. Students' primary access point to MTDA courses, the web browser, now routinely ships with AI features for writing support, summarization, translation, search assistance, and media creation. Those features change quickly and can appear with little notice.

Because of that, MTDA is taking a close look at our existing learning, support, and assessment model with a simple lens: ***where can AI reduce risk for students and staff, and where might it introduce new risk?***

MTDA does not broadly discourage AI use among students, teachers, or staff. Students are already encountering these tools in everyday platforms, and there are reasonable uses that can support engagement, persistence, and clarity in an online course. We also set boundaries around privacy, academic integrity, and expectations for original thinking.

Many educational institutions are earnestly trying to make learning environments **"AI-proof."** In practice, that can push instruction toward narrow tasks and heavy controls, and it can pull against what we know about learning: practice, feedback, revision, and dialogue with a teacher.

At the same time, reverting to older assessment models (for example, the handwritten "blue book") may address a slice of the issue in the short term. **It does little to prepare students for a civic life and work world where AI tools are everywhere.**

MTDA's internal work has focused on uses of AI that strengthen instruction and support teacher–student interaction. We are avoiding uses that undermine instructional quality or replace meaningful learning with automation.

Development of Curriculum Resources Using AI Toolsets

MTDA has developed a structured internal framework, called ***Project GeoNova***, to use generative AI to develop and refine high-quality, student-facing curriculum materials for digital learning environments. This framework is *not intended* to automate the creation of a curriculum. Instead, **it is designed to augment established instructional design workflows by combining human expertise, learning science, and carefully constrained use of AI.**

Project GeoNova uses vetted source materials, clearly defined standards, and multiple stages of human review to support tasks such as scope and sequence development, initial drafting, differentiation, assessment design, and accessibility improvements. **AI is treated as a bounded and transparent component within a larger design system,** helping reduce development time while maintaining rigor, alignment, and instructional intent.

The framework emphasizes **iterative quality checks, version control, and oversight by subject-matter experts (MTDA's most experienced teachers) at each stage.** This structure allows MTDA to update and refine curriculum more efficiently as standards evolve, content requires revision, or accessibility needs emerge, while preserving accountability and consistency across courses.

Over time, **Project GeoNova may increase MTDA's capacity to develop, maintain, and improve digital curriculum,** particularly in subject areas where high-quality, K–12-appropriate open educational resources are limited, without sacrificing instructional quality or professional judgment.

MTDA External Work: the Frontier Learning Lab

Since July 2025, MTDA's external-facing AI work has been coordinated through the **Frontier Learning Lab** (FLL).

Since 2023, MTDA staff have presented on artificial intelligence across Montana, including events hosted by the School Administrators of Montana, the Montana School Boards Association, the Montana Small School Alliance, the Montana University System, and the Montana Federation of Public Employees (MFPE). MTDA staff have also provided direct, on-site presentations in districts across the state at the invitation of local school leaders.

These sessions have emphasized **big-picture, systems-level conversations** rather than tool promotion. The consistent message has been that AI capabilities are increasingly embedded in everyday digital environments, and **schools *must* actively participate in shaping how these tools influence teaching, learning, and student development.**

In partnership with Virtual Learning Leadership Alliance partner Michigan Virtual, **MTDA released a comprehensive planning guide for schools in January 2024.**

MTDA was invited to present to the Montana Legislature's MARA Committee in January 2024, reflecting recognition of MTDA as a credible, balanced voice on emerging educational technologies. In November 2024, **MTDA leadership was invited to discuss with legislators the potential for MTDA to help schools build capacity in AI and other emerging technologies.**

During the 2025 Legislative Session, **MTDA staff were invited to propose the Frontier Learning Lab,** envisioned as a center of excellence to help Montana schools respond to emerging technologies with clarity, guardrails, and practical support. ***The Frontier Learning Lab was ultimately funded with one-time-only funding through House Bill 2.***

Today, several realities are clear:

- Most major productivity applications now include generative AI features
- Social media and youth-oriented platforms (e.g., Snapchat, TikTok) embed AI directly into user experiences
- Students already interact with AI systems with little to no friction outside of school

The Frontier Learning Lab's work is timely.

The Frontier Learning Lab Model

Drawing from MTDA's 15 years of statewide digital learning experience, the Frontier Learning Lab (FLL) uses several interrelated strategies to help Montana schools navigate emerging technologies with clarity, guardrails, and practical support:

- **High-quality professional learning (with follow-through).** FLL provides rigorous learning experiences for teachers, administrators, librarians, and support staff. We value in-person professional learning because it builds shared understanding quickly—but it must be paired with ongoing, embedded support so educators can apply what they learn over time. We will also rely on webinars, online training, and teacher-paced learning with stackable credentials. Training is available at no cost to educators across the state.
- **AI Help Desk.** The FLL AI Help Desk (ai.help@mtda.org) provides email-based guidance for Montana educators on AI-related questions and projects—ranging from classroom use and instructional planning to concerns about accuracy, ethics, and appropriate boundaries. The goal is simple: meet educators where they are, whether they are curious, cautious, or skeptical.
- **Train-the-trainer capacity building.** The Montana AI Educator Coach Program, facilitated by FLL, is designed to build regional expertise in artificial intelligence among educators statewide. This 4-week program provides high-density professional learning through asynchronous online content, weekly Zoom discussions, and collaborative community building and resource sharing. By training educators across various roles, grade levels, and district sizes, FLL effectively fosters local expertise and supports in-district professional development.
- **Pop-up labs.** FLL brings hands-on, "try it safely" learning events to schools and regions, allowing educators to explore AI, VR, and AR tools in controlled, peer-supported settings before making implementation decisions. These sessions are purpose-built to lower the barrier to exploration and help separate real instructional value from hype.
- **Public learning and field notes.** The Frontier Learning Lab Substack (an online and email-based newsletter) provides a transparent space to share practical implementation insights, including what worked, what didn't, and what we learned, so that Montana educators can benefit from real experience rather than polished case studies.
- **Centralized vendor engagement and vetting.** For rural and small districts with limited administrative and technical capacity, centralized evaluation matters. MTDA reviews tools for instructional quality, student data privacy, accessibility, and security, reducing duplication of effort and lowering risk while helping smaller districts access high-quality options on a more equal footing with larger systems.
- **Resource sharing with a focus on access.** MTDA's resource-sharing model addresses a key barrier for rural and small schools: the high upfront costs of VR/AR equipment and the specialized expertise needed to evaluate emerging technologies. Rather than each district purchasing and maintaining equipment independently, MTDA can leverage group purchasing power and develop a headset lending library, enabling schools to borrow equipment for defined periods and rotate access statewide. This approach supports equitable access and helps prevent a technology divide based on district size or budget.
- **Safe teacher and student access.** MTDA has partnered with platforms such as SchoolAI to provide educators with structured, supported ways to explore generative AI in instructional contexts. Instead of ad hoc or unsupervised use, these environments are designed for education, helping reduce privacy and security risks while making it easier, *especially for rural and small districts*, to engage thoughtfully with AI. FLL will also bring up "Frontier Learning Lab Amplify," a platform patterned after the University of Montana's cost-effective strategy to provide diverse platform access using open-source models.
- **Tool and framework development.** MTDA has developed (and will continue to develop) practical tools to help educators envision how AI can support instruction while keeping educators in

control. One example is OpenMCQ, a “multiple-choice question writer” AI tool maintained through the Frontier Learning Lab. It generates draft multiple-choice items from educator-provided source text, including answer keys and a detailed quality check of the stem and distractors based on established item-writing guidance. OpenMCQ is “open” in the sense that its embedded best-practice references are drawn from openly available or openly licensed resources, reducing intellectual property concerns while keeping the tool grounded in research-informed principles.

State Engagement

MTDA is intentionally engaging a broad cross-section of Montana's education community to inform and guide our work in artificial intelligence and emerging learning technologies. This includes ongoing collaboration with rural and small districts, school administrators, classroom teachers, curriculum leaders, school boards, librarians, and educator preparation programs, ensuring that diverse perspectives shape both strategy and implementation.

Through partnerships with professional associations, regional networks, and statewide organizations, **MTDA is gathering real-world feedback on opportunities, concerns, and practical constraints, particularly in rural contexts.** This engagement model helps surface shared needs, identify regional differences, and design supports that are responsive to local conditions rather than prescriptive.

By serving as a convener, MTDA helps connect districts, state agencies, and external partners around responsible, Montana-centered approaches to AI adoption. **MTDA believes the most effective way to respond to the realities of 2025, fast-moving technology, and finite local capacity, is to work in concert with existing infrastructure and leadership across the state.**

Examples include:

- MTDA collaborated with the State Superintendent of Public Instruction to support the drafting and release of Montana's first statewide guidance on AI in K–12 schools.
- MTDA is working with the Department of Labor and Industry in support of the 406 Jobs Initiative and its focus on frontier technologies, including AI. Executive Director Neiffer was appointed in December 2025 by Governor Gianforte as an ex officio member of the State Workforce Innovation Board to help align efforts.
- MTDA is committed to partnership with the Montana University System and educator preparation programs (EPPs) to identify best practices and promising models for preparing educators in an AI-rich environment.

As paraphrased from Executive Director Neiffer, broad initiatives like this work best when Montana's education partners are aligned and "pulling on the same oar."

MTDA's Role in National Conversations

MTDA's work increasingly situates the organization within broader state and national conversations about artificial intelligence in education. Through presentations, partnerships, and policy-oriented discussions, MTDA has positioned itself as:

- A **measured, credible, and non-commercial voice** focused on governance, instructional quality, and responsible implementation
- An **advocate for building educator capacity,** rather than promoting rapid or tool-driven adoption
- A model for how small, rural states can **engage emerging technologies thoughtfully and responsibly**

MTDA staff are actively engaged in national conversations related to AI in education, contributing both practical experience and policy-informed perspectives. Executive Director Neiffer is frequently invited to present and facilitate training sessions on AI in education and was among the early national keynote speakers on the topic, delivering a keynote address on artificial intelligence in education at the Northwest Council for Computer Education (NCCE) conference in 2023. In September 2025, he briefed Western United States legislators at the CSG West Education & Workforce Development session at the 78th CSG West Annual Meeting in Jackson, Wyoming.

MTDA has also provided leadership through national organizations focused on digital learning. **The organization plays an active role in DLAC (the Community Advancing Digital Learning), where MTDA co-convenes workgroups and contributes to professional knowledge and policy discussions on** AI in digital education. Lab Director Byers is the co-chair of this national group. These efforts currently include leadership from MTDA staff, with Technology and Integrations Manager Paul Kozlowitz co-chairing a national AI-focused workgroup.

In addition, **MTDA is highly engaged in the Virtual Learning Leadership Alliance (VLLA),** contributing to ongoing discussions about the role of artificial intelligence in distance learning. MTDA co-proposed the formation of the VLLA AI Workgroup, which is currently co-chaired by Frontier Learning Lab Director Caitlin Byers, further extending MTDA's influence in shaping responsible, practitioner-informed approaches to AI in virtual education.

Closing Perspective

MTDA is not "all in" on artificial intelligence. Instead, the organization is intentionally focused on identifying a measured, middle path. We aim for a path that is safe, responsible, and specific. AI remains a complex and rapidly evolving set of technologies that demands nuance, restraint, and careful alignment with decades of research on teaching and learning.

What MTDA is committed to is **informed leadership.** This includes staying engaged with emerging technologies, learning directly from educators working in real classrooms and distance learning environments, building institutional and human capacity before scaling tools, and protecting students, educators, and districts from unnecessary risk.

This balanced, experience-informed approach allows MTDA to act as a **steady guide rather than a reactive adopter**, ensuring that innovation proceeds thoughtfully as artificial intelligence becomes a more permanent feature of the educational landscape.