CAST | Until learning has no limits®

5 Ways AI & UDL Work Better Together

Artificial Intelligence (AI) and Universal Design for Learning (UDL) offer powerful opportunities to enhance education by making learning more accessible, inclusive, and personalized.

Learn more about the impact of UDL

AI-driven tools, like adaptive learning platforms, tutoring systems, and lesson-planning assistants, are transforming classrooms, but their true potential is realized when they are designed and implemented with UDL principles. By integrating what we know about learning science (UDL) with the power of personalization (AI), we gain the power to design experiences and tools that support all learners from the beginning, rather than retrofitting solutions later. Here are five key ways AI and UDL work better together.

1. Co-design from the start—don't retrofit

Most education technology is designed for an "average" student, leaving many out. Because there is no "average" learner, technology is too often created with hidden barriers. Hidden barriers mean educators must spend time and money changing the technology by adding, modifying, or accommodating it for everyone who can't use the tool as designed. Instead of retrofitting solutions, AI developers should consider learner variability from the start and include learner voices in the design. By co-designing with learners and applying UDL principles from the outset, developers and learning designers can reach a broader audience, reduce barriers, and ensure accessibility. What's more, engaging a variety of voices—including people with disabilities and multilingual learners—early in the design process often leads to innovative solutions that benefit everyone.

To ensure AI is designed inclusively, consider CAST's UDL Product Certification, which supports accessibility and universal design in educational products. CAST's Accessibility Solutions Team also provides expertise in making AI-driven learning design and tools more inclusive.

2. Use the UDL Guidelines to support the development of AI tools and implementation of AI literacy

Everyone brings unique perspectives and experiences to learning, and every brain is as different as a fingerprint. To address this predictable learner variability, CAST developed the **UDL Guidelines**, a design thinking tool, to help learning experience and product designers find "hidden" barriers that keep many people from accessing content and products. The UDL Guidelines align with the brain's learning networks and help AI developers anticipate barriers. Following these guidelines can ensure multiple means of engagement, representation, and expression are built into AI-driven tools. Educators using UDL deepen their skills to make learning accessible, foster learner agency, and create flexible pathways to success. AI can further expand these opportunities by offering personalized support tailored to individual needs.

In addition to AI-based learning tools, the UDL Guidelines should also be applied to the design and implementation of AI literacy education to help make this content accessible and flexible for all learners. A recent research report, "**A Framework for Inclusive AI Learning Design for Diverse Learners**," offers some insight into the opportunity around embedding UDL in AI literacy instruction. To learn more about how UDL can be applied in AI literacy or the use of AI learning technologies, please contact CAST's PK-12 Professional Learning Team at **pl.cast.org**.

3. Keep educators in the loop

Educators must play a crucial role in shaping AI's impact in the classroom as they have the best understanding of what individual learners need to succeed. However, a recent CAST survey of **educators and district leaders in the U.S. school districts** we serve found:

Nearly two-thirds say they're not getting the help they need to solve problems and select tools.

70% of educators are specifically interested in learning how to use AI to support students with disabilities and English language learners.

Educators see the potential and power of personalizing. Educators need to be at the forefront of AI tool design, selection, and use.

4. AI as Assistive Intelligence

People with disabilities often use assistive technologies in learning and to navigate the world today. AI has already improved many of these traditional technologies, like text-to-speech and voice recognition, making them more accurate and natural-sounding. But the next exciting frontier for AI in learning is in the power to reduce cognitive load. In this next phase, AI will actually function like ***assistive intelligence*** because it will help individuals more quickly understand and process information.

For individuals with executive functioning or language processing issues, things like organizing large amounts of information, or accessing a complex level of text, can be barriers to deeper learning. Often, just getting through the basic process to understand the information is exhausting and they aren't able to engage deeply with the content. Tools that use AI to quickly customize the reading level of text, or to simplify the descriptions of chemistry expressions for example, increase the accessibility of academic content and deeper learning. When AI and UDL are incorporated, these tools will allow individuals to reach the content more easily and unlock deeper engagement. To learn more about AI and UDL's potential in making content and writing more accessible, check out CAST's publication, "**Rethinking Writing Instruction in the Age of AI**."

5. Prioritize AI and UDL in Workforce and Career Education

AI is increasingly used in skilled trades but remains underutilized in career and technical education (CTE) classrooms and workforce training environments. Many CTE educators and workforce training instructors lack professional development on AI integration, creating a gap in workforce readiness. Using Universal Design for Learning, **CAST's Postsecondary and Workforce Development team** partners with workforce administrators, CTE educators, professional organizations, and more to develop, deploy, and evaluate meaningful, research-based, professional offerings that inspire and engage all learners, whether they are exploring career options in AI or leading organizations that develop these cutting-edge technologies.

Learn more about CAST and our work in AI and UDL

CAST is a nonprofit organization focused on learning science and technology. We are committed to making learning accessible, effective, and inclusive. From schools to workplaces and any other learning space, our many resources elevate strengths and empower lifelong learners. Grounded in scientific research and educational expertise, our services, programs, tools, and publications uphold quality and strive for continuous improvement.

Learn more at cast.org/what-we-do.

We'd love to work with you.
Contact us at cast@cast.org.