Framework for Accessible and Equitable Artificial Intelligence (AI) in Education

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# Contributors

This work is an aggregation of work being done in the Artificial Intelligence, Education, and Accessibility communities. It reflects the work and influence of many diverse voices and perspectives.

## Project Leadership

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## Disclaimer

The views expressed in this publication are those of the author(s) and do not necessarily align with the views of the Government of Ontario or the Ontario Online Learning Consortium.

The following framework was written in early 2024. It is meant to be the start of a conversation that continues with your contributions. What is presented here will not keep up with the field of AI in Education. By the moment it is uploaded into a repository, the domain will have already changed. This is the burden we, as content producers, have to address in this brave new world of AI.

How might AIs use the following content, we wonder. We remain hopeful they will propagate the approaches and warning and benefits, but we are troubled knowing some have already been trained to treat hostile those things that address diversity, equity, and inclusion.

And a reminder that with AI, what is the ‘best’ today might not be tomorrow…

## Licence

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The guidelines will be developed as an Open Education Resource (OER) that will have a systems framing regarding accessible and equitable AI in the sector that addresses current and emerging AODA requirements. The areas that AI is applied to include, but are not limited to admission, assessment, proctoring, hiring, student use for assignments, assistive technologies for sector members with disabilities, faculty use for curriculum development, faculty-student interaction and assessment, administration use for administrative tasks, communication, dissemination, recruitment, research proposal preparation, research report writing, meeting management, and productivity tools. These topics will be covered in a practical guide, which will also cover large language models (LLM), generative AI, and pervasively deployed and embedded AI decision systems.

# Introduction

This is a practical guide to the dizzying domain of artificial intelligence within the education ecosystem, with a particular focus on the impact on equity and accessibility. AI and accessibility are beginning to have an interesting conversation. Not unlike the conversation about AI in general, the conversation about AI and accessibility in education can be found taking a techno-solutionist or techno-tragedist perspective. As we grow wary of this false dichotomy, we move toward what is much more likely to be the case: that it will be “both/and” *and* “neither/nor.” AI can make things better. It can benefit us all, it can address inequities, and it can lower barriers for people with disabilities in education. It can equally be used to amplify inequities (intentional and unintended), including discrimination against people who do not fit a “norm.”

AI is neither uniformly bad nor uniformly good for furthering our goals of eliminating barriers to education for people.

There are, however, a few key areas where we must be vigilant to ensure AI tools are used to break down barriers, not create them:

1. We must be actively critical to ensure AI tools protect and respect the complexities of digital [privacy](#_Privacy_breaches_and) and don’t compromise it to deliver “optimization.”
2. We must be able to opt-in and opt-out, or at least understand how our use of systems contributes to our own [surveillance and manipulation](#_Surveillance_and_manipulation).
3. We must speak up to make sure AI addresses the voices of those on the edges, for whom the “typical” will never work. Without intervention, we risk AI creating a kind of amplified, fractal echo-chamber, advancing [homogenization](#_Homogenization) and being capable of enacting more discrimination at a faster rate.
4. We must build in protections for those who measure beyond a certain standard deviation for an “average” assumed through data that perpetuates [statistical discrimination](#_Statistical_discrimination).
5. We must proceed with eyes wide open for the [human and environmental costs](#_Connectivity_costs) of using and growing AIs and the impact on climate change (another complex problem that disproportionately impacts those who already face discrimination and inequities).
6. We must be able to follow the results of AI to a source so that we can avoid and track its own mistakes, its [hallucinations](#_Hallucination).
7. We must maintain the “human in the loop” if we are to have difficult conversations that move us beyond a sanitized AI output of [censorship](#_Toxicity_sensors_(censoring).
8. We must address the failure of AIs to avoid [biased, stereotyped output](#_Biased,_stereotyped_output)—an upstream data problem.

This is our call to vigilance, critique, and action.

What sets AI apart from previous “new tools” is the rapidity of its integration into our living, working, and playing spaces. The speed makes this tool uniquely capable of amplifying harmful inequities.

As with any new technology tool, the larger community will create limits and guides for use based on a combination of considerations, including equity, ethics, regulations, and best practices. Historically, those guides and early laws have not protected those most vulnerable: those who have been impacted by inequities based on human diversity and entangled with intersectional identities that have been impacted by the matrix of domination.

We can be sure that some of those practices will consider diversity, equity, and inclusion (DEI), but worryingly and predictably, that has not been the case with the development, implementation, and reliance on AI. And AI is already being used all around us, impacting our daily lives. But it is too early for there to be established precedence that can protect the most vulnerable from the systems—both AI and societal—already being used.

The authors of this resource are actively working on a standard for Canada called the “Accessible and Equitable Artificial Intelligence Systems.”[[1]](#footnote-2) Within that work, a technical committee is working on a series of basic conditions that must be met by AI if it is to be both accessible and equitable. We present those [conditions as requirements for AI systems](#_Conditions_for_Accessible) adopted into our educational systems.

We implore you, the larger community of higher education professionals in Ontario, to engage with the information in this resource and join the conversation about accessible and equitable uses of AI in education. And let it impact the ways we discuss, adopt, use, interrogate, and assess our engagement with AI in our roles within education. More than ever, educating ourselves about AI and its possible impact is essential. As Maha Bali suggests, we are at a point of desperately needing “critical AI literacy” (2024c).

# General AI Risks

Kate Crawford speaks about the five layers of extraction that AI causes. They are earth, labour, data, user, and device. Crawford warns us of the larger implications of this data-as-master-of-everything approach:

Current machine learning approaches are characterized by this aspiration: to map the world. A full quantification of all knowledge from tracking human movement across the globe to interpreting our emotions and our characters. Everything that can become an object of quantification is being quantified. There is a massive land grab going on right now to get as much data as possible and we are living in the greatest, and I would suggest largest, classification experiment in human history. (UNSW, 2020, 38:16)

## Privacy Breaches and Data Abuse and Misuse

AI systems work optimally when they know as much intimate information about the “prompt generator” (you) as possible. For some of the “magic” promised by AI systems, we must consider what private, individual information must be shared. And by sharing it, how it can then easily be misused and abused. To take advantage of personalized systems, we must ask, what must we reveal about ourselves? They are extracting our personal information to perform optimally for us, but also to extract our “labour” unknowingly to further their own training. ReCAPTCHA, those little boxes that are meant to determine if you’re a robot or not, are Google’s way of getting you to tag and label images that they then use to train their AIs. The systems then store and propagate our own information without conscience.

We further give our data away in the terms of service agreements that most reflexively click “accept” to. They often contain the details of a relationship with tools our institution has made available for education. In this relationship our clicking “accept” and using the learning management systems (LMSs) to engage in courses, or using the Microsoft 365 suite for productivity makes us data producers who have authorized others to consume and use our data.

OpenAI’s Chief Technology Officer, Mira Murati, when interviewed by the *Wall Street Journal*, could not report what data Sora (a video generation model) was trained on and did not seem to know what data was used for training. She stated, “We used publicly available data and licensed data” (WSJ, 2024). She said she wasn’t sure if it had been trained on videos from YouTube. In what has been called a cringe-worthy moment, she also didn’t know if it was trained on videos from Facebook or Instagram. Then the interviewer asked about Shutterstock, at which point Murati said she “wasn’t going to go into details about the data that was used, but it was publicly available or licensed data” (WSJ, 2024).

These questions and the subsequent answers clearly reveal what we (and the CTOs) do not know about AI systems: Are they using our data? Facebook, Instagram, Shutterstock—those are platforms where we have personal data, some professional data too. Are the privacy choices we make within those platforms being followed? We don’t know, and presumably, neither does Murati. Also, content creators like [The Blind Kitchen](http://theblindkitchen.com/) on YouTube are compensated based on YouTube’s business model—one that is based on subscribers and views. How does AI training on The Blind Kitchen’s content impact her compensation?

One of the problems here is that the gathering and collecting and training on data is not transparent to us. We, and the CTO, cannot answer whether or not our data is being used to train the AI. This could amplify existing data breaches without any means of detection or corrective action. The utter lack of transparency is one of the main reasons for warnings that AI will cause great harm. When we defer to AI and we ultimately don’t know where AI is getting its information, where are we left?

## Surveillance and Manipulation

AI systems that have collected private information are capable of tracking and manipulating. To the systems, more information is always better, but to the individual, more information can pose a risk for being watched or manipulated. If AI systems aggregate our personal information, it isn’t difficult to see how it could harm individuals, especially individuals who are already part of a marginalized or monitored group. The system has data about what you like, it can collect data on what you’re struggling with.

And AI can outright manipulate you through experimentation without consent. In January 2012, “Facebook’s data scientists manipulated the News Feeds of 689,003 users, removing either all of the positive posts or all of the negative posts to see how it affected their moods.” This isn’t the first time Facebook has experimented on its users either: “Facebook has played around with manipulated people before— getting 60,000 to rock the vote in 2010 that theoretically wouldn’t have otherwise” (Hill, 2014).

Joy Buolamwini and others have highlighted the risk of creating tools for mass surveillance that are then in the hands of those with power. In her book *Unmasking AI,* she discusses the use of facial recognition software, its erasure and misidentification of Black people, its use in law enforcement, recidivism decision-making, housing, employment, and more. The Algorithmic Justice League is made up of a number of academic AI experts, including Buolamwini, who are pushing to make AI work safely for everyone and not cause harm to marginalized groups.

## Statistical Discrimination in Education

AI was created within a context, as part of a historical narrative. That narrative includes the use of inherited tools and approaches that amplify statistical discrimination.

### Origins

Since the 1800s and the emergence of demographic analysis, statistical reasoning has been the favoured form of producing evidence and determining the veracity of research claims regarding humans. Statistical power is a favoured key to determining academic rigour in research, granting publication in high-impact journals, successful research funding, and thereby tenure and promotion in the academy. It is echoed in majority-rules decisions, assessment of research impact through quantitative analysis, and processes to scale innovations through formulaic replication of “winning” solutions.

### Artificial Intelligence

This veneration of statistical reasoning is amplified, accelerated, and automated in the power tools of artificial intelligence. Statistical reasoning is the basis of optimization routines in AI decision systems. In AI decision tools, statistical reasoning is used to optimize success patterns based on available data. Since data is from the past, this amplifies, accelerates, and automates the winning patterns of the past, replicating the past but only “better.” Unlike “fallible” human decision-making, AI decision systems can arrive at the statistically determined decisions more accurately, consistently, and efficiently.

Employing AI decision tools to assist in, or automate, arduous decisions within post-secondary education, such as large-scale admissions, hiring, promotion, grading, or proctoring, can appear to be merely implementing accepted processes more accurately, consistently, and efficiently. The strategy also carries the added appeal of reducing labour costs and exonerating staff from direct responsibility.

This line of reasoning ignores the outliers and historically marginalized minorities who have been excluded from past success data and success metrics. The AI power tools mechanize, amplify, accelerate, and automate past discrimination more accurately, efficiently, and consistently. When AI is used to sort, label, select, find, match, calculate, measure, or analyze people at scale, it puts past discrimination on hyperdrive. It also homogenizes the outcome and pushes toward a monoculture. The student, applicant, faculty member, or staff member who deviates from past success patterns faces statistical discrimination. With more granular, detailed data arrived at through surveillance systems in learning management systems and employee productivity tools, this discrimination becomes more accurate and consistent. AI tools do not provide the opportunity to make exceptions or recognize the misfit of metrics for a particular person or group.

### Statistical Discrimination in AI Ethics Measures

Unfortunately, current AI ethics measures also deploy statistical reasoning. Risk-benefit analysis and impact assessments use quantitative statistical analysis to determine the balance of risk to benefit and the thresholds of impact. Most AI ethics guidelines focus on achieving proportional representation of under-represented groups in data, removing biased data labels, stereotypical proxies, and offensive metrics. However, even with full proportional representation and the removal of all biased human presumptions in labels, proxies, and metrics, outliers and minorities will still face statistical discrimination from statistical optimization.

### Remedy

AI acts as a mirror of human conventions and promoted value systems. Commercially available AI is designed to maximize attention, popularity, and profit using available data. This is consistent with the veneration of statistical reasoning in the academy. By amplifying the outcomes of human conventions, AI offers an opportunity to reconsider accepted practices and customs.

There is a growing recognition (albeit contested) of the value of human diversity for better decision-making, more accurate prediction, and greater innovation. AI optimization routines can be used to optimize diversification, rather than exploiting data to amplify homogenization or replicate past successes. This inversion of metrics can be used to diversify hiring and admissions and to highlight novel and unique contributions to scholarship and research.

Until statistical discrimination is addressed, AI *used to make decisions regarding any person that is beyond a threshold of difference from the statistical average of the AI training data should be approached as though it is likely doing harm.*

Most notably this applies to anyone with a disability, whether or not they have self-identified. Disability, from a data perspective, means difference from the average. People with disabilities tend to be outliers. Unlike other minority groups, people with disabilities are more different from each other than people who are statistically average diverge from others who are also average.

## Homogenization

As we explore below, the AI system can cause a homogenization and a reification of what is a “default,” further perpetuating bias and inequity.

With AI, the default socially becomes the default programmatically.

AI is a mere mirror of our own social, ethical, and political mores. If the tools are based on the average person, and by that we mean someone without a disability, then we will recreate inequities that already exist socially, technologically, and systemically. For example, if we are using a speech-to-text tool, the “average user” that the tool has been designed around does not have an accent, has no speech disability, and has a voice that achieves a baseline for the tools, then our tools will fall short of meeting the needs of anyone whose voice does not conform to a narrowly defined “default.”

As Liss Chard-Hall reminds us, “AI is not a divergent thinker” (DEEW, 2023), and it’s not only not neurodivergent, but it is flattening its responses to a neuro-homogeneity. The divergent thinker shows us that the neurodivergent thinker is still the magic in this exchange. Thinking outside the literal and theoretical box is something that the neurodivergent individual can do and the AIs cannot.

Who is and where is the human in the loop for someone to check on the AI for use involving vulnerable populations? If we’re leaning on “it’s still better than nothing,” then we have a decidedly low bar for ethical standards—one that AI would appear to have lowered.

## Hallucination

Both hauntingly and adorably, we call made-up answers from AI “hallucinations.” These hallucinations are haunting because they are so convincing that they will challenge our ability to distinguish between real and fake news. The hallucinations, unfortunately, do succeed in deceiving us, as Joseph Weizenbaum notes in the 1960s with his chatbot ELIZA. He was horrified by how seemingly easily people were deceived when they chatted with ELIZA. Weizenbaum suggests that the “computer professional therefore has an enormously important responsibility to be modest in his claims” (2023). We are not seeing that circumspection within the communities creating AI. Creators and champions have suggested AI will eradicate diseases, solve climate change, and solve the world’s biggest problems. This is not modesty.

With more practical uses, such as automated captions, we still require the human in the middle. “For WCAG conformance, captions must be 100% accurate—automatic captions simply aren’t there yet. YouTube’s automatic captions are roughly [60-70% accurate](https://itss.d.umn.edu/centers-locations/media-hub/media-accessibility-services/captioning-and-captioning-services/correct#:~:text=YouTube%20automatic%20captions%20typically%20provide,%2C%20or%20multi%2Dsyllable%20words.), and creators need to carefully review the output” (BOIA, 2023).

YouTube automatic captions typically provide about 60-70% accuracy, which means that 1 in 3 words can be wrong. This accuracy rate will be improved with good audio quality and simple content but worsens when there is background noise, accents, or multi-syllable words. (ITSS MediaHub)

Now consider who uses automated captions. Certainly, we all do, but some people depend upon captions to access content at all. How comfortable are we with automating and accepting the error rate for that audience? Our own policies and laws suggest it isn’t enough. AI unfortunately can degrade the feature further, giving content creators a false sense of “doing the right thing” and giving those who depend on the feature inaccurate or unusable content. Policies and practices among universities, like the one highlighted above, already implore that the “human in the loop” is still necessary for this automated task.

3Play Media was listed in a settlement between Harvard University and National Association of the Deaf. In it, the process for captioning was required to be as accurate as 3Play Media’s process creates—99% accuracy. Below is a description of 3Play Media’s process:

1. Each caption file goes through automatic speech recognition technology to produce a rough transcript.
2. A professional transcription editor cleans up the rough transcript using our proprietary software.
3. The transcript is finally reviewed by a professional quality assurance manager to check for correct spelling, grammar, and more. (Lazzari, 2020)

“A combination of speech recognition technology and human editors is what allows us to efficiently deliver a caption file that is 99% accurate or higher to all of our customers” (Lazzari, 2020).

Captions require this level of attention to achieve 99% accuracy because voice recognition is imperfect. It does not work well for some voices (let along someone with a speech impairment), and it does not work well for esoteric words. So, the farther your vocabulary or accent from the imagined default, the worse your captions. The human in the loops is essential to capture the literal voices and intentions of humans speaking.

Gary Marcus, a cynic, and critic of AI systems, recently said, “For a long time I have been baffled about why so many people take LLMs so seriously, when it is obvious, from the boneheaded errors, hallucinations, and utter inability to fact-check their own work, that the cognitive capacities of LLMs are severely limited” (2024). He then points to an article by Baldur Bjarnason that draws a parallel between LLMs and the methodology of mentalists. Some might consider Marcus overly negative when it comes to AI, nevertheless, his warnings are relevant and legitimate and are playing out over time. Why, indeed, do we tolerate systems that can be so wrong, can manipulate us, and can lead us to harm others?

Hallucinations are a major problem for people who use AI and for AI as well. When our truths are made up by a disembodied algorithm that is granted enough trust that it is not held to a standard that demands it show provenance and attribution and references, then we are in a real conundrum. To trust something that is not thinking, feeling, nuanced, or experienced is perhaps only a [human foible](#_Ethics_of_Personhood).

With AI that claims to perform human actions like understanding, learning, and knowing, it’s important to remember that these systems are using probabilistic understanding, learning, and knowing. It is calculating. Tunable tricks.

AI should raise in us a need to reconcile our proposed or stated ethics (especially in High Ed, with the DEI statements about equity on our websites) with our actions. If we know that AI systems do harm, then why are we using them with so little oversight, transparency, and clarity?

## Toxicity Censors

We might consider of certain AI systems; how will they be “trained” on this framework? This framework speaks about diversity, equity, and inclusion (DEI) and about accessibility and people with disabilities. We should be troubled by any censoring of words by systems—behind those systems are people making decisions about what is acceptable and what is not. Automated captions will replace words deemed to be offensive or toxic. This misleads students who depend upon captions in conversations that address subjects that are deemed to be toxic, such as the critical examination of the sex trade.

In a video he posted on TikTok, Ziggi Tyler shows how this censoring is working: “Tyler showed the phrases ‘I am a neo nazi’ and ‘I am an anti semitic’ getting accepted, while ‘I am a black man’ was flagged” (Ohlheiser, 2021). With errors like these, companies respond with why the error happened, apologize, and then tweak the rules and algorithms—after the fact. In this case, “a [TikTok] spokesperson apologized for the ‘significant’ error and said that what Tyler was seeing was a result of an automatic filter set to block words associated with hate speech. The system, it said, was ‘erroneously set to flag phrases without respect to word order.’ The company told recode that this particular error came from the inclusion of the words ‘Black’ and ‘audience,’ because its hate speech detection picked up on the ‘die’ in ‘audience’ and flagged the pairing as inappropriate” (Ohlheiser, 2021).

One question we can ask is, what do AI systems get trained on when this happens? Do they get trained on the mistake or the reason for the mistake, and how does it get corrected?

## Biased, Stereotyped Output (Due to Stereotyped Training Data)

“These biases and harmful outputs don’t just happen on occasion. It seems that Large Language Models like OpenAI’s GPT are almost unavoidably biased. The tremendous volume of discriminatory, gendered, racist, and ableist language in the dataset means that models have a tendency to discriminate by default” (Furze, 2023). For those who fall outside of the majority of the average, there is already a further marginalization that takes place within our culture, society, and architecture. With AI, these marginalizing forces will be enhanced, pushing the edges further out. In the 1960s, Joseph Weizenbaum said the following, which eerily holds true today, especially when we consider AI systems:

The computing metaphor is as yet available to only an extremely small set of people. Its acquisition and internalization, hopefully as only one of many ways to see the world, seems to require experience in program composition, a kind of computing literacy. Perhaps such literacy will become very widespread in the advanced societal sectors of the advanced countries. But, should it become a dominant mode of thinking and be restricted to certain social classes, it will prove not merely repressive in the ordinary sense, but an enormously divisive societal force. (2023, p. 30)

As Buolomwini and other Algorithmic Justice League members remind us: “Since many of these systems have demonstrated racial bias with lower performance on darker skin, the burden of these harms will once again fall disproportionately on Black people.” If we add to this sentiment the words of Frederick Joseph (2022), “freeing all Black people is best accomplished by centering the liberation of the most marginalized in our community—cis and transgender Black women” (8). To follow this, we should look to those most marginalized to action equity within our organizations—we must consider the intersectional identities of those who are farthest from the “default” AI is designed around. Are we doing that? Is AI helping us do that? We should refer to the [Weizenbaum test](http://Weizenbaum#_Perform_the_).

### Automation Does Not Work for Everything

As shown above, automation does not work for many things that require contextualization, interaction, relationships, belonging, and more. The risk here is that people with disabilities still will not get the same quality education as their non-disabled peers, and now we will be outsourcing the responsibility for that to a disembodied machine. While Weizenbaum would argue it’s the computer scientist’s responsibility if AI does harm, there is no clarity of responsibility. In the domain of education, we let the Trojan horse into our campuses. Too often we fall under the spell of the disembodied technology that will help absolve us of responsibility. It is clear, though, that those who allow the technology in are responsible: the administrators.

There’s still a lot of hype about how machines can do it better though. (Oh now I’m imagining a t-shirt that says “Machines Do It Algorithmically.”) The term for this idea is automation bias: humans tend to favour decisions made by machines because we have lived experience of human-human interactions being steeped in bias, so we assume that those engineered by a machine will be more equitable. But here automation bias meets algorithmic bias: the tendency of algorithmic processes to reflect human biases. Oops. (Gray, 2023)

## Connectivity Costs

Who has access? And, most importantly, who does not have access? What are the environmental costs associated with the use of AI systems? More than anything we as individuals do in our every day, our use of AI will have the greatest impact on our climate. The energy and climate domains are raising concerns about AI without emissions limits or regulation. AI works best, most optimally, on newer computers. The push for the newest equipment and ever more data will drive consumption costs. The AI companies are already exploring subscription-based models, and large companies are building and training their own AIs, creating redundancy. In addition to the computing, energy, and land costs associated with data centres for AI, there are additional cooling costs.

In the worst-case scenario, if we decide we’re going to do everything on AI, then every data center is going to experience effectively a 10-fold increase in energy consumption. That would be a massive explosion in global electricity consumption because data centers, not including cryptocurrency mining, are already responsible for consuming about 1 percent of global electricity. Now, again, that’s not going to happen—that’s not realistic at all. It’s a useful example to illustrate that AI is very energy-intensive. (Leffer, 2023)

## Attribution and Referencing

There is also the issue of who will get paid if AI is left to train itself on all licenced and unlicenced materials. This poses a risk to the Commons and a risk to the Open Web. In the current context, AI is not expected to trace or be transparent about where it gets its information. This is causing concern for many within education. In particular, it is creating confusion with attribution and referencing. It is challenging those who contribute to the Commons to consider that their content will train AIs and then they will never been attributed. Will it push academia back into a paywalled closet? Will we keep feeding the AI by putting our content in the cloud? What is the deal we have inadvertently made when we decided on convenience and sharing over protection and ownership? We know the web works most democratically when it is open and accessible to everyone. We ought to explore how AI challenges that access of information and obfuscates how that information is being used.

What we would like to see (the dream) is for AI to interact with ingested content according to the copyright status licence terms, then deliver it to the user under the correct terms while revealing the source. That requires transparency, provenance, and some regulation that does not yet exist.

## What It Is Not: Aware, Magic, True…

AI has no awareness of truth or falsehood. It is important to remember and behave as though AI is not a person. It is a disembodied set of statistically computed combinations. It is true: we can assert that AI has no awareness of truth or falsehood. At this point, AI is incapable of some important qualities heretofore reserved to people—namely, human judgment, thoughtfulness, and nuance. AI has no expertise, no depth of experience, no subtlety or whimsy. It lacks understanding and is incapable of embodied knowledge. It is not guided by a reflexive ethic or a moral code.

It does not understand, learn, or know. It does not think or feel.

AI only *simulates* intelligence. In reality, it is just rolling dice to predict and then select the most likely next word or phrase based on trillions of chunks of text it has been trained on. “Semantic context” is meaningless to the machine. It has no soul. It has probabilistic understanding at most.

The best models are about 80% accurate, so about 20% of the time it’s going to make things up. Unless you’re an expert, you won’t know if the AI is making things up, and even if you are an expert, you might fall victim to a hallucination.

### Magic

These terms are used as shortcuts but are loaded with cognitive implications: understand, learn, know, think, or feel. Researchers who build AI and ML systems use them too, but with an implicit caveat that they are only metaphors for expressing what the AI is doing. These kinds of AI/MLs are statistical models that are tuned to certain abstract patterns and generate what is most probable based on those patterns. The patterns are not at all simple and can be quite complex, but they are statistical patterns, nonetheless. The dataset combined with the training algorithm forces the system to find and record those patterns and gives it the capability to generate similar patterns. Hence, the system does not know, for example, English; a better metaphor is that it resonates with the shape of English.

### Human in the Loop

There is an increasing articulation of the need for the “human in the loop,” and not just as a “prompt engineer” writing the questions that we then feed AI. The use of the human in the loop is an acknowledgement that using AI still requires human thoughtfulness and understanding. For example, alt-text can be automatically generated, but because AI systems cannot *understand* context, it will still get the alt-text wrong.

Sarhan and Hegelich show in their paper “[Understanding and Evaluating Harms of AI-Generated Image Captions in Political Images](https://www.frontiersin.org/articles/10.3389/fpos.2023.1245684/full)” the harms caused by automation in the creation of alt-text for images. Without reproducing the image (warning: the image is disturbing and is linked below), here are the automated caption and the human-generated caption for Figure 2 in the paper:

AI caption: a man flexing his muscles.

Human-annotated caption: “Journalists Neamat Naqdi and Taqi Daryabi show their wounds in their newspaper office after being beaten and detained for hours by Taliban fighters for covering a protest in Kabul.”

Image taken by Wakil Kohsar and can be found under: <https://www.theguardian.com/artanddesign/gallery/2021/sep/10/twenty-photographs-of-the-week?CMP=share_btn_tw&page=with:img-16#img-16>.

With no awareness of or sensitivity to context, the AI system cannot appropriately describe what is in the image. To do so would require the invisible labour of those in the gig economy labelling and tagging for AI systems through Mechanical Turk. Bizarrely, some of those workers are using AI to complete the Mechanical Turk tasks—a kind of dragon eating its own tail scenario, as shown in Devin Coldewey’s article “Mechanical Turk workers are using AI to automate being human.”

Here we arrive at the earlier stated point that AI is neither uniformly bad nor uniformly good. It will require a human in the loop, and to see that demonstrated we need look no further than where it fails. And its failures are numerous. Tolerating a technology in its early, imperfect iterations is something we’re accustomed to. When cellphones arrived and gave us bad reception, we determined that the convenience was worth it. With AI the acceptance of failure is much different—we become complicit in a bias engine.

In their report “AI and the Future of Teaching and Learning,” officials from the Office of Educational Technology at the U.S. Department of Education describe a goal for an AI that behaves more like an electric bike and less like robot vacuums. On an electric bike, the human is fully aware and fully in control, but their burden is less, and their effort is multiplied by the supporting technology.

### Negative Players

Despite these many failures and examples of harm, some are still making techno-solutionist claims. AI is unlikely to solve all things for everyone, yet there are no shortage of claims suggesting it might. Within the conversation between AI and accessibility, there have been some careless claims that AI will eliminate the need for accessibility efforts. We can comfortably put this claim into the realm of “techno-solutionisms.” AI will not “solve” for differentiated learning, make language differences irrelevant, and customize content for each individual. It will do some level of improved matching of learning materials to learners, have translation abilities that will begin to address language differences, and it will transform content into multiple modes. This is a “yes/and” *and* “neither/nor” moment. Carelessly, some suggest AI will magically make all things accessible to everyone. AI will not. We are already well-versed in AI-generated image descriptions that fail.

This “technochauvanism” has been around for quite a while, and as Meredith Broussard (2018) warns us, “When we rely exclusively on computation for answers to complex social issues, we are relying on artificial unintelligence. To be clear: it’s the computer that’s artificially unintelligent, not the person” (p. 11). Because issues of equity are fundamentally complex social issues, the suggestion that AI can be our solver is an act of technochauvanism, acting as though they are “blind to the faults of computational decision making or they are excessively attached to the idea of using computers to the point at which they want to use computers for everything—including things for which the computer is not suited” (2018, p. 12).

# AI in Education: The Hype, the Confusion, and the Story

AI is already changing education. AI is already contributing to accessibility. AI is already being used to make decisions within the larger complex system of education. AI is already causing harm to marginalized groups. It is changing every day, moving so quickly that we can barely keep up, and as a human-created tool, it carries with it all the biases and potentiality we all carry within ourselves.

Below is a discussion of the benefits, risks, and approaches possible when using AI for accessibility in education. The conversation will change (quickly) as this technology, its uses, and new tools become available every day. The moment this resource is uploaded, it will already be out-of-date with the latest in AI. The goal here is to *begin* the conversation in earnest, with some specific benchmarks for those involved in education: what to do, what not to do, what to worry about.

First, it’s worth saying that AI will not educate alone—the goal is to harness the power of a system that can act as an assistant. The human must stay in the loop in any use of AI. Below we outline more ways it can be used, but it is worth noting that these approaches presuppose the human in the loop.

## AI over Person

We ought to be careful that our policies and practices protect people, not AI. In some cases within education there is an imbalance of responsibility put on people because we do not yet have effective ways to regulate the use of AI tools.

It has the distracting result of putting burdens on faculty to be transparent about their use of AI tools when the tools themselves lack basic transparency (of training data, of algorithmic decision-making, of harm, etc.).

## Who Does It Affect?

Ultimately, human judgment must be used in deploying AIs. The tools themselves must be human-interpreted, human-limited, and human-chosen. The people involved in those decisions within education are:

* Students (assignment completion, writing, and assistive technologies for students with disabilities)
* Instructors (assessments, proctoring, curriculum development, publications, faculty-student interaction, proctoring, proposal preparation, research report writing, meeting management, productivity tools, tenure and promotion, and assistive technologies for sector members with disabilities)
* Administrators and Staff (admissions, financial aid decisions, ethics, recruitment, research, administrative tasks, hiring, communication, content creation, , and information and communication surveillance systems, and assistive technologies for sector members with disabilities)

## Students

Student uses of AI can include the following activities discussed below: assessment, language support, facilitating writing, facilitate understanding of ideas, personal tutoring, personalized learning, creating engaging learning, and addressing inequities, and accessibility.

AI could be used to improve writing so that it’s simpler and clearer. To check for and improve contrast and the weight of fonts for easier readability. To determine how and when to use notifications for screen readers. To validate keyboard access. It’s not there yet, but it can get there and I believe it will.

AI can help create a future where people with disabilities work alongside others of all genders and cultural backgrounds. Both human and non-human beings can co-create an increasingly personalized experience online that blurs the lines between the physical and digital world. I am more excited than ever for the AI-powered future ahead of us. (Kalcevich, 2024)

Students can use AI to extend their own creativity and diverse needs. It can also be used to help reinforce research practices and clear attribution. It will not do that itself; humans in the loop will be a necessary part of AI used in learning.

### Assessment

#### Benefits

Students can use AI to help with assignments and assessments. AI can be an assistant that can help with planning, writing, and initial research. Students can use AI tools to enhance and make their work more creative. If they can use AI tools to offload some of the more rote aspects of learning, then they can free up time to get creative with its uses.

#### Risks

Students might be penalized if their use is detected or deemed outside the institution’s limits on use of AI. The burden then could fall on students to make their material obviously personal. Presently, students with dyslexia who are using GPT to fix grammar and spelling are being punished as though they are authoring with GPT. Tools like Grammarly are being called into question for use on assessments.

#### Approach

Just like conflict of interest declarations, students can be encouraged to show their work by disclosing where and how they used AI tools. Prompts can becomes part of their research approach, and they can express how they have learned using an AI. It can be an empowering tool that helps students with the metacognition issue of learning how they learn best.

### Language Support

#### Benefits

English language learners or French language learners can use AI to translate materials quickly and easily.

One of the ways students are using AI tools is to translate materials from their non-native language to their first language. This is a powerful use of the tools. And, as Eaton (2021) predicted, “language barriers will disappear.” It is important to note that they have not magically disappeared. Students using AI tools to help with non-native language translations are often wrangling an unenviable workflow. For example, non-native English speakers in an asynchronous course will download a transcript from recorded lectures, translate it into their native language, read it, then respond in their native language, translate it using an AI tool, and then have a native speaker read it for understandability. There are many points of that workflow that can fail—notably, many instructors do not generate transcripts from lectures (it is an option in Zoom and in Teams that has to be opted in to).

When people imagine AI removing all language barriers are they considering the Deaf community? If so, there is an assumption that Deaf students who require Sign Language can use AI.

#### Risks

AI tools have been known to censor certain language and subjects and images. The risk for the language learner is that they are not getting accurate and high fidelity translations of the materials. In addition the reality (also a risk) is that the information is not accurate.

#### Approach

Because this feature deals with a human difference (speech) that has been used to discriminate against people, extreme caution should be used when trusting it with especially nuanced or risky communications.

### Facilitate Writing

#### Benefits

Students can use AIs to help facilitate writing by organizing, giving suggestions, and giving early ideas that students can then research and back up with references. In her February 2023 blog post “6 Tenets of Postplagiarism: Writing in the Age of Artificial Intelligence,” Sarah Elaine Eaton warned that hybrid human-AI writing “will become the norm”. It is fair to say we are there a little more than a year later. Most students will use an AI tool to check writing or do a portion of writing.

#### Risks

Students will need guidance on how to appropriately use AI tools. Punitive approaches are already a failure (Eaton, 2021). AI cannot effectively be used to track plagiarism. But AI tools can be useful tools for research, writing, organization, and more of the skills education aims to develop. Students will need to be taught new ways of attributing content and ideas to others.

Attribution becomes even more confusing and arguably obfuscated from everyone. Those in education and in the Commons are facing a conundrum with attribution and provenance. With many AI tools it becomes hard to do the former and next to impossible to find the latter. There have been some recent, troubling examples of Large Language Models (LLMs) engaging in a game of telephone with original sources, subtly changing the content and the meaning along with it. It is again a demonstration of the speed with which misinformation can be spread using LLMs and the troubling trend of not knowing what content is being used to train LLMs. And if LLMs are not held to a standard of transparency, this will become harder to track down.

### Facilitate Understanding of Ideas, Personal Tutoring, Personalized Learning

#### Benefits

AI tools can used as personalized learning tools or tutors. An AI can “gauge” the student’s level of understanding on the topic and adapt the learning to that level. AI can also customize the way it explains something to meet the needs of the individual—to meet them where they are. Right now, accomplishing that requires that we become “prompt engineers,” or as Jon Stewart jokes on an episode of *The Daily Show*, “types-question guy.” It is both worrying, because of the threat of AI taking over jobs, and it is also exciting that there is a new skill we can learn and can get different results from. Currently, you can use the same prompt across AI tools and get very different responses. Each AI is revealing a specific of tone—some are more kind and sensitive, and others are more dry and direct. Part of AI prompt engineering is telling the AI the ways you want it to respond to you.

#### Risks

There are already examples of AIs delivering responses that are calibrated to the grammar and writing of the “prompt engineer.” For example, if you use too many spaces or ask a silly question, the AI will calibrate to give you simpler answers. Might AI create a barrier for some learners based on erroneous interpretations of the way the student asks the question? Notably those learners who struggle the most will have the hardest time with the instructional tutor because their prompts will be the farthest from their mode of learning. And what of whimsy, playfulness, experimentation?

These systems, because of their tendency to homogenize, will shape the learner toward the default, the model of a standardized, successful student. This means that it is now standardizing learners, not just content. Is that desirable?

### Engaging Learning

#### Benefits

Students who need extra supports or closer attention as they work through learning can use an AI for engagement. Students want caring, curious, passionate, joyful, supportive engagements. With tools like [Pi.ai](https://pi.ai/) they can have some of those needs met. AIs are increasingly developing “tones.” Pi is known as the chatbot that has more emotional intelligence.

#### Risks

Will we lose the relational aspects of teaching? When we know how essential the interaction between the student and instructor is to outcomes, we must be vigilant that there are limits and clear next steps for students who use AI in this way. There is an additional worry here, especially if the student needs professional help and is not reaching out for it. How can safeguards be put in place to protect those who need additional human help?

### Inequity, Accessibility, Cost

#### Benefits

We have spent decades talking about the democratization of the internet and the impact it has had on access for those who lacked access previously. If we are to get to the point of AI systems having the same kind of democratizing impact, then they will have to be so highly personalized that the cost to produce and run them will be prohibitive, to say the least. There are of course AI that have broken down barriers for people with disabilities. Image recognition, with all its issues, can help people who are blind identify things in their environment.

#### Risks

There are numerous ways that AI creates inequities and amplifies them across systems that cannot be “cleaned” of insidious ideas. Yet another is documented by Ethan Mollick: “If you ask the AI dumber questions, it would get you less accurate answers. And we don’t know the ways in which your grammar or the way you approach the AI—we know the amount of spaces you put gets different answers. So it is very hard, because what it’s basically doing is math on everything you’ve written to figure out what would come next” (Klein, 2024).

### Strategies

1. For students, what are helpful tools, how to be aware of discrimination in tools used, how to advocate for accessible tools, how to protect privacy.
2. More than ever students should be encouraged to “show your work”—trace inputs and outputs and explore how they vary—provenance and transparency together.
3. Students should not be categorically penalized for using AI, rather they should be have supports to help with appropriate use of AI.
4. A student declaration of AI use could look like an explanation to list where other sources were used to help understand or create content.

### Questions to ask of AI

1. Students can ask, How can I use AI tools in a way that breaks down accessibility barriers for me and others?
2. How can I contribute to the evolution and maturation of AI tools?
3. How can I responsibly and ethically use AI tools in my educational journey?
4. How can I make sure my use of AI is not contributing to global warming, inequities, etc.?
5. How will AI help or hurt mental wellness among the student populations?

## Instructors and Researchers

The many uses of AI can help instructors in teaching, content creation, research, assessments, proctoring, publication, interactions with students, proposal preparation, research report writing, tenure and promotion, and assistive technologies for sector members with disabilities.

What does it mean to assess student work, and how do technological advancements align with or diverge from the core educational values of understanding, feedback, and growth? (Vallet, 2024)

There are many uses of AI for the instructor/researcher. Below are some of those, broken down by risks and benefits. AI can help instructors and researchers by being an enhanced assistant to instruction, content creation, argument strengthening, and more.

### Create Course Content

#### Benefits

AI can help instructors create multimodal content to meet the needs of diverse learners. Different formats can be created and be made available with the help of AI. Because AI is trained on content that is openly licenced, it may be possible to calibrate it to scan those resources and aggregate lists of publications or learning materials.

AI tools can help instructors structure content to meet the needs of diverse learners. Faculty can explore ways to add supports for writing, captions, descriptions, and more to clarify their course content and reach more learners.

AI does not create the content itself, but aggregates content (licenced and otherwise) from around the internet. Where possible, there does not seem to be a categorical issue with AI tools creating some content—especially where the content is commonly known. As an enhanced search tool, AI tools can be helpful.

#### Risks

Hallucinations and made-up content continue to plague AI tools. This could be especially problematic if faculty trust the systems to put materials together. The human in the loop is still necessary. And that means more time and attention from already-stretched faculty to learn how to use these tools and then check their output. As previously mentioned, automated alt-text and captions can cause harm.

### Assessment

#### Benefits

Faculty who are embracing a measured use of AI are treating it as an assistant. AI can help faculty create multiple types of assessments—again, multimodal. Instructors can play a role in nurturing a critical approach to AI. Assessments can be built around finding bias and inconsistency in AI responses, analyzing different AI responses to the same prompt, and much more.

#### Risks

We are past the point of AI being useful in detecting plagiarism. Plagiarism “catchers” are no longer useful or accurate. As AI tools create content by aggregating it from sources that are often not cited, it has become useless to try to track down “unfair” uses.

### Publications

#### Benefits

A number of AI users are reporting using AI as a sparring partner. The user builds an argument and then asks the AI to poke holes in it or explain where the weak points are. Reid Hoffman speaks about using AI as a debater in his episode of *On Being* (Tippett, 2023). If there is concern that AI is being too nice or being too agreeable, you can try an “antagonistic AI” (Plumb, 2024). This could be enormously helpful in tackling gnarly problems and especially helpful for publications. Formatting can also be done by AI with some caveats.

#### Risks

Gnarly problems involve not just an intelligence about facts, but an emotional read and intelligence—EQ. Not only do AI tools lack emotional intelligence, they also lack any understanding or sensitivity to context.

Though Eaton tells us that “although humans can relinquish control, they do not relinquish responsibility for what is written,” this is already becoming a hotly debated point: Whose responsibility is it ultimately (Eaton, 2021)? The person who trains the LLM? The person who develops it? The person who uses it? The details of this point will likely be played out slowly in courts. The troubling question is how much harm will be done before something like a standard or legal precedent is established.

### Tenure and Promotion

#### Benefits

Administrative tasks can be made easier with AI; however, decisions that impact people are not considered to be tasks.

#### Risks

When we leave decisions about advancement to automated tools, our results can be biased and untrue. When we know the systems we’re using are biased, then our use of them to make important decisions that impact people is an act of power and discrimination.

### Teaching and Testing Methods with AI

#### Benefits

With AI tools built into the Learning Management System (LMS), instructors can get a sense for how their teaching is impacting students.

#### Risks

These systems are tantamount to surveillance of students. They can give incorrect information about how much time a student has spent with materials that could then impact the grade a student is given or leave an inaccurate impression of their effort. The risk here is that a system has come between people having individual choices (about where they work and how and how long) and about how much of that information is shared. Faculty can feel complicit in the loss of student privacy and agency in the use of such tools.

### Student/Teacher Relationship

#### Benefits

AI can be used as an assistant for understanding how students are doing. AI could plausibly let instructors know where or if students are struggling or falling behind or are not achieving the intended outcomes of the lessons. In that way it can help the instructor pivot and make adaptations to their pedagogical approach, to the way content is presented.

#### Risks

Instructors are also fed a great deal of data on student achievement and time spent on content. This material is unreliable at best and requires interpretation. This does not bring the student and the instructor closer together; instead it has a tendency to make the instructor distrust the student and vice versa. In teaching and learning, which are highly relational activities, it is essential for people to connect in real ways, rather than in computational ways that introduce doubt, mistrust, and bias.

### Proctoring

#### Benefits

This is a job machines have been used for in remote testing to try to maintain fairness.

#### Risks

Those people whose bodies move unpredictably or whose eyes wander can be disproportionately and unfairly flagged by these systems for cheating. This results in a guilty until proven innocent approach to student behaviour that has universities and colleges scrambling.

### Strategies

1. Keep the human in the loop when employing AI in the instructor/student relationship.
2. Keep the human in the loop when depending upon AI for content creation and remixing of content.
3. Build in ways for students to explore and experiment with AIs in a non-punitive, creative way. Questions to self: Am I guiding or punishing students who use AI?
4. Help inform students about appropriate use of AI.
5. Be transparent about what is appropriate use of AI for learners.
6. Prioritize transparency with the use of AI tools.

### Questions to ask of AI

1. How can I use AI tools in a way that breaks down accessibility barriers for me and others?
2. How can I help educate my students about AI tools that might help us both?
3. How can I make sure my use of AI tools is ethical?
4. How can I contribute to the evolution and maturation of AI tools?
5. How can I responsibly and ethically use AI tools in my research?
6. How can I make sure my use of AI is not contributing to global warming, inequities, etc.?
7. Be wary of AI taking the place of human supports for human issues. If students are demonstrating mental health challenges, AI cannot be seen as a sufficient way to address their challenges.

## Administrators and Support Staff

* Administrators (admissions decisions, financial aid decisions, ethics, recruitment, research, administrative tasks, communication, dissemination, procurement, hiring, security, student information systems, registrar, assessment proctoring, surveillance systems, accessibility services, data capture and privacy).

AI brings educational technology to an inflection point. We can either increase disparities or shrink them, depending on what we do now.

—Dr. Russell Shilling (USA Department of Ed 7)

### Value Proposition

Perhaps now more than ever it is time to align the institution’s principles and practices. When we follow the capital within various endeavours in Higher Education, we can see those profiting from student needs (textbooks, inclusive access, tutoring, etc.) and those profiting from creating a dependency (education technology, campuses with MOUs, publishing subscriptions, etc.). This is not a time to shy away from the conversation about who benefits and from what.

Pascal Vallet shows us that many tools will be and are set up to put money in the pocket of developers based on use. They are known as “black box” systems because they are not understandable, configurable, or adaptable to context. They are “rented” through contracts with the developer. Instead, Pascal shows us how important to the issue of cost and control it is to use open source AI tools:

Educational institutions are not only required to support the developers of these applications through subscription fees, as they have always done when not using open source or free platforms, but also to bear the indirect costs of AI usage. Developers, in turn, pass on the fees charged by AI technology providers such as OpenAI, Anthropic, Google, and Mistral, among others, to the institutions. This means that behind the scenes, a portion of the expenses incurred by schools is allocated to paying the developers, who then settle their accounts with the proprietors of the AI models embedded in the applications used. As a result, each time an educational institution utilizes an AI-powered platform, it essentially pays a premium to the developer acting as an intermediary for the AI services consumed. This intermediary model invariably leads to a scenario where institutions are consistently overcharged for their AI usage. The situation exacerbates when multiple AI applications are in use, compounding the overcharges for AI consumption significantly. This economic model, characterized by fixed licensing fees and layered costs, imposes a substantial financial burden on educational institutions, challenging their ability to leverage the full potential of AI technologies in enhancing educational delivery and operations. (2024b)

Vallet goes on to suggest that the fundamental opacity of the economic model for AI should now be interrogated and should motivate a model that provides the following:

1. Direct access to AI technologies
2. Cost transparency and control
3. Customized AI solutions
4. Encourages technological diversity and innovation
5. Foster collaboration and customization
   1. Strategies
      1. Questions to self: Reliance on AI on completing tasks? Other methods of checking?
      2. How comfortable are you with using a tool that can cause harm to a student? Where does your ethical line meet your institution’s goals?

### Procurement

Procurement policies are one of the key entry points for technologies that must meet needs expressed by the organization. We know that if policies are specific about accessibility requirements (legal, ethical, and functional), then an organization can quickly make a more inclusive, equitable culture. This, of course, means that the tools that are adopted at the organizational level meet the requirements stated (for example, AODA, ACA, etc.). It is also an indicator (internally and externally) of the level of commitment to stated goals for accessibility and inclusion an organization is willing to call culture.

Abishek Gupta, in AI Ethics Brief #146 (2024), offers the following guidance:

#### Innovation-Friendly Procurement Strategies

* **Set Aside Contracts for Startups:** Allocate a certain percentage of government AI contracts for startups and SMEs, encouraging innovation and giving newer companies a fair chance to demonstrate their solutions.
* **Adopt Agile Procurement Processes:** Simplify procurement processes for AI technologies, adopting more flexible and agile methodologies that can adapt to the rapid pace of AI innovation and accommodate smaller vendors.

#### Evaluation Criteria Emphasizing Ethical AI

* **Incorporate Ethical AI Criteria in Tenders:** Define clear criteria for ethical AI practices within procurement tenders, including requirements for transparency, fairness, and accountability in AI systems, prioritizing vendors who adhere to these principles.
* **Reward Responsible Innovation:** Offer incentives for companies that demonstrate responsible AI innovation, such as ethical use of data, inclusivity in design, and efforts to mitigate bias, through higher scores in procurement evaluations or financial incentives.

#### Partnerships and Collaborative Projects

* **Foster Public-Private Partnerships:** Encourage collaborations between government agencies, academic institutions, and private sector startups focused on developing AI solutions for public good, sharing risks, and rewards.
* **Support Collaborative R&D Projects:** Provide funding and support for collaborative research and development projects in AI between startups, larger companies, and research institutions, promoting the exchange of ideas and fostering a more diverse AI ecosystem.

### Hiring

#### Hiring Platforms

It is well established that hiring platforms use matching algorithms to filter out applicants. Those filters can eliminate anyone who does not use a keyword expected from the system, anyone with a gap in employment, and other forms of discrimination associated with resumes and cover letters. Hiring is a responsibility that requires judgment. AI systems are unable to do any such considered judgment of applicants when performing candidate shortlisting. The system winds up promoting “false positives” and overlooking “false negatives.”

AI hiring tools filter out highly qualified candidates with disabilities. EEOC asserts that 90% of organizations use some form of AI hiring tool. AI hiring tools exploit data regarding past hiring to filter applicants by optimizing the characteristics of past successes (US EEOC). In optimizing past successes these tools are biased against diversification; while the companies deploying them have a commitment to diversity, equity, and inclusion. AI hiring tool options such as specifying “culture fit,” persona matching, team profiles, and favorite university, contribute toward creating a company monoculture. This is not good for company survival. It also filters out applicants with disabilities. Promising research has shown that algorithms that favor data exploration rather than data exploitation result in greater hiring diversity without compromising hiring success (Li). Unlike race, origin, and gender; disability has no common data characteristic other than distance from the average such that things made for the mainstream don’t work.

#### Online Skills Tests/Exams

Proctoring systems that are meant to watch can cause false negatives as well. When systems are trained on bodies that move in “predictable” or “average” ways and a system encounters a body that does not meet that statistical expectation for movement, a person is penalized and vilified. It is something like a guilty until proven innocent situation because we have abdicated our decision-making to the disembodied systems.

### Admissions and Awards

To adopt and use an AI system for student recruitment, admissions, or financial aid decisions, you must understand what information it is basing decisions on. You also have to consider that the human in the loop will require you to know why it is deciding the way it is and if that is in and of itself discriminatory. Grade point average, standardized testing, financial need, address, postal code can all be used in decisions that involve people and their futures. Each of these points of data has been shown to disproportionately disadvantage students on the edges. This is where the ethics and equity policies should somewhat guide what the institution is willing to accept. If the system harms one person, is it acceptable?

### Research

#### Ethics

There is no culturally agreed upon ethic that can be created and propagated. And that wouldn’t be desirable if it did exist. Mores and cultures are diverse and have different ethical standards.

As Stephen Downes, senior research officer for digital technologies with the National Research Council of Canada, observed:

The problem with the application of ethical principles to artificial intelligence is that there is no common agreement about what those are. While it is common to assume there is some sort of unanimity about ethical principles, this unanimity is rarely broader than a single culture, profession or social group. This is made manifest by the ease with which we perpetuate unfairness, injustice and even violence and death to other people. No nation is immune.… Ultimately, our AI will be an extension of ourselves, and the ethics of our AI will be an extension of our own ethics. To the extent that we can build a more ethical society, whatever that means, we will build more ethical AI, even if only by providing our AI with the models and examples it needs in order to be able to distinguish right from wrong. I am hopeful that the magnification of the ethical consequences of our actions may lead us to be more mindful of them; I am fearful that they may not. (Rainie, Anderson & Vogels, 2021)

This is a moment for institutions to clarify what they mean when they commit to equitable and ethical education.

### Information Technology

All IT systems must be procured with clarity for how it will be used at the institution. Will instructor and student information and content be used to train AI as a result of using these tools? How will these tools impact users of assistive technology? Will it share personal information about their use of assistive technology?

#### Surveillance Systems

Staff members on campus must understand how systems are trained and used. They must understand how the systems work, especially when the systems are used to track or watch any of the campus community. Safety is not an appropriate rationale for privacy breaches.

### Questions to ask of AI and yourself

* How can I use AI tools in a way that breaks down accessibility barriers for me and others?
* How can I contribute to the evolution and maturation of AI tools?
* How can I responsibly and ethically use AI tools in my professional capacity?
* How can I make sure that I am acting on AI data to make decisions that are not biased or magnifying inequities?
* How can I make sure my use of AI is not contributing to global warming, inequities, etc.?

## Litigation

As can be expected from a tool that works quickly and is being adopted without care and close regulation, there are already databases of AI-related lawsuits being collected. As there is little to no legal precedent for these cases, this space will change rapidly as well.

There are already a number of databases tracking AI-related harm and lawsuits:

* an [industry-maintained database](https://incidentdatabase.ai/)
* an [independent public database](https://www.aiaaic.org/aiaaic-repository)
* an [AI litigation database](https://blogs.gwu.edu/law-eti/ai-litigation-database/)
* [a university database](https://docs.google.com/spreadsheets/d/1eyZZW7eZAfzlUMD8kSU30IPwshHS4ZBOyZXfEBiZum4/edit#gid=910445724)

# Conditions for Accessible and Equitable AI

Below are four edicts from the technical committee actively working on a standard for Accessible and Equitable Artificial Intelligence Systems. They state what AI systems must do to be both accessible and equitable. The details of implementation, monitoring, assessing, and tolerating error will ultimately determine how accessible and equitable AI tools are when it comes to individual experience. In large part, those decisions are human made, which puts this work squarely into the realm of ethics. At a minimum, those engaging with AI systems should be familiar with:

1. Access to AI

People with disabilities must have access to being full participants in AI creation and deployment.

Those who are in control of the tools control the narrative, and right now few have access to the tools. Now, the landscape is made up of many companies producing early AI tools that provide little transparency, abundant misinformation, and little clarity about privacy. People with disabilities, minorities, and marginalized people must have access to contributing to the full pipeline of tools and experiences that make, model, train, and implement AI. People with disabilities cannot just be end users.

1. Equitable AI

Where AI systems are relied upon to make decisions that impact people with disabilities, those decisions and uses of AI systems shall result in equitable treatment of people with disabilities.

Within education, many decisions are already made based on data. The critique of those decisions and the data used to make them must not stop when it is the source of what trains AI. If we do not hold our AI tools to a transparent and ethical standard, then we are merely adopting tools that create (or perpetuate) harm, do so without conscience, and at a rate that humans cannot control. “Where are you from” is a question often explored to get at the root of historical biases and generational trauma. Similarly, we must ask of our AI systems and their outputs, where are you from? Show us your provenance, the burden is on you.

1. Organizational Processes

Organizational processes should support AI systems that are accessible and equitable to people with disabilities. The “nothing about us without us” dictum must apply here.

Within education, this means admissions, evaluations, promotion, assessments, procurement, and more. AI can help herald in more accessibility, or it can amplify inaccessibility, and the reality is it will do both depending on the degree to which there is a human in the loop (i.e., where a human decision-maker is involved in steering the outputs).

1. Education and Training

Support and educate instructors on accessible and inclusive learning and application to teaching practices. Use open-source AI systems.

Within education, this means that anyone on campus who is in a position to make decisions or carry out decisions that get made must be informed about and trained on how AI works and the skills needed to be a critical “human in the loop.”

## Approaches to Use

### Perform the “Weizenbaum Test,” Not the Turing Test

Joseph Weizenbaum warned us. The creator of ELIZA, an early natural language processing program developed in the 1960s, he worried we would fall victim to the seductions of AI—that is, we would accept that it is thinking and would treat it as such, a delusion. Over sixty years later, we are still discussing the seductions and falling victim to the delusions.

There are worthwhile uses and there are deep distractions. Is there a way we can differentiate between the two when we use AI?

One approach is to consider creating a “Weizenbaum test” for our uses, as Jack Stilgoe suggests (2023). That test would challenge us to answer the following questions:

* Is it good?
* Do we need it?

Rather than a test of intelligence, a Weizenbaum test would assess the public value of AI technologies, evaluating them according to their real-world implications rather than their proponents’ claims. Some suggestions for the questions that might constitute such a test can be found in a later Weizenbaum paper, published in the Bulletin of Atomic Scientists:

1. Who will benefit?
2. Who will bear the costs?
3. What will the technology mean for future generations?
4. What will be the implications not just for economies and international security, but also for our sense of what it means to be human?
5. Is the technology reversible?
6. What limits should be imposed on its application?

One might argue that the answers to such questions are beset by too many uncertainties. But there is a wealth of untapped historical and sociological evidence that can inform us. Weizenbaum argued that the problem is not a lack of evidence; the problem is that the “questions are almost never asked. A recent survey of machine-learning papers from Abeba Birhane and colleagues found that 68% make no mention of societal need, and only 4% provide a rigorous justification for how the work addresses a social problem” (Stilgoe, 2023).

# Advanced Topics That Need Interrogation

The goal of this module is to situate where we are now (early 2024) with respect to AI in education and in particular with respect to accessibility in AI education. One thing is certain, AI moves at a pace that is already and will continue to challenge us on ethical decisions we are making or passively allowing to happen.

## Ethics of Personhood

AI is already adding complexity to our concepts of personhood. If some level of cognition or intelligence is what makes a person a person, then where does AI land? If an AI tool is able to pass the Turing test and fool a person into thinking it is a person, then what does that say about our definition of personhood? Does the Weizenbaum test help us differentiate between human and machine?

To categorize something and build a type around it is an act of power. In this case something has been built that is sufficiently capable of differentiating itself from its creator or its training data (is disembodied), and yet someone must be responsible for it, right? Who? Which embodied persons will be the ones that are responsible for these tools? Without an answer to that question, a cascading number of concerns follow:

* What if it causes harm?
* What if it perpetuates falsehoods?
* What if it breaks a law?

And without an embodied someone that is responsible, we are left without the established ways to address these issues. It acts, it responds, it masquerades, it convinces…

It also raises the question of who is a person and who is not. How can we define personhood? Some are granting anthropomorphized language to AI, and in doing so they are coming up against the ethical edges of a deeply contested and controversial part of our world: abortion, euthanasia, intelligence, cognition, and more. We do not have good, clear answers for personhood when we are considering those who have a human body of some sort, let alone a set of computational boxes that are masquerading as intelligent beings.

AI will push us in ways that already make us uncomfortable and will challenge our notions of personhood, truth, validity, objectivity, and value. It is interesting to consider that to trust something that is not thinking, feeling, nuanced, or experienced is perhaps only a [human foible](#_Ethics_of_Personhood).

Much as we may mourn the crumbling of ancient civilizations, we know nevertheless that the glory of man resides as much in the evolution of his cultures as in that of his brain. The unwise use of ever larger and ever more complex computer systems may well bring this process to a halt. It could well replace the ebb and flow of culture with a world without values, a world in which what counts for a fact has long ago been determined and forever fixed. (Weizenbaum, 2023, 28)

## Truth, What Is It?

Where will truth be stored and protected in the digital world? As Safiya Noble (2018) tells us, “There is no algorithm that can replace human dignity. They created a system that simulates a value, based on their own algorithm,” and it represents their own values. Will AI systems call into question what truth is?

## Peccadillos

Do you want to eliminate your peccadillos? Always? Sometimes? Never? Do you want to be able to choose when and how and how much? At what point does ridding ourselves of our peculiarities begin to make us less *us?* My colleague, who is a native Spanish speaker, speaks with an accent. Or does he? Do I?

We can use AI tools to change our voices, but what will we likely settle on? This feels like a moment when we will further codify a “default”; for example, a “typical” voice for an Ontarian is a native English speaker with neutral vowels, an accent preferred by many, such as the sociolect known as *Canadian dainty*, similar to accented English known as the Transatlantic accent (think Cary Grant, William F. Buckley, Katherine Hepburn, Torontonian Peter Jennings). Is it desirable for my colleague to sound like Peter Jennings or to sound like himself? Is it desirable for me to sound quasi-British? Ontario is a diverse province made up of many immigrants with many different accents. Perhaps the typical Ontarian accent does not exist. In 2023, 42.5% of the population of Ontario were immigrants. Who speaks with an accent and who does not? Shouldn’t we be aware of the matrix of domination that deals with issues of race, class, gender, and more when we “neutralize” or standardize?

Voice AI is homogenizing voices. What does it look like to ensure student voices are not flattened and homogenized?

# The Regulatory Domain in Ontario and in Canada

On April 4, 2024 the [Center for AI and Digital Policy](https://www.caidp.org/reports/aidv-2023/) released an updated AI Index Rank in policies and practices for eighty countries. Canada is among those ranked at the top. Across pages 266–279, the authors outline the regulatory and policy domain in Canada as it relates to AI. Below is a summary of some of the more relevant pieces for the purpose of this education audience.

## AODA

The current version of the AODA does not directly address artificial intelligence. There is a revision coming that will include AI.

## Artificial Intelligence and Data Act (AIDA)

The Artificial Intelligence and Data Act (AIDA) framework proposes a new regulatory system that is designed to steer AI innovation and encourage responsible AI adoption by Canadians and Canadian businesses. This framework aims to proactively identify and mitigate harms and biased outcomes while supporting responsible research and innovation within the AI ecosystem. The federal government will be developing guidelines and regulations with regular input from a variety of stakeholders.

The aim of the AIDA is to protect Canadians, support responsible AI development in Canada, and to promote Canadian firms and values within the global AI ecosystem. The AIDA framework is also designed to mirror developing international AI guidelines, laws, and framework, while integrating with current Canadian legal frameworks.

For high-impact AI systems, especially those used as part of international and interprovincial trade and commerce, the AIDA would ensure accountability for associated risks and potential harms. To ensure accountability throughout the lifecycle of a high-impact AI system, the AIDA outlines and imposes obligations for businesses involved in the AI lifecycle where risk may be introduced.

## Directive on Automated Decision-Making

The Directive on Automated Decision-Making, as well as the related Prequalified AI Vendor Procurement Program, has been established by the Government of Canada’s Treasury Board Secretariat (TBS) to ensure that administrative decisions are transparent, accountable, and legal, and ensure procedural fairness.

The directive aims to ensure that AI systems are deployed in a way that minimizes risks to clients, federal institutions, and Canadian society as a whole. These aims would lead to decisions that more transparent, accurate, fair, and consistent, while being made in accordance with Canadian law.

## European Union AI Act

The European Union AI Act is the very first comprehensive legal framework on AI. As existing legislation does not provide enough protection against the risks of AI, the aim of the new act is to foster the development of responsible and trustworthy AI in Europe and around the world by:

* Ensuring that AI systems and their development respect fundamental rights, safety, and ethical principles, and
* Addressing the risks that come with powerful and impactful AI systems.

The proposed rules will:

* Address risks specifically created by AI applications
* Prohibit AI practices that pose unacceptable risks
* Determine a list of high-risk applications
* Set clear requirements for AI systems for high-risk applications
* Define specific obligations deployers and providers of high-risk AI applications
* Require a conformity assessment before a given AI system is put into service or placed on the market
* Put enforcement in place after a given AI system is placed into the market
* Establish a governance structure at European and national level[[2]](#footnote-3)

As part of the new legislation, the EU has released two tools:

* The [AI Act Explorer](https://artificialintelligenceact.eu/ai-act-explorer/) tool, which enables users to intuitively search the content of the new act as well as to search for relevant parts.
* The [EU AI Act Compliance Checker](https://artificialintelligenceact.eu/assessment/eu-ai-act-compliance-checker/) tool, which can determine whether an AI system will be subjected to the new rules.

## The Broader Regulatory Domain: Standards, Regulations, and Good Intentions

### CA AB 2370

The CA AB 2370 is an interesting bill that has just been introduced in the State of California, USA, that directly addresses the role that AI may play in community college education.

This bill would prohibit artificial intelligence from being used to replace community college faculty for purposes of providing academic instruction to, and regular interaction with, students in a course of instruction, and would authorize artificial intelligence to only be used as a peripheral tool to support faculty in carrying out those tasks for uses such as course development, assessment, and tutoring.

### IEEE

Sources:

1. [The AI Revolution in Education: A Game-Changer for Learning](https://edu.ieee.org/eg-guc/2024/01/17/the-ai-revolution-in-education-a-game-changer-for-learning/%5d(https://edu.ieee.org/eg-guc/2024/01/17/the-ai-revolution-in-education-a-game-changer-for-learning/), 2024
   * A list of ten positive aspects of AI in education.
2. [Artificial Intelligence in Education: A Review](https://ieeeaccess.ieee.org/featured-articles/ai_in_education_review/%5d(https://ieeeaccess.ieee.org/featured-articles/ai_in_education_review/), 2020
   * A long review of various reports on the use of AI in education, all positive. Introduces the concept of a “cobot,” a robot that works together with teachers.
3. [How AI Could Save (Not Destroy) Education](https://www.youtube.com/watch?v=hJP5GqnTrNo), 2023
   * A TED talk by [Sal Kahn](https://en.wikipedia.org/wiki/Sal_Khan) about their cobot, [Khamingo](https://www.khanmigo.ai/).

Overall, IEEE comes across as a cheerleader for using AI in education and, generally, sees no issues with it. The [list of ten positives](https://edu.ieee.org/eg-guc/2024/01/17/the-ai-revolution-in-education-a-game-changer-for-learning/%5d(https://edu.ieee.org/eg-guc/2024/01/17/the-ai-revolution-in-education-a-game-changer-for-learning/) has a comment on its use specifically for SWDs (students with a disability), and states that AI tailors education resources to accommodate different learning styles, “ensuring every student, regardless of their abilities, has an equal opportunity to excel.” But that’s the problem—it’s not clear that any of the reviewed studies include SWDs as a specific research group. Without that kind of data, it’s not clear that SWDs will benefit in the same way as the targeted research subjects.

[Khan’s TED talk](https://www.youtube.com/watch?v=hJP5GqnTrNo) addresses and appears to solve [Bloom’s two sigma problem](https://web.mit.edu/5.95/readings/bloom-two-sigma.pdf) ([Wikipedia summary](https://en.wikipedia.org/wiki/Bloom%27s_2_sigma_problem)). Bloom (1984) compared grades between those taught in a classroom setting with those that had one-on-one tutoring. Bloom found that the grades improved by two standard deviations, or by two sigmas, with tutoring. Khan shows that the cobot Khaminga can act like a tutor and help students. Overall, Khan’s presentation shows that an AI as tutor (for students) or as lesson planner (for teachers) can be very useful and positive.

A caveat is this is a TED talk, and speakers are not likely to show failures at such a venue, but only positive results. Nonetheless, Khan does espouse a balanced approach since he argues: (1) for guardrails, (2) against the cobot simply giving the answer, and (3) acting as a one-on-one tutor or buddy who helps the student. There is nothing in this talk specifically about SWDs, except a statement that the cobot can learn and adapt to a student’s learning style.

### UNESCO

Sources:

* [Ministerial Roundtable on Generative AI in Education](https://unesdoc.unesco.org/ark:/48223/pf0000385556), 2023
  + Opening remarks by Stefania Giannini, Assistant-Director General for Education, UNESCO.
* [Beijing Consensus on Artificial Intelligence and Education](https://unesdoc.unesco.org/ark:/48223/pf0000368303), 2019
  + A list of forty-four statements about how to ensure safety, inclusion, equity, diversity, and quality of education in light of AI.
  + References [Sustainable Development Goal 4](https://en.unesco.org/education2030-sdg4/targets) (SDG 4), a set of ten targets about different aspects of education.

UNESCO’s position is more sober than IEEE’s confident attitude, positioning themselves as cautiously optimistic. They are in favour of using AI in education where it leads to beneficial improvement, but are aware of the known pitfalls of AI; for example, bias in the data, bias in the algorithms, etc. [Stefania GIannini notes](https://unesdoc.unesco.org/ark:/48223/pf0000385556) that the recent emergence of AI is another inflection point in human history and there are no rules nor regulations (2019). She notes our collective duty is to proceed with caution and make sure that the values of education—namely, safety, inclusion, equity, diversity, and quality—are upheld.

One of UNESCO’s concerns to highlight is where some developing nations might opt out of using AI for legitimate reasons—the AI training data is culturally inappropriate for example—but that could lead to a digital divide where have-not nations are left out. As a result, UNESCO suggests fixing the issues to make the training data and algorithms more diverse, inclusive, and culturally relevant so that a digital divide does not become the norm.

The adoption of AI systems, though, it is important to note will vary by country. Where some countries are democratic, AI will be tolerated more than a country that is more restrictive of media and thought.

# Additional Resources

The [AI Observatory](https://higheredstrategy.com/ai-observatory-home/ai-observatory-policies-and-guidelines/), part of the Higher Education Strategy Associates, maintains a list of policies and guidelines implemented in universities in Canada and around the world. Each entry provides a summary of specific policies and guidelines in place at that particular institution, as well as a link to the full resource.

[Jisc](https://www.jisc.ac.uk/innovation/artificial-intelligence), a UK digital, data, and technology agency focused on education, research, and innovation, has a section of their website dedicated to the use of AI in education, including relevant guides, reports, and case studies about the use of AI. You can visit that page <https://www.jisc.ac.uk/innovation/artificial-intelligence> to see reports, case studies, and guides.

For a list of AI tools see a new [Pressbook from Troy Heaps called Generative Artificial Intelligence: Practical Uses in Education](https://pressbooks.openedmb.ca/aiineducation/) from OpenEd Manitoba.

For a list of AI adaptive technology tools see [*AI Innovations & Disability Inclusion* by Elizabeth Whitmer](https://www.linkedin.com/pulse/ai-innovations-disability-inclusion-elizabeth-whitmer-fy90e/?trackingId=sWA0wBa3WPBBtkIOCFs4mQ%3D%3D).

Abishek Gupta, Founder and Principal Researcher at the Montreal AI Ethics Institute maintains a newsletter about Responsible AI called [The AI Ethics Brief (Democratizing AI ethics literacy)](https://brief.montrealethics.ai/).

Maha Bali, Professor of Practice at the Center for Learning and Teaching at the American University in Cairo has been actively blogging about [AI and Teaching and Learning](https://blog.mahabali.me/). She is a London School of Economics (LSE) Higher Education blog fellow, 2024.

Merve Hickok maintains an impressive website with AI materials linked that is up-to-date and thorough called the [AI Ethicist](https://www.aiethicist.org/).

Julia Stoyanovich, Professor of Computer Science and Engineering at New York University, has created [open source comics in multiple languages that address various AI and data responsibility](https://dataresponsibly.github.io/comics/). They have been translated into a number of languages and are openly available.

# Closing Thoughts

Hallucination rates are dropping over time. But the AI still makes stuff up because all the AI does is hallucinate. There is no mind there. All it’s doing is producing word after word. They are just making stuff up all the time. The fact that they’re right so often is kind of shocking in a lot of ways… when AIs get good enough, we just stop paying attention. (Klein, 2024)

— Ethan Mollick, Professor of Management at Wharton

If we lose our wonderment at how often AI gets something right, perhaps that is our litmus for when we have come to trust something incapable of trustworthiness. These systems are not humane or insightful or thoughtful. They are math, mostly probability, based on a majority. We know that this probabilistic determination carries bias and that AIs can cause harm. We know that AI cannot contextualize. And yet we seem satisfied when we’re told it will get better with more data. Will it?

We have to ask what is lost, who is harmed, and what should be forgotten with the embrace of artificial intelligence in decision making. It is of no collective social benefit to organize information resources on the web through processes that solidify inequality and marginalization—on that point I am hopeful many people will agree. (Noble, 2018)

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# Prompt: How is AI being used in education?[[3]](#footnote-4)

**Artificial Intelligence (AI)** has the potential to revolutionize education by addressing significant challenges, enhancing teaching and learning practices, and advancing progress toward **SDG 4**. Here are some ways AI is being utilized in education:

1. **Personalized Learning Experiences**:
   * AI tools, including natural language processing, machine learning, and data analytics, enable personalized learning paths for students. [These systems adapt content, pace, and difficulty levels based on individual needs and learning styles1](https://teachflow.ai/the-evolution-of-ai-in-education-past-present-and-future/).
2. **Intelligent Tutoring Systems**:
   * AI-powered tutoring systems provide real-time feedback and guidance to students. [They analyze student performance, identify areas of improvement, and offer customized recommendations1](https://teachflow.ai/the-evolution-of-ai-in-education-past-present-and-future/).
3. **Adaptive Assessments**:
   * AI algorithms create adaptive assessments that adjust difficulty levels based on student responses. [This ensures more accurate evaluation of student knowledge and skills](https://teachflow.ai/the-evolution-of-ai-in-education-past-present-and-future/)[1](https://teachflow.ai/the-evolution-of-ai-in-education-past-present-and-future/).
4. **Automating Administrative Tasks**:
   * Educators can use AI to automate administrative work, such as grading papers, managing schedules, and responding to general queries. [This frees up time for more meaningful interactions with students2](https://www.analyticsinsight.net/8-ways-ai-is-used-in-education/).
5. **Enhancing Accessibility**:
   * AI can improve accessibility for students with disabilities. [For instance, speech recognition tools assist students with speech impairments, while text-to-speech systems aid those with visual impairments3](https://www.weforum.org/agenda/2023/05/ai-accelerate-students-holistic-development-teaching-fulfilling/).
6. **Data-Driven Decision-Making**:
   * Schools and institutions can analyze large datasets using AI algorithms to make informed decisions. [This includes predicting student performance, identifying at-risk students, and optimizing resource allocation4](https://appinventiv.com/blog/10-ways-artificial-intelligence-transforming-the-education-industry/).
7. **Virtual and Augmented Reality**:
   * AI-driven virtual and augmented reality experiences enhance learning by creating immersive environments. [Students can explore historical sites, conduct virtual experiments, and visualize complex concepts4](https://appinventiv.com/blog/10-ways-artificial-intelligence-transforming-the-education-industry/).
8. **Supporting Teachers**:
   * AI assists educators by recommending teaching resources, suggesting personalized interventions, and identifying gaps in student understanding. [It complements teachers’ expertise and helps them tailor instruction](https://teachflow.ai/the-evolution-of-ai-in-education-past-present-and-future/)[4](https://appinventiv.com/blog/10-ways-artificial-intelligence-transforming-the-education-industry/).

**UNESCO** emphasizes a human-centered approach to AI in education, ensuring that it promotes inclusion, equity, and core competencies needed in the AI era. [The goal is to harness AI’s potential while minimizing risks and addressing inequalities](https://teachflow.ai/the-evolution-of-ai-in-education-past-present-and-future/)[5](https://www.unesco.org/en/digital-education/artificial-intelligence). As we move forward, AI can play a pivotal role in transforming education for the better. 🌟

1. Jutta Treviranus, Director, Professor, Inclusive Design Research Centre at OCAD University, has been appointed Chairperson of the standards committee developing a standard on “Accessible and Equitable Artificial Intelligence Systems” for Accessibility Standards Canada, as part of the Accessible Canada Act: <https://accessible.canada.ca/centre-of-expertise/information-and-communication-technologies#s6.2> [↑](#footnote-ref-2)
2. *AI Act*. European Commission. (2024, March 6). https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai. [↑](#footnote-ref-3)
3. The response was delivered by copilot.microsoft.com [↑](#footnote-ref-4)