

Understanding AI Through Language

What do students learn?

Today's lesson introduces students to how large language models (LLMs), like ChatGPT or Gemini, generate text. Instead of learning how to use artificial intelligence (AI), students learn how AI works by exploring fundamental concepts behind language generation and thinking critically about AI-generated responses. By examining AI-generated language in the context of grammar, meaning, and context, students begin building an accurate mental model of how these systems work.

Why teach this in elementary school?

AI is becoming a common part of students' lives, both inside and outside the classroom. Whether students interact with AI to assist in search, homework, or everyday life, they will benefit from learning not only how to use AI, but also how AI works. Understanding the anatomy of a new technology helps recognize its strengths and limitations, as a driver that knows how a car works can recognize when the car malfunctions. Likewise, learning the mechanisms behind language generation helps students stop accepting AI responses at face value and identify when they should be questioned. The purpose is to help students become more thoughtful, responsible, and independent users of technology.

Key Concepts

- Next-token prediction: LLMs generate text by predicting sentences word-by-word.
- Syntax (grammar): Whether a sentence follows the rules of English.
- Semantics (meaning): Whether a sentence makes sense.
- Pragmatics (context): Whether a sentence is appropriate given its context or situation.

Students discover that an AI-generated response can be grammatically correct but semantically or contextually incorrect.

Activities

- Simulating language generation by predicting words in a sentence
- Analyzing AI-generated responses in the context of syntax, semantics, and pragmatics
- Discussing what it means to “understand” language

Students do not directly interact with AI models during the lesson.

Conversation Starters at Home

- What is the difference between fluency and understanding?
- Why can AI make mistakes?
- Should we always trust something just because it sounds confident?

Students are encouraged to continue discussing the topics covered in the lesson and apply learned concepts to their personal AI usage.

Notice: The lesson is not intended to encourage or discourage students to use AI in search, homework, or everyday life. The lesson is intended to equip students to think critically about how they interact with AI and how AI contributes to their lives.