AI for Education

1. the U.S. educational system is one of the most unequal in the industrialized world, and students routinely receive dramatically different learning opportunities based on their social status. In contrast to European and Asian nations that fund schools centrally and equally, the wealthiest 10 percent of U.S. school districts spend nearly 10 times more than the poorest 10 percent, and spending ratios of 3 to 1 are common within states.

Darling-Hammond, L. (2016, July 28). Unequal opportunity: Race and education. Retrieved March 22, 2021, from <https://www.brookings.edu/articles/unequal-opportunity-race-and-education/>

2.nationwide, one-third of teachers do not have an education background in the main subject that they teach. And, more than 20 percent have less than five years of teaching experience. About nine percent are teaching without the usual state certification.

V. (2019, April 02). Study: America's teacher shortage is a bigger problem than thought. Retrieved March 22, 2021, from <https://learningenglish.voanews.com/a/study-america-s-teacher-shortage-is-a-bigger-problem-than-thought/4859004.html>

3. Constantly shifting demands, increased hours, and high levels of stress are leading to burnout.

Long, C. (n.d.). Many educators buckling under pandemic workload. Retrieved March 22, 2021, from <https://www.nea.org/advocating-for-change/new-from-nea/many-educators-buckling-under-pandemic-workload>

4. feedback is something that every student can benefit from, whether it is offered digitally, verbally, or through the traditional written annotations on an assignment. This variety of feedback styles makes it easy to incorporate the feedback-model of student performance and assessment into the contemporary classroom.

Pircon, B. (2020, March 06). The importance of feedback for student learning. Retrieved March 22, 2021, from <https://www.thegraidenetwork.com/blog-all/importance-of-feedback-student-learning>

5. Personalized learning can also give students the chance to build self-advocacy skills. It encourages them to speak up about what interests them. It also allows them to be equal partners in their learning experience.

Morin, A. (2021, March 02). Personalized learning: What you need to know. Retrieved March 22, 2021, from <https://www.understood.org/en/school-learning/partnering-with-childs-school/instructional-strategies/personalized-learning-what-you-need-to-know>

6. Obesity has reached epidemic proportions in the U.S., and the same poor eating habits that led to the obesity problem may also be contributing to lower student achievement. Obesity also increases a student’s risk for other conditions, like diabetes and high blood pressure, which could result in higher absenteeism and more academic issues.

Chen, G. (2012, May 07). 10 major challenges facing public schools. Retrieved March 22, 2021, from [https://www.publicschoolreview.com/blog/10-major-challenges-facing-public-schools#:~:text=Family%20factors%20also%20play%20a,brings%20to%20school%20every%20day](https://www.publicschoolreview.com/blog/10-major-challenges-facing-public-schools%23:~:text=Family%2520factors%2520also%2520play%2520a,brings%2520to%2520school%2520every%2520day).

7. Schools are often given the responsibility of helping reduce teacher workload and ensuring they retain staff, but this can be difficult against a backdrop of increasing budget cuts.

P. (2020, October 26). What are the biggest challenges in education for 2020? Retrieved March 22, 2021, from <https://pamojaeducation.com/blog/what-are-the-biggest-challenges-in-education-for-2020>

8. At its core, Bakpax is a computer vision system that converts handwriting to text and interprets what the student meant to say. The system’s auto-grader teaches itself how to score.

Smith, C. (2019, December 18). The machines are learning, and so are the students. Retrieved March 22, 2021, from <https://www.nytimes.com/2019/12/18/education/artificial-intelligence-tutors-teachers.html>

9. ITS research has leveraged AI advancements, and has also helped push the boundaries of AI capabilities with grounded usage scenarios.

Kokku, Ravi., Sundararajan, Sharad., Dey, Prasenjit., Sindhgatta, Renuka., Nitta, Satya., Sengupta, Bikram. (2018, April 6). *AUGMENTING CLASSROOMS WITH AI FOR PERSONALIZED EDUCATION.* Retrieved March 30, 2021, from <https://www.researchgate.net/publication/327806141_Augmenting_Classrooms_with_AI_for_Personalized_Education>

10. Example of AI for education. A company called Squirrel AI promising personalized tutoring in China.

Hao, Karen. (2019, August 2). *China has started a grand experiment in AI education. It could reshape how the world learns.* Retrieved March 30, 2021, from <https://www.technologyreview.com/2019/08/02/131198/china-squirrel-has-started-a-grand-experiment-in-ai-education-it-could-reshape-how-the/>

11.Smart Content –  Technology that attempts to condense text books into useful tool for exam preparation such as true or false questions.

Intelligent Tutoring Systems - Personalized electronic tutoring customized to the learning styles and preferences of the pupil.

Virtual Facilitators and Learning Environments – Virtual human guides and facilitators for use in a variety of educational and therapeutic environments

Faggell, Daniel. (2019, November 21). *Examples of Artificial Intelligence in Education.* Retrieved March 30, 2021, from <https://emerj.com/ai-sector-overviews/examples-of-artificial-intelligence-in-education/>

12. Digital health technologies help avoid obesity

The Medical Futurist (2019, November 21). *7+1 Ways Digital Health Technologies Help Fight Obesity.* Retrieve March 30, 2021, from <https://medicalfuturist.com/71-ways-digital-health-technologies-help-fight-obesity/>

13. eLearning as technology becomes more affordable in higher education but hav-

ing a big barrier in the cost of developing its resources. Deep learning

using artificial intelligence continues to become more and more popular and having impacts on many areas of eLearning.

Muniasamy, Anandhavalli., Alasiry, Areej. (2020, January 15). *Deep Learning: The Impact on Future eLearning.* Retrieved March 30, 2021, from <https://www.researchgate.net/publication/338617738_Deep_Learning_The_Impact_on_Future_eLearning>

14. For education and learning, there is a consensus that the impact of AI has its benefit-risk duality. To reinvent education systems towards an AI era, policy makers will need to examine potential benefits and risks of AI.

Mader, Clemens., Hilty, Lorenz. (2020, February 12). *Artificial Intelligence in Schools.* Retrieved March 30, 2021, from <https://files.ifi.uzh.ch/hilty/p/AI_in_schools_overview.pdf>

15. Research in two fields is shaping the new technology. Artificial intelligence (AI) is letting machines learn about the pupils using them by studying the data produced in the process. And research drawing on psychology, cognitive science and other disciplines is providing practical insight into the “science of learning”.

Edtech. (2017, July 22). *Technology is transforming what happens when a child goes to school.* Retrieved March 30, 2021, from [economist.com/briefing/2017/07/22/technology-is-transforming-what-happens-when-a-child-goes-to-school](http://economist.com/briefing/2017/07/22/technology-is-transforming-what-happens-when-a-child-goes-to-school)

16. A team of behavioural scientists at [University College London (UCL)](https://www.ucl.ac.uk/iehc/research/behavioural-science-health)  and researchers at [IBM Research-Ireland](https://www.research.ibm.com/labs/ireland/) are looking at ways to help people reach these goals and achieve better health behaviour by using AI.

Bonin, Francesca. (2018, December 12). *Could AI Help People Change Their Behaviour?* Retrieved March 30, 2021, from <https://www.ibm.com/blogs/research/2018/12/ai-help-change-behaviour/>

17. XiaoYuanTiKu（Little Ape Calculation App） announced that the current accuracy rate of AI corrections for primary schools maths questions has reached 99.9%, exceeding the human average.

Chan, Jenny. (2020, April 27). *AI Help Teacher To Correct 1500 Students’ Assignments In 2 hours with 99.9% accuracy.* Retrieved March 30, 2021 from <https://jenc-yincubator.medium.com/ai-help-teacher-to-correct-1500-students-assignments-in-2-hours-with-99-9-accuracy-55f9f87e30df>

18. What happens when universities can’t tell whether an essay is written by a human or an algorithm?

Bartlett, Matt. (2019, September 13). *A.I. and the Future of Cheating.* Retrieved March 30, 2021, from <https://onezero.medium.com/a-i-and-the-future-of-cheating-caa0eef4b25d>.

19. Technologies, such as Artificial Intelligence, are helping researchers learn more about the biological connections between plants and humans. For instance, Brightseed has created a powerful artificial intelligence called Forager™, which coupled with advanced metabolomics instrumentation, systematically identifies unknown plant compounds and predicts their likely roles in human health. Thus far, the technology has predicted beneficial phytonutrients for many important health conditions.

Flatt, Jim. (2020, July 31). *How AI is bringing the ‘dark matter of nutrition’ to light, unlocking the power of plants.* Retrieved March 30, 2021, from <https://www.weforum.org/agenda/2020/07/how-ai-is-uncovering-the-dark-matter-of-nutrition-and-making-history> .

20. Researchers at Rensselaer Polytechnic Institute and IBM Research in New York have recently created pFoodReQ, a system that can recommend recipes tailored around the preferences and dietary needs of individual users.

Fadelli, Ingrid. (2021, January 21). *Researchers develop a system that can recommend personalized and healthy recipes.* Retrieved March 30, 2021, from <https://techxplore.com/news/2021-01-personalized-healthy-recipes.html>.