Artificial Intelligence in Education

Inland Personnel Council—3rd General Meeting

May 3, 2024

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Agenda

📚	Brief Overview of AI in Education
👩‍💻	A Closer Look at ChatGPT
⚖️	Legal Issues
📋	Best Practices
👥	Q & A
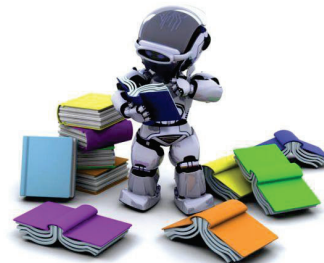
AI in Education:

Overview
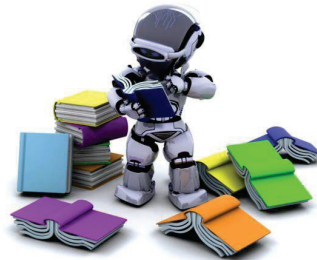
What is Artificial Intelligence ("AI")?

- "A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments." (15 U.S.C.A. 9401(3).)

- Examples of AI we have already been using for years: Google, GPS, Alexa, recommendations, etc.
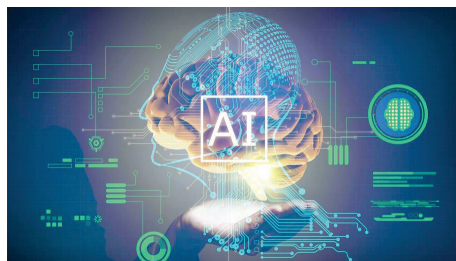
What is Artificial Intelligence ("AI")?

Figure 3: Components, types, and subfields of AI based on Regona et al (2022).[12]

Artificial Intelligence in Education

- Data Driven Artificial Intelligence in Education: A Comprehensive Review (Ahmad, K. et al., Hamad Bin Khalifa University), 2021

- Two basic forms of AI used in educational settings

  – Representation/knowledge based AI: employs human expert knowledge in decision-making (e.g. rule-based systems)

  – Data-driven AI: isolates data and predicts outcomes absent expert knowledge

- Employed to improve outcomes on three different levels: (1) individual, (2) course-wide, (3) cohort-wide (grade level [secondary] or major field of study [tertiary])

Artificial Intelligence in Education

- Student grading/evaluation
  - Use of algorithms to monitor student performance that can later be used to predict performance on final examination
  - Helps to identify area of highest need, ultimately improving dropout rates and increasing student success rates
  - Also can assist in identifying student learning difficulties, helping to identify those who may need assistance under law
- Student performance predictions
  - Within first few weeks of a course, deep learning models are able to predict a student's likelihood of success in course completion
  - Purpose: facilitating intervention and remedial actions promptly

Artificial Intelligence in Education

- Retention and Dropout Prediction (akin to data analytics)
- Personalized learning
  - As opposed to traditional methods, such as lecturing to a standards-based course design, AI can be used to tailor instruction
  - Better engagement, closer interaction, improved comprehension, and wider scope of coverage of learning outcomes
  - Deep Reinforcement Learning (RL): provides adaptive learning materials based on real-time outcomes, and can tailor appropriate learning material in a connected, continuous manner that adapts to changing needs
  - Relies heavily on scaffolding and time management to create "flipped classrooms"
  - AI is fed through big data as well as learning analytics

Artificial Intelligence in Education

- Sentiment analysis
  - Analyzing student feedback to better understand opinions and make adjustments to the delivery of content or learning material
  - Tracks emotional response vis-a-vis academic performance (e.g. emotional expression differs between level of achievement, and adjustments can be made to tailor interventions)
  - Opinion mining shown to be more difficult in online/distance education environments

- Classroom monitoring and visual analysis
  - Utilization and occupancy of facilities are analyzed with the purpose to increase attendance and levels of engagement (Detroit Metropolitan Wayne County Airport—"Parallel Reality")
  - Includes analysis of facial recognition programs to assess engagement (!)

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Artificial Intelligence in Education

- Intelligent tutoring systems
  - Differs from personalized learning platforms in that it provides immediate and customized feedback to improve outcomes (prescriptive v. predictive)
  - Predicts cognitive needs, results, mental states and skills to recommend specific actions (may also have mental health benefits)
  - Uses tutorial dialogue systems to map out adaptive student instruction, both proactive and reactive
  - Models have demonstrated benefit universally to both high achieving and low achieving students, improving performance in both groups when compared to traditional static-based instruction

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AI's Capabilities (GAME)

Was this photo made by AI?

Yes   No

No, this photograph was
not generated by AI.

AI in Education:

A Closer Look at ChatGPT

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ChatGPT: Overview

- Overview and Demonstration
- How it works
- Key features
- Benefits/drawbacks
- Ethical considerations
- Legal issues in education

ChatGPT: Overview

- Advanced language model – Natural Language Processing
- AI chatbot
- Generative Pre-Trained Transformer model – to understand and generate text based on prompts
- Trained on massive data from the internet but stopped adding as of January 2022

Demonstration – Let's ChatGPT!

PROMPT 1: Generate ideas for science experiments for a 9th grade science class that will help demonstrate the effects of air pressure.

PROMPT 2: I'm working on a presentation about Brown v. Board of Education. Generate a presentation slide deck of 10 slides that discusses its historical significance.

Key Features

- Natural language understanding
- Text generation
- Multilingual support
- Customization options
- Text input allows modification of the text based on prompts

How can teachers use ChatGPT?

- Lesson planning
- Personalized learning plans for students
- Adaptive tutoring
- Homework and assignment assistance
- Test preparation
- Explaining complex concepts

How can Human Resources use ChatGPT?

- Creating letters and correspondence
- Creating job descriptions
- Employee evaluations
- Evaluating responses to interview questions
- Preparing emails
- Useful tool, but be careful…

Dear [Employee's Name],

I hope this letter finds you well. We are writing to address a matter of concern that has come to our attention. It has been brought to our notice that you have been discussing your compensation with colleagues, which is a violation of our policy on confidentiality and professionalism.

We want to emphasize that our company places a high value on maintaining a positive and respectful work environment. As part of our commitment to fostering a collaborative workplace, we have implemented policies to ensure confidentiality and protect sensitive information, including details about employees' compensation.

Discussing personal compensation matters openly can create discomfort among employees and may lead to misunderstandings. As such, we must insist on compliance with our company policies.

Upon review of this matter, we have decided to take the following disciplinary action:

      [Specify the disciplinary action – e.g., verbal warning, written warning, suspension, etc.]

Please be aware that this action is not intended to be punitive but rather as a reminder of the importance of adhering to company policies. We believe in your commitment to maintaining a professional and collaborative work environment, and we trust that you will adjust your behavior accordingly.

We encourage you to review our company policies, specifically those related to confidentiality, and ensure that you are familiar with the expectations outlined therein. If you have any questions or concerns regarding this matter, please feel free to contact [HR Contact Person] at [HR Contact Person's Email] or [HR Contact Person's Phone Number].

How can administrators use ChatGPT?

- Virtual assistant for administrative tasks
- Teacher professional development
- Answering frequently asked questions
- Parent/teacher communications
- Student registration and enrollment assistance
- Student counseling and mental health support

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Benefits of ChatGPT

- Improved communication
- 24/7 Accessibility
- Efficient administrative support
- Enhanced parent and student engagement
- Language support
- Data collection and feedback

Drawbacks of ChatGPT

- Potential for plagiarism/cheating
- Limited understanding of context and potential for misinformation
- Privacy concerns
- Loss of human interaction
- Overreliance on technology
- Ethical considerations
- Generic outputs
- Accuracy

AI's Capabilities (GAME)
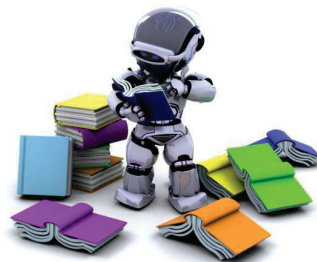
Was this photo made by AI?

Yes   No

No, this photograph was
not generated by AI.

AI in Education:

Challenges & Legal Issues

Potential Legal Issues

- Major ongoing lawsuits involving AI
- Misinformation/Defamation
  - Headline: OpenAI Fails to Escape First Defamation Suit From Radio Host – AI generated content incorrectly summarized Radio Host background identifying him as being convicted of embezzlement
  - Walters v. OpenAI LLC, Ga. Super. Ct., No. 23-A-04860-2, 1/11/24
  - Would a reasonable person consider a ChatGPT summary a "statement of fact"?
  - OpenAI has disclaimers warning users not to take ChatGPT's output as accurate all the time

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Potential Legal Issues

- **Employment Discrimination**
- **8.9.23 EEOC Breaks New Ground by Settling First-Ever AI Discrimination Lawsuit: 10 Pointers to Avoid Robot Bias – New York -** iTutorGroup
- **AI employment screening technology flagged due to applicant filling out same application with different birth dates**

Potential Legal Issues

- **Intellectual property – who owns the prompts and responses?**
- **Do AI-generated responses infringe on copyright?**
- **Whether and how will the laws around copyright infringement apply?**

Logistical or Legal Concerns

- **Record Retention** – for information pertaining to an identifiable student, how does the record need to be retained (more on this later)?

- **Surveillance** – for campus monitoring systems, what are the privacy and security risks involved?

- **Outside of AI in Education** – lawsuits involving **data use** (non-compliance with software licensing requirements, AI tools creating **copyrighted** images)

Other Challenges & Legal Issues

Logistical Challenges

- Understanding of how to use powerful functions of AI
- What to do with the information generated
- Concerns about cheating or plagiarism/ discipline

Legal Issues:

- "Algorithmic Bias and Discrimination"
- Equity and Accessibility
- Privacy and Security Issues
- Student Records (FERPA Obligations)

- Content Moderation for Explicit Material (CIPA)
- Concerns about job replacement
- California Public Records Act Requests

"Algorithmic Bias & Discrimination"

- An algorithm is a set of rules or instructions that is to be followed by computers in problem-solving operations to achieve an intended end goal. They are the "core elements of AI."

- "Whenever people create algorithms, they also create a set of data that represent society's historical and systemic biases."

- While it may not be explicitly intended, various biases such as gender and/or racial biases have been found in different AI platforms.

  – Akgun S, Greenhow C. *Artificial intelligence in education: Addressing ethical challenges in K-12 settings*. AI Ethics. 2022

"Algorithmic Discrimination" Continued…

DEFINITION OF "ALGORITHM DISCRIMINATION"

Systemic unfairness in the learning opportunities or resources recommended to some populations of students.

- EXAMPLE 1: Voice recognition system may not work as well with regional dialects.

- EXAMPLE 2: Exam monitoring platform that unfairly identifies some groups of students for disciplinary action.

    – Source: U.S. Department of Education, Office of Educational Technology, *Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations*, Washington, DC, 2023.

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Digital Equity

- <u>Defined</u>: "The condition in which individuals and communities have the information technology capacity that is needed for full participation in the society and economy of the United States."

- In February 2023, President Biden issued an Executive Order that stated "members of underserved communities – many of whom have endured generations of discrimination and disinvestment – still confront significant barriers to realizing the full promise our great Nation…"

- "The Federal Government shall both pursue educational equity so that our Nation's schools put every student on a path to success" and also "root out bias in the design and use of new technologies, such as AI."

    – Source: U.S. Department of Education, Office of Educational Technology, *Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations*, Washington, DC, 2023

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Accessibility

- Title II of the Americans with Disabilities Act (ADA):
  - Prohibits disability-based discrimination in public services furnished by governmental entities. (42 U.S.C. §§ 12131-12165.)

- CA Unruh Civil Rights Act:
  - All persons within the jurisdiction of this state are free and equal, and no matter what their sex, race, color, religion, ancestry, national origin, disability, medical condition, genetic information, marital status, or sexual orientation, are entitled to the full and equal accommodations, advantages, facilities, privileges, or services in all business establishments, including both private and public entities. Any violation of an individual's rights under the ADA also constitutes a violation of the Unruh Act. (Civil Code § 51.)

- Section 504 of the Rehabilitation Act of 1973:
  - "No otherwise qualified individual with a disability ... shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." (29 U.S.C. § 794(a).)

AI's Capabilities: Shakespeare or AI on Justice?

Could great men thunder
As Jove himself does, Jove would ne'er be quiet,
For every pelting, petty officer
Would use his heaven for thunder;
Nothing but thunder! Merciful Heaven,
Thou rather with thy sharp and sulphurous bolt
Split'st the unwedgeable and gnarled oak
Than the soft myrtle: but man, proud man,
Drest in a little brief authority,
Most ignorant of what he's most assured,
His glassy essence, like an angry ape,
Plays such fantastic tricks before high heaven
As make the angels weep; who, with our spleens,
Would all themselves laugh mortal.

Shakespeare, Measure for Measure
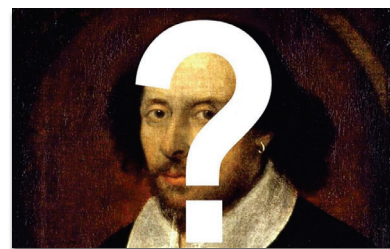
Yet oft I wonder, in this mortal sphere,
Doth thy fair countenance truly prevail?
Or doth corruption, like a creeping fear,
Within the hearts of men, its venom trail?
For justice, though she wears a regal crown,
Is oft beset by envy's vicious snare,
And power, like a tempest, raging down,
Doth cloud her vision with its dark despair.

Chat GPT

Privacy Considerations & Risks

Define the "circumstances"; define the privacy right

?

- Potential Factors:
  - Clear written policy?
  - Information stored on District-owned equipment?
  - Use of institution network?
  - Exchange of personal communications?
  - Notification of how data may be used?

# Privacy in Student Records

Federal and state law:

- Defines educational records
- Protects the <u>privacy</u> of records (and the information contained therein)
- Protects the right of <u>access</u> to records

Privacy in Student Records

- Governing Laws:
  - Family Educational Rights and Privacy Act (FERPA)
    - 20 U.S.C. § 1232(g)
  - Code of Federal Regulations, title 34, Part 99
  - California Education Code sections 49060-49085
  - California Code of Regulations, title 5, sections 400-450

Privacy in Student Records
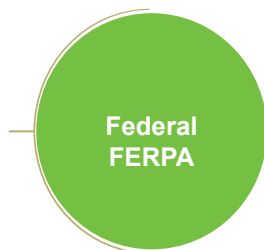
Federal FERPA

- Applies to all educational institutions that receive federal funds

- FERPA Definition of "Educational Records"
  - Those records, files, documents, and other materials which (1) contain information directly related to a student; and (2) are maintained by the educational agency or institution or by a person acting for such agency or institution
    - A "record" is defined as information recorded in any way, including but not limited to, handwriting, print, computer, media video, audio tape, film, microfilm and microfiche

Privacy in Student Records
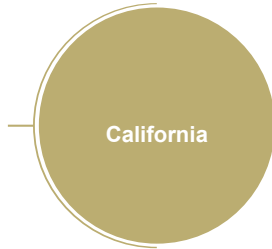
California

☑ California Definition of "Pupil Records" Similar to FERPA "Student Records"

  ☑ Any item of information directly related to an identifiable student, other than directory information, which is maintained by the school site or required to be maintained by employee in the performance of his or her duties, whether recorded by handwriting, print, tapes, film, microfilm, or other means

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Record Retention

Permanent Records (Class 1) →
- Must be retained "indefinitely"
  5 C.C.R. § 59023
  - (e.g., employee records, student records, annual reports, etc.)

Optional Records (Class 2) →
- Retained until reclassified as "Class 3 – Disposable"
  5 C.C.R. § 59024
- "Catch-all" designation for records that the district wishes to retain, but are neither permanent nor disposable.

Disposable Records (Class 3) →
- Must be retained for three (3) years, or any other applicable retention period.
  5 C.C.R. § 59025
- Includes records basic to audit (attendance, business and financial transactions, etc.) and periodic reports.

Content Moderation for Explicit Material for Minors

- The Children's Internet Protection Act
  - 47 U.S.C. § 254
  - 47 C.F.R. § 54.520
- CIPA forbids school districts from receiving federal assistance for Internet access unless block or filter internet access to visual depictions that are obscene, pornographic, or harmful to minors (individuals less than 17 years old) to prevent minors from accessing such content

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Content Moderation for Explicit Material for Minors (cont'd)

- Under CIPA, school districts also have the following requirements:
  - Their internet safety policies must include monitoring the online activities of minors.
  - They must provide for educating minors about appropriate online behavior, including interacting with other individuals on social networking websites and in chat rooms, and cyber bullying awareness and response
- AI can be used to create images or videos, which can include content that is obscene, pornographic, or harmful to minors
- If school districts allow students to use AI, they should ensure that it prevents students from accessing or creating content that is obscene, pornographic, or harmful to minors
- Real life example: Some middle school students in Beverly Hills shared AI created nude photos in school to their classmates

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Impact on Job Duties:
Bargaining Implications

- Upon reaching a firm decision and before implementing a non-negotiable decision, an employer must give notice and a reasonable opportunity to negotiate upon request over the reasonably foreseeable effects of that decision on matters within the scope of representation

Examples: Evaluation and Discipline

- The type of evidence relied on or permitted to substantiate employee performance evaluations is logically and reasonably related to evaluation procedures, which is a term and condition of employment in EERA section 3543.2(a)
- Using performance markers/indicators in discipline proceedings is logically and reasonably related to disciplinary procedures, which have been held to be a matter within the scope of bargaining

Recent Guidance

- U.S. Department of Education report: Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations
- President Biden's Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence
- California Executive Order N-12-23

Proposed Legislation and Regulatory Efforts

- What legislation and regulation is intended to accomplish

- Proposed legislation/regulations
  - AB 331 (died): would have prohibited employers from using an automated decision-making tool (ADMT) in a way that contributes to algorithmic discrimination and would have required employers to disclose if ADMT was used to make a "consequential decision," and accommodate employee or applicant request to have the information reevaluated without ADMT

- How might proposed legislation/regulations affect schools?

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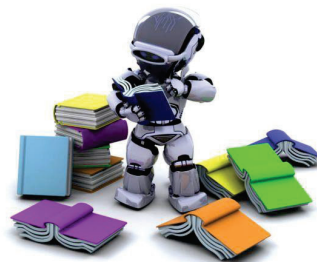
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AI in Education:

Best Practices

Best Practices

- Ongoing training: PDs centered on emerging technology

- Keep humans in the loop!

- Review/ update policies to address AI: District AUPs, Board Policies, Student Handbooks

Figure 14: Recommendation for desired qualities of AI tools and systems in education

Best Practices: Review District Policies

- Existing policies may be read to cover AI
- Consider (a) updating District policies to expressly account for AI or (b) creating a new District policy specifically about AI
  - Guiding principles for AI use
  - How AI can be used to augment learning
  - Reaffirm commitment to existing policies
  - Protection of privacy
  - Expectations regarding academic integrity

Best Practices

- Learn how to identify AI generated content
  - Perplexity
  - Rigid structure
  - Tone
  - Generic language
  - Writing style
  - "Too good to be true" improvement in work quality
  - Consider AI to catch AI generated content – GPTZero, Turnitin, etc.
    - But these have frequent false positives and false negatives

Best Practices – Ongoing Training

- Implicit Bias/ Cultural Competence training to recognize and address "Algorithmic Bias and Discrimination" and ensure equity and accessibility for all students

- Meaningful PDs on AI platforms to level playing field and warn against sharing sensitive information about themselves, colleagues, or students

Policies Recommended by Dept. of Ed.

- **Guiding Questions:**
  - *1) What is the vision of a desirable and achievable system that leverages automation to advance learning while protecting human agency?*
  - *2) How and when will we be ready with necessary guidelines and guardrails to ethically and equitably implement this vision?*
- Leverage automation to advance learning outcomes while protecting human decision making and judgment;
- Interrogate the underlying data quality in AI models to ensure fairness and accuracy.
- Enable examination of how particular AI technologies, like ChatGPT, may increase or undermine equity for students; and,
- Take steps to safeguard and advance equity, including providing for human checks and balances and limiting any AI systems and tools that undermine equity
  - U.S. Department of Education, Office of Educational Technology, *Artificial Intelligence and Future of Teaching and Learning: Insights and Recommendations*, Washington, DC, 2023.

AI's Capabilities (GAME)

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Question & Answer
Session

Thank You

For questions or comments, please contact:

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