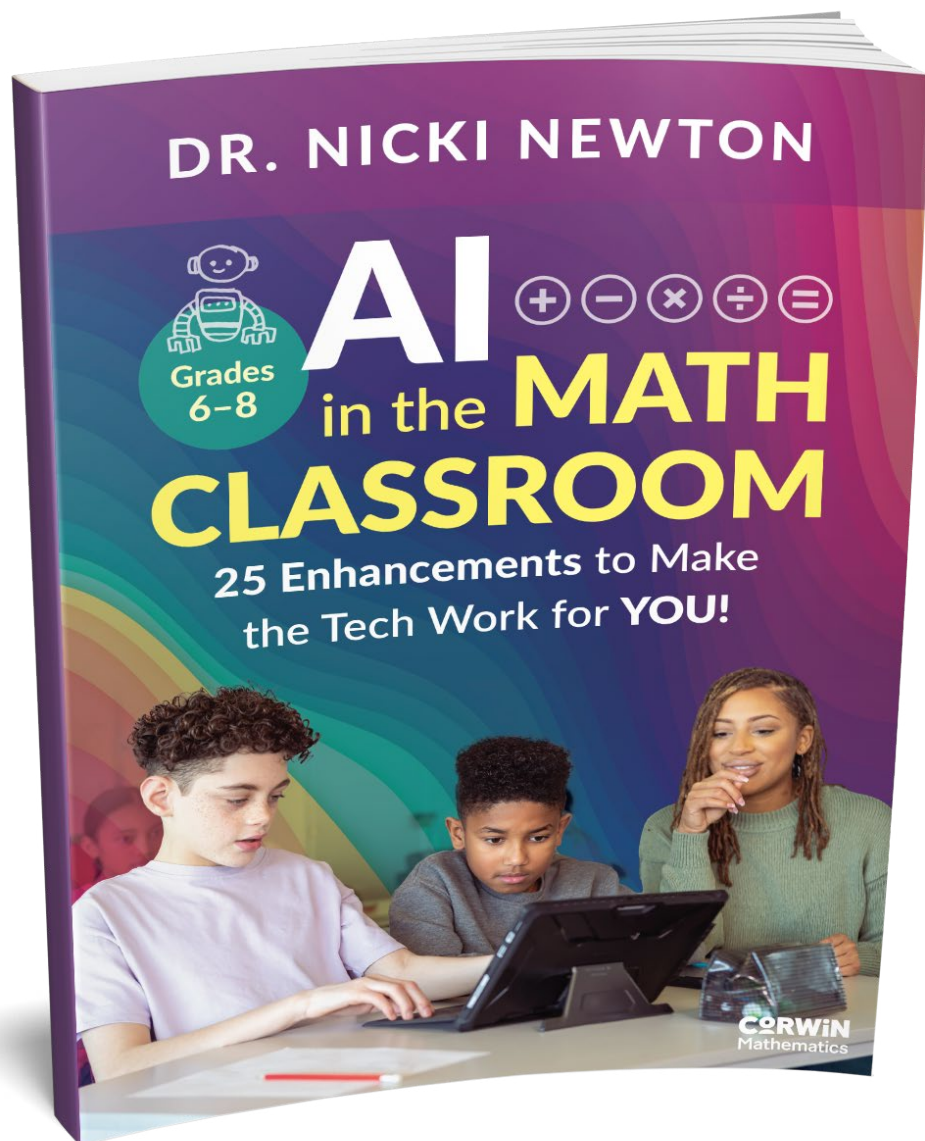


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CHAPTER 2

MASTERING THE BASICS

Prompting AI Effectively

The most important thing about artificial intelligence (AI) is how you talk to it. This is because if you want it to give you what you ask for, you have to know how to ask. This chapter takes a deep dive into how to communicate with AI so that you can get it to generate what you need.

CHAPTER OVERVIEW

In this chapter we will

- Look at how you have to work across multiple platforms, each with distinct personalities and capabilities
- Discuss some of the pitfalls, ways that we have to monitor bias, and be ever vigilant of issues of equity
- Offer hands-on rounds of real classroom examples and iterative refinement techniques, through which you will develop fluency in prompt engineering—moving from basic requests to sophisticated, multilayered communications that produce professional-quality educational materials tailored to specific student populations and learning contexts
- Explore the SCRIPT protocol—a systematic approach to crafting prompts that yield precise, contextually appropriate responses (throughout the book we will use this architecture, so hang on, here we go!)

WHAT IS SCRIPT PROMPTING?

A very helpful acronym, SCRIPT (Knight, 2025, p. 5) can be used to help us think through effective AI prompting. Don't worry, this isn't one more thing to laminate and hang by your desk—it's just a way to help you talk to AI so it gives you exactly what you want (instead of something meant for a college calculus class when you asked for a counting game).

There are many different AI platforms. There are new ones every day. You can sign up for them individually or go to a place like MAX AI that congregates several of them in one place. They all are a bit different and do different things. You have to try different ones to figure out which one you like best. They each have a different personality and way of doing things. We'll cover this more in Chapter 3. Most have a free version. I use AI a great deal, so I have the paid versions. I usually do a prompt in one and then ask that same AI or another AI to make it better. As we explore prompting in this unit, we will zero in on each aspect of SCRIPT so you can get the feel of it, and then we will combine all of these in some later prompts.

So here we are, figuring out how to speak AI's language. Here's what SCRIPT stands for—and how it works in real life:

1. S = Specify

The first step is to tell AI *exactly* what you want with the utmost specificity. Don't just say, "Give me a math activity." Say, "Give me a hands-on activity using two-sided counters to teach ratio to sixth graders." Think about it as though you were giving directions to a substitute teacher who has never met your class and doesn't know that telling the students to do what they want for the next 10 minutes is a very bad idea.

2. C = Context

Help AI comprehend the scene. Are we introducing multiplying negative fractions? Are we setting up decimal comparison workstations? Are we in a small, guided math group doing hands-on division activities? Are we teaching bilingual students who just came to the country? Include all that. The more context AI has, the more spot-on the response.

3. R = Role

Who's doing this task, and *why*? Is it a student practicing math facts in a game? A teacher writing a note home? A paraprofessional working with a small group? Let the AI know. Just like we differentiate for students, AI needs to know *who* it's talking to and *where they are* on their learning journey.

4. I = Iterate

Okay, don't expect magic on the first try. Sometimes the AI gets weird. That's normal. Just say, "That's not quite it—can you make it simpler?" or "Try it again, but use apples instead of aliens." You give feedback, and it tries again. Like a kid learning how to ride a bike, the more you do it, the better you get.

5. P = Parameters

This is where you set the parameters of the project. Tell AI how long, what level of difficulty you are after, and what format you want it in. Do you want five true/false questions for sixth graders at a sixth-grade reading level? Do you prefer a list with emojis? Do you need a parent letter that sounds warm but professional? Say it. Give it the word count, the style, and the layout—AI doesn't guess well, it's not a mind-reader, and it doesn't make decisions, so lay it out clearly.

6. T = Tone

You have to set the tone! Do you want something fun and silly, with jokes? Or something more formal and persuasive, like a mini-TED Talk for families? Should it be encouraging and age-appropriate for a 12-year-old who's nervous about integers? You have to tell AI exactly how to say it so that it can get it right.

PRACTICING HOW TO SPECIFY

Let's try it! I am going to give you different examples from different Gen AI tools using each part of the protocol. You will begin to see the different types of responses. It is really important for you to play around with different AI platforms to see which one you like. They all do things a little differently. An important note is that here we are focusing on a prompt for each part of the protocol for the sake of example, but once you get skilled at this, your prompts will incorporate *all* parts of the protocol seamlessly. Here we go.

Model Round: Specify

Tell AI *exactly* what you want. In the following prompt, I state clearly that I want three different leveled word problems for teaching the multiplication of integers. I also give specific details about what I want. I did this in MaxAI. I did it through Gemini and then Claude Sonnet AI. I am showing the Claude version (Exhibit 2.1).

Dr. Nicki's Prompt: *Give me three different leveled word problems for multiplying integers. Level them as DOK Level 1, 2, and 3. Make them culturally and linguistically relevant. My kids come from Puerto Rico, the Dominican Republic, and the United States. Also give me teacher notes to support multilingual learners and neurodiverse students.*

Exhibit 2.1 • Sample of Claude Sonnet AI's Generated Word Problems for Multiplication of Integers

DOK Level 1: Recall and Reproduction

Problem: Marisol is preparing for her quinceañera celebration. She orders 4 boxes of *alcapurrias* from her favorite restaurant in San Juan. Each box costs \$12, and she pays with cash. What integer represents the change in the amount of money she has?

Solution: $4 \times (-\$12) = -\48 . The integer is -48 .

Support Features:

- ▶ Clear, one-step operation
- ▶ Familiar cultural context (quinceañera, Puerto Rican food)
- ▶ Direct connection between spending money and negative integers

DOK Level 2: Skills and Concepts

Problem: Miguel's family runs a small restaurant in Washington Heights, NYC. During a power outage, the walk-in freezer stopped working. The temperature inside started at 10°F . For each of the next 6 hours, the temperature rose 3°F per hour. What was the final temperature in the freezer? Show your work with a number sentence.

Solution:

- ▶ Temperature increase: $6 \text{ hours} \times (+3^{\circ}\text{F}/\text{hour}) = +18^{\circ}\text{F}$
- ▶ Final temperature: $10^{\circ}\text{F} + 18^{\circ}\text{F} = 28^{\circ}\text{F}$

Enhanced Features:

- ▶ Two-step problem requiring conceptual understanding
- ▶ Real-world application relevant to Dominican-American community
- ▶ Requires students to show mathematical reasoning

DOK Level 3: Strategic Thinking and Reasoning

Problem: Carmen owns three small businesses: a *panadería* (bakery) in Bayamón, Puerto Rico; a food truck in Miami; and a catering service in the Bronx. Last month, her bakery lost \$25 each day for 8 days due to ingredient shortages. Her food truck made \$40 profit each day for 12 days. Her catering service had mixed results: It lost \$15 each day for 5 days, then made \$60 profit each day for 4 days.

Analyze Carmen's overall financial situation for the month. Did she have a net profit or loss? Justify your answer with calculations, and explain which business contributed most to her overall financial outcome. Provide recommendations for her business decisions.

Solution and Analysis:

- ▶ Bakery: $8 \times (-\$25) = -\200
- ▶ Food truck: $12 \times (\$40) = +\480
- ▶ Catering losses: $5 \times (-\$15) = -\75
- ▶ Catering profits: $4 \times (\$60) = +\240
- ▶ Net catering: $-\$75 + \$240 = +\$165$
- ▶ **Total:** $-\$200 + \$480 + \$165 = +\445 profit

Justification: Carmen had a net profit of \$445. The food truck was her most successful venture, contributing \$480 in profit. The catering service showed improvement (net +\$165), while the bakery needs attention due to consistent losses (-\$200).

Recommendation: Focus on resolving ingredient supply issues for the bakery while expanding the successful food truck model.

Enhanced Teacher Notes for Multilingual Learners (MLLs) and Neurodiverse Students

For MLLs

Linguistic Scaffolds:

- ▶ **Cognate Recognition:** Highlight Spanish-English cognates (*panadería*/bakery, *restaurante*/restaurant) to build vocabulary connections.

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- ▶ **Tiered Vocabulary Instruction:**
 - Tier 1: profit, loss, money
 - Tier 2: net income, financial outcome
 - Tier 3: integer, negative value, mathematical justification
- ▶ **Visual Word Walls:** Create bilingual anchor charts with mathematical symbols linked to both English and Spanish terms.

Cultural Asset Pedagogy

- ▶ **Community Connections:** Invite local business owners to share experiences with profit/loss calculations.
- ▶ **Translanguaging Opportunities:** Allow students to explain reasoning in their strongest language, then support English academic language development.
- ▶ **Cross-Cultural Math Practices:** Discuss how different cultures approach business mathematics and money management.

For Neurodiverse Students

Multisensory Approaches:

- ▶ **Kinesthetic Learning:** Use physical movements (step forward for positive, step back for negative) while solving problems.
- ▶ **Visual Processing:** Provide color-coded templates (red for losses/negative, green for profits/positive).
- ▶ **Auditory Support:** Record word problems so students can replay and process at their own pace.

Executive Function Supports:

- ▶ **Problem-Solving Framework:** Give students templates to plan out the work. (*Dr. Nicki's addition: Avoid things like CUBES because students need to focus on the structure of the problem.)
- ▶ **Cognitive Load Management:** Break DOK Level 3 into smaller, sequential tasks with checkpoints.
- ▶ **Choice Architecture:** Offer multiple response formats (written, verbal, visual diagram, or digital presentation).

Attention and Focus Strategies:

- ▶ **Movement Breaks:** Incorporate 30-second movement breaks between problem-solving steps.
- ▶ **Fidget Tools:** Allow appropriate sensory tools that don't distract from learning.
- ▶ **Timer Management:** Use visual timers for each problem-solving phase.

Universal Design for Learning (UDL) Integration:

- ▶ **Multiple Means of Representation:** Problems available in text, audio, and visual formats
- ▶ **Multiple Means of Engagement:** Cultural relevance increases intrinsic motivation
- ▶ **Multiple Means of Expression:** Various ways to demonstrate mathematical understanding