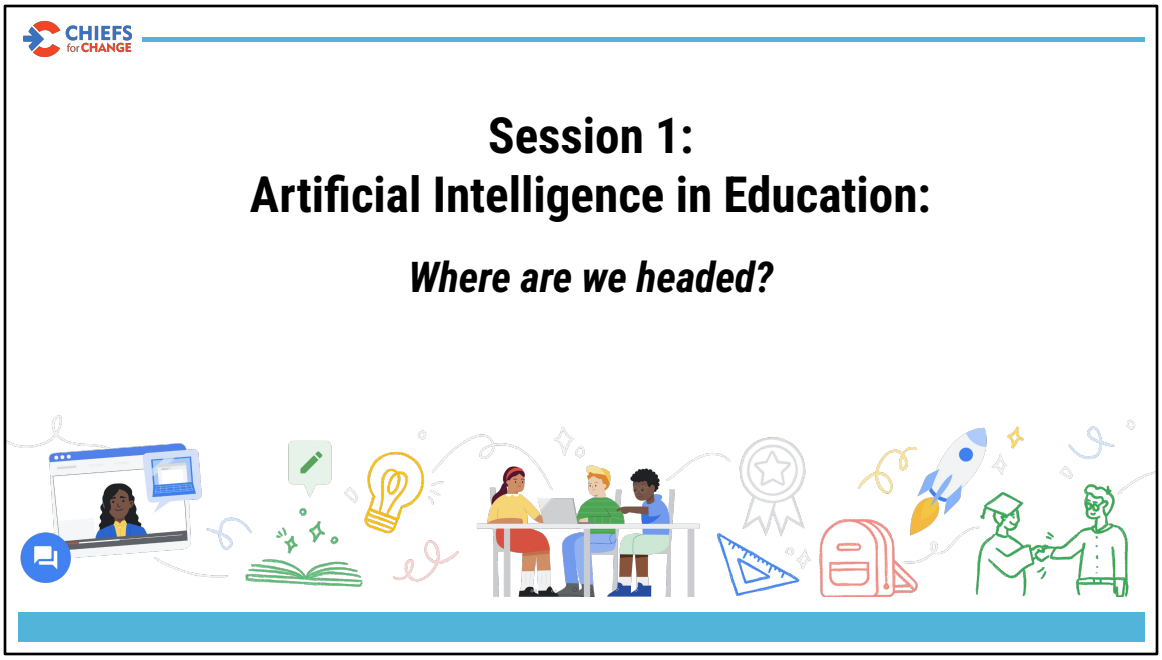

We are on the precipice of transforming education as we know it. With so many disturbing issues impacting public education, we are potentially approaching an existential period in this country. Our evolution is critical because public education is THE lynchpin in our democracy. We continue to depend on informed citizens to make democracy work, to continuously improve this great country we live in. break). AI in its simplest form has been around for decades: directing your calls when you are placed on hold; guessing your next words as you are typing; Siri by Apple (2011); Alexa by Amazon. Machine learning has evolved–computers "get smarter" by studying volumes of info for patterns and solutions. IBM's Deep Blue computer defeated chess champion Gary Kasparov in 1997. In 2006 IBM's Watson defeated Ken Jennings, all time champion of Jeopardy. IMPACT ON MEDICAL FIELD is incredible and encouraging. Generative AI is much more advanced today with ability to create such as composing a reference letter or a lesson plan..

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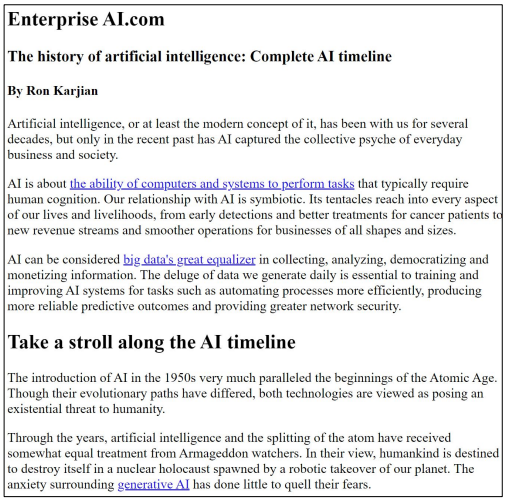


Enterprise AI.com

The history of artificial intelligence: Complete AI timeline

By Ron Karjian

Artificial intelligence, or at least the modern concept of it, has been with us for several decades, but only in the recent past has AI captured the collective psyche of everyday business and society.

AI is about the ability of computers and systems to perform tasks that typically require human cognition. Our relationship with AI is symbiotic. Its tentacles reach into every aspect of our lives and livelihoods, from early detections and better treatments for cancer patients to new revenue streams and smoother operations for businesses of all shapes and sizes.

AI can be considered big data's great equalizer in collecting, analyzing, democratizing and monetizing information. The deluge of data we generate daily is essential to training and improving AI systems for tasks such as automating processes more efficiently, producing more reliable predictive outcomes and providing greater network security.

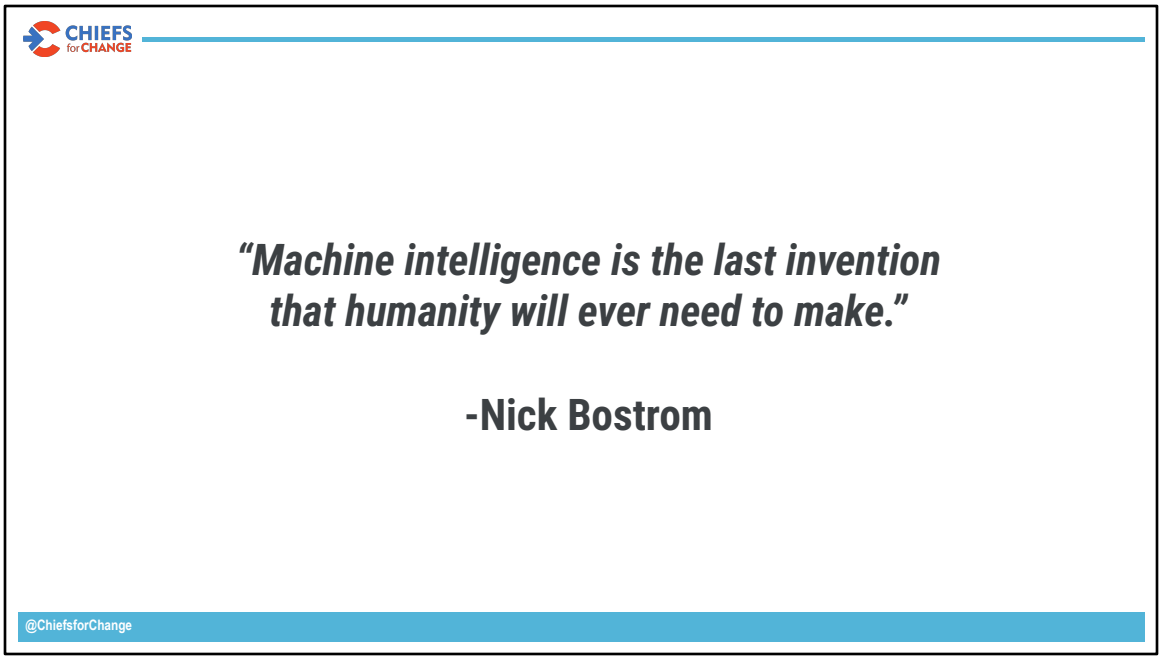
Take a stroll along the AI timeline

The introduction of AI in the 1950s very much paralleled the beginnings of the Atomic Age. Though their evolutionary paths have differed, both technologies are viewed as posing an existential threat to humanity.

Through the years, artificial intelligence and the splitting of the atom have received somewhat equal treatment from Armageddon watchers. In their view, humankind is destined to destroy itself in a nuclear holocaust spawned by a robotic takeover of our planet. The anxiety surrounding generative AI has done little to quell their fears.

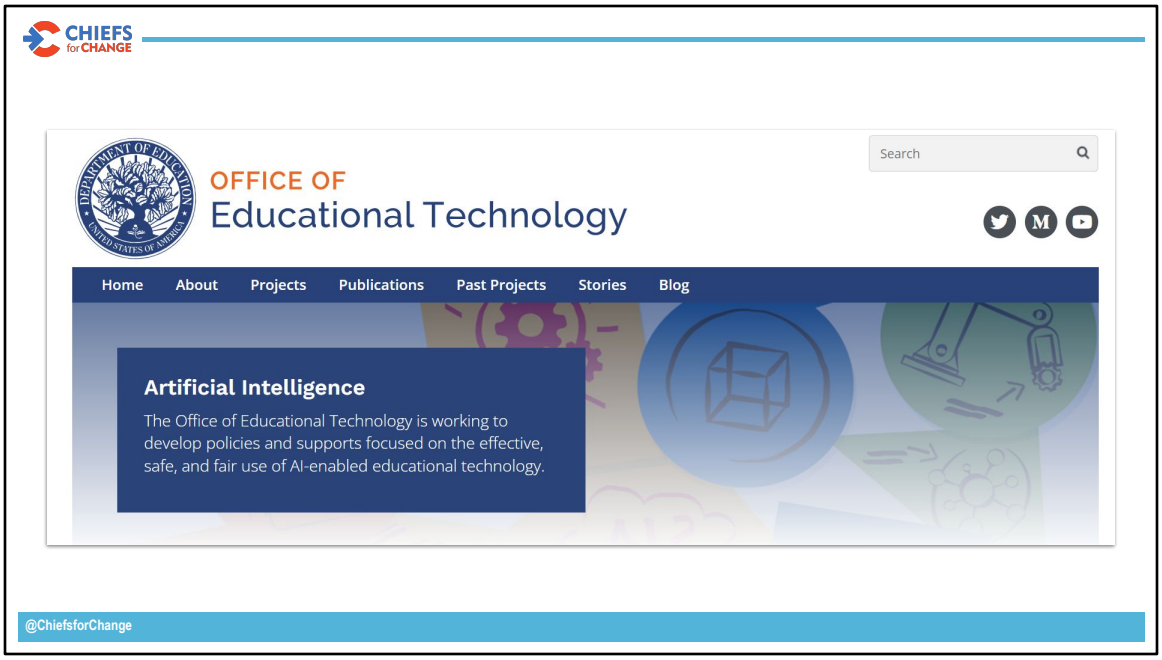
The History of Artificial Intelligence: Complete AI Timeline

If you are interested in the history/timeline for AI, here is one resource to review.



Take a moment to think about the quote you may be familiar with by Nick Bostrom. Nick is a Swedish philosopher who is the Director for the Future of Humanity at the University of Oxford. Think about the profound effect AI could have on our daily lives as this field of machine intelligence evolves. Today our focus is on one small, yet important aspect of how AI is changing the face of education. But on a higher level, are we previewing the end of mankind as we know it? Godfather of AI Geoffrey Hinton said–"these are things getting smarter than us," and felt the need to "blow the whistle …worry seriously about how we stop these things from getting control over us." You can google the 60 minutes interview—somewhat alarming. According to a CNN poll, 42% of CEOs say AI could destroy humanity in 5 to 10 years. A more reassuring perspective comes from Bill Gates, who says the risks are real but manageable. Let's use that perspective as we focus on AI in education.

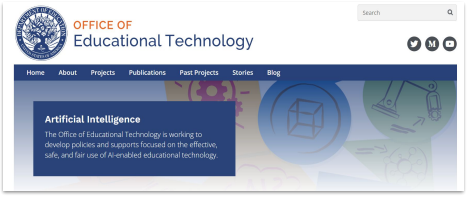
https://nickbostrom.com/



This topic is so important that the US Department of Educational Technology, as highlighted on the front page of their website, is working to develop policies and supports for safe and fair use of AI- enabled educational technology. Notice some of the key insights…

https://tech.ed.gov/ai/

- Enable New Forms Of Interaction
- Address The Variability In Student Learning
- Support Forms Of Adaptive Learning
- Enhance Feedback Loops
- Provide Educators The Ability To Design Tools To Do Their Job Better



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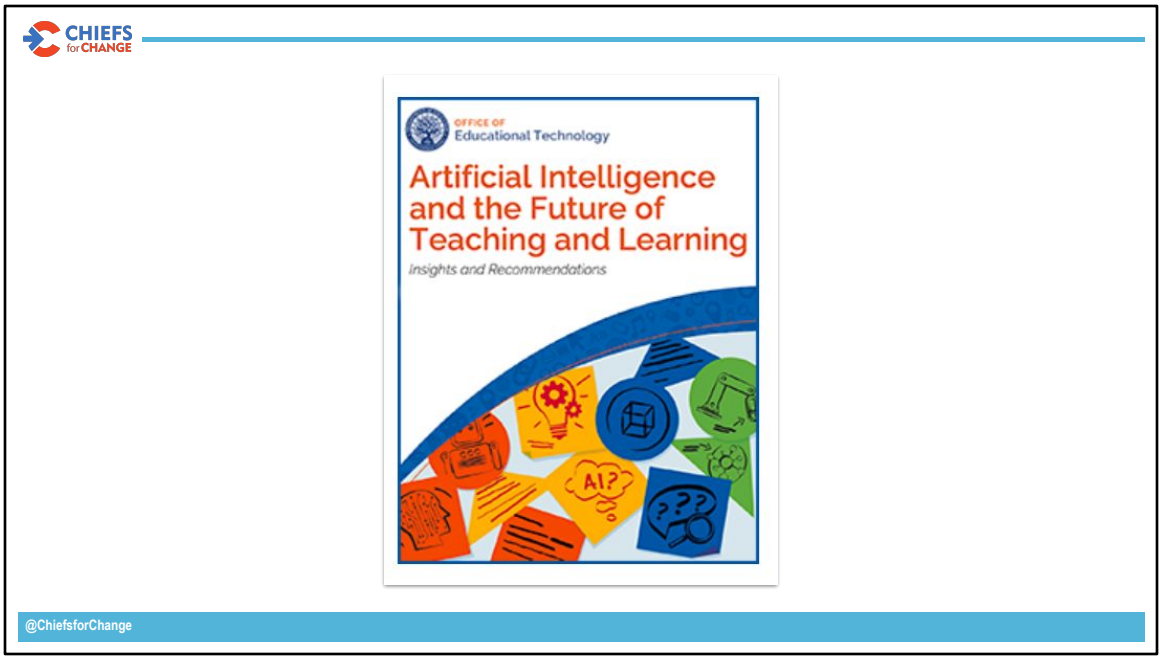
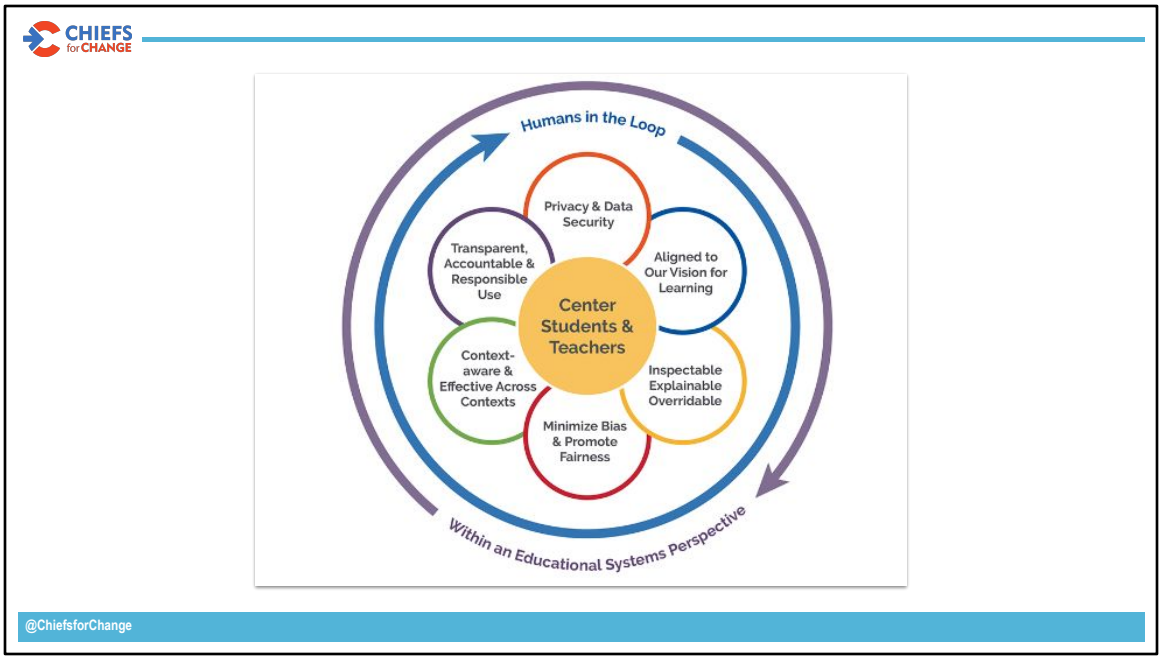
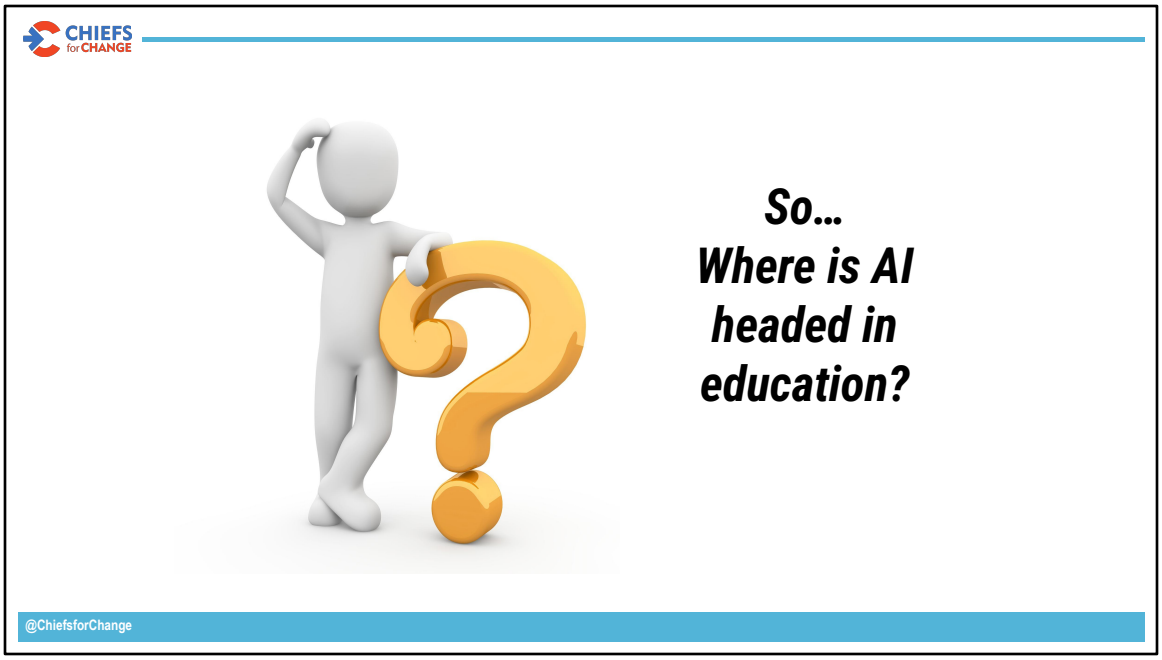
AI should enable new forms of interaction, address the variability in student learning, support forms of adaptive learning, enhance feedback loops and provide educators the ability to design tools to do their job better. We can call agree that those are very broad guidelines.



On their homepage, the Department of Education highlighted a featured publication entitled Artificial Intelligence and the Future of Teaching and Learning. The report provided 7 recommendations that varied in themes, however one stood out that brings relevance to our topic.



Recommendation #2 emphasizes the need to Align AI models to a Shared Vision for Education. (describe graphic) A critical component of this continuum loop is that the focus remains on the impact to **Students and Teachers**. They are, and should be, the center of decisions made regarding AI..



Let's take a look at some areas that AI is making or could make an impact on the future of education. Its being discussed across the country and is both exciting and frightening at the same time. The IMPACT of AI can TRANSFORM TEACHING AND LEARNING; So what is TOP OF MIND FOR EDUCATORS? There are a few obvious areas where AI will have a profound impact—productivity and efficiencies, language learning, tutoring and personalized learning. These are just the tip of the iceberg, and then talk about some of the fears and concerns educators are raising.

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Productivity & Efficiencies

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The software application known as Chatbots that simulates human conversation (text or voice) can be used to increase productivity and create extreme administrative efficiencies. AI will help streamline routine tasks and significantly save educator time. This should be the path of least resistance for 2 reasons: one—teachers are overworked and always spending time beyond the duty day to complete tasks like grading tests; two– across the nation, we have teacher shortages that are rapidly growing. So we must make the job easier in order to attract and retain teachers and we have to replicate/clone excellent teachers to impact more students. It is fascinating that over the last several years Chatbots are becoming more and more sophisticated. An April Article in EdTechReview gave an expansive view of how chatbots are supporting teachers and students. In the classroom, administrative type tasks can overwhelm a teacher or other school based personnel, so Chatbots can provide a valuable service. Imagine the time saved by Chatbots answering query questions on scheduling for administrators. Chatbots can grade quizzes and provide analysis back to teachers, and provide students tailored messages on progress to keep them motivated in class. Many of these Chatbots can be integrated into learning management systems. Probably one of the most powerful uses of Chatbots centers around personalized learning, which we will cover in a moment.

Language Learning

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Consider the impact of AI on Language Learning. In a world that is becoming increasingly interconnected, AI apps can provide a convenient and personalized approach to learning and technologies to improve the quality of translations. A June 2023 article from Intellias, Author Yurii Nykno highlighted the role AI could play in language learning. Of course it mentioned many products you are familiar with: Babbel, Rosetta Stone, Duolingo and even ChatGPT. All of these products, with the advancement of AI have become powerful tools in language learning. A very popular product, Rosetta Stone for instance, in its latest version now provides users the ability to scan objects with a camera and translate content in different languages. Just Imagine that capability in classrooms for second language learners or cross continent collaboration of classrooms. The language and academic barriers fade away with personalized content. Students wishing to learn a second language will not be prohibited by a shortage of foreign language teachers, AND they can start at the primary grade level, with greater success. The possibilities are exciting for educators. Again, this is a strongly supported area of impact.
(https://intellias.com/how-ai-helps-crack-a-new-language/)

Tutoring- All of us witnessed the negative academic impact of the pandemic on students. Research was clear, the learning loss was significant. As students struggle academically, AI can be a resource for teachers to provide various alternative learning methods to address the learning style of each student. Interestingly, "Intelligent Tutoring Systems" are not new to education. During the 1960's at the University of Illinois the developed PLATO (Programmed Logic for Automatic Teaching Operations). Donald Bitzer, professor of electrical engineering, started PLATO because he was concerned about high percentage of students graduating who were functionally illiterate. (Britannica). Over 60 years later, in March of this year, Khan Academy launched their Khanmingo platform which leverages AI to support 1 on 1 tutoring. This new program uses the latest AI technology available (GPT-4 from OpenAI who created ChatGPT) and is designed to integrate existing Khan Academy video and resources/lesson with interactive feedback from the Chatbot Khanmingo. Imagine the power of any student having access to individualized tutoring anytime/ anywhere. In a recent article, it was noted that Khan Academy envisions "an enhanced version of Khanmingo with features like long term memory for user interaction, feedback on student writing and the ability to facilitate multi-user interactions, like moderating a debate. Other companies are intensely focusing on this area as well and the precision will continue to escalate.(Wonderful Engineering)

(https://www.khanacademy.org/khan-labs#faq)

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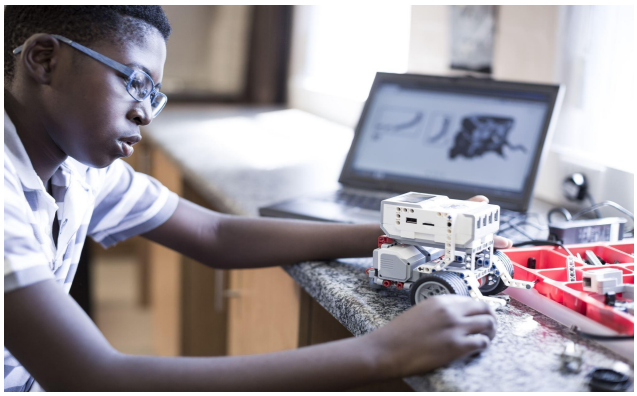
Personalized Learning



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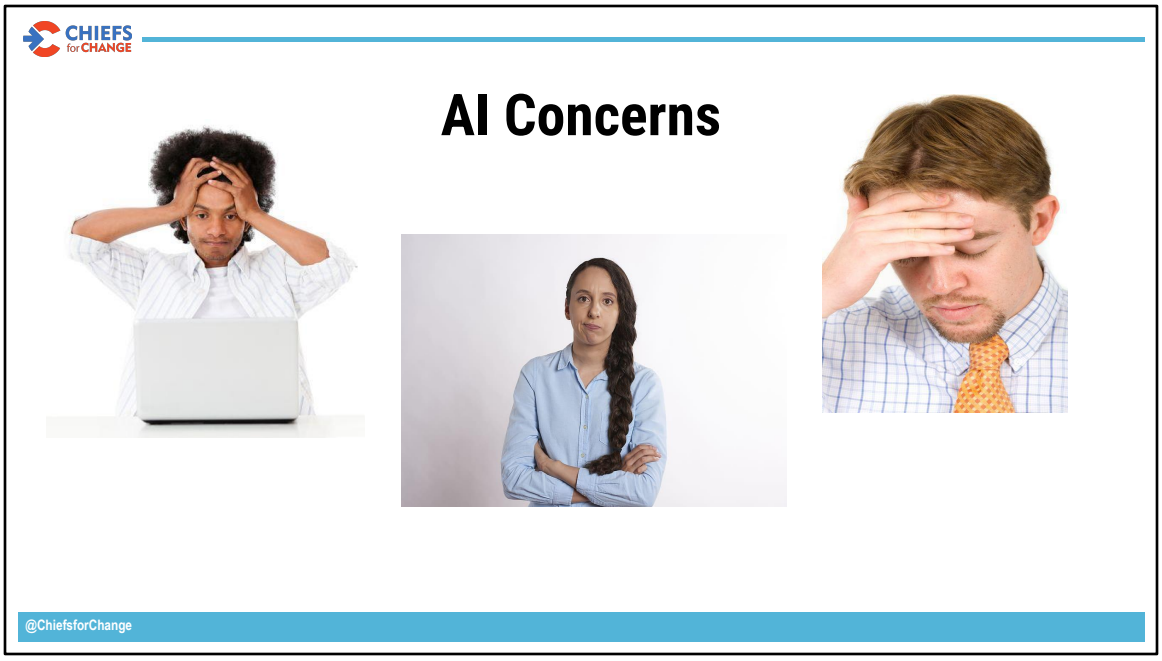
AI can REALLY HELP PERSONALIZED LEARNING –every student can have their own customized instructor. The idea of Personalized Learning has been around since the 1800's A 2019 article in Classcraft shared that there are documented efforts in Colorado and San Francisco in regards to letting students work at their own pace. And then we had Bloom's mastery learning since the late 60s. the So the concept is not new, yet it has taken us 200 years and AI to really change the game on what personalized learning can be. Meehir K, in his June eLearning Industry article shared that "Personalized learning means that each student's learning experience is tailored to fit their needs." Yet he also mentioned that LARGE scale personalized learning might not be possible with AI technology right now. Look at the changing role of Adaptive Learning Platforms. With AI they are more nimble to analyze student data and make academic changes (or pathways) for students. The article mentioned personalized recommendations where AI can analyze vast amounts of data, include a student's past performance to recommend learning resources based on their needs and interests. All this AI data can also provide teachers information which will help them have a greater understanding of their individual students that they can use to make academic decisions. Imagine the power of AI, in a personalized learning environment, incorporating multimodal learning based on student interest. Text, audio, video and other interactive resources can engage students, based on their

individual interests. Imagine the ability of AI and the ability to provide near instant feedback on quizzes and assignments along with suggesting target resources to assist in areas for improvement. The door is open wider than ever because of what we went through during the pandemic. Digital learning did become the norm, but we are at risk of not taking advantage of this catapult. Some will sadly continue to long for returning to normal, (normal is overrated and has never has served all students). The potential is astronomical, and perhaps the toughest area to achieve rapid progress. Again, AI in education is both exciting and frightening.



While AI has great potential as you have seen, we must also be cognizant of the perceived and very real concerns and dangers. A February Forbes article tackled some of these widely kept notions. 1) Some teachers see AI as a threat to their jobs and that a robot will be replacing them. Remember the model where students and teachers are in the center of planning? We must remain vigilant to remind others that AI doesn't replace the human element of interaction. 2) Privacy and security concerns have been raised; that personal, sensitive data must be secured. 3)There are ethical concerns also voiced. Chat-GPT raises concerns about INTEGRITY, CHEATING, PLAGARISM and more. Some teachers have resorted to making students hand write their essays for precisely that reason. We need safeguards and tools for those concerns, as well as clear laws and regulations consistent from state to state on privacy, security and intellectual property. 4) CONTAMINATION due to vast sources of non-curated information being sourced through machine learning. Just like we have to convince students that everything on the internet is not true, we will need some safeguards to prevent STEREOTYPES, BIAS, and outright ERROR from contaminating how we instruct students. Creativity and human interaction cannot be replaced by AI. Regarding the concerns and fears, most superintendents believe these concerns can be mitigated over time.

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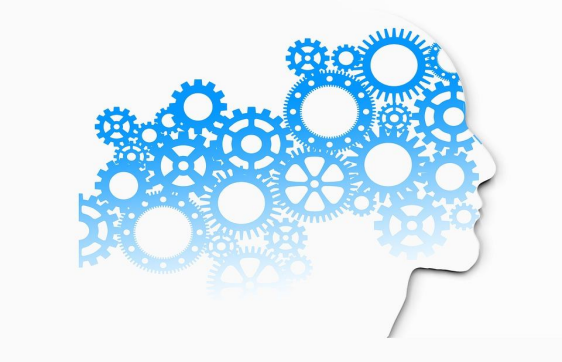
Final Thoughts



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We shouldn't even use the term final thoughts, because the possibilities are so vast, and changing as we speak. The bottom line is that these possibilities cannot be overlooked. If educators try to ignore AI, the students (our digital natives) will not. In fact, they are far more aware of AI than their teachers today. And as we forge ahead into the AI world, we must acknowledge that further teacher turnover is likely among our more experienced teachers. We saw it with digital learning. The wise educators will find ways to incorporate AI to make learning more exciting and successful for students and at the same time make teaching more rewarding and less stressful for educators. (see c4c news and updates Oct 9 email for AI resource for teachers)
Ali Ghodsi, CEO of Databricks believes in ten years, CEOs who don't understand data and AI won't be eligible for the top job in any industry. It is reasonable to include education in this prediction. He states, "As generative AI becomes more ubiquitous, companies that prioritize data will have an advantage."