AI Pedagogy @ SCRP Summer 2026

Extending Pedalogical with Voice, Communication Theory, and AI Literacy

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I will be presenting on the work I am doing this summer to extend Pedalogical with voice, communication theory, and AI literacy.

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1 Who I Am and What I Do

1.1 At Willamette University

Figure 1: Cartoon me. I like coffee and dogs.

Dr. Lucas Cordova

- CS Professor at SCIS
- Teach courses in CS and Data Science like software development, data structures, algorithms, data engineering, and more
- Lab focuses on human-centered learning tools and AI-powered learning

2 Working on Pedalogical?

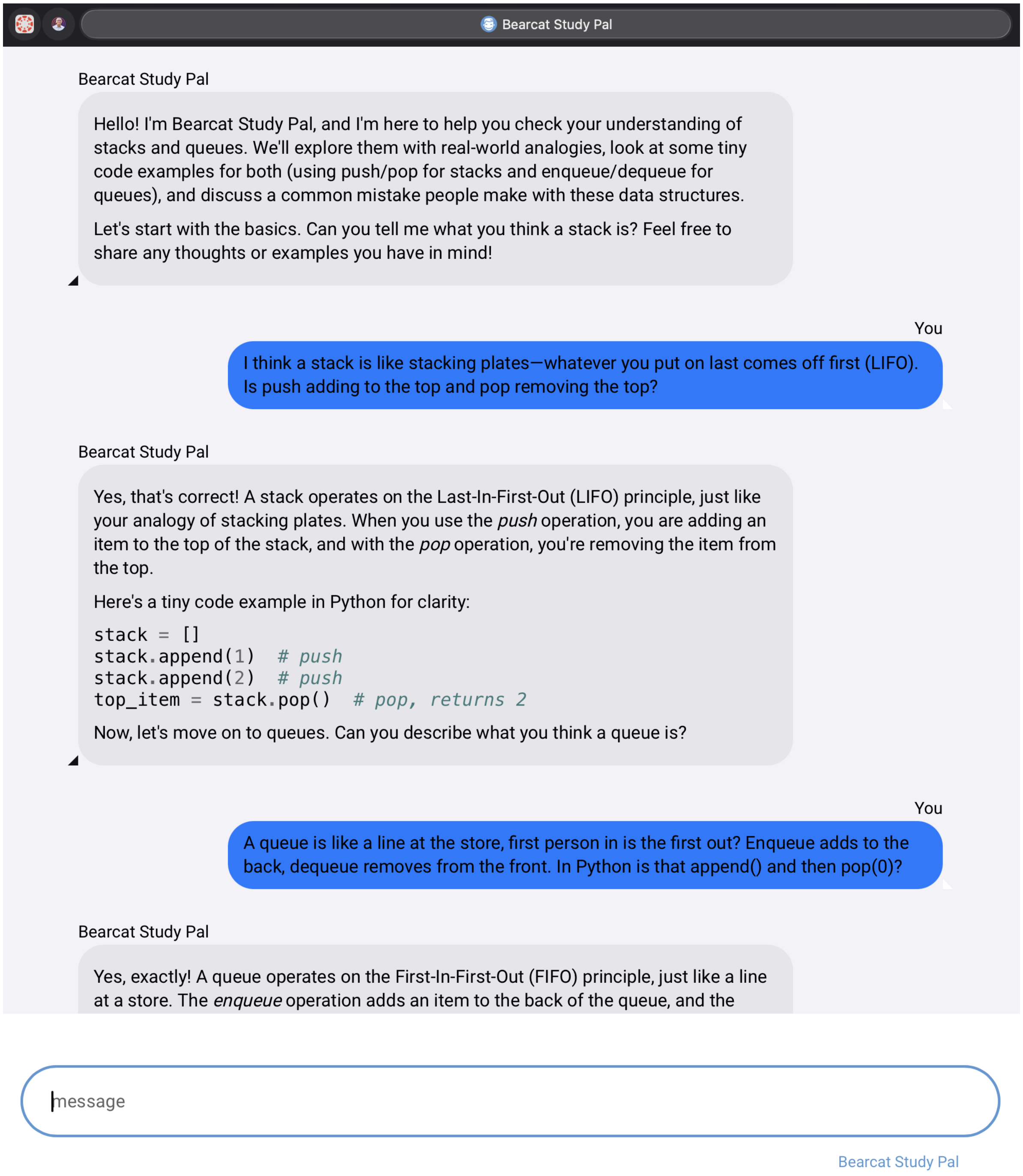
2.1 An AI platform built for learning, not just answers

Pedalogical is an AI-infused platform developed by students in the Cordova Lab at Willamette University. It helps instructors quickly build high-quality assessments and learning experiences without needing to become experts in educational technology or AI tooling.

2.2 What it already does

- Supports multiple assessment types for any discipline, including textual and chat-based assessments designed to strengthen understanding and explanation
- Grounded in psychological learning theories:
  - **Feynman Technique**: learn by explaining in your own words
  - **Zone of Proximal Development**: meet learners where they are
  - **Cognitive Load Theory**: keep feedback focused and manageable

2.3 Feynman Technique Chatbot Example



Bearcat Study Pal

Hello! I'm Bearcat Study Pal, and I'm here to help you check your understanding of stacks and queues. We'll explore them with real-world analogies, look at some tiny code examples for both (using push/pop for stacks and enqueue/dequeue for queues), and discuss a common mistake people make with these data structures.

Let's start with the basics. Can you tell me what you think a stack is? Feel free to share any thoughts or examples you have in mind!

You

I think a stack is like stacking plates—whatever you put on last comes off first (LIFO). Is push adding to the top and pop removing the top?

Bearcat Study Pal

Yes, that's correct! A stack operates on the Last-In-First-Out (LIFO) principle, just like your analogy of stacking plates. When you use the *push* operation, you are adding an item to the top of the stack, and with the *pop* operation, you're removing the item from the top.

Here's a tiny code example in Python for clarity:

```
stack = []
stack.append(1)  # push
stack.append(2)  # push
top_item = stack.pop()  # pop, returns 2
```

Now, let's move on to queues. Can you describe what you think a queue is?

You

A queue is like a line at the store, first person in is the first out? Enqueue adds to the back, dequeue removes from the front. In Python is that append() and then pop(0)?

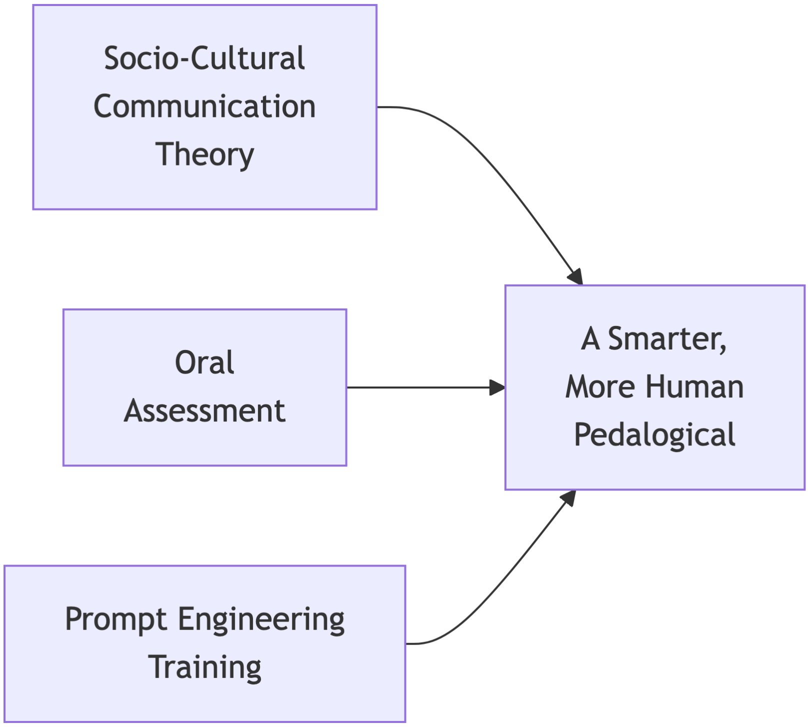
Bearcat Study Pal

Yes, exactly! A queue operates on the First-In-First-Out (FIFO) principle, just like a line at a store. The *enqueue* operation adds an item to the back of the queue, and the

Figure 2: Pedalogical in Action

3 This Summer: Three Big Extensions

3.1 Summer 2026 roadmap


Socio-Cultural Communication Theory
Oral Assessment
Prompt Engineering Training
A Smarter, More Human Pedalogical

We are extending Pedalogical in three major directions this summer, each designed to make the platform more responsive, more human, and more useful across disciplines.

4 Direction 1: Communication Theory

4.1 Learning is communication, not just correctness

We are expanding our theoretical foundation to include **socio-cultural communication theory**, which treats learning and explanation as situated communication that depends on:

- Audience and context
- Social norms and expectations
- Purpose and intent

The goal is to make Pedalogical's feedback more sensitive to *how* learners express knowledge in real settings, not just *whether* they have the correct information.

5 Direction 2: Oral Assessment

5.1 Say it out loud

We are integrating **oral assessment** into Pedalogical. Students will be able to practice explaining and expressing their understanding out loud and receive feedback that supports growth in:

- Conceptual understanding
- Communication skills
- Confidence

5.2 Beyond the classroom

The pedagogical intent supports oral exams, discussion-based learning, and reflective explanation, but it also connects directly to real-world scenarios:

- Interview preparation
- Presentation rehearsal
- Professional communication practice

6 Direction 3: Prompt Engineering Training

6.1 Teaching students to use AI well

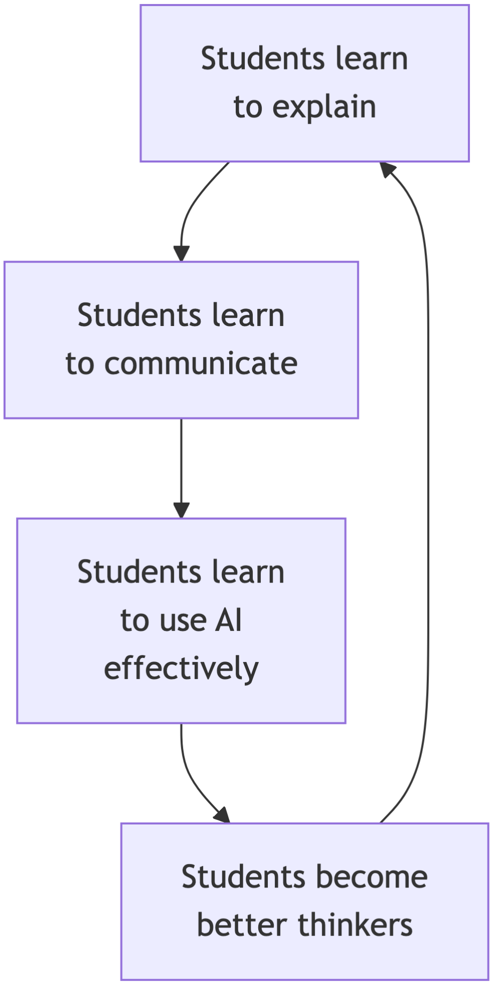
We are building a **prompt engineering training module** to help learners use generative AI effectively as a learning tool. The focus is on moving beyond one-shot prompting toward iterative workflows:

- Planning and decomposition
- Adding constraints and context
- Verification and revision

The goal is to equip learners with **durable AI literacy skills** that transfer across disciplines and tasks.

7 Why This Matters

7.1 The big picture


Students learn to explain
Students learn to communicate
Students learn to use AI effectively
Students become better thinkers

Pedalogical is not just a learning tool. It is a platform for building the skills that matter most: articulation, reflection, communication, and critical use of AI. This summer's work makes it more responsive to real human learning.

7.2 Thank You!

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