THE LEARN-IT-ALL EDUCATOR

A Guidebook for Training Brains, Not Replacing Them

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CHAPTER 2 FACULTY WORKSHEET

The Intelligent Gearbox: Advanced Prompting for Educators

PURPOSE

Each activity presents a core concept from Chapter 2, then directs you to apply it to your own course, discipline, or students. You will leave with a personalized Intelligent Gearbox Action Plan grounded in the chapter's frameworks.

Name	**Institution / Discipline**
Course / Program	**Date**

How to Use This Worksheet

This worksheet accompanies Chapter 2 of *The Learn-It-All Educator* (Machajewski, 2026). Chapter 1 addressed *what* to delegate to AI. Chapter 2 addresses *how* to communicate with it effectively and reveals that the same principles that produce better student learning.

SECTION A	The Foundation (Activities 1–3): Understand the probability engine, diagnose wrong-gear failures, and experience the student's perspective.
SECTION B	Shifting Through the Gears (Activities 4–11): Practice all four gears: One-Shot, Few-Shot, Chain of Thought, and Agentic and build gear-selection intuition.
SECTION C	The Pedagogical Parallel (Activities 12–15): Translate prompting gears into instructional design. Redesign real assignments.
SECTION D	Closing (Activity 16): Finalize your Intelligent Gearbox Action Plan with specific semester commitments.

Each activity follows a consistent structure:

📍 **CONCEPT**	A brief definition of the framework or principle from the guidebook.
▶️ **DIRECTED TASK**	A specific action tied to your own course, discipline, or students.
✏️ **RESPONSE AREA**	Space to write - use pencil, pen, or type directly in this document.

A SECTION A: THE FOUNDATION

Understanding what AI is and what it is not

1 AI as a Probability Engine *The Non-Negotiable Prerequisite for AI Literacy*

CONCEPT

Most educators approach AI as a high-speed calculator or refined search engine, mental models that produce frustration. A calculator operates on certainty: 47 × 23 always returns 1,081. AI operates on probability: it predicts the most statistically likely word sequence to follow your input, based on patterns from training data. It does not retrieve verified facts. It generates plausible continuations. This distinction has one critical implication: the context you provide shapes everything. Vague prompts produce statistically average outputs. Specific context produces elite, discipline-tuned results.

DIRECTED TASK

Perform a diagnostic audit of a real task where you previously treated AI as a "fact-checker" or "calculator" and received mediocre, generic, or unreliable results. Then rewrite that prompt, explicitly providing the statistical "patterns" (disciplinary voice, specific theorist, grading style) the AI should prioritize. Compare what changed.

The original prompt I used (or a close approximation):

What "patterns" or context was missing from that prompt?

My rewritten prompt with context, role, and discipline-specific constraints added:

What do I expect to change in the output? Why?

2 The Wrong Gear Diagnostic *Matching Prompt Sophistication to Task Complexity*

CONCEPT

Anyone who has driven a manual transmission knows the grinding noise of the wrong gear: first gear on the highway makes the engine scream while you crawl; fourth gear from a dead stop causes a stall. AI prompting follows the same logic. A one-sentence "Zero-Shot" prompt applied to a complex task (curriculum gap analysis, nuanced feedback, multi-week scaffolding plan) produces shallow, generic output, the grinding noise. Over-engineering a prompt for a trivial task wastes time and confuses the model. Effective AI use means matching gear to task, every time.

DIRECTED TASK

Identify a high-complexity "highway" task where you used a first-gear (one-sentence) prompt and received shallow output. Describe the output you got. Then identify what specific gear, and what specific additional context, the task actually required.

The Task	Gear I Used	Output I Got	Gear It Actually Needed	Missing Context

What is my "default gear", the one I reach for most automatically? When does that become a problem?

3 The Student Seat *Experiencing Zero-Shot Failure From the Inside*

CONCEPT

Faculty who resist AI prompting often do so because it feels like “learning to talk to a machine.” This reframe helps: the student’s experience of a vague assignment instruction is structurally identical to AI’s experience of a zero-shot prompt. Both are forced to guess. Both fill gaps with generic patterns from prior experience. Both produce outputs that frustrate the person who gave the instruction. The problem is almost never intelligence. It is almost always design.

DIRECTED TASK

Step 1: Without any additional context, attempt to respond to this zero-shot instruction:
"Write a critical analysis of a significant development in your field."

Step 2: Note every assumption you had to make. What did you guess about length, sources, argument
structure, and audience? What would have helped you produce a stronger response?

Step 3: Map each thing that would have helped to the corresponding prompting gear.

What assumptions did I have to make to even begin this task?

What Would Have Helped Me	Corresponding Prompting Gear	How I Would Add This to My Own Assignment Instructions

What does this exercise reveal about the assignments I currently give students?

B SECTION B: SHIFTING THROUGH THE GEARS

Practicing all four gears and building gear-selection intuition

4 First Gear: One-Shot Prompting *Gear 1: Anchoring Style With a Single Example*

CONCEPT

Moving from Zero-Shot (no context) to One-Shot means providing the AI with exactly one clear example. This anchors the model's predictions to your professional voice, your disciplinary conventions, and your specific standards, rather than forcing it to guess from the statistical average of its training data. The key insight: a single example transforms the task from "invent a style" to "match this style." One is a creative problem. The other is a replication task. AI is far more reliable at replication than invention.

DIRECTED TASK

Select a specific style of feedback or communication you provide regularly (e.g., Socratic questioning, direct corrective feedback, encouraging growth-mindset language). Draft a complete One-Shot prompt that includes your context sentence plus one "Gold Standard" sample from your own past work.

PROMPT TEMPLATE

```
Context: I am a [YOUR DISCIPLINE] instructor at [INSTITUTION TYPE].
I need to write [TASK, e.g., feedback on a student draft / a rubric / a weekly
announcement].
Match the tone, structure, and voice of the following example exactly.

EXAMPLE (paste your Gold Standard sample here):
[Your example goes here]

Now produce a new version for: [NEW SPECIFIC REQUEST]
```

My Gold Standard example (the sample I would paste in):

What specifically does this example signal to the AI that a Zero-Shot prompt cannot?

5 Second Gear: Few-Shot Grounding *Gear 2: Reducing Hallucinations With Multiple Examples*

CONCEPT

Where One-Shot anchors style, Few-Shot reveals patterns. By providing three or more examples, you give the AI boundaries, guardrails that channel the probability engine toward outputs consistent with your actual standards rather than statistical guesses. Three examples are the minimum for reliable pattern extraction. More examples increase consistency and reduce hallucinations, especially for complex tasks involving evaluation criteria, rubric design, or nuanced feedback. The model shifts from “invent what success looks like” to “replicate what success looks like.”

DIRECTED TASK

Select a complex grading or feedback task (rubric design, written feedback on a multi-part project, or evaluating disciplinary writing). Identify three distinct “successful” examples from your past work that together reveal the pattern of your disciplinary rigor. Then: before asking AI to generate new content, write the “explain the pattern” command you will use to verify it has understood your examples.

Example #	What It Represents (the pattern it contributes)	What Would Make It a Weak Example

PROMPT TEMPLATE

```
Before generating anything new, explain back to me the pattern you see
across these three examples. Specifically:
  — What makes each example high-quality?
  — What consistent standards or criteria appear across all three?
  — What would a fourth example need to include to match this pattern?

Do not generate the fourth example yet. Only explain the pattern.
```

What pattern do I expect the AI to identify? What might it miss?

6 The Hallucination Defense *Designing Constraints That Stop the Engine From Guessing*

CONCEPT

Hallucination is not a bug, it is the logical consequence of how AI works. When the model lacks sufficient context to constrain its predictions, it fills the gap with statistically plausible content. That content may be entirely fabricated: invented citations, false statistics, non-existent legal cases, outdated protocols. AI presents all of it with the same confident tone it uses for verified facts. The antidote is constraints: specific instructions that restrict the model's predictions to what you can verify. "Cite only from the uploaded PDF." "Provide page numbers for every claim." "Do not generate any statistic you cannot trace to a named source in this document."

DIRECTED TASK

Identify a scenario in your specific discipline where an undetected hallucination would cause professional harm to a student, a patient, a client, or a professional outcome. Then design three specific prompt constraints that would prevent the hallucination from occurring.

The high-stakes scenario in my discipline:

Constraint	What Hallucination It Prevents	How I Would Phrase It in a Prompt

How would I teach students to build their own hallucination constraints for AI-assisted work?

7 The Hallucination Autopsy *Evidence-Based: Witnessing Fabrication in Your Own Field*

CONCEPT

Hallucinations are abstract until you have experienced one in your own discipline. The most effective counter to "AI is just a tool, students should know better" is watching AI fabricate a source, case, statistic, or procedure that sounds exactly like something from your field, because it does. The failure mode is systematic, not a student character flaw. Faculty who have witnessed a discipline-specific hallucination firsthand make far more effective, credible arguments to students about verification than faculty who have only read about the phenomenon.

DIRECTED TASK

Step 1: Give any AI system a zero-shot prompt on a narrow, specialized topic in your discipline, one where you could immediately detect a fabrication (e.g., ask for three recent peer-reviewed sources, a specific legal case, a technical specification, or a clinical guideline).

Step 2: Verify every specific claim, citation, or statistic the AI produced.

Step 3: Document your findings below. If no hallucination appeared, try a more specific query.

My zero-shot prompt and the topic I chose:

AI Claim or Citation	Verified? (Yes / No / Partial)	What Was Wrong or Fabricated

One specific prompt constraint that would have prevented the most serious fabrication I found:

How will I use this experience when explaining AI limitations to my students?

8 Third Gear: Chain of Thought Reasoning *Gear 3: Making Logic Visible Before Accepting Conclusions*

CONCEPT

For complex reasoning tasks like analysis, evaluation, multi-step problem solving, AI output improves dramatically when you explicitly require the model to externalize its thinking before reaching a conclusion. The magic phrase is simple: “Think step by step” or “Show your work.” These instructions force the model to generate intermediate reasoning rather than jumping to answers. This serves two purposes: it reduces errors on complex tasks, and it makes the logic available for your critical review. You are no longer grading a result, you are auditing a process. This is also the pedagogical model for teaching students to make their own reasoning visible.

DIRECTED TASK

Take a multi-step problem, case study, or analytical task from your course. Write a Chain of Thought prompt that explicitly forbids the AI from giving a final answer until it has justified its logic for each intermediate step. Identify the specific step where you most expect errors to surface.

PROMPT TEMPLATE

```
Do not give me a final answer yet.

First, identify the [NUMBER] most important considerations or sub-problems
involved in [TASK/PROBLEM].

For each one, explain your reasoning before moving to the next.
Flag any step where you are uncertain or where the evidence is ambiguous.

Only after completing all steps: give your final recommendation,
and explain which intermediate step most influenced your conclusion.
```

My Chain of Thought prompt (adapted for my discipline / problem type):

The step where I most expect errors to surface and why:

9 Fourth Gear, Overdrive: Agentic Delegation *Gear 4: Treating AI as a Specialized Staff Hire*

CONCEPT

In Overdrive, you stop treating AI as a generic assistant and start treating it as a specialized team member: a research analyst, a skeptical peer reviewer, a hostile examiner, a policy consultant. The role assignment matters because it activates specific vocabulary, analytical frameworks, and levels of rigor from the AI's training data. A "supportive colleague" persona generates fundamentally different output than a "senior research committee." The Role–Context–Mission (RCM) structure is the professional framework: assign the role, provide relevant context, define the mission with specific deliverables. This is delegation, not just a request.

DIRECTED TASK

Construct a complete Role–Context–Mission (RCM) prompt for a "Skeptical Peer Reviewer" agent that would be useful in your discipline. Specify the exact critical lenses it must apply and the precise deliverable format it must produce.

PROMPT TEMPLATE

```
ROLE: Act as a [SPECIFIC ROLE with credentials/perspective, e.g., 'skeptical senior
       peer reviewer for a [FIELD] journal with 20 years of methodological
expertise'].

CONTEXT: I am going to share [DOCUMENT/WORK]. Your purpose is NOT to be
       supportive. Your purpose is to identify weaknesses before submission.

MISSION: Review the attached work and produce:
  1. [DELIVERABLE 1, e.g., 'Top 3 methodological weaknesses with evidence']
  2. [DELIVERABLE 2, e.g., 'Claims that require stronger sourcing']
  3. [DELIVERABLE 3, e.g., 'One-paragraph summary for the editorial board']

Format your response as: [SPECIFY FORMAT]
```


My complete RCM prompt (adapted for my discipline and a real professional use case):

What specific professional outcome does this agent help me achieve that I currently do manually?

10 The Gear Selector *Building the Intuition to Match Gear to Task*

CONCEPT

The gearbox fails in two directions: over-engineering simple tasks wastes time and confuses the model; under-engineering complex tasks produces shallow output. Most faculty need a decision heuristic, not just gear definitions. The question to ask before any AI task: "What does this model need in order to produce output I would actually trust professionally?" Some tasks need only style anchoring (Gear 1). Others require pattern grounding (Gear 2), visible reasoning (Gear 3), or a specialized agent persona (Gear 4). The right gear is not always the highest gear.

DIRECTED TASK

Classify each of the tasks in the table below by the gear you would use and your reasoning. Some are genuinely ambiguous, that is intentional. Then add two tasks specific to your own discipline and classify those as well.

Task	Gear (0–4)	Key Reason for This Gear
Drafting a feedback email to a student about late work		
Building a semester-long scaffolding plan for a new course		
Verifying whether a cited study actually supports a student's claim		
Creating a rubric for a multi-modal final project		
Analyzing curriculum alignment across a full program		
Generating a list of discussion questions for next week's reading		
Writing a grant proposal narrative section		
My discipline-specific task #1:		
My discipline-specific task #2:		

Where did my gear choice surprise me? Where did I default to a higher gear out of anxiety rather than necessity?

11 The Persona Calibration Test *When Is a Supportive Agent Actually the Right Choice?*

CONCEPT

Most faculty writing their first Gear 4 prompt choose an adversarial persona: “skeptical reviewer,” “hostile examiner.” This is appropriate for many tasks. But the implicit assumption that rigor always means adversarial framing misses something important: different professional contexts require different agent calibrations. A “supportive developmental editor” produces fundamentally different, and sometimes more useful, output than a “senior peer reviewer.” The same request sent to three different personas produces three different documents. Knowing which persona to choose is a professional skill, not a default setting.

DIRECTED TASK

Write the same professional request to three different agent personas. Use a real task from your Discipline, something you might actually use the output for. Then analyze what each persona produces and when you would choose each.

The task I am sending to all three personas:

Persona	What This Persona Prioritizes	When I Would Choose This Persona	What It Misses
Supportive Developmental Editor			
Skeptical Peer Reviewer			
Hostile External Examiner			

What does choosing the right persona tell you about what you actually need from the AI in a given context?

C SECTION C: THE PEDAGOGICAL PARALLEL

Translating prompting gears into instructional design

12 Identifying the Zero-Shot Teaching Trap *When Assignments Work Like Vague Prompts*

CONCEPT

Zero-shot teaching fails for the same reason zero-shot prompting fails: the intelligence doing the work cannot read your mind. Students fill in the gaps with whatever models they have encountered before, often generic patterns from high school or popular media that do not match your disciplinary expectations. The frustration educators feel reading student work ("This isn't what I asked for!") mirrors the frustration novice AI users feel reading AI output. In both cases, the problem is not the intelligence doing the work. It is the quality of the instruction guiding it.

DIRECTED TASK

Perform a diagnostic audit of your most "frustrating" assignment, the one where student submissions most consistently disappoint. Identify three specific gaps where students are currently forced to guess your intent. For each gap, decide which gear you will use to close it.

The assignment I am auditing (brief description):

Gap: What Students Must Currently Guess	Why This Gap Exists (tacit knowledge?)	Gear to Close It	Specific Addition Needed

What would a student who did this assignment well, but for the wrong reasons, look like? How would I know the difference?

13 The Tacit Knowledge Audit *Making Invisible Disciplinary Expertise Visible*

CONCEPT

Experts often cannot see what they know. After years in a discipline, the conventions of critical analysis, evidence use, and argumentation become invisible, so automatic that they require no conscious effort. We forget that students have not yet internalized these patterns. This "tacit knowledge blindness" is the root cause of many assignment design failures: instructions that assume expertise the student has not yet developed. Chain of Thought reasoning, applied to your own expertise, is the diagnostic tool: it forces you to make implicit steps explicit.

DIRECTED TASK

Select one core skill in your discipline that you evaluate regularly but rarely teach explicitly (e.g., "evaluating source credibility," "constructing a valid argument," "interpreting data," "diagnosing a system failure"). Use the Chain of Thought model to list the five or more invisible expert steps required to perform this skill steps a student might not even know exist.

The core skill I am reverse-engineering:

Step #	The Invisible Expert Move	What a Novice Does Instead	How I Will Make This Visible in My Assignment

Step #	The Invisible Expert Move	What a Novice Does Instead	How I Will Make This Visible in My Assignment

Which of these invisible steps do I almost never explain and which would most improve student performance if I did?

14 Scaffolding vs. Spoon-Feeding *The Difference Between Structure and Doing the Work*

CONCEPT

Many educators default to Zero-Shot teaching because they fear scaffolding is “hand-holding” that stifles thinking. This conflates two different things. Spoon-feeding removes the struggle: providing the answer, completing the reasoning, or eliminating the challenge. Scaffolding preserves the struggle while removing unproductive confusion: providing examples (One-Shot), revealing patterns (Few-Shot), or making reasoning visible (Chain of Thought). The student still does the hard cognitive work. They simply know what that work is supposed to look like before they begin.

DIRECTED TASK

Select one assignment that you currently deliver with minimal scaffolding. Create a Before/After comparison: show the original instructions (Zero-Shot), then redesign them using at least two gears. Critically: ensure that the redesigned version preserves the core intellectual struggle it adds structure without removing the SPARK.

BEFORE (Zero-Shot)	AFTER (Geared Scaffolding)
Original instructions:	*Redesigned with Gear(s):*

What cognitive struggle does the redesigned version preserve? What does it remove, and is that acceptable?

15 The Gear Translation *Scoring a Real Assignment Against All Four Gears*

CONCEPT

The chapter's central argument is that the four prompting gears map directly to four levels of pedagogical scaffolding: One-Shot provides a worked example; Few-Shot reveals patterns across multiple examples; Chain of Thought models visible reasoning; Agentic gives students a role, context, and mission. Most assignments score well on zero or one gear. The most powerful redesigns systematically add all four not to eliminate challenge, but to ensure that the challenge is the content, not the instructions.

DIRECTED TASK

Take one complete assignment from your syllabus including the instructions, rubric, and any supporting materials. Score it against all four gear levels using the audit table below.
Then plan specific additions for each gear level it currently lacks.

The assignment I am auditing (course, title, brief description):

Gear	What It Looks Like in Assignment Design	Currently Present? (Y/N/Partial)	Specific Addition Planned
Gear 1 One-Shot	Provides at least one strong example of what excellent work looks like before students begin.		
Gear 2 Few-Shot	Provides multiple worked models or sample responses and asks students to identify the pattern.		
Gear 3 Chain of Thought	Requires students to show their reasoning at intermediate steps, not just submit a final product.		
Gear 4 Agentic	Assigns students a specific role, audience, context, and mission not just a topic and a length.		

After adding all four gears, what cognitive struggle remains? Is it the right struggle?

D SECTION D: CLOSING

Finalize your Intelligent Gearbox Action Plan

16 My Intelligent Gearbox Action Plan *Personalized Commitments for This Semester*

CONCEPT

The gearbox is not a ladder you shift through once in sequence. Different tasks call for different gears, and mastery means developing the automatic judgment to choose the right one. The transition from Know-It-All to Learn-It-All educator requires deliberate practice in both directions: applying the gears to your own professional workflow, and translating them into your instructional design. True mastery involves the courage to play the simpleton today, asking basic questions of AI, building prompts that feel awkward at first, so you can remain the expert tomorrow.

DIRECTED TASK

Complete all four commitment statements below. Be specific: name the gear, the task, the course, and the week. Then use the notes section for remaining questions or ideas to explore further.

1 The Gear I Will Master First

Gear: _____ Task where I will apply it: _____ By: _____

2 The Zero-Shot Teaching Gap I Will Close

Assignment: _____ Gear I will add: _____ Specific addition: _____

3 The Agent Role I Will Deploy

Role: _____ Professional task it will handle: _____

4 The Hallucination Constraint I Will Build

Discipline-specific risk: _____ My constraint phrase: _____

Notes, Questions, and Ideas for Further Exploration:

GEAR	TECHNIQUE	CORE PRINCIPLE	PEDAGOGICAL PARALLEL
0 — Zero-Shot	No context	AI (and students) guess based on prior patterns	Vague assignment with no examples
1 — One-Shot	1 example	Anchor to your style and voice	Show one Gold Standard student model
2 — Few-Shot	3+ examples	Ground the model; reduce hallucinations	Multiple worked examples; analyze the pattern
3 — Chain of Thought	Step-by-step reasoning	Make logic visible; reduce errors	Require process documentation, not just final product
4 — Agentic	Role + Context + Mission	Activate specialized expertise	Assign students a role, audience, and deliverable

"If you would not expect good output from AI with a vague zero-shot prompt, why expect it from students?"

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