

Using ChatGPT to Plan High School Math Lessons

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Kristen Moore

Education Trends

Using ChatGPT in Math Lesson Planning

Artificial intelligence tools are useful beyond language arts classes. Math teachers can use them to save time and create interesting lessons.

By Kristen Moore

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Harry Campbell / The iSpot

When ChatGPT hit the scene, we saw a surge of worry wash over our English and social studies teachers. How would this change the way they taught writing? For months, I pushed ChatGPT to the side and thought of it merely as a means to an end for supporting students with writing. Or as the English equivalent of Mathway—the program with which math educators

have come to have a love-hate relationship because of its abilities to solve problems for students. But as with most new technologies, these two have their place in the classroom when used well.

Since its introduction, we've seen more educational uses for ChatGPT, particularly in terms of supporting the teacher and their seemingly endless duties, which had me wondering... could ChatGPT be used in math class?

Artificial intelligence (AI) provides math teachers with the means to answer every teacher's favorite question: "When am I ever going to need this?" Through use of specific prompting and sequencing of questions, math teachers can identify real-world connections to math topics they're teaching, connect those to student interests, and create a variety of instructional materials to use in the classroom.

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AI as a Search Engine

Throughout the school year, you get to know your students—their interests and aspirations. Whether using formal surveys or general classroom observation, you've built up a repertoire of knowledge about what topics they find relevant and what sparks interest in your students the most. It's through this information that teachers can filter their results in ChatGPT.

Topic leading to interest: You can start with a broad question: “What are real-life applications of polynomials?” Then, filter which applications are most relevant to teenagers. From those suggestions, select ones that best align with your students' interests, such as computer graphics and video game design.

Interest leading to topic: You can start with a particular student interest, like buying a car for the first time, and ask AI to help you identify relevant content connections. You may be surprised to find out all the different content connections you can make. Don't let overwhelm stop you. Instead, you can use AI to help you create the instructional materials for you.

AI as a Math Content Creator

Now that you've homed in on the idea that you want to explore, it's time to create the lesson. Since you may not know the explicit connections between the math content and the topic very well yourself, you can use AI to help you create the content to turn this into an engaging experience for your students.

Question creator: At their most basic level, ChatGPT and other AI sources can help you write a series of word problems connecting your topic and content. These can be embedded into homework assignments, partner tasks, or warm-ups.

Tip for prompting AI: Include the general content topic or topics your students are interested in as well as the content topic or standard you're addressing.

Performance tasks: You can also use ChatGPT to explore creating a variety of performance tasks, where students are engaging in higher-order critical thinking skills to apply mathematics. You can create these with and without

scaffolding, as I have done.

Projects: I've found that projects and project-based learning activities can be created in less than half the time it usually takes when I use AI. Easily outline a project, select criteria to be assessed, and have AI help write a rubric for your project. Then, just gather the materials and bring the project to life in your classroom! I created a project focused on geometry, art, and culture.

Inquiry-based activities: Growing students' critical thinking skills and their ability to use mathematics to problem-solve and analyze data is essential. AI can help you create inquiry-based activities to develop students' quantitative literacy skills. I used ChatGPT to create an activity based on the U.S. Census.

AI as a Math Lesson Designer

As with other content areas, I find that AI is a useful tool for mathematics teachers in creating lesson plans. Math teachers can use artificial intelligence to design essential questions; create a standards-aligned lesson plan complete with practice problems, remediation, and extension opportunities; and wrap up their lessons with exit tickets.

Tips for prompting AI: Begin with using AI to co-draft an essential question for a lesson. After you've established that, prompt AI to help provide example problems to jump-start your thinking. When you find an example you like, you can ask it how to create similar problems that would work to support remediation and extension opportunities for the lesson.

When designing standards-aligned lessons, it's important to consider the explicit component of rigor expressed in a standard when designing a lesson, as each type lends itself to different instructional models. AI supports teachers in designing lesson plans to address each aspect of rigor contained within a standard, thus providing a holistic approach to lesson design.

Tips for prompting AI: You can prompt AI to support you in developing a lesson plan structure for each emphasis of rigor addressed in your standard. Once you've identified that, AI can help you create a time-specific lesson plan

to enact in your class with a particular emphasis on conceptual development, procedural skills, or applications of standards.

AI as an aid to Human Intelligence

While there's no doubt that AI has impressive potential to support math teachers in a variety of tasks, it's important to remember that it's the human touch that matters. Using AI as a springboard, teachers can then use their knowledge of their students' interests and skills to best design the lesson and activity to meet their students' needs. It's the teacher's ability to connect the students and the standards that makes the learning experience impactful, not the impressively quick way in which the lesson or activity was designed.

Education Trends

In Utah, a New Law Takes on Teen Social Media Addiction

The sweeping new legislation will create an age verification process for social media users, require parental consent for kids under 18, and block access to apps during sleeping hours.

By [Andrew Boryga](#)

March 30, 2023



Last week, Utah Governor Spencer Cox signed sweeping legislation aimed at holding social media companies accountable for how their products affect the mental and physical health and safety of their young users.

In explaining the reasons for the new law, Gov. Cox pointed to rising rates of depression and other mental health issues in teens. Gov. Cox, sounding like early critics of cigarette companies, said social media platforms like Facebook, Instagram, and TikTok know their "products are toxic" and have "designed their apps to be addictive."

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School Culture

How a School Made Play Central to Learning

At a primary school in the UK, both students and teachers have become more engaged and curious as a result of a shift to a fully play-based approach—and learning has become more joyful for everyone.

March 24, 2023



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Critical Thinking

Notice and Wonder in Kindergarten Math

Activities that guide young students to engage visually instead of through text maximize productive struggle, improving critical thinking.

By [Montana Lowe](#)

May 26, 2023



Are we asking too much of students? How can we help them express what they know? What should productive struggle look like in kindergarten? As a resource teacher, I do not have a classroom of my own but have spent the last year working with kindergarten teachers across my district. I wanted to work with them to maximize productive struggle in their classrooms, but the tasks designed by our curriculum to launch our lessons were not providing meaningful insight into student understanding.

As the book *Principles to Actions: Ensuring Mathematical Success For All* states, “Tasks with high cognitive demand are the most difficult to implement well and are often transformed into less demanding tasks during instruction.” I started to wonder: How could the tasks be adapted to maintain high cognitive demand and provide the opportunity for students to engage and reason daily?

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Student Engagement

4 End-of-Year Learning Strategies to Maintain Engagement

Having students rotate through learning stations or engage in design thinking can keep them motivated as the year winds down.

By Rachelle Dené Poth

May 26, 2023



The spring is a challenging time, with standardized testing, spring events, and other demands that lead to a dip in student engagement. In my Spanish class and STEAM (science, technology, engineering, art, and mathematics) class, I use the end of the year as a time to branch out and engage students in new ways of learning. Here are some innovative teaching ideas to help motivate students.

1. Learning stations: Learning stations boost students' activity and help them build social and emotional learning (SEL) skills. The end of the year is a great time to try learning stations. Because I noticed a drop in student engagement and wanted to focus on building relationships, I divided students into small groups and had them rotate through the stations. When I did this, it created a flow that gave students the opportunity to both work hands-on and use digital tools.

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Trauma-Informed Practices

Building Confidence and Resilience Through the Arts

By bringing in arts education, this school found a creative way to help heal trauma and encourage a more supportive learning environment.

May 26, 2023



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English Language Learners

How Peer Teaching Assistants Can Support Multilingual Learners

Consistent interaction with fellow students who know what it's like to learn a new language can offer multilingual learners essential support.

By [Jonathan Zabala](#)

May 26, 2023



When the American Indian Model Schools (AIMS) College Prep Middle School reopened in Oakland, California, in fall 2021, English Language Development coordinator Adria Banihashemi knew it would be difficult to support all her English learners (ELs) at once. During the pandemic, students' English language growth slowed, and their rates of reclassification—the process by which they were deemed fully proficient in English—dropped significantly. As a result, there were more ELs with a wider range of language needs than she could serve at once.

Without additional staffing, she wondered if some bilingual and former EL students might be willing and able to facilitate regular conversations and otherwise support the language development of her current ELs.

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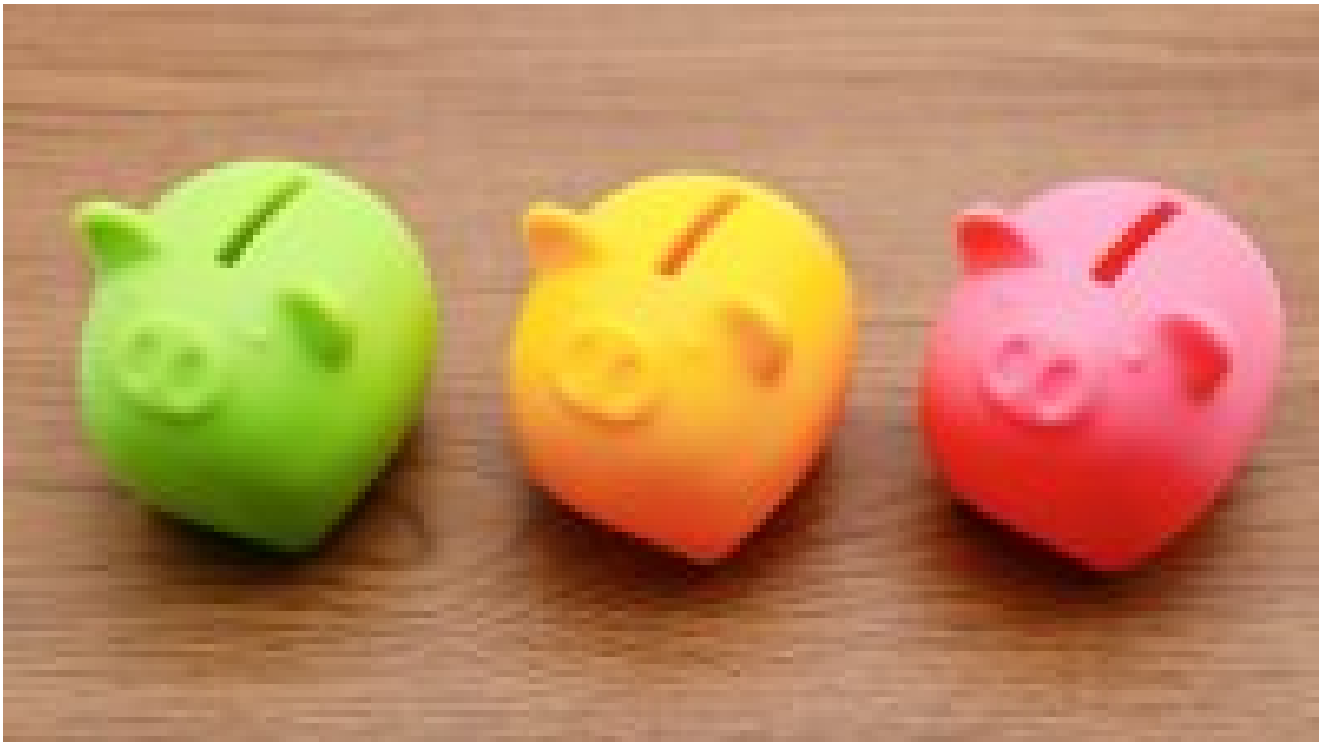
Financial Literacy

Teaching High School Students How to Budget

Giving older students a plan for saving, spending, and sharing their money can help them make wise financial decisions in the future.

By Jonelle Rocke

May 25, 2023



What's one math-based life skill that students will use on a daily basis throughout their lives? If your answer is budgeting, then you are absolutely right! A recent CNBC survey reports that almost 60 percent of Americans are living paycheck to paycheck. Teaching students how to budget effectively can help them decide how best to spend, save, and share their money in the future.

When it comes to personal finance, it's important to teach skills that students will be able to use right away so that even if they don't have a steady income, they can start to manage the money that they do receive through allowances, gifts, and odd jobs using the strategy of creating a zero-based budget.

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Literacy

[Using Fairy Tales to Inspire Wonder in Kindergarten](#)

The enchanting nature of fairy tales can foster collaboration, critical thinking, communication, and creativity in young learners.

By Bianca Starck

May 25, 2023



My story begins about a year ago when my 21st Century Skills PLC (professional learning community) embarked on a reflective journey: What does the teaching of critical thinking, collaboration, communication, and creativity look like in practice? As a kindergarten teacher, I recognize the importance of phonics and reading strategies to boost my students' literacy skills, and I wondered: How can I integrate all these skills meaningfully? In my context, definitely play-based!

During one of our library sessions, after reading *We're Going on a Bear Hunt*, by Michael Rosen, one of my students questioned why the family had run away from the bear: "What if he just wanted to make friends?" Their creativity and critical thinking were my idea generator. What if I were to use the wonders of storytelling to foster 21st-century skills *and* support the students' language development?

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