

Artificial Intelligence in Health Professions Education

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Disclosures

- Martin receives funding from the AMA Reimagining Residency Initiative and receives salary support from the ABMS
- Kate and Dennis do not have disclosures

To receive credit for today's
BCH Academy Seminar:

Text 4306 → 617-648-7950

Evaluation

Make and defend judgments based on internal evidence or external criteria.

Synthesis

Compile component ideas into a new whole or propose alternative solutions.

Analysis

Break down objects or ideas into simpler parts and find evidence to support generalizations.

Application

Apply knowledge to actual situations.

Comprehension

Demonstrate an understanding of the facts.

Knowledge

Remember previously learned information.

appraise
argue assess attach
choose compare conclude
contrast defend describe discriminate
estimate evaluate explain judge justify interpret
relate predict rate select summarize support value

arrange assemble categorize collect combine comply
compose construct create design develop devise explain
formulate generate plan prepare rearrange reconstruct relate
reorganize revise rewrite set up summarize synthesize tell write

analyze appraise breakdown calculate categorize compare
contrast criticize diagram differentiate discriminate distinguish
examine experiment identify illustrate infer model outline
point out question relate select separate subdivide test

apply change choose compute demonstrate discover
dramatize employ illustrate interpret manipulate
modify operate practice predict prepare produce
relate schedule show sketch solve use write

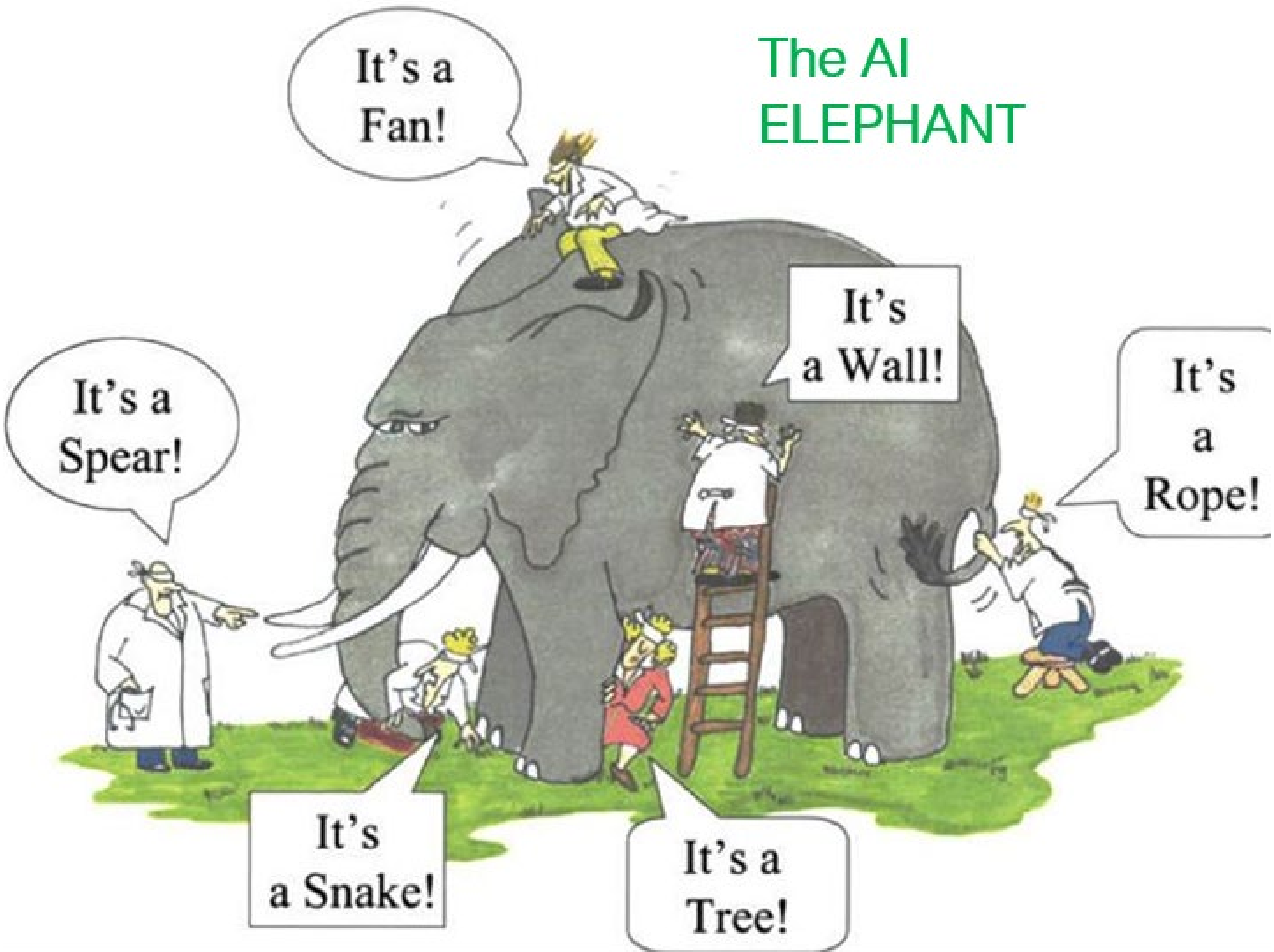
classify convert defend describe discuss
distinguish estimate explain express
extend generalized give example(s)
identify indicate infer locate paraphrase
predict recognize rewrite review select
summarize translate

arrange define describe duplicate
identify label list match memorize
name order outline recognize
relate recall repeat reproduce
select state

Higher Order Thinking Skills



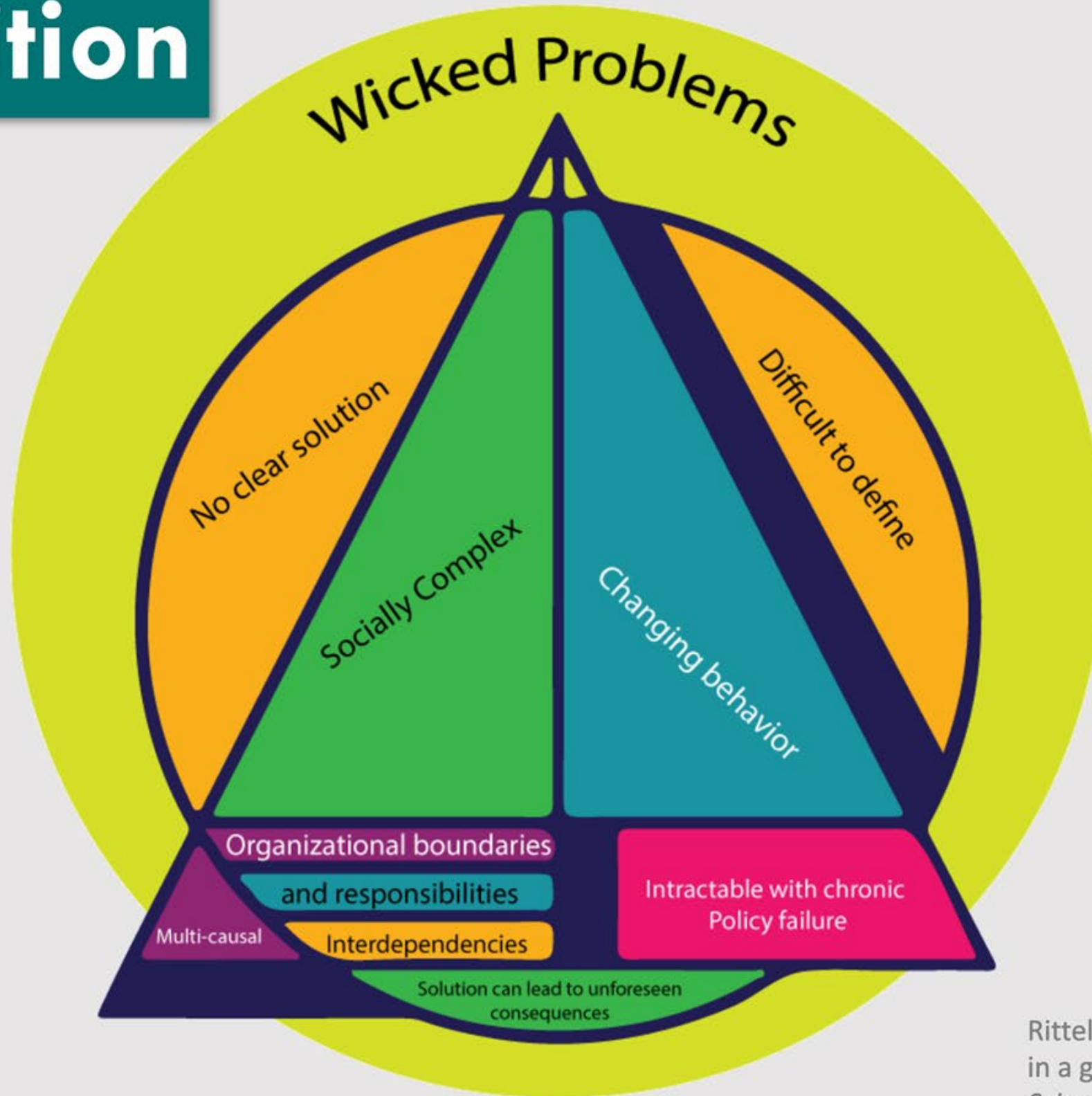
The AI ELEPHANT



Goal for this segment

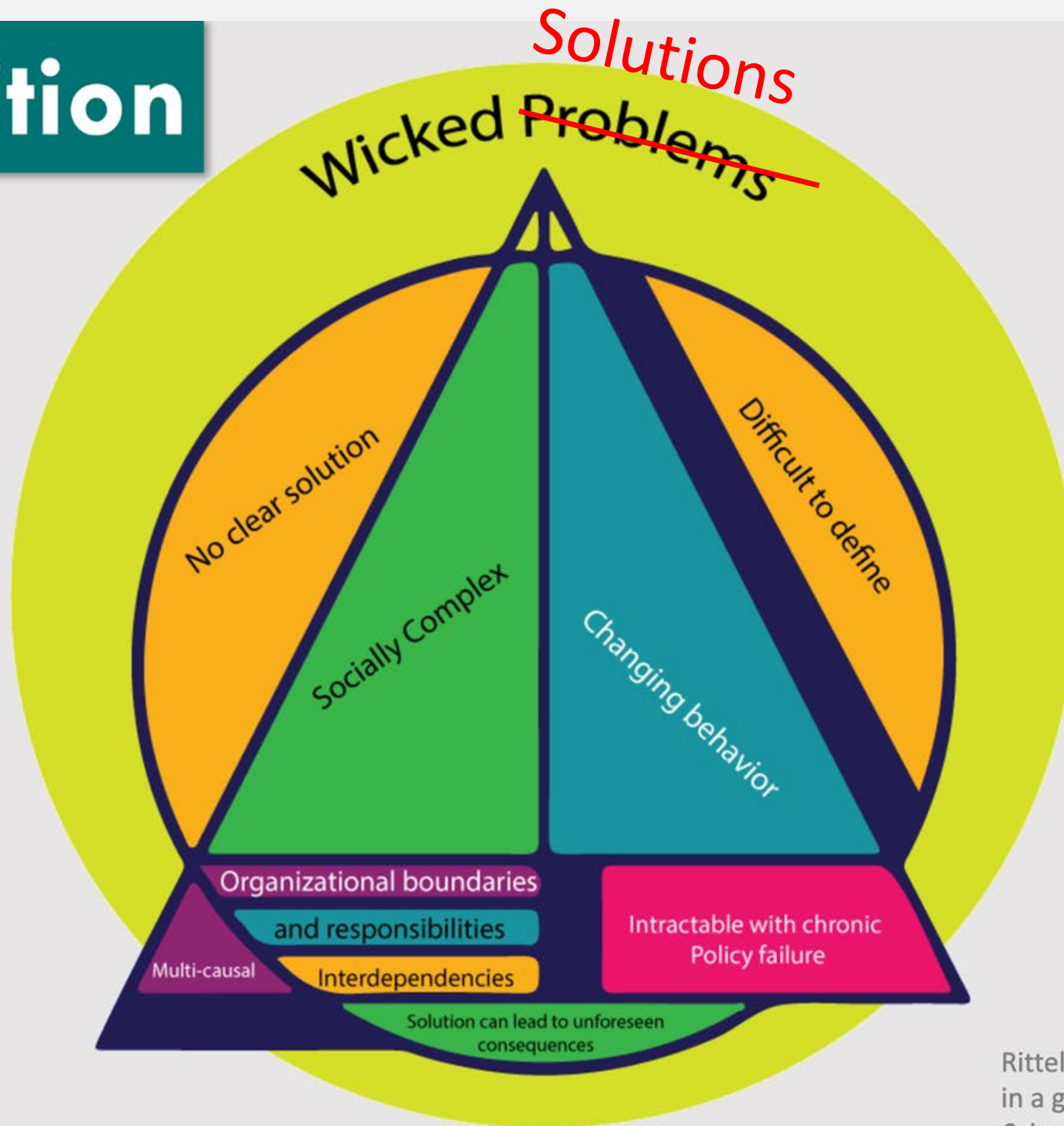
How can AI be used *by* health professions educators to enhance HPE?

Definition



Rittel, H., & Webber, M. (1973). Dilemmas in a general theory of planning. *Policy Sciences*, 4(2), 155–169.

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The New York Times

How Schools Can Survive (and Maybe Even Thrive) With A.I. This Fall



By Kevin Roose

Aug. 24, 2023

The New York Times

THE SHIFT

How Schools Can Survive (and Maybe Even Thrive) With A.I. This Fall



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Step 1: Assume all students are going

Not optional the way SoMe is



Instagram



twitter



facebook

ChatGPT



ChatGPT



Google Play

THE SHIFT

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Step 2: Eliminate the “students are c

Use Cases

Method	Old Way	AI Way
Flashcards	User-generated/scheduled	AI generated/scheduled
Virtual patients	Predetermined Branched schema	Interactive adapt-on-the-fly customizations
Look-up	Up-To-Date; Google	Customization to actual patient
Differential Diagnosis	Static lists	Interactive refinement
Patient-Learner-Knowledge	Back-room lookup	Dynamic three-way interactions

PU

Please generate a 3 column table comparing and contrasting how AI enabled studying by medical students differs from traditional methods. For example, how are flashcards used/generated differently with AI? How does using AI differ from traditional textbooks. How do virtual cases differ?

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Step 3: Focus on the STRENGTHS
and not the weaknesses.

My Clinical ChatGPT Story



That likeable senior resident that you don't (yet) trust.

UNESCO Generative AI quickstart guide
...courtesy of Andrew Maunder

PU

Pretend you are An 8-year-old child with a high fever, sore throat, and difficulty swallowing. Do not tell me the specific diagnosis. Let me ask you questions and elicit physical findings that could lead to an appropriate management plan. Ready?



Absolutely, I'll simulate the role of the 8-year-old with those symptoms.



In a child-like voice: "Hi, I don't feel good. My throat hurts a lot."

Go ahead and ask your questions.

PU

What's been going on ?



"My throat started hurting a couple of days ago. It's gotten really bad, and now it's hard for me to swallow. I've been feeling really hot too, and mommy said I have a fever. I just want to lie down all the time, and I don't feel like playing or eating."



PU

How high has the fever been?



"Mommy used a thermometer and said it was 103°F yesterday. She looked worried. I've been feeling really hot and shivery."



PU

CAn you swallow liquids?



"It hurts when I try. I tried drinking some water earlier, but it made my throat hurt more, so I didn't drink much. I feel thirsty though."





Alright. Let's simulate that.



After checking the vital signs, you find:

- **Temperature:** 103.2°F (39.6°C)
- **Heart rate:** 110 beats per minute (elevated for age, likely secondary to fever)
- **Respiratory rate:** 24 breaths per minute (within normal limits for age)
- **Blood pressure:** 100/60 mmHg (normal for age)
- **Oxygen saturation:** 98% on room air

The child appears uncomfortable, with a clear preference for not moving the neck too much and appears slightly dehydrated.

How would you like to proceed?

PU

Is there any stridor? Is the patient drooling?



"No, I don't have any noisy breathing. But I do feel like there's a lot of spit in my mouth. I don't want to swallow because it hurts too much, so I've been spitting it out sometimes."



PU

I do a physical examination and in particular I look to see if the uvula is midline, what the tonsils look like and whether there is any tonsillar swelling.



Upon examination:



- The child appears to be in mild distress, mainly from discomfort.
- **Uvula:** It is deviated to one side.
- **Tonsils:** One tonsil is significantly larger than the other and appears inflamed and reddened with some white exudate. The swollen tonsil is pushing the uvula to the opposite side.
- **Pharynx:** The rest of the throat is erythematous.
- **Neck:** There's tender and enlarged anterior cervical lymphadenopathy on the side of the enlarged tonsil.

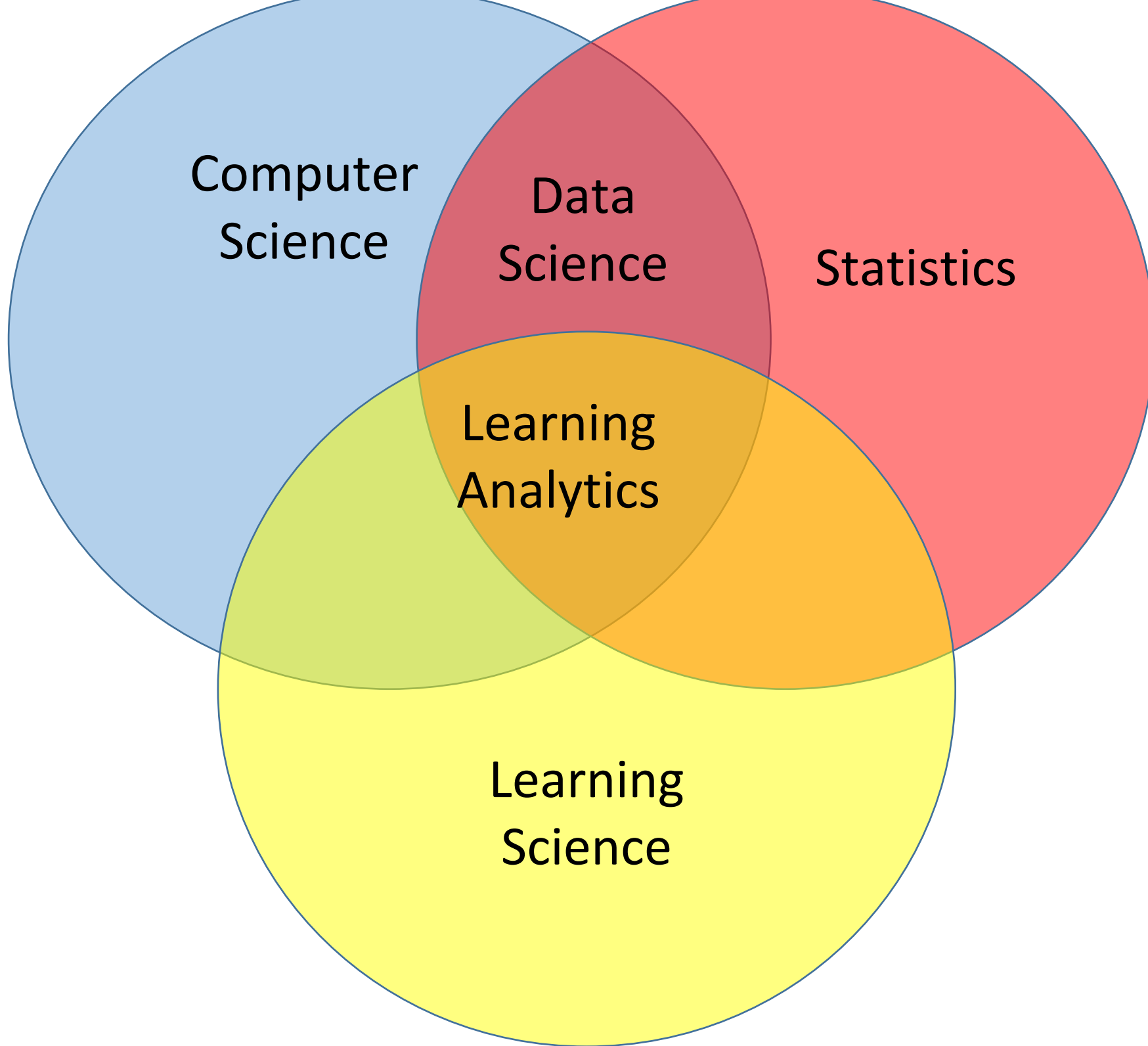
Given the findings, you can now decide on the appropriate management plan.

Schools Can Survive (and Maybe Even Thrive) With A.I. This Fall

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23

Step 4: Gain personal experience.



CHAT - GPT



Natural language
processing
+
Iteration



Generative
Pre-trained
Transformer

rompting

Clinical

- DDX – a different kind of Up-to-Date
- Discharge instructions by reading level, language, length

Recursive prompting

- “Improve the following prompt: “xx”
- “What mistakes do clinicians make when developing prompts? ...when using ChatGPT”

Output in tables

- “Generate a 3 column table comparing and contrasting Design thinking with Design-based research”

100+ ChatGPT prompts for healthcare professionals

[Dan Levitt](#)

April 22, 2023

Medical education and training

Developing educational materials for medical professionals

1. Prompt: "Create an educational resource about [medical condition] for medical professionals. Give me 3 examples. You have 250 words max for each resource."
2. Prompt: "Design a training module outline for a new treatment approach for [medical condition]. Provide 3 examples, each within 200 words."

100 Prompts for Clinicians



70 ChatGPT Prompts for Medical Students to Develop Skills

Basic Medical Knowledge

- Explain the role of the hypothalamus in the endocrine system.
- Describe the structure and function of the nephron.
- Compare the functions of the sympathetic and parasympathetic nervous systems.

Clinical Skills

- What are the key questions to ask when taking a history of present illness for chest pain?
- Describe the components of a comprehensive review of systems.
- How to elicit a complete past medical history from a patient?

0 Prompts for Students



“Give a person a fish, feed them for a day.
Teach a person to fish, feed them for their lifetime”

“Give a person a PROMPT.....”

Maimonedes

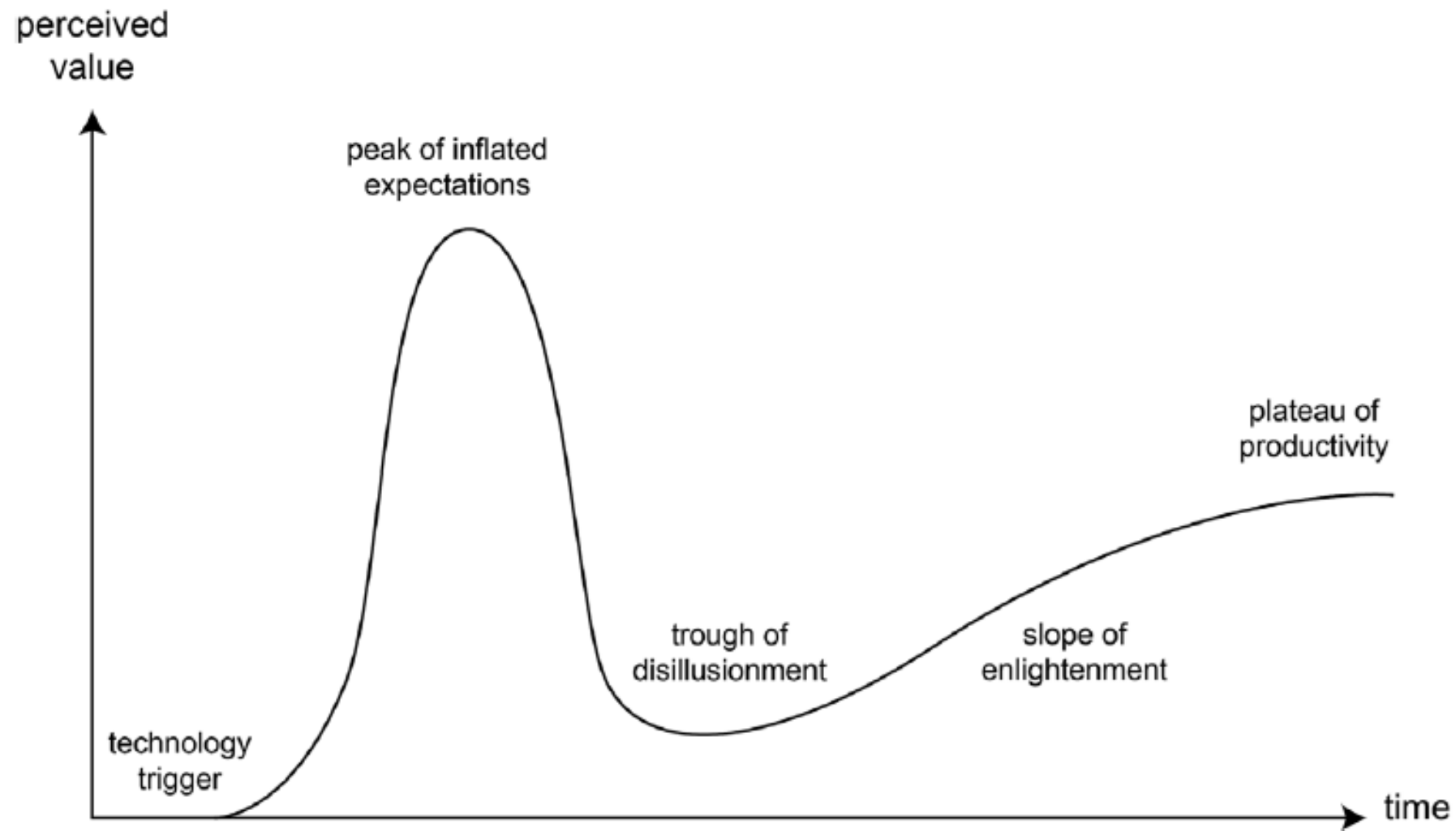
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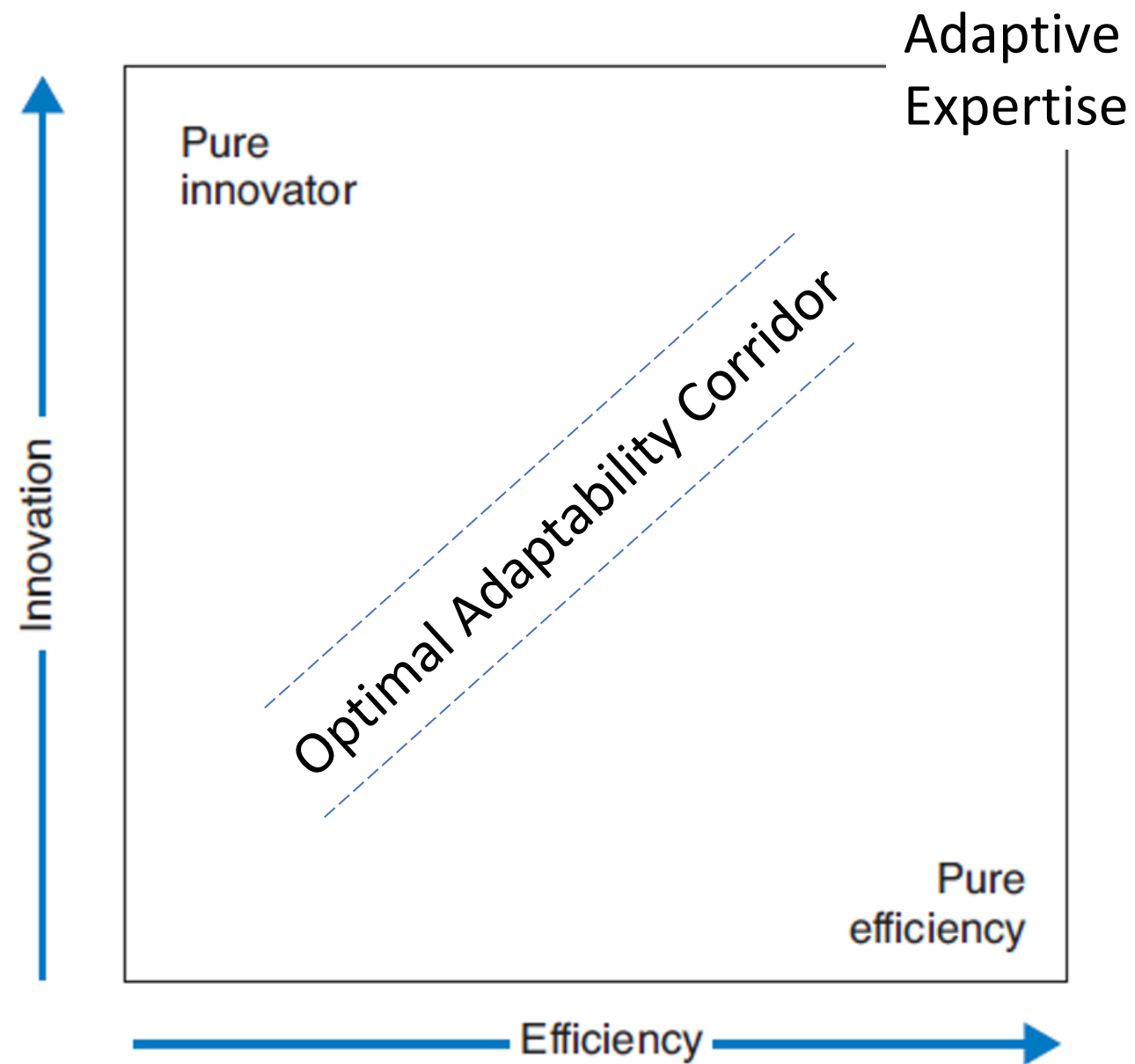
Step 5: This coming academic year
and transition.

the Hype Cycle

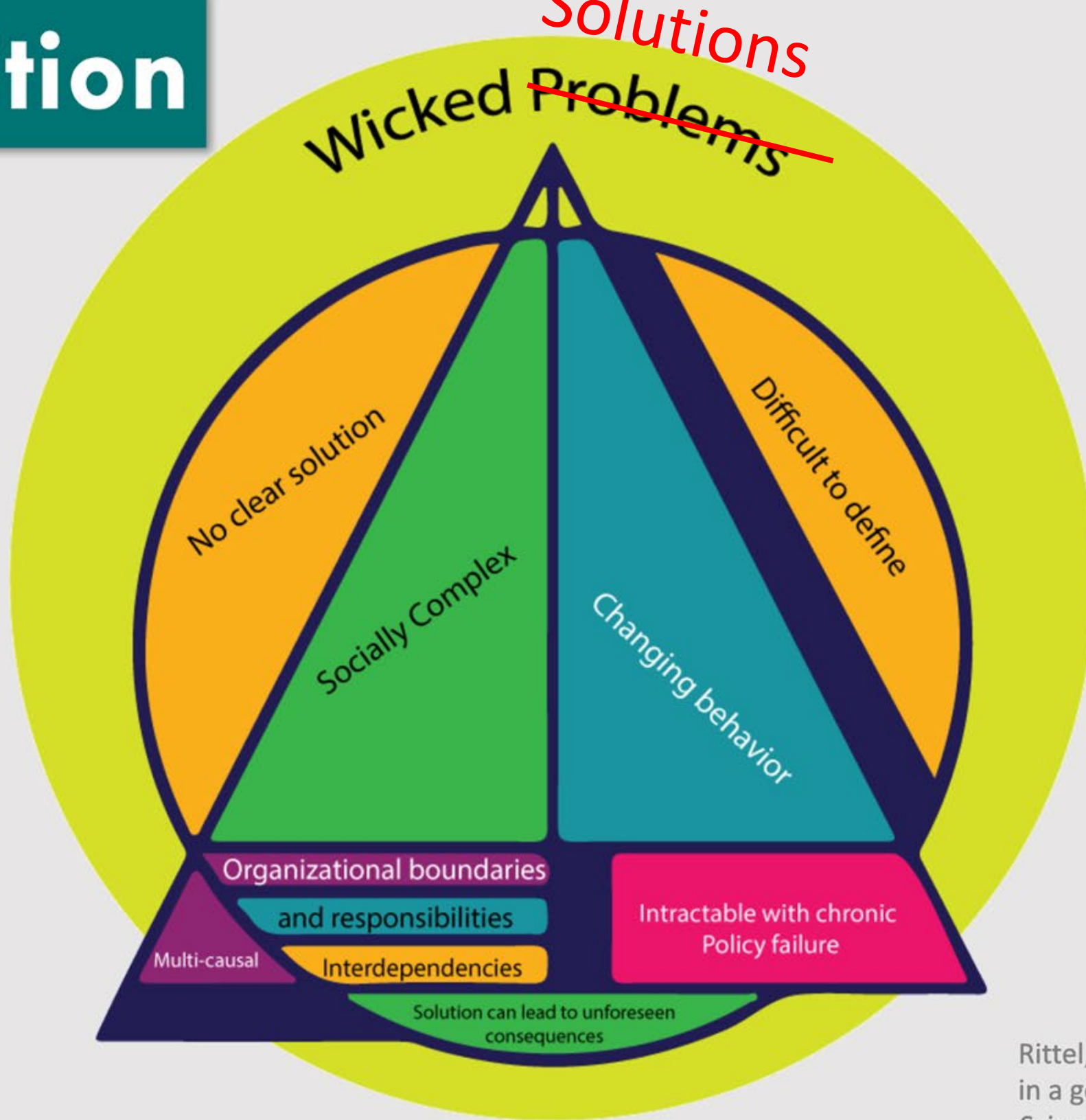


Fenn and Linden, 2003
Pusic and Ellaway,
2023

Adaptive Expertise



Definition



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ELEPHANT

