

AI and Digital Literacy

Teaching and Learning Story

TASK DESIGN	
Learning experience title	<i>Creating Cool Creations: Exploring AI & Dodging Bias!</i>
Grade	9
Learning area(s)	Mathematics 9
Curricular competencies	<p>Understanding and Solving</p> <ul style="list-style-type: none"> • Develop, demonstrate, and apply mathematical understanding through play, inquiry, and problem solving • Visualize to explore mathematical concepts <p>Communicating and Representing</p> <ul style="list-style-type: none"> • Communicate mathematical thinking in many ways • Represent mathematical ideas in concrete, pictorial, and symbolic forms
Curricular content	<ul style="list-style-type: none"> • spatial proportional reasoning
Links to core competencies	<p>Thinking</p> <ul style="list-style-type: none"> • Critical and Reflective Thinking
TASK SUMMARY	
<p>Students explore bias in AI image generation and attempt to recreate geometric images by providing prompts to an AI generator. Following an introductory conversation about generative AI, students will create queries about privacy, bias, and security. The students will then work in pairs or groups of three and record their prompts and image attempts in a digital slide show.</p>	

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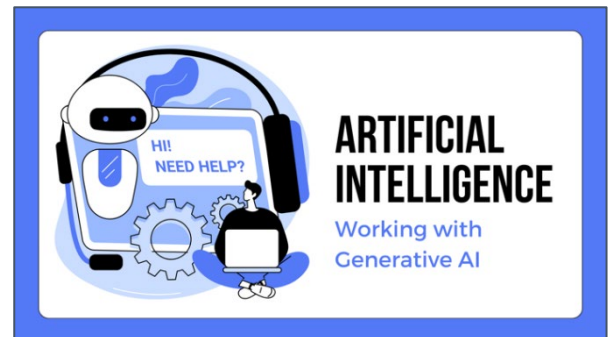
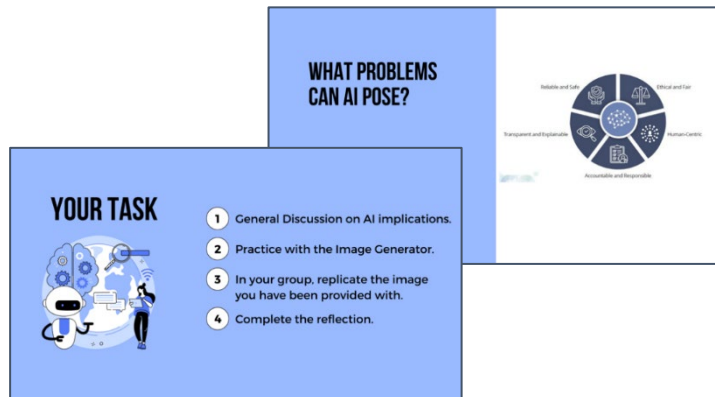
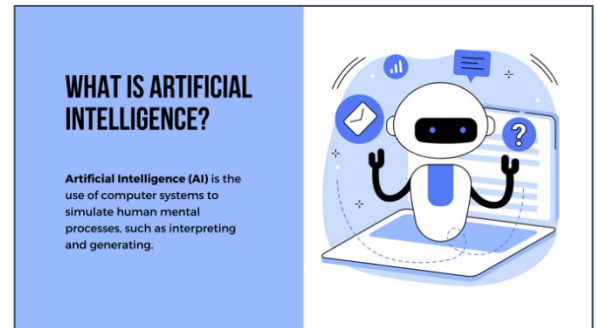
LEARNING STORY

PLANNING

Students work in pairs or in small groups to combine their ideas.

Teacher created 14 geometric images to encourage students to use correct math terminology when formulating their prompts.

A short slideshow to introduce AI concepts and spark conversations on AI use was presented, followed by a quick tutorial on using the text-to-image generator.



TEACHING

To gain insight into the students' understanding of generative AI, the lesson started with a class discussion about AI and a review of the slides.

I presented examples of how the image generator retrieves information from a dataset it has been trained on, some of which may contain biases. Before the picture was generated, students were able to anticipate the bias it would exhibit. We then discussed implicit bias, and how it does not always stem from a place of malice, but can be a result of sample size.

Students were given 10 minutes to freely explore the image generator. They were then asked to share how they felt about the tool. Student responses included some of the following words: "cool, smart, fun!"

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TEACHING CONTINUED

Students were asked to try and recreate the geometric image that the teacher had generated using the AI. All the pictures were intentionally geometric to stress how students should use mathematical terminology in their prompts. The students were given about 40 minutes to work on this.

After this work session, students were asked again how they felt about the image-generating tool. This time student responses included some of the following comments: “mindless, stupid, simply doesn’t read our words.”

In conclusion, the class engaged in a discussion about the importance of recognizing that while tools are useful, they’re not infallible. We emphasized the need to engage in critical thinking, creativity, and action in our class work.

Note: The classroom teacher instructing this lesson was unable to gather work samples from students. However, their teacher observations are shared below.

ASSESSMENT

STUDENT A

TEACHER OBSERVATIONS

Group 1:

- This pair started the task by diving right in. They didn’t take time to plan and they started with a very simple prompt.
- When they created their second prompt, they did not change anything, they simply added words. Students reported that the longer prompt would be better.
- They continued with this approach for the next two prompts, not making any changes, but instead only adding words.
- The pair then asked if they could erase everything and start again. They were encouraged to try a different strategy.
- The first prompt in the second round was more effective. It included mathematical vocabulary as they tried to describe their desired visual elements, such as colours and shapes.
- Although they were not successful in the task, Group 1 became much more critical of their word choices, and they learned the importance of planning

This group successfully demonstrated the curricular competencies outlined for this lesson and was assessed as Proficient.

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STUDENT B

TEACHER OBSERVATIONS

Group 2:

- This group started with a technical prompt including specific math vocabulary.
- They completed the most attempts out of any of the 14 groups in the class.
- Every single prompt was completely different from the previous, and they didn't make any attempt to build on their designs.
- They didn't work together as much, and this was evident in their lack of direction.

The use of technical language by this group did not align with the expected level of skill development. They placed too much emphasis on replicating an algorithm rather than on effectively conveying their thought process and analyzing the required adjustments. This group demonstrated a partial understanding of the curricular competencies outlined for this lesson and was assessed as Developing.

Teacher observations

Students need to understand the ethical implications of AI, including issues such as bias, privacy, and security. They should be able to critically evaluate AI technologies and recognize potential risks and consequences associated with their use.

Teacher observations

In order to best support students, it is essential to prioritize the development of digital literacy skills. This includes understanding how AI works, how it can be used in various contexts, and how to evaluate the credibility and reliability of AI-generated content.