

The Fast Track: DEI and AI for Learning Design

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[Abstract] In today's rapidly evolving educational landscape, diversity, equity, and inclusion (DEI) has increasingly emerged as a priority in learning design. By analyzing current educational disparities and examining the potential biases in AI criteria, input, and systems, this White Paper highlights significant challenges and opportunities present within these topic areas. Based on a detailed review of scholarly sources and case studies, AI-driven technologies can be a potential catalyst for inclusion and for ways to mitigate the risk factor of perpetuating inequities. Key focus areas include adaptive learning systems, personalized learning paths, and predictive analytics in education, all examined through a DEI lens. I argue that a deliberate and mindful integration of AI in learning design can lead to more equitable and inclusive learning environments and can help foster a sense of belonging that drives improved access to quality education for historically marginalized groups. Additionally, the paper presents best practices and guidelines for developing and implementing AI tools that align with DEI principles. Ultimately, this white paper aims to provide educators and learning designers with actionable insights to create inclusive learning experiences through ethical AI integration. By prioritizing DEI in the design and application of AI in education, we can move towards a future where every learner can succeed, regardless of background.

[Keywords] AI in instructional design, DEI in learning environments, design best practices

Introduction

Welcome to the ever-evolving world of Learning Design! Learning Design is that piece of education where knowledge becomes currency, and those who can't keep up might as well be reading yesterday's paper. Learning designers are like digital shapeshifters - ever adapting to new and evolving tech, tools, knowledge, and demographics. However, designing inclusive, accessible content quickly can be a challenging piece of the process that can be easier said than done. So, what's the secret to creating effective, DEI-compliant content fast without burning a hole in your budget? Read on to learn more about ways to use AI to create inclusive, accessible learning content without sacrificing your sanity, time, or wallet. Get ready to get on the fast track with DEI and AI for learning design.

Part 1: DEI for Learning Design? What's That?

Imagine a learning environment that not only welcomes differences but thrives on them. This is where Diversity, Equity, and Inclusion (DEI) lives, battling outdated norms and showing bias the door. As a major architect of a new educational era, DEI helps ensure every learner gets a front-row and equitable seat to success.

Now, keep in mind, DEI isn't just about counting colors. It's about celebrating the kaleidoscope of identities that make us unique - from our individual characteristics to our backgrounds, to our communities - and incorporating them into the experiences, images, and stories learning provides. Equity kicks inequality to the curb and ensures that every learner gets a

fair shot, with resources tailored to individual needs. Meanwhile, Inclusion throws the door open, inviting every voice in to help paint and shape outcomes.

Let's review these concepts more closely and give them some formal definitions:

Diversity - this is the “spice” that adds flavor to the educational “soup”, with varied “ingredients” or social identifiers like religion, age, race, gender, sexual preference, physical/emotional/developmental ability, and more. Which tools, resources, and approaches in your learning design help diversify YOUR work?

Equity - this is the justice league of learning, ensuring that all policies, procedures, programs, and structures are fair and offer equitable access for all learners, based on their individual starting points and needs. Note that equity is different from equality. Which policies, programs, structures, or strategies in YOUR work help ensure equity and accessibility?

Inclusion - this is like the kid in school who ensures everyone feels like they belong, and who helps amplify voices that may typically be hushed. Inclusion makes sure all participants are equitably included, heard, and able to contribute to the decisions about or outcomes of a learning environment in an authentic way. How might YOUR learning content ensure inclusion?

Social Identifiers - Imagine your own personal highlight reel that includes all of the unique traits that make you, well, you! We're talking about that blend of your gender, race, sexual orientation, disability, age, and other characteristics that add layers to your identity. The identities by which an individual characterizes themselves are their identifiers. How do YOUR learning experiences diversify and show inclusion around social identifiers?

Systemic Barriers - Meet the invisible force field that's a blockade on the path of progress. Systemic Barriers are those sneaky policies, procedures, and practices that serve as gatekeepers to success and keep many out of the loop. With historical and generational biases that go way back, systemic barriers play favorites, leaving underrepresented groups stuck in a mire of unfair and often intentional red tape. Which systemic barriers have impacted YOU? Which impact your learning community(ies)?

Now that we know more about what DEI is and have thought about it in the context of you and your learners, let's think about why it matters to education as a whole. Picture millions of young people locked out of school, missing out on the chance to learn. This is the reality in today's world, particularly in underserved communities. In fact, National Institutes of Health (NIH) research shows that only 1 in 10 individuals from a low-income background will earn a bachelor's degree by age 25, with low-income learners less likely to enter a STEM (Science, Technology, Engineering or Math) related field. NIH research also shows that underrepresented communities often do not provide a pathway to STEM, with only 10-25% of low-income earners gaining early education access to the sciences. (National Institutes of Health, 2024)

Meanwhile, Humanium research shows that more than 72 million children worldwide are out of school, without access to learning in any subject area, while 759 million adults worldwide are illiterate. (Humanium, 2024) The result? A learning landscape marred by disparities, where some are empowered to sprint ahead while others struggle to keep pace or ultimately fall behind. These realities directly impact the way some of your learners need to access, connect with, and leverage learning content.

In our increasingly diverse and multicultural world, inclusivity isn't a “nice to have” to connect with learners. It's a must. Increasingly diverse learner demographics have created a

growing need for diverse learning products, services, marketing, and experiences. In fact, Pew research reveals that 27 nations have been identified as home to more than 50% of the world's immigrants and have seen a corresponding median increase in diversity of 69% over the last 20 years. (Pew, 2024) This includes nations in Europe that have traditionally been perceived as less diverse. Think about it. Consider the most popular films, music, foods, and fashions of the last decade. They are a rich tapestry that reflects varied nationalities; races; genders; ages; gender identities; religions; physical, emotional, and developmental abilities; physical sizes; sexual preferences, and more.

Now think about some of the foods and entertainment you, your family, friends, colleagues, and associates enjoy. You may like sushi (a Japanese food), enchiladas (from Mexico), fried dumplings (from China), macarons (from France), jollof rice (from Nigeria), or southern fried chicken (from the USA). You may enjoy pop or hip hop by BTS (from South Korea), Tyla (from South Africa), Bad Bunny (from Puerto Rico), Sam Smith (from England), or Rihanna (from Barbados). Your tastes may be as diverse as the world we live in - and you may have never really given it a thought!

Now think back to your learners. Their experiences, backgrounds, and tastes are every bit as diverse as yours but may also be very *different* from yours. Think about how this impacts the way they may need to learn. Remember, learners digest new information most effectively when it is reflective of and meaningful to who they are, what they do, where they are from, and what matters to them. This means that in order to connect in a meaningful way with an increasingly diverse target audience in an increasingly diverse world, your content and materials need to reflect that diversity by leveraging DEI. The connection between learning content that is meaningful and learning outcome success has been noted by none other than Dr. Michael Allen - CEO and Founder of Allen Interactions and creator of the often-used Successive Approximation Model (SAM). Dr. Allen is the author of the ground-breaking instructional design book *Leaving Addie for SAM* (Allen, 2012), which notes that effective learning content should be meaningful, memorable, and motivational. (Allen Interactions, 2024) If we agree with Dr. Allen that inclusion makes learning meaningful to learners, then simple math leads us to the conclusion that diverse, inclusive content is more meaningful, memorable, and motivational than content that is not.

Put in an equation, it might look like this:

$$\textit{Learning Strategy \& Methods} + \textit{DEI} = \textit{Increased Meaningful, Memorable, Motivational Learning}$$

This makes DEI a critical component of learner success. Failing to craft inclusive and diverse learning experiences can cause your learners to be unable to access or to disconnect with your content and tune out. Remember, learners cannot effectively apply what they did *not* effectively learn. Ineffective learning pulls your metrics down in the end and leaves you stuck with real-world impacts that fail to meet planned outcomes and goals.

Now, granted, crafting inclusive learning experiences can be time-consuming and may therefore generate a heftier price tag. This is due to the additional measures that must be taken to ensure accessibility and DEI compliance. In fact, the added time and cost are what cause some organizations to hit pause on DEI, relegating it to a postscript after design is complete. This approach short-changes learners and fails to meet needs in the long run.

So, how can you strike a balance between DEI, speed, and cost? Enter Artificial Intelligence (AI). Think of AI as the secret sauce to turbocharge your learning design! The proper use of AI can help make inclusive learning design a speedy and delightful reality. Let's learn more about ways to use DEI and AI to speed up inclusive learning design.

Part 2: The Revolution is Now: AI for Learning Design

Artificial Intelligence (AI) isn't just a fleeting trend in the world of modern ed tech. Instead, picture it as your trusty sidekick, able to help you sift through data, spot learning patterns, and create personalized experiences lightning-fast. From tackling mundane tasks (like grading) to crafting dynamic learning on adaptive platforms, AI is like the Swiss Army knife of learning design—versatile, efficient, and ready to take on any challenge. But what is AI, really? Let's break it down in a Learning and Development (L&D) context, to better understand what AI is and what it isn't:

What AI Is: The Boost You Need

A Design Supercharger - AI is tech that enables computer systems/machines to simulate human intelligence. (IBM, n.d.) It can take different forms and can be used in varied ways. Think of it as a supercharge to your design.

A Task Tackler - AI can combine with other tech to rapidly perform tasks. (IBM, n.d.) This can reduce time and help you easily and quickly complete tasks for L&D or other work. Say goodbye to long, tedious hours and hello to record-setting efficiency.

A Virtual Toolbox - The number and types of tools that AI can combine and work with are broad, and (IBM, n.d.) includes LMS, CMS, and more for L&D.

Your Chat BFF - AI drives ChatGPT, a natural language processor or NLP form of generative AI (GenAI). Not just a chatterbox, ChatGPT is a fairly sophisticated tool that can transform your written content, even though it is - at present - considered “weak” AI (IBM, n.d.). What is “weak” AI?

Review the note below.

Remember, **Weak** or **Narrow AI/Narrow Artificial Intelligence (ANI)** is the use of AI for specific, narrow tasks. (IBM, n.d.) In a learning design context, think of it as your own, personal specialist for auto-generating scenarios and other L&D content.

Meanwhile, **Strong AI**, or **Artificial General Intelligence (AGI)**, or **Artificial Super Intelligence (ASI)** is mostly theoretical at this point. It refers to AI becoming self-aware with intelligence and consciousness equal to that of humans. (IBM, n.d.) ASI could potentially learn, plan, solve problems, and surpass human intelligence in the future. Think of I-Robot or the singularity. ASI was the stuff of science fiction that will likely come to life all too soon. For now, we are focused on what we have - weak AI.

What AI is Not: Why AI Won't Steal Your Thunder

A Job Thief - Fear not, GenAI is unlikely to snatch your job. Crafting compelling learning requires a cocktail of skills including analysis, scoping, and rock-solid research. AI often struggles with these tasks due to its tendency to "hallucinate" or offer dodgy content. Plus, AI still needs a lot of human babysitting to get it right. (Tucker, C., 2023)

That Creative Spark - Let's face it, creativity and a nuanced understanding of the target audience are the heartbeat of learning design. AI can crunch data, but it can't replicate the emotional intelligence and innovation human designers bring to the table. That creative spark is a big differentiator. Unlike a versatile learning designer, AI trends towards being a one-trick pony that lacks the finesse and tech know-how to combine learning theories and writing to create captivating, user-friendly content. That's a job made for humans! (Tucker, C., 2023)

An Ethical Utopia - AI is a Pandora's box of ethical dilemmas and data privacy issues that human-driven design neatly side steps. Breaches in this area can lead to reputation damage, legal issues, fines, and even jail time. (Clio, n.d.)

A DEI Expert - AI mirrors its input. If prompts are laced with biases—hidden or otherwise—expect AI outputs to reflect them, sidelining diversity and inclusion. Yep, your input and criteria can unintentionally cause AI to generate algorithmic or tech bias. Be mindful of this as you leverage AI in your work. (Clio, n.d.)

The Bridge Builder - Remember, the digital divide is real, and AI just widened it. For learners in underrepresented or developing communities, a divide that was just a hurdle is now the Grand Canyon. As global learning designers, it's up to us to create bridges and ensure that AI helps rather than hinders.

Right now, you might be thinking, "I'm not an engineer. Working out the kinks of AI is an IT issue that doesn't impact my world today." Think again. Consider the GenAI you probably already use. Pizza delivered by AI-powered, self-driving cars. Asking Siri or Alexa to play your favorite tunes. Your smart fridge tells you when you're out of milk, or - depending on where you live - maybe you've had a drone drop off your packages, with chatbots handling your orders. You've probably designed or at least completed *some* AI-driven online learning or surveys. Now what do you think about the impacts of AI? If you haven't noticed, AI is already becoming deeply woven into the fabric of our world and this is rapidly including learning design.

Now, think about your learners. They're also immersed in an increasingly AI-rich world, and interact with GenAI for daily tasks, just like you. How might this evolving tech influence their expectations for learning content? What might today's learners expect in terms of speed, accessibility, and tech sophistication? Learners using cell phones, tablets, laptops, smartwatches, and smart glasses are now the norm in many geographic areas. How might this change their preferred ways of consuming content? By delving into the world of AI, you're not just keeping pace with changes in tech; you're harnessing a powerhouse that can redefine L&D as we know it. Make AI your ally, and remember that human creativity, ethical vigilance, and emotional intelligence are irreplaceable.

Ok, you've got the big picture. AI has come for learning design fast and furious and is changing expectations. If you haven't already tried it out for learning design, you may be wondering, "When it comes to learning design, what exactly can AI do?" The answer is - a lot. AI can design decent scenarios, assessments, and reports, in mere seconds. Leveraged properly, it's

the tool that can help you deliver the high-quality learning experiences, tools, and resources you desire, with a click. Avoid AI and you waste time, add cost, and lose out on innovation.

In this context, AI isn't the big, scary "baddie", out to take your job! Instead, it's the magic wand that can give you the support you need to:

Work Fast - think of AI as your personal assistant. It can whip up scenarios, assessments, and reports in the time it takes for you to sip your coffee. This means you can maximize your creative potential while avoiding long labor with intensive hours. Think about it. If you have started leveraging AI, what are some ways you are already using it to help speed up your work?

Engage learners - with AI, you can craft learning experiences so personalized and adaptive that learners feel they've been tailored just for them. This ensures your learning content is compelling enough to connect in meaningful ways that will help it "stick". Think about it. If you are an early adopter and already using AI, what are some ways you've used it to create accessible, dynamic learning experiences?

Be innovative - AI can help you stay ahead of the curve and on the cutting edge of learning design. In a rapidly evolving educational landscape, designers who embrace AI's potential will shine, while skeptics risk becoming relics. Think about it. What are some ways you plan to use AI in the future to deliver increasingly innovative, meaningful, and effective learning experiences?

Remember, AI avoidance can leave your organization sluggish, outdated, and unable to engage learners. This can pull your impacts and outcomes down. Just as DEI initiatives are crucial, leveraging AI is also key to making your content effective for today's learners. So, how might you blend the powers of DEI with the magic of AI to create inclusive, cutting-edge learning?

When we think back and add AI into the equation, our formula for creating effective, meaningful learning experiences becomes:

DEI + Learning Strategy & Methods x AI = Increased Meaningful, Memorable, Motivational Learning Experiences

Let's take this formula and place it in the context of *how* we can leverage AI to create inclusive and accessible learning experiences with speed.

Part 3: Speed and Inclusivity: DEI and AI for Learning Development

As the digital age becomes increasingly entrenched in our daily lives, the role of AI will continue to grow exponentially. From adaptive learning systems to AI-driven assessments and personalized support mechanisms, AI is poised to transform how DEI is integrated into learning frameworks. Let's discuss some ways AI can enhance inclusivity and increase DEI—quickly and affordably—in learning content, experiences, and systems.

Adaptive Learning: These systems use machine learning algorithms to tailor learning strategies and experiences to the unique needs of each student. By continuously analyzing learner performance, style, and engagement data, adaptive learning platforms can create personalized learning that adjusts in real time. This is particularly beneficial for learners with varied physical, mental, or emotional abilities, language barriers, or different cultural backgrounds, and can help ensure accessible and engaging learning for all.

Intelligent Tutoring Systems (ITS): These are another AI innovation that can help ensure DEI compliance and increase access and engagement. These AI-driven platforms mimic one-on-

one tutoring by providing personalized feedback and guidance. ITS platforms identify learner strengths and weaknesses, offer targeted interventions, and help bridge knowledge gaps. For DEI-specific purposes, ITS can incorporate culturally relevant content, multilingual support, and varied learning style options.

AI-Driven Assessments: These offer a more nuanced and objective approach to evaluation than traditional assessment methods. By utilizing natural language processing and pattern recognition, AI can analyze written responses, project work, and even oral presentations, providing comprehensive and customized feedback, quickly. These assessments can adapt to the cultural, linguistic, and ability attributes of learners, ensuring that evaluations are fair and reflective of each student's unique capabilities.

Affective or Emotional AI: Understanding the emotional and psychological state of learners is key to nurturing an inclusive learning environment. Sentiment analysis via Affective or Emotional AI tech is emerging as a significant tool in this area. By analyzing language, facial coding, and interaction patterns, Emotional AI can assess the level of emotional engagement and well-being of learners. Educators and Learning Designers can utilize this data to identify learners who may be struggling emotionally or socially and intervene appropriately.

Blockchain Technology: This is technology currently used to enhance transparency and trust in academic records. Blockchain tech can be used to create verifiable records of learner achievements and credentials. This is particularly beneficial for marginalized, underrepresented, or displaced learners who may lack traditional documentation. By securely storing academic records on a blockchain in the cloud, all learners can have consistent and equitable access to their educational history. This helps to facilitate smoother transitions between educational systems and institutions.

Voice-Activated Assistants or Chatbots: Voice-activated assistants and chatbots are making learning increasingly accessible, particularly for learners with disabilities. This AI tech can offer real-time assistance including navigational support, answering queries, or dictating content. For learners with visual impairments or language barriers, voice-activated assistants can serve as invaluable tools for accessing and interacting with learning materials. The development of multilingual chatbots further contributes to an inclusive learning ecosystem, by providing support in a variety of languages and dialects.

Gamification and AI: Gamification combined with AI is emerging as a powerful strategy to engage diverse learners. AI can adapt serious gaming elements to suit varied learning styles and preferences. This can help make learning fun and increasingly immersive. Gamified learning environments can be particularly effective in reaching learners who may otherwise be disengaged by traditional teaching methods and can help provide an alternative path to success.

AI-Enhanced Learning Analytics: AI-enhanced learning analytics can provide Learning Designers and Educators with deep insights into learner performance and learning patterns. By analyzing learner data quickly, learning analytics can highlight disparities and identify trends that may not be readily evident via traditional assessment or that could otherwise take extensive time to compile. This empowers targeted interventions and resources that can support underrepresented learner groups more equitably and effectively.

Virtual and Augmented Reality (VR/AR): Finally, Virtual and Augmented Reality (VR/AR) technologies, powered by AI, are creating evolving possibilities for inclusive learning. VR and AR can create immersive learning environments that transcend physical and socio-economic barriers. For example, learners from varied backgrounds can collaboratively explore

historical sites or scientific phenomena in a virtual space, breaking down geographical and cultural barriers. AI can further enhance these experiences by personalizing content to a learner's context, making learning experiences both inclusive and universally engaging.

Now let's think back to our original challenges in creating inclusive content - time and cost. While it's true that the AI tools listed above have an initial, upfront cost, it is equally true that - over time - this cost is offset by the increased speed and decreased time required to develop adaptable, inclusive, and accessible learning ecosystems. Before AI, ensuring Americans with Disabilities Act (ADA) and DEI compliance across a learning experience could've taken months and thousands of dollars.

This time can be trimmed to weeks or even days, by remembering to take the following actions:

Build to the End - create learning content and ecosystems with the end in mind. If you want inclusive and accessible content, ensure that color contrast, font sizes and types, directives, links, media, headings, and tables are accessible via assistive technology. Ensure that content is available across varied languages and can be leveraged by learners with varied needs and ability types. AI can help cross-check accessibility against ADA standards and requirements, with speed.

Design Inclusively - as you design and create your learning content, ensure inclusivity in images, pronouns, character names, backgrounds, scenarios, illustrations, voice-overs, or other embedded media or perspectives espoused. Dominant cultures can be easy to default to and can leave your diverse learning audience excluded and underrepresented. Remember the varied social identifiers and backgrounds your learners may come from and work to be as inclusive as possible, from the start. AI can be leveraged to generate diverse, copy-right-free images at little or no cost and can be used to rapidly cross-check inclusivity against DE standards.

Consider the Divide - consider the access to technology and the environment within which your target audience will consume your content. This is particularly important when you consider that some members of your learning audience may come from underserved populations with more limited access to some technologies. This may impact where, when, and how they need to access, interact with, and leverage the learning experiences you create. When you consider the divide, you'll recognize how important it is to select the most appropriate use of AI (think back to our non-exhaustive list of potential uses) to ensure that your learners will be able to access and use it. AI can help here too! It can help you think through the most appropriate learning solutions and interventions for your target audience.

Ultimately, the emergence of AI technologies is revolutionizing and speeding up the development of increasingly effective and inclusive learning experiences. AI innovations bring the promise of learning environments that are not only inclusive but also tailored to the unique needs of every learner. As Learning Designers and Educators continue to explore and implement this technology, the traditional time and cost associated with achieving DEI compliance, inclusivity, and accessibility in learning content and experiences reduces dramatically, making inclusive, adaptive content a reality for all learners from all backgrounds.

Let's look back at and streamline our formula one last time, based on what we've discussed. Perhaps, DEI and AI can combine as follows:

DEI + Learning Strategy & Method x AI = Faster, More Inclusive & Engaging Learning

Now that we've got our formula streamlined a bit and better understand some of the ways DEI and AI can be leveraged to quickly create increasingly inclusive, and engaging learning, let's reflect.

- How might YOU leverage AI to drive diversity and equity in your work?
- How might YOU use AI to speed up and increase inclusivity and accessibility?
- How effectively has your organization or institution incorporated DEI compliance?
- How ready is YOUR organization or institution for broad AI adoption?
- How might your learners be able to access and leverage AI inclusively?

As you reflect on the questions above and drive towards your solutions, remember that this paper is just a starting point for what should be the beginning of your journey into learning more about DEI, Accessibility, and AI. Check out some resources below that were used in the creation of this paper and that YOU can use as you seek to learn more on your journey to incorporate DEI and AI successfully as a professional.

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