AI in K12 Education Presentation Notes

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What is Generative AI

Artificial Intelligence (AI) is a branch of computer science that enables machines to mimic human intelligence by:

1. Learning (the acquisition of information and rules for using the information),
2. Reasoning (using the rules to reach approximate or definite conclusions),
3. Self-correction (using newly acquired information to draw new conclusions)

Machine learning is a subfield of AI

- where a machine "learns" how to do something without explicit programming. In machine learning, a computer is given data from which it builds a model, and that model can repeatedly be trained, tested, and have more data added until it performs well

Generative AI:

- A subfield of Machine learning where a model is given a large set of data
- The model can then create new content based on the patterns it learned from existing data.
    1. Text, images, audio, and program code.

The game “I’m Going on a Trip” is a good example of training on datasets. With every correct guess, that model learns to make better conclusions

https://doitandhow.com/2012/05/16/im-going-on-a-trip-game/

Benefits of Generative AI

Personalized learning experiences

1. Adaptive Learning: Adaptive learning paths based on learning style, pace, and difficulty.
    - Personalized tutoring
    - Eventually, models will be trained well enough to create lessons specific to learning needs like ADHD, Dyslexia, or various other learning needs.
2. Content Generation:
    - Concise learning material
    - Convert text to audio files
    - Leveled reading material
    - Personalized tutoring
    - Personalized content

Automate administrative tasks:

- Generate reports, schedules, and data entry
- Automate compliance training
- Semi-automation of professional development and teacher observations

Challenges of Generative AI in K12

Lack of policy guiding the use of AI in K12

- 38% of teachers report having received guidance on GAI
- 7% globally report institutions having policies in place
- Concerns about academic integrity
- Lack of guidance training for students who will use generative AI

Privacy concerns: Protecting student data and meeting federal guidelines related to student privacy

- COPPA: This law was created by the Federal Trade Commission to protect children under age 13 from having their information collected, sold, or marketed by online entities.
- CIPA: This law was created by the Federal Communications Commission to protect students from accessing obscene, offensive, or harmful online content via school or library computers.
- FERPA - This law was created to protect the identifying information of students (such as name, address, place of birth, phone number, awards, honors, etc) from being disclosed either online or in print to third parties without parent/guardian consent. If the information can be used to identify a specific student, it cannot be published in any way without consent.

Equity issues and access to technology:

- When implementing the use of AI, do all students have access to the tools?
- Do all teachers have access?

Need for teacher training:

- Understanding the limitations of the technology
- Bias:
- In the mid-1980s, a British medical school was found guilty of discrimination after building a computer program to screen candidates. The program closely matched human decisions but showed a persistent bias against women and applicants with non-European names.
- Amazon tried building a similar program to improve its hiring process and almost immediately realized the system was penalizing women because the dataset it was trained on reflected the male-dominant tech culture of the time.
- ChatGPT and the Dall-E image generator have been particularly scrutinized since the public release of ChatGPT in November 2022. The company has had to address bias issues on the fly as its users surface unforeseen issues in their outputs, ranging from political ideologies to ethnic stereotypes.

Training Teachers to Use AI

1. Provide teachers with a foundational understanding of GAI
2. Address specific privacy issues (CIPA, FERPA).
3. Address issues of bias, fairness, transparency, and equity
4. Explore how GAI can be used to enhance planning, instructional delivery, and assessment.
5. PD in designing lesson plans incorporating GAI tools to support differentiated instruction, personalized learning, and creative expression.
6. Provide ongoing professional development opportunities for teachers to stay up-to-date on the latest GAI advancements and best practices.
7. Regularly evaluate the GAI initiative and make adjustments based on teacher and student data.
8. Training students on the proper use of GAI as a learning tool that enhances the learning process
9. Provide strategies (curriculum) to educate students about GAI's ethical and responsible use, including plagiarism prevention and critical evaluation of AI-generated content.