

# AI Bytes

## Making Sense of Artificial Intelligence in Literacy and Basic Skills Education

A Contact North | Contact Nord and Literacy Link South Central publication

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Welcome to *AI Bytes*, your digital digest for the latest in artificial intelligence information for literacy & basic skills (LBS).

Can Artificial Intelligence (AI) and Universal Design for Learning (UDL) transform education? Explore how these innovative tools and practices can revolutionize learning by making it personalized, accessible and engaging for every learner.

In this issue, we explore the transformative potential of AI and UDL in education, allowing you to discover how AI can customize learning experiences to individual needs, and enhance accessibility and engagement. We examine how integrating UDL principles with AI can create inclusive environments that address diverse learning styles. Learn about cutting-edge AI applications that support differentiated instruction, boost learner engagement and provide instant feedback. We also share insights on using AI to design flexible learning materials and assessments that cater to various abilities.



## Inside *AI Bytes*

This bulletin is the fifth in a series of six scheduled for distribution throughout 2024 and 2025. We specifically designed it to provide valuable insights and resources for educators in adult education, with an emphasis on LBS programs

In this issue, we cover:

- How AI is transforming accessibility and education for all learners
- Global and Canadian accessibility statistics
- Breaking down barriers with smart technology and UDL
- Practical applications of AI use in LBS
- Additional AI and UDL connections
- The path forward: The future of learning

## Meet the AI Bytes team



**Carolina Cohoon** is an EdTech Consultant at Literacy Link South Central. Her professional background encompasses education and rehabilitation, with a passion for inclusion and accessibility.

Carolina is dedicated to designing learning experiences that celebrate and embrace diversity. Her interest in artificial intelligence (AI) is fueled by her enthusiasm for innovation, knowledge sharing, enhancing accessibility, and improving the learning experience through personalized learning adaptations that AI can offer within the framework of Universal Design for Learning (UDL).



**Jeremy Marks** works for Literacy Link South Central as a project manager and edtech researcher. He completed the Teacher/Trainer of Adults program at Conestoga College and now teaches Essential Skills in London. Jeremy has

taught learners in public and secondary schools, colleges, and universities in Canada and the U.S. since 2002. His fascination with AI comes from his longstanding passion for educational theory and cognitive philosophy.

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*\* This bulletin is edited by Contact North | Contact Nord.*

## How AI is transforming accessibility and education for all learners

In a recent AI Community of Practice, a deafblind member captured the room's attention with a simple yet profound declaration: "This AI is a miracle!" He elaborated on its transformative potential, describing how AI could summarize information across multiple websites. "Instead of tediously exploring one website at a time," he shared, "AI can interrogate multiple sources, summarize the main ideas and deliver tailored information in ways that suit our needs." His testimony served as a striking reminder that despite persistent barriers to website accessibility, AI offers promising solutions and innovative approaches to information access for people with disabilities. This potential of AI to reshape accessibility is particularly significant at this moment. While adhering to proper coding and accessibility standards remains essential, generative AI introduces dynamic, personalized solutions that were once unimaginable. In education, this means breaking down barriers and creating spaces where every learner, regardless of ability, can thrive.

Accessibility in education is about more than compliance. It's about equity. Using the Universal Design for Learning (UDL) framework, educators can design environments that adapt to diverse needs, much like an architect incorporates ramps and adjustable lighting into a building. Now, imagine augmenting this design with AI: a tool that transforms content into multiple formats, tailors resources to individual preferences and ensures equitable access to knowledge.





When integrated thoughtfully, AI amplifies UDL's principles, converting complexity into clarity and accessibility into empowerment. By merging these approaches, educators can craft learning ecosystems that are flexible, inclusive and driven by innovation — a blueprint for an educational future where no learner is left behind.



## Global and Canadian accessibility statistics

Here's a brief overview of the role disability plays in learning and accessing information globally and in Canada.

### Around the world:

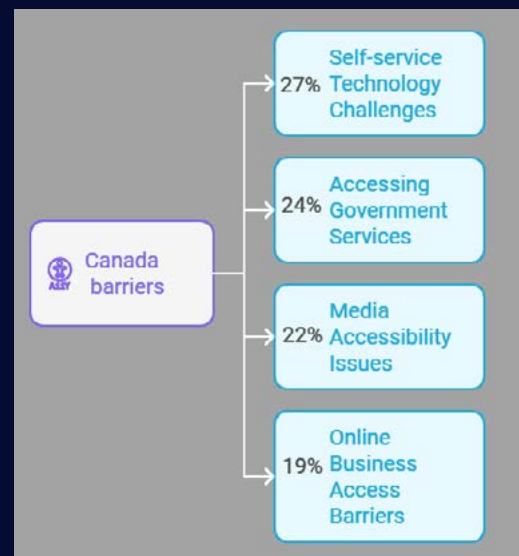
- One in six (16%) people live with some form of disability ([WHO](#))
- A 2024 analysis of the world's top 1 million home pages showed a staggering 96.9% failed to meet criteria from the Web Content Accessibility Guidelines (WCAG) 2.0 level AA ([WebAIM](#))
- 70-80% of disabilities are invisible disabilities ([Inclusive City Maker](#))



### In Canada:

Nearly half (45%) of Canadians with disabilities have encountered barriers in using information and communication technologies:

- 27% struggled to access self-service technology
- 24% had trouble accessing federal government information, services or support online
- 22% faced barriers consuming entertainment such as TV shows and movies on traditional platforms
- 19% found it difficult to access federally regulated businesses online ([https://www.canada.ca/disability\\_accessibility\\_and\\_inclusion\\_report](https://www.canada.ca/disability_accessibility_and_inclusion_report))



## Breaking down barriers with smart technology and UDL

Ontario has committed itself to ensuring accessibility for all residents. In 2005, the legislature passed the Accessibility for Ontarians with Disabilities Act (AODA), which is committed to identifying, removing and preventing barriers for people with disabilities in important areas of their daily life including:

- Customer service
- Information and communication
- Employment
- Transportation
- Design of public spaces (AODA, 2005)

Modern AI-powered technologies have emerged as powerful tools to achieve these accessibility goals. They are revolutionizing information access by providing real-time, personalized adaptations: converting written content to natural-sounding speech, transcribing spoken words into accurate text and transforming visual information into detailed descriptions.

AI-powered education tools also form an essential part of Ontario's commitment to transform accessibility, instantly adapting content to the needs of each learner. For example, AI systems can now detect and describe complex visual elements in educational materials, convert content into various formats, and provide real-time closed captioning in virtual meetings — capabilities that were unimaginable when AODA was first enacted.

The CAST UDL Guidelines were also updated last year to enhance their effectiveness and promote inclusion, incorporating considerations for AI integration:

- **Shift in core objective:** The core objective of the UDL Guidelines has shifted from developing expert learners to cultivating

learner agency. This change emphasizes empowering learners to take control of their own learning journey.

- **Language changes:** The updated version has removed the “provide” language from all three principles and nine guidelines. This shift signals that the UDL Guidelines should not be seen as an adult-centric tool or a checklist but as a collaborative framework for co-creating learning experiences with young people.
- **Addressing bias and exclusion:** The new update places a strong emphasis on addressing bias and exclusionary practices. It aims to give learners more voice, choice and autonomy in their learning, fostering an environment where every learner feels valued and included.
- **Integration of executive function:** The restructuring of how executive function is integrated into the guidelines aligns more accurately with a neuroscience perspective. This alignment ensures the guidelines are grounded in the latest scientific understanding of how the brain functions.
- **Emphasis on identity:** The updated guidelines emphasize the importance of identity as part of variability. They recognize the significance of learners' cultural and linguistic practices, ensuring that these aspects are considered in the design of educational experiences.
- **Collaboration and collective learning:** The guidelines now foster collaboration, interdependence and collective learning. This focus encourages learners to work together, learn from each other, and develop a sense of community within the classroom.
- **AI integration:** The guide highlights the limitations of relying solely on traditional educational tools, which can hinder learners' ability to fully express their knowledge and constrain teaching methodologies.

By incorporating AI, educators can unlock more dynamic, creative, and accessible learning environments, better preparing learners for the demands of the future.

*“Relying upon traditional tools has several liabilities: 1) it does not prepare learners for their future; 2) it limits the range of content and teaching methods that can be implemented; 3) it restricts learners’ ability to express knowledge about content; and, most importantly, 4) it restricts the kinds of learners who can be successful”*

By integrating smart technology with the updated [CAST 2024 UDL Guidelines](#), we can create educational environments that are more inclusive, responsive and empowering, ensuring every learner has the opportunity to succeed.

We’ve provided you with some examples of scenarios illustrating how this looks.

Scenarios in the learning environment and UDL principles: [Download your copy here!](#)



## Additional AI and UDL connections

One size has never fit all in education, and AI now makes true personalization a reality. Adaptive learning platforms like [Duolingo](#) tailor lessons to a learner’s pace and preferences. If a concept proves challenging, the system rephrases it or breaks it into smaller, more manageable steps. Conversely, when a learner excels, the platform increases the difficulty, keeping them engaged and motivated.

For neurodiverse learners, such as those diagnosed with dyslexia, ADHD or autism, personalization is especially impactful. Several tools can support these learners in various ways. For writing and spelling, tools like [Grammarly](#), [Chat Assist](#) or [iOS Writing Tools](#) helpful proofreading assistance. Executive functioning skills, crucial for success, can be supported by tools like [Todoist](#) which helps learners stay organized and on track. [Goblin Tools](#) (Magic To Do) is particularly useful for breaking down large assignments into smaller, more manageable steps, making them less overwhelming.

[Microsoft Edge’s Immersive Reader](#) removes distractions like ads and menus, presenting only the essential text and images. Its [Read](#)

**Mia**



**A learner diagnosed with ADHD loves the Math activities on Khan Academy, which uses AI to create personalized learning paths. The platform breaks down complex tasks into manageable steps, offering perfectly timed prompts that maintain focus and motivation.**

[Free account for Educators.](#)

**Engagement**

Khan Academy’s AI-driven personalized learning paths provide tailored support for learners with ADHD by breaking down complex tasks into manageable steps and offering perfectly timed prompts. This approach ensures appropriate challenges, maintains focus and motivation, and supports participation and progress toward learning goals. The platform’s feedback is relevant, constructive, timely, and emphasizes effort and practice, encouraging perseverance and the development of long-term learning habits. Additionally, the feedback helps learners reflect on their progress and incorporate positive strategies for future success. [UDL Consideration 8.2](#) (Optimize challenge and support), and [Consideration 8.5](#) (Offer action-oriented feedback)

**Action and Expression**

The platform’s feedback is relevant, constructive, timely, and emphasizes effort and practice, encouraging perseverance and the development of long-term learning habits. Additionally, the feedback helps learners reflect on their progress and incorporate positive strategies for future success. [UDL Customization 5.3](#) (Build fluencies with graduated support for practice and performance)

**Representation**

Khan Academy’s personalized learning paths cater to the learner’s unique needs, making the content more accessible and easier to understand as it has the capacity to help learners connect previously learned topics and reinforce learning. By breaking down complex tasks into smaller steps and with multiple representation of the concept, the platform supports the [UDL Consideration 2.1](#) (Clarify vocabulary, symbols, and language structures and [Consideration 2.5](#) (Illustrate through multiple media), which helps the learner better comprehend and retain information.



[Aloud](#) feature uses AI for natural-sounding text-to-speech, and built-in grammar tools support comprehension by highlighting parts of speech and breaking words into syllables. These features reduce clutter and cognitive overload, improving attention and information processing. Safari's Reader Mode functions, similarly, strip away unnecessary content for a cleaner, more focused reading experience. Furthermore, [Safari](#) also leverages machine learning to proactively identify and block trackers, safeguarding user privacy – a crucial consideration when educating learners about online safety and data protection.

AI can develop [interactive and immersive learning resources](#) that captivate learners' attention and enhance their understanding of complex concepts. From virtual reality simulations to AI-driven educational games, the possibilities are endless!

The University of Calgary created a downloadable infographic showcasing many other AI tools and connections to UDL. To review and download, please follow this link: [The Use of AI for Accessibility and Inclusion | Taylor Institute for Teaching and Learning | University of Calgary.](#)

## The future of learning

The landscape of AI-powered educational tools continues to evolve, introducing innovations that reshape how we think about accessible learning. Advanced systems are emerging that can fundamentally transform the educational experience.

- Emotion-aware AI represents a significant breakthrough, utilizing affective computing to recognize and respond to learners' emotional states. These systems can detect signs of engagement or frustration, automatically adjusting content delivery to maintain optimal learning conditions. This technology ensures that learners receive support precisely when they need it most.
- Customizable interfaces serve as another cornerstone of inclusive learning, creating environments that adapt to individual preferences. These systems remember and implement specific requirements for each learner, from font size adjustments to colour contrast modifications, ensuring the learning environment is optimally configured for each individual's needs.



Natural language processing continues to advance, breaking down complex concepts into more digestible formats. This technology acts as a bridge, making sophisticated ideas accessible to learners across different comprehension levels and learning styles.

However, this technological advancement brings significant challenges that require careful consideration:

**Accuracy and precision concerns:** Speech recognition and transcription technologies, while advancing rapidly, still face challenges with diverse accents, dialects and non-standard speech patterns. These limitations can create barriers for learners from diverse linguistic backgrounds. Data bias also remains a persistent issue, as AI models trained on limited datasets may misinterpret or misclassify information, particularly affecting marginalized groups.

**Ethical considerations in implementation:** The collection and analysis of personal data for AI training raises important questions about privacy and security. Education institutions must carefully balance the benefits of personalized learning with the need to protect learner information. Algorithmic bias can also perpetuate existing societal inequities if not carefully monitored and addressed.

**Accessibility and representation:** The current landscape reveals several critical gaps in AI accessibility:

- Underrepresentation of people with disabilities in training data limits the effectiveness of AI solutions
- Overreliance on automated systems without adequate human oversight can lead to accessibility barriers
- AI models may inadvertently perpetuate stereotypes or misclassify information, particularly affecting marginalized groups



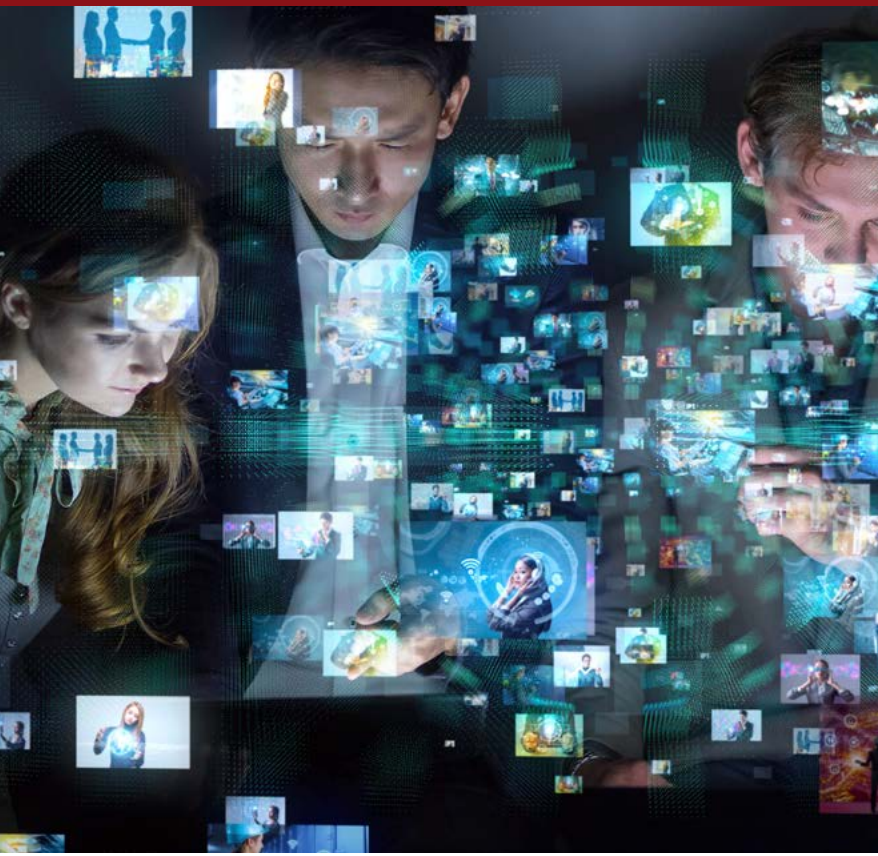
## The path forward

AI presents us with both limitless possibilities and profound responsibilities. As we navigate these challenges, our focus must remain on developing strong digital literacy and ethical AI usage. This isn't just about managing risks, it's about thoughtfully integrating these tools to create a world where technology serves as a bridge, rather than a barrier, to knowledge and opportunity.

The path ahead requires vigilance and adaptability. In this emerging era, the digital world isn't just becoming more accessible; it's evolving into a space where everybody, regardless of background, has an equal opportunity to thrive. Our success will be measured not by the sophistication of our systems but by their ability to elevate every voice and empower every learner.

Let's move forward with the conviction that thoughtful innovation, guided by ethical principles, will light the way to a truly inclusive digital future.





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[What to Know About the UDL Guidelines 3.0 Update](#)

[AI for UDL: Leveraging ChatGPT for Universal Design Learning — Aaron Lanou](#)

## **AI Bytes edition 6: What's next**

In the upcoming bulletin, we'll share more information on privacy and the ethical uses of AI, continuing our commitment to responsible advancement in this rapidly evolving landscape, and new tools to integrate AI in LBS.

See you next time!