

Joyful integration and critical reflection on AI-augmented assignments supporting statistics process knowledge

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eCOTS 2026 workshop

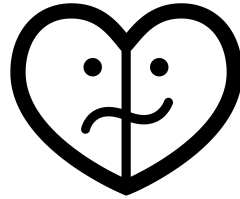
Agenda

1. Icebreaker
2. A theory to consider - Self-Regulated Learning (SRL)
3. Activity 1: SMART
4. Connecting SRL and Activities 1/2
5. Break: 5 minutes
6. Activity 2: Ask Better Prompts
7. Adding Heuristics to AI Activities
8. Working Time: Select an activity to work with and consider how SRL might be incorporated.
9. Share initial activity ideas
10. Working Time: Add in an opportunity to work with AI and a Heuristic
11. Share activity ideas
12. Gallery Walk
13. Share Takeaways

What are your current feelings about AI, specifically LLM?



A: You and AI were meant to be together forever.



B: Sometimes it is helpful, sometimes it is awful, but we have to prepare students for a life with AI.

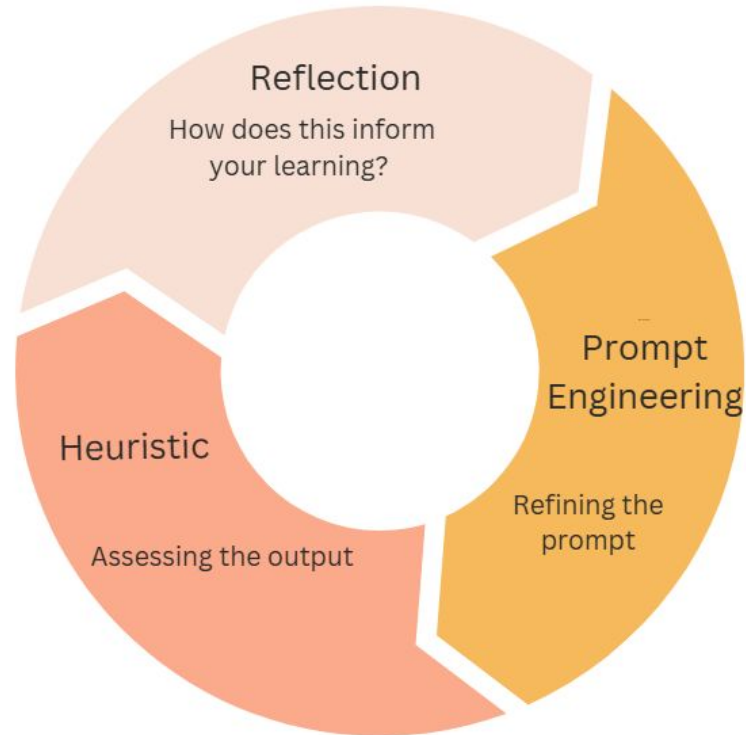


C: There is absolutely nothing good about LLM.

What types of learning strategies do you use
in your teaching?
(Examples: mnemonics, concept maps, peer
groups)

Developing Critical Thinking

Critical Components to Critical Thinking with AI use

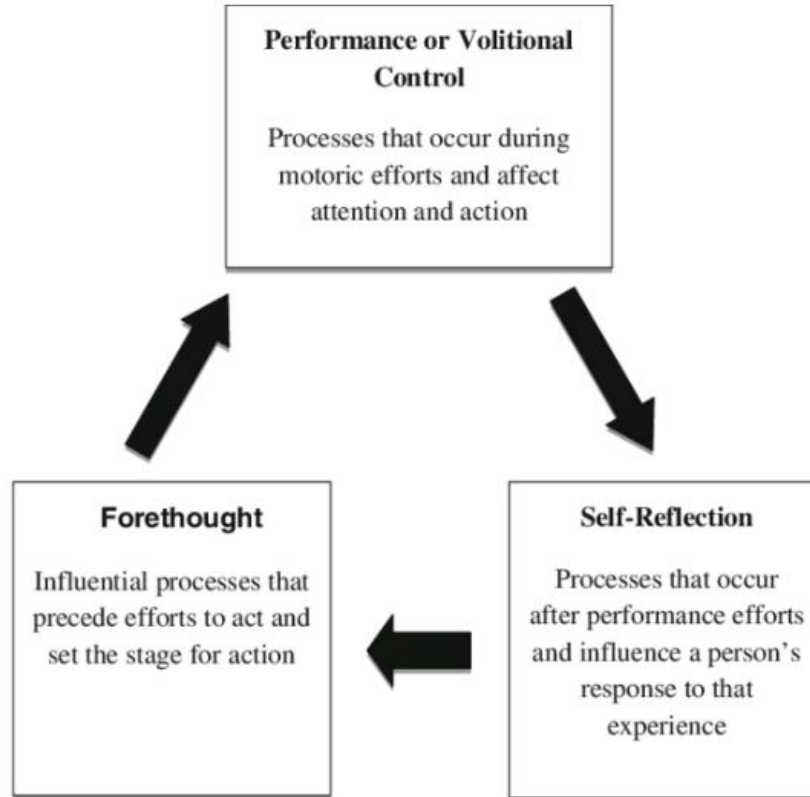


What is self-regulated learning?

“Self-regulated learning refers to self-generated thoughts, feelings, and actions for attaining one’s learning goals”

Zimmerman 2009

Zimmerman (2000)



SMART Activity

Statistics

Mnemonics

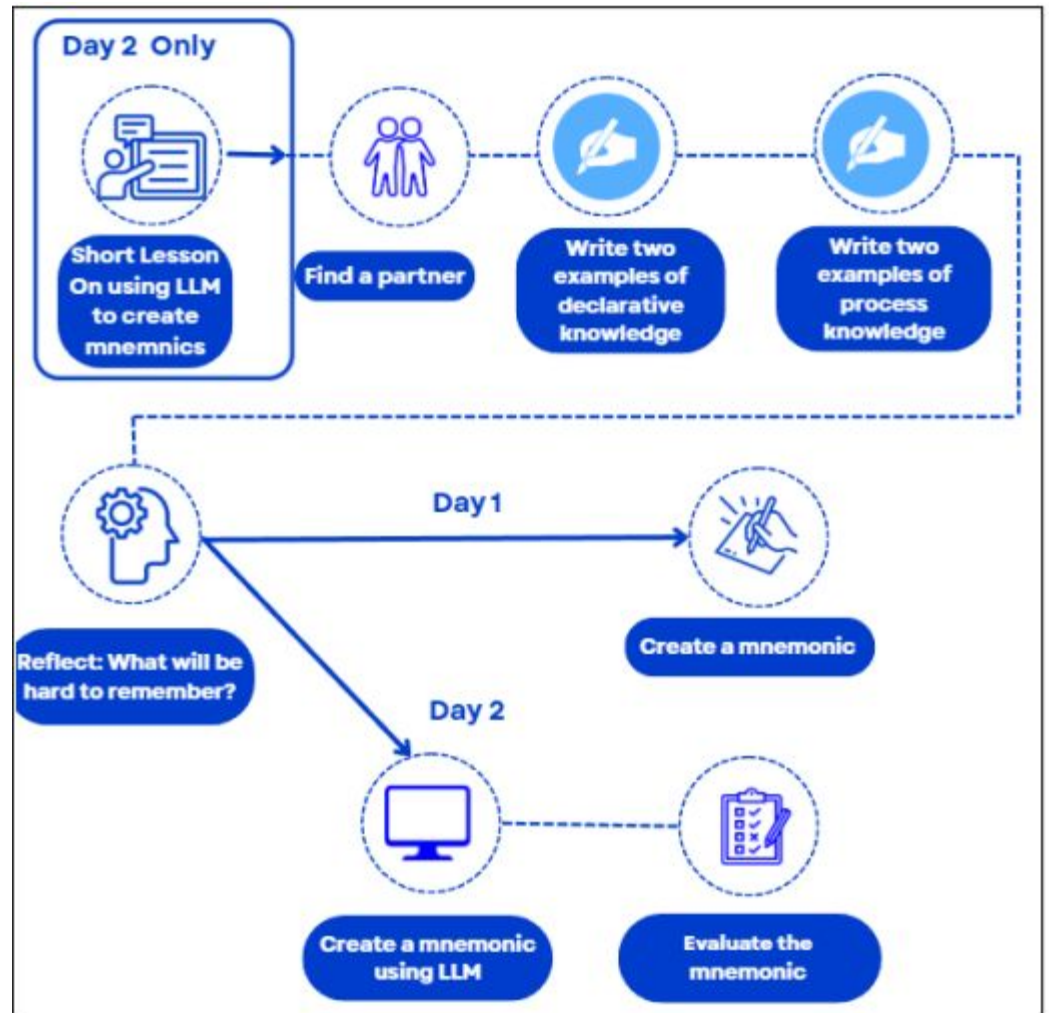
Assembled with

Reflection and

Technology

(Items in Blue text on the following slides are from the SMART activity)

(Mocko et al., 2026)



Forethought

SMART Activity

Declarative Knowledge

Think back to what we have worked on in this module. Please list two declarative knowledge items that you encountered in this module. Declarative knowledge would be definitions and simple relationships. (Example from Right Triangle Trigonometry: $\sin \theta$ equals the opposite side over the hypotenuse, $\cos \theta$ equals adjacent over the hypotenuse, or $\tan \theta$ equals the opposite side over the adjacent side.)

- 1.
- 2.

SMART Activity

Process Knowledge

Now, think about the process knowledge that you worked on in this module. Please list two processes that you encountered in this module. Processes would be completing a series of steps to solve a problem. (Example from Algebra: To multiply binomials, you use the distributive property to add up all the product-pairs of terms: first(leftmost), outer, inner, and last(rightmost))

- 1.
- 2.

Performance

Prompt Engineering (Walker, 2024)

Type	Explanation	Example Prompt
Input / Output	Short and simple	Provide a mnemonic for the assumptions for simple linear regression.
Chain of Thought Prompting	“slow it down”	Provide a mnemonic for the assumptions for simple linear regression but show me each step of the way why you chose the mnemonic and the steps that you took.
Role-Play or Expert Prompting	“give it a role”	Imagine that you are a tutor helping a student that is struggling with assumptions for simple linear regression. You want to help the students by having them look at several mnemonics generated for this topic and pick one that is helpful for them.

Creating the Mnemonic

By hand

With LLM

Reflection

Heuristic for use with LLM

Express your level of agreement with these statements.

1 Strongly Agree

2 Somewhat Agree

3 Somewhat Disagree

4 Strongly Disagree

_____ I am confident that the mnemonic from the generative AI output is correct.

_____ I am confident that the mnemonic from the generative AI output is useful as is.

_____ I am confident that the mnemonic from the generative AI output will be useful after I make a small change.

_____ I am confident that I could have created a better mnemonic on my own without using generative AI at all.

Explain.

Reflection (excerpt of questions)

- Which method did you prefer in creating the mnemonics with your partner(s) without technology or with generative AI, such as ChatGPT? Explain.
- Did the creating and compiling of mnemonics increase or decrease your anxiety about the upcoming exams? Explain.
- Is the creation and compilation of mnemonics something that you would do in a future class? Why or why not?
- What did you find more helpful: mnemonics for declarative knowledge or for process knowledge?

Connecting Theory with an Activity using AI

Discussion prompts:

- What did you think about connecting self-regulated learning (SRL) with the activity?
- How have you used SRL in your teaching?

Break (5 minutes)

Ask Better Prompts



(Mocko et al., expected 2026)

Forethought

Forethought (updated summer 2026 version)

Think about the given learning objective.

- What questions do you have?
- What do you already know about this topic?
- What concerns do you have?

Performance Stage

At home:

On your own:

1. Consider the objective: “Evaluate and distinguish between a bootstrap distribution and a sampling distribution of a statistic, based on their construction, purpose, and interpretation.”
2. Develop a prompt.
3. Rate the output.

In Class: Learn about Prompt Engineering (Walker, 2024)

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Input / Output	Short and simple	Provide a mnemonic for the assumptions for simple linear regression.
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In Class - Work with Partner and Create a New Prompt

1. Discuss the output with your partner.
2. Create a new prompt and get new output.

Reflection Stage

Heuristic for examining output

Rank the output provided by the large language model using the following scale.

1. Off-topic
2. Not at the right level (answer too basic or too theoretical or too mathematical)
3. Not enough that I could work out a problem on my own.
4. Likely that I could work out a problem on my own.
5. Enough that I could confidently work out a problem on my own.

Reflection

1. Reflect on the process during the initial prompting and then today.
2. What did you learn about writing prompts for large language models?
3. What was surprising?

(100 word minimum, 200 word maximum, all three steps combined)

Use of Heuristics with LLMs

Discussion prompts:

- Have you used heuristics with LLMs?
- If so, please share.

Break

Building An Activity - Working Time (15 minutes)

1. Pick an activity that you have designed to improve student learning strategies that you would like to revise so that it has parts with and without LLM.
2. Feel free to use something for a general topic or a specific topic.
3. If you don't have one, you can use [ours](#).
4. Incorporate the three phases (forethought, performance, self-reflection) of Self-Regulated Learning.
5. [Google Drive](#) - Please create a document by +New. Work on your document here.

Getting Started

- 1.) CHOOSE: work in this main room or work in a breakout room with a partner.
- 2.) Please post in the chat if you are choosing to work with a partner and who they are, and we'll create a breakout room for you.
- 3.) If you would like to work with someone, but you would like for us to pick, please also post in the chat.
- 4.) One of us will stay in the main room, and the other will circulate among the breakout rooms.

Reporting Out (15 minutes)

Sharing

- What activity have you picked to redesign?
- What challenges have you encountered in integrating SRL?
- What successes or insights can you share?

Building An Activity (Cont'd): Working Time (15 minutes)

1. Do you want to change the integration of SRL?
2. Add a heuristic to help with critical thinking about the LLM output.
3. Continue to change and work on your activity to make it work for your practice.

Reporting Out (15 minutes)

Sharing

- One or two volunteers to share their activity.

Gallery Walk

- Visit the other documents in the [Google Drive folder](#) and leave comments on their activities. Do you have any suggestions?

Wrap Up

Reflection:

- What is your key takeaway from today's session?

Housekeeping Announcement:

- Make a copy of your activity by the end of eCOTS if you wish to keep it.

References

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