AI Education - RISE Conference

Introduction (2 min.)

Slide 1

Good morning! I'm Naomi Fredman. It is an **honor** to be working with you this morning. I'm a mother of four grown children. My youngest, Michael, is pursuing a Bachelor's Degree in Education at Suny, New Paltz. He's graduating this May.

His resume is on Linked in.

As for **myself**, I began my career in the elementary school classroom and later graduated to Middle School. **And** - unlike many of my peers who are currently working toward early retirement from the New York Board of Ed, I decided to work in *Private Schools*.

About a decade ago- I decided to **pivot** from my commitment to teaching students in the **classroom** to working with teachers in the **faculty** room. I found that my breadth of experience, curriculum building, and knowledge of classroom management would be an opportune way to **impact** the next generation of teachers.

I found myself at the **right** place at the **right** time. I was offered the position of Director of Technology at a nursery through 12th grade multi-campus institution. I both **oversee** the entire IT infrastructure of each school, and **instruct** and **support** teachers on introducing education technology into their classrooms as a means to **augment** curriculum.

Slide 2

"To **augment** curriculum" serves as the **anchor** to all educational technology integration. It is counter-intuitive to **first** choose a digital platform and then match it to the curriculum.

Educational technology serves as a **vehicle** to better engage the 21st century learner. So, when I begin my workshops with faculty, I first ask them to identify either content or skill from a **specific** unit of instruction.

This is the springboard for bringing in a digital platform - not the other way around. The identified skill or content is **supplemented** by the digital platform.

Animation

This is the ed tech **imperative**: to incorporate a digital platform to best support curricular content and skill building.

This brings us to A.I. in education.

Part I - Taking the Temperature (20 min.)

Slide 3

As we begin, I'd like to take the **temperature** of this room. I'd like us to engage in an exercise to see where **you** stand on A.I. education.

Before me are four **statements** relating to teacher and student in the arena of AI in education. In a moment, I am going to invite you to come up and place a **sticker** on each statement. The stickers are **green**, **yellow** and **red**. A **green** sticker means you agree that what is written on the statement should take place **often**. A **yellow** sticker means you agree that what is written on the statement should take place **sometimes**. And a **red** sticker means what is written on the statement should **rarely** occur.

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The statements read as follows:
A.I. platforms should be utilized by

Animation

Teachers to build better lessons

Animation

Students to best engage them during a lesson

Animation

Students for skill-building

Animation

Teachers to assess student learning

I invite you to the front of the room to take stickers and label each statement accordingly.

(Discussion)

Part II - What is AI (10 min)

Slide 4

Before we dive into **pedagogical** methods when using AI, I want to give you a clear understanding of the **genesis** of Artificial Intelligence.

First, it must be noted that there is a distinction between **general** AI and **generative** AI- a subset of general AI.

General AI, as a field, has been around since the mid-20th century- when early concepts of machines were built to think or perform human-like tasks.

Slide 5

One of the first general AI machines was called the **Logic Theorist**. Developed in 1956, by Allen Newell and Herbert A. Simon, the Logic Theorist was **designed** to mimic human problem-solving skills. It used rules of logic to prove mathematical theorems.

Slide 6

In 1966, **Ah-Lie-Zah**, developed by Joseph Wee-zan-baum, was one of the earliest natural language processing programs. It **simulated** conversation by using pattern matching to respond to user inputs. Ah-Lie-Zah could not **understand** the conversation but could mimic certain conversational patterns **effectively**.

Ah-Lie-Zah demonstrated the potential of AI in **simulating human-like interactions**, which later influenced generative A.I. Chat Bot technology and human-computer interaction.

Slide 7

Later, **Watson**, developed by IBM, gained fame after winning the game show Jeopardy! in 2011, demonstrating its ability to process and respond to complex natural language questions. Today, Watson is used in a **variety** of fields, including healthcare for diagnosis assistance, customer service, and business analytics.

Slide 8

More recently we've seen **virtual assistants** enter the scene. Siri and Alexa were developed by Apple and Amazon respectively.

As a side note- when I practiced reading this presentation aloud, everytime I said "Siri" she responded from my phone, asking how she could help. And I apologize if I am waking her up on your phones during this presentation!

Siri and Alexa are capable of understanding **voice commands**, answering **questions**, controlling **smart home devices**, and setting **reminders**. While primarily focused on voice interaction, these assistants are general AI systems that can perform a **variety of tasks** across different domains, from entertainment to personal assistance.

Slide 9

One cannot discuss general AI without including **self-driving cars**, like the Tesla. The Tesla runs on an advanced system that uses AI to navigate **roads**, avoid **obstacles**, and make driving **decisions** in real-time. It relies on deep learning models to interpret the environment, recognizing **pedestrians**, **vehicles**, and **traffic signs**. This AI system demonstrates general AI's capabilities in **real-world applications**, particularly in autonomous systems that operate across a variety of driving conditions.

Slide 10

Generative A.I. refers to a subset of artificial intelligence that focuses on creating **new content**—such as text, images, music, or even code—based on **patterns** and **data** it has been trained on. Unlike general or what has become known as **traditional AI**, which primarily classifies or analyzes existing data, **generative AI** produces novel outputs that didn't exist before. Generative AI began in the mid 20th century, but took on more practical uses in 2018 with GPT large language models, representing significant advancements in text generation.

Slide 11

To break it down further, GPT stands for the following:

Animation

G - **Generative** - Generative refers to the model's ability to **generate** new content, such as text, by predicting what comes next in a sequence based on its training data.

Animation

P- **Pre-trained** - Pre-trained indicates that the model has been pre-trained on a large dataset to understand patterns, structure, and context in **language** before it is fine-tuned for specific tasks.

Animation

T - **Transformers** - Transformers are deep learning models that are particularly powerful for understanding context in **sequences of data**, which makes them highly effective for natural language processing tasks.

GPT demonstrates the ability to generate coherent and contextually appropriate text on a **variety** of topics, sparking widespread interest in the potential of generative AI for **writing, coding, and creative content.**

Slide 12

In a simplified way, we can look at generative AI as **tools for education** in three categories.

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First is a Chat Box.

A Chat Box, also known as a chatbot, is considered a **virtual assistant**. It's like a digital conversation-partner that uses artificial intelligence to interact with students. It's designed to understand a question and give a useful response. Common ways to use a Chat Box is if one is asking for help with a **problem, looking for information, or even chatting for fun**. You supply the Chat Box with prompts or questions, and it utilizes an **algorithm** scanning the content of the internet to form a cogent reply. A Chat Box can continue replying on the **same** strand- as though you are having a conversation with it. For example, ChatGPT, or OpenAI, is a conversational Chat Box designed for generating human-like **text** responses, helpful in a variety of scenarios including **content creation, learning, and problem-solving.** Another popular Chat Boxes used in the education arena is **Meta AI.** Shortly, we will be looking at ChatGPT to craft various components of a lesson.

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A second form of Generative AI allows the user to supply the **content** and direct the A.I. tool to **"do" something** with the content. Educators use these tools to assist in a variety of teacher tasks. For example, **Magic School** is an AI-powered platform designed specifically for educators to help improve their **productivity** and teaching efficacy. Its **primary** purpose is to assist teachers by automating and streamlining various classroom tasks, such as lesson planning, providing feedback on student work, generating quizzes, and even writing IEPs - Individualized Education Plans. By offering more than **60 AI tools**, Magic School aims to reduce the workload of educators and allow them to focus more on **student engagement** and **instruction**.

A second popular tool among educators is **Brisk**, an AI-powered tool designed to assist teachers in handling various educational tasks efficiently, helping them save time and improve classroom instruction. It integrates with platforms like **Google Docs** and **Google Classroom**, offering a variety of features that enhance teaching and learning. Later, we will be looking at ways to use Brisk integrating in lesson planning.

Animation

Last, and probably the most fun, are the **non text AI tools**. These are AI systems that interact with users or perform tasks without relying solely on written or spoken text. These tools typically involve visual, auditory, or interactive elements. An example of a popular non text AI tool used in education is DALL-E. This is an AI model developed by OpenAI that generates images based on textual descriptions. Users can input a sentence, and DALL·E creates a **unique image** that matches the description.

Another popular non text AI tool is Udio. **Udio** is an AI-powered music creation tool designed to allow users to generate music across various genres, even without musical expertise. By providing simple text prompts, Udio can create professional-quality tracks, including both vocals and instrumentals. Users can specify musical elements like moods, instruments, or specific parts of a song, making it highly **customizable**. Later, we will look at Udio, an excellent resource for project-based learning.

Slide 13

Right now- I'd like to offer you a five-minute break to stretch and chat before we move on to experiencing various A.I. tools.

BREAK (5 Min)

Part III - Multiple Intelligences and A.I. (8 Minutes)

Slide 14

When developing appropriate educational technology integration, I find it extremely important to use our experts as a guide. Howard Gardner is a renowned American psychologist and professor at Harvard University. He is probably **best known** for his Theory of Multiple Intelligences. This theory, introduced in 1983, challenges the **traditional view** of intelligence as a single, general ability.

Instead, Gardner proposed that humans possess multiple distinct types of intelligences, each representing **different ways** of processing information. He introduced this theory in his 1983 book "Frames of Mind: The Theory of Multiple Intelligences." The theory has greatly influenced education by suggesting that students learn in different ways, and **teaching** should cater to a variety of strengths.

Slide 15

Gardner breaks down his theory into **eight different intelligences**. Let's look at a few of them and determine how A.I can be leveraged to address the needs of each child.

Animation

First, Gardner postulates that there is **linguistic intelligence**. Linguistic intelligence is the ability to use language effectively, whether in **writing, speaking, or understanding**. People with strong linguistic intelligence are good at **reading, writing**, **storytelling, and memorizing words**.

Slide 16

This brings us to Prompt Generating. AI models like ChatGPT, generate outputs based on the **input prompt** provided. A well-crafted prompt can guide the model to produce more **accurate, relevant, and high-quality results**. Poorly phrased prompts, on the other hand, can lead to irrelevant or incomplete outputs. Prompts help clarify the task and reduce ambiguity. This ensures the model understands the specific context or type of response required. For instance, a prompt for a story might need to specify its conflict and characterization. Prompt generation allows users to **personalize** AI outputs based on their needs. By tweaking prompts, users can adjust tone, style, complexity, or focus of the generated content.

There have been some studies conducted on **prompt generating**. The one I'd like to share with you today is called the **PREP method**. PREP is an acronym for four facets of a good prompt.

Animation

Purpose: what outcome are you looking for? This is kind of like the directions a teacher posts at the top of an assignment.

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Next is **Role**. Whose voice is the response coming from? A 6th Grade student? A poet? A Zoo Keeper?

Animation

Then there is **Execution**. These are the necessary details of the response. Would you like a 500 word essay? Are there specific features to include in the response like characters or a setting?

Animation

Last is **Parameters**. What age group should the response appeal to? Is there a specific theme?

Slide 17

Let's try it! As Election Day has recently come and gone, perhaps it **may** be a good time for us American citizens to review the Bill of Rights. These, as you may know, are the first ten amendments of the United States Constitution- which guarantees U.S. citizens specific inalienable rights.

Let's say, I'm a teacher of a high school freshman Civics class and I've given them the following assignment:
Pose as the U.S. president and use ChatGPT to generate a two minute speech summarizing the Bill of Rights that would be read to a middle school student body.

First, my students must fill in a graphic organizer to create a prompt, and it may look as follows.

Animation

Purpose: summarize the Bill of Rights

Animation
Role: as the U.S. President

Animation
Execution: a 2 minute speech

Animation
Parameters: for a Middle School student
*It must be noted that AI tools do not inherently respond to prompts in a voice a student could understand. To set them up for success, it is always my recommendation that the generated prompt should be written as a reply to a group that is younger than the student posing the prompt.

Next, my students must use the graphic organizer to write the prompt in a coherent statement.

Animation
"As the U.S. President, write a two minute speech summarizing the Bill of Rights for a middle school student."

Slide 18 - Video
Once the prompt has been approved, the student would copy and paste it into ChatGPT.
Or perhaps this is Spanish Class.
Or perhaps it is an English class.

Slide 19
Next, I'd like to go back to Howard Gardner's theory, and pull out another form of intelligence. Let's take **Spatial Intelligence**. Spatial Intelligence is the ability to visualize and manipulate objects or images in one's mind. It involves understanding spatial relationships, recognizing patterns, and imagining transformations of shapes or structures. People strong in spatial intelligence are

often good at tasks that require them to think in three dimensions, such as **designing, navigating**, or **visualizing** objects from different angles.

A great AI tool for students with spatial intelligence is Dall-e, an image generating tool.

Slide 20
Let's go back to the PREP method.

Animation
Purpose: depiction of the Bill of Rights

Animation
Role: as a political cartoonist

Animation
Execution: humorous

Animation
Parameters: for middle school students

The final prompt reads as follows:
Animation
Draw a humorous depiction of the Bill of Rights as a political cartoonist.

Slide 21 - Video

Slide 22
Last, let's look at one more of Gardner's intelligences, the **musical intelligence**. Musical intelligence refers to the capacity to **recognize, create, understand, and appreciate** musical patterns and rhythms. Individuals with strong musical intelligence tend to excel in tasks related to sound, rhythm, tone, and music. They

are often sensitive to music's pitch, rhythm, and emotional nuances. They have the ability to recognize and reproduce these auditory elements.

Slide 23

Earlier, I mentioned Udio, a song generating platform. I've taken the liberty to generate a song about our work together today.

Animation

Purpose: jingle about school leadership

Animation

Role: written by a school administrator

Animation

Execution: 30 seconds

Animation

Parameters: country song

Animation

Prompt: compose a 30 second country music song about school leadership written by a school administrator

Slide 24

Here is a quick look at Udio's platform.

Slide 25 - Udio video

Part IV - Teacher-Facing AI (5 Minutes)

Slide 26

Now, I'd like to turn to the **other** side of the desk. I'd like to spend a few minutes describing ways **teachers** can leverage AI to become more efficient and effective. Using AI can improve both their **teaching practices** and **student outcomes**.

Animation

The first example is creating an environment of **personalized learning** for each student. There are multiple adaptive learning platforms that customize lessons and activities based on each student's **learning style, pace, strengths, and weaknesses**. For example, platforms like IXL or Khan Academy use AI to adapt math problems or lessons to suit individual progress. AI tools can provide insights that help teachers differentiate instruction more effectively by grouping students based on **learning needs** and tailoring **teaching methods** accordingly.

Animation

Another use of AI is **automated grading**. AI-powered tools can provide instant feedback on assignments, allowing students to learn from their mistakes immediately and giving teachers more time to focus on planning and one-on-one instruction. AI can automatically grade multiple-choice quizzes and essays. Tools like Gradescope or Turnitin use AI to assist with assessment, saving teachers significant time on grading. AI tools can track student **performance** and provide real-time **data analytics**, identifying areas where students are struggling and suggesting targeted interventions.

Animation

A **third** use of AI for teachers is in the area of curriculum and lesson planning. AI can recommend curricular materials and resources based on **learning objectives** or **student needs**. For instance, teachers could use platforms like AI-powered search engines to find videos, interactive activities, or articles that match specific learning goals. Tools like Brisk can generate lesson plans, suggest activity ideas, or create quizzes and assessments based on a particular topic, making the planning process more efficient.

Let's take a moment to look at the tool Brisk mentioned earlier in this presentation. Let's go back to our Civics class, and I'll pull up a web page. A teacher would like to create a lesson explaining the electoral college to her students. After finding the right article, she simply hits the Brisk app. Brisk provides her with multiple ways to turn the webpage into a lesson. Let's look at a few of these.

Slide 27 - Video

Slide 28

Teacher-faced AI tools are not exclusively used in the **classroom**. Students can utilize these tools for learning support and tutoring like conversational AI, chatbots. These tools offer students help with homework or concepts outside of school hours, answering questions in real-time without needing teacher involvement.

Animation

An important part of a teacher's responsibility is communication with parents. AI systems can automatically send progress reports, grades, and personalized updates to parents based on their child's performance, saving teachers time on manual updates.

By leveraging AI in these ways, teachers can become more **efficient**, free up time for deeper **student engagement**, and focus on personalized instruction, ultimately leading to **improved outcomes** for students.

Slide 29

I'd like to conclude with a video I put together of three case-studies using AI education integration used in elementary, middle, and high school classrooms.

The first case study features a social studies unit on the United States election. Here you will see students learn how to best create prompts to put into an Meta-AI, an AI search engine. This will generate grade-level information about key issues addressed in America today. Students use this information to design presentation slides and write concise speeches/

The second case-study focuses on the European Expansion to the New World in an early American history class. Here you will find students using Humie, an

interactive A.I. tool. After writing content-driven questions, students engage in a "real-life" conversation with a European explorer found on this AI platform.

The last case-study takes place in a high school English literature classroom. Students learn symbolism by generating unique images based on character traits from Homer's the Odyssey using the platform: perchance.

Slide 30 -Video

Part V - Conclusion (1 Minute)

Slide 30

Let's take a moment to look back at this presentation to summarize the key points.

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Educational Technology is used as a vehicle to augment skills, content, and student engagement.

Animation

Generative AI is a subset of general AI

Animation

In a simplistic way, generative AI can be broken down into three categories: a virtual assistant tool, a tool to act on specific content, and a non-text tool.

Animation

AI tools support the learning of Gardner's multiple intelligences theory

Animation

Teacher-facing AI can be leveraged to assist teachers to become more efficient and effective.

Slide 31

I'd like to thank you for taking the time to participate in today's session. I invite you to stay a little longer should you have any questions.

Thank you and enjoy the rest of the conference.