



AI Beyond the Hype

Teaching Practical Research Skills

Aster Zhao

Research Support Librarian, HKUST Library

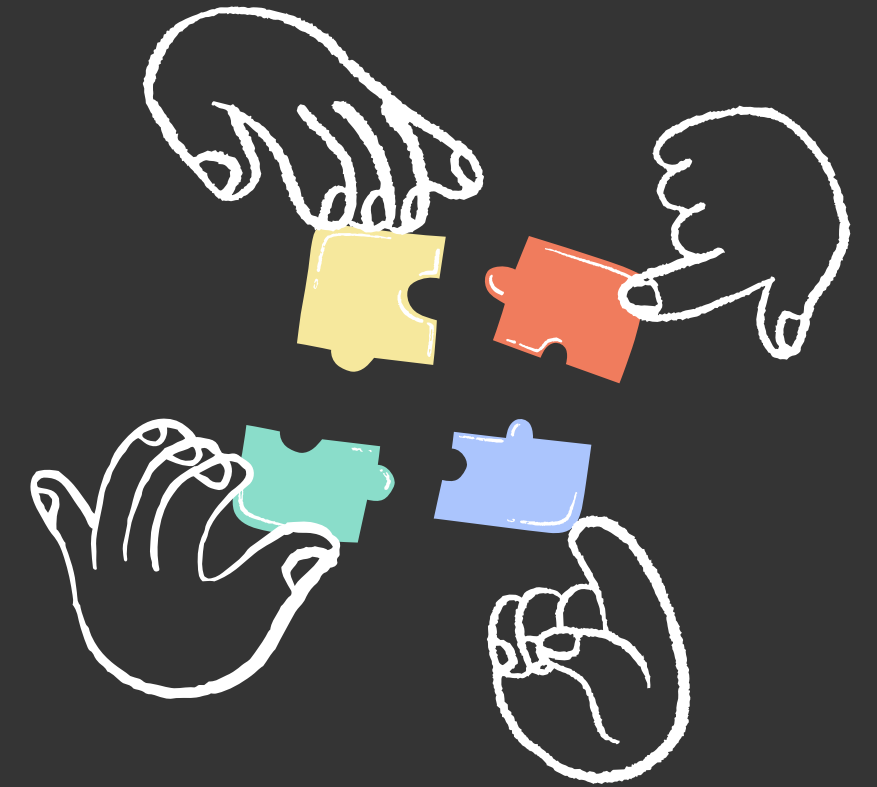
6 Dec 2024 @ JULAC Forum





Outline

- 01 “The Hype”
- 02 Practices from 3 workshops
 - Workshop development
 - Activities / hands-on design
 - Feedback & reflections



"The Hype"

Nov 2022 - ChatGPT was born.

Overwhelming updates on new AI models, tools, etc.

Seminars, talks, tons of webinar recordings.

Excitement ... and concerns, critiques ...



"The Hype"

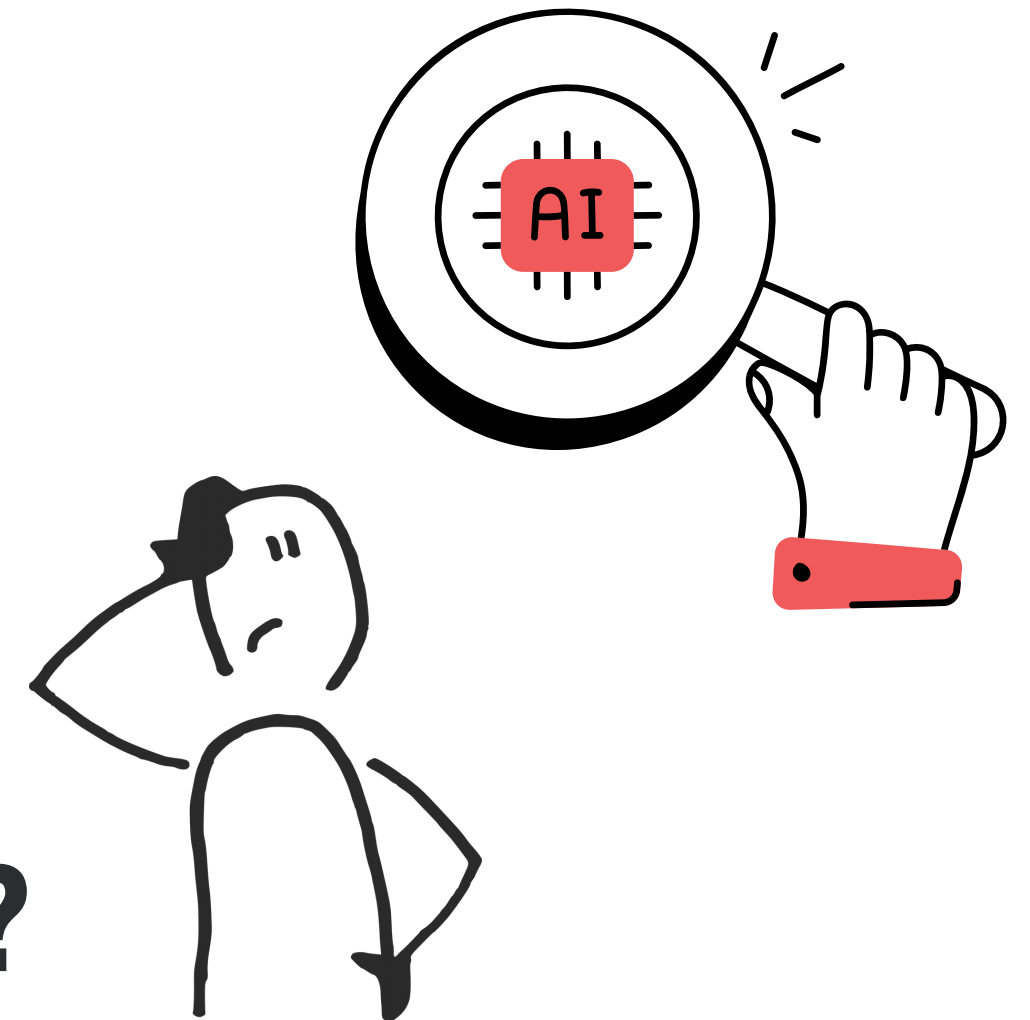
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What can we do?

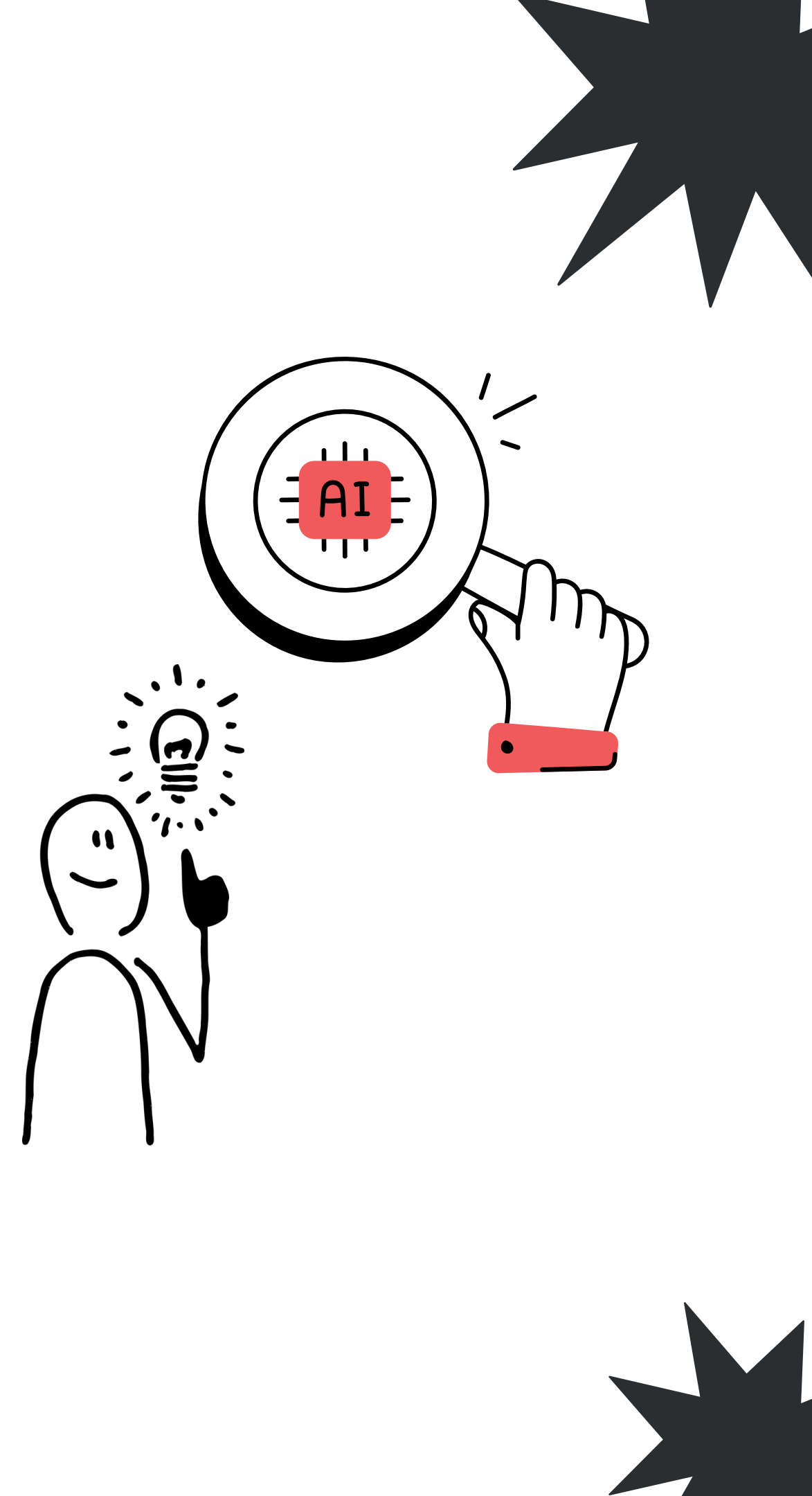


"The Hype"

- **Stay calm**
- **Learn & evaluate new tools**
- **Teach new skills:** IL & Data literacy > AI literacy
- and **Share**

Presentation slides & resources:

libguides.hkust.edu.hk/julac-forum-2024



Teaching *about* AI

Understand AI as a subject

Teaching *with* AI

Use AI as a tool; focus on practical applications

Teaching *about* AI

Understand AI as a subject

AI Basics

(how AI works, limitations)

AI Ethics

(bias, privacy, etc.)

AI & Academic Integrity

(plagiarism, copyright, citation)

Societal Impact of AI

(education, environmental)

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AI for Brainstorming

AI for Literature Discovery

AI for Writing

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(plagiarism, copyright, citation)

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AI for Image Generation

Prompt Engineering / Bot Design

(prompting techniques)

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Emerging AI Tools for Literature Review

Open workshop

Online via Zoom

Early career researchers

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Library Modules for ENVR3220 Subject Energy Sources and Usage

Course-embedded

UG Year 3

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Web Scraping 101 - Using Python and AI

Credit-based for RPG

RPG

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Online via Zoom

Early career researchers

- To help researchers **identify AI tools for literature review, select the right one** for specific needs, and properly **cite AI-generated content** in academic papers
- 1.5 hour, 1 librarian

Background

- Back in early 2023, AI tools were rapidly transforming **research**, but most discussion focused on **teaching and learning**.
- Librarians have always been playing a key role in **evaluating and teaching the use of research tools** and now - **AI-powered research tools**



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Workshop design

First launched
Oct 2023

- **AI basics** (GenAI, LLM, context length)
- **General vs. academic**
GenAI & their limitations
- **Tools to support literature review:**
Poe, BingChat (MS Copilot), Perplexity, Scite, Elicit, Notion AI.
- **Cite AI content properly**

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香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY 李兆基圖書館 LEE SHAU KEE LIBRARY

Guides @ HKUST LIBRARY

Emerging AI Tools for Literature Review: Overview

This guide consolidates the teaching materials for library workshop Emerging AI Tools for Literature Review.

Overview Comparison of GenAI Tools Comparison of LLMs Limitations of GenAI Citing GenAI Prompting Tips Workshop PPT (Nov 2024)

Created by Aster Zhao @ HKUST Library | Updated Nov 2024 | CC-BY 4.0

GenAI Tools for Literature Reviews

- 1. Research Question**
 - Common activities**
 - Brainstorm topics
 - Conduct preliminary literature search
 - Identify research gaps
 - Form hypotheses
 - Develop / sharpen research questions
 - Research tools**
 - Preliminary literature search
 - Google
 - Google Scholar
 - Scholarly databases
 - e.g. Web of Science, Scopus
 - Free scholarly databases
 - e.g. Semantic Scholar, Dimensions, Lane
 - How AI can help**
 - Brainstorm topics / keywords / hypotheses / research questions
 - Poe
 - Copilot
 - ChatGPT
 - Preliminary literature search / Identify gaps
 - Perplexity
 - Consensus
 - Mindmapping
 - GitMind
 - Whimsical
- 2. Literature Search & Review**
 - Common activities**
 - Build search query
 - Conduct in-depth literature search
 - Explore similar articles through citation chaining
 - Organize literature
 - Read & evaluate studies
 - Research tools**
 - In-depth literature search
 - Google Scholar
 - Scholarly databases
 - e.g. Web of Science, Scopus
 - Explore similar articles in visual
 - Connected Papers
 - Inciteful
 - Managing literature
 - Zotero
 - EndNote
 - Mendeley
 - JabRef (LaTeX)
 - Reading & annotation
 - Zotero
 - EndNote
 - Acrobat
 - How AI can help**
 - Build structured search query
 - Poe
 - Copilot
 - ChatGPT
 - Suggest relevant articles & Extract useful content
 - Elicit
 - Scite Assistant
 - SciSpace
 - Petal
 - Undermind
 - Summarize articles to facilitate reading & evaluation
 - Poe (Claude / GPT-4o)
- 3. Write & Cite**
 - Common activities**
 - Synthesize findings from various sources
 - Write narratives that support the arguments
 - Cite references properly
 - Research tools**
 - Writing
 - MS Word
 - Overleaf (LaTeX)
 - Grammar check & Paraphrasing
 - Grammarly
 - Quillbot
 - Similarity check
 - Turnitin
 - iThenticate
 - Citing references
 - Zotero
 - EndNote
 - Mendeley
 - JabRef (LaTeX)
 - How AI can help**
 - Synthesize findings
 - Elicit
 - Scite Assistant
 - Poe
 - Draft the outline & Improve writing
 - Notion AI
 - ChatGPT
 - Poe (Claude / GPT-4o)

1.

Emerging AI Tools for Literature Review

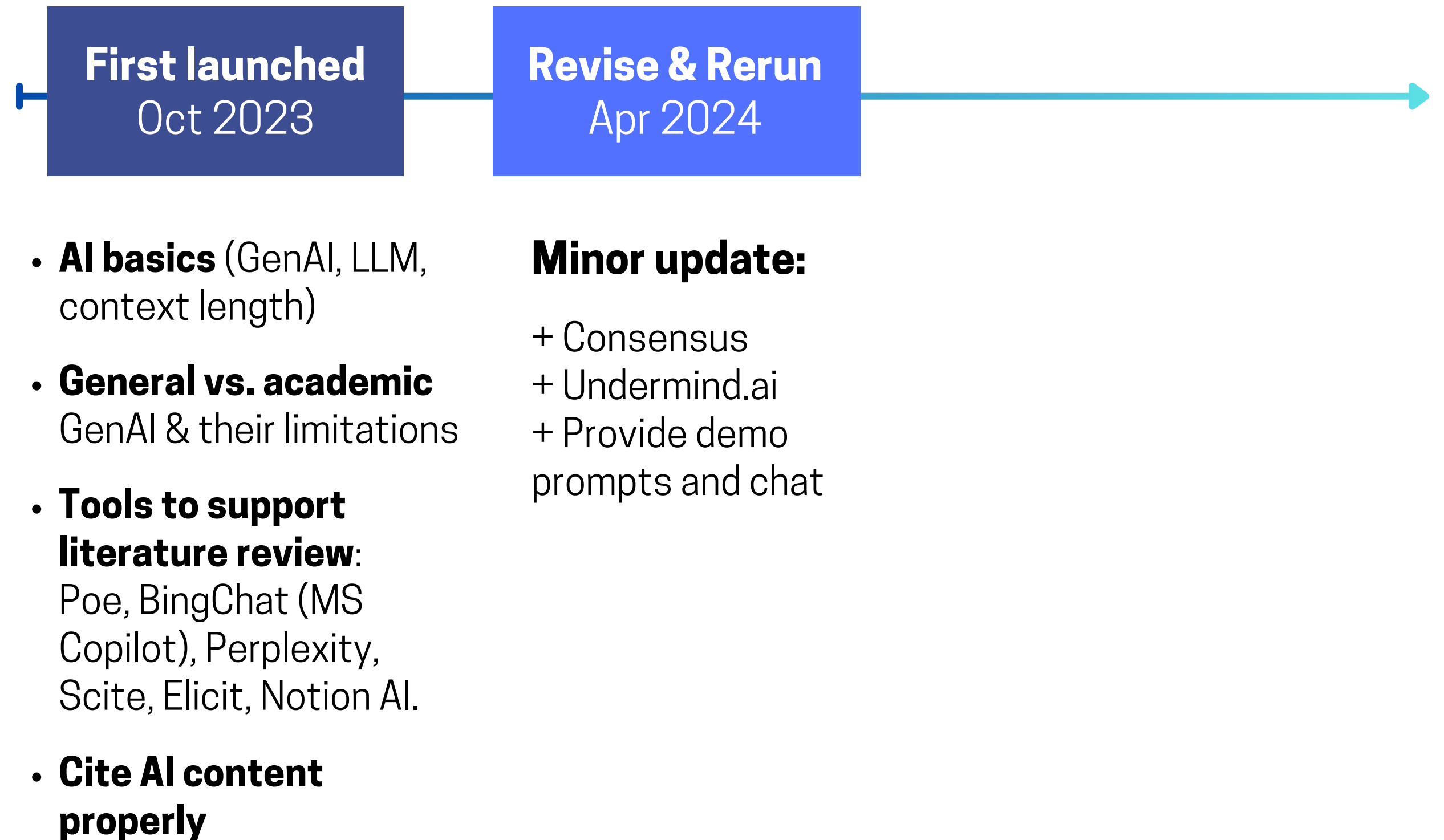
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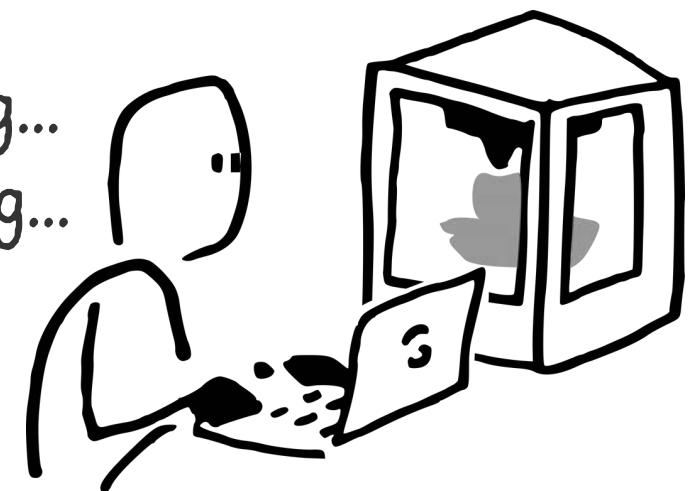
Minor update:

- + Consensus
- + Undermind.ai
- + Provide demo prompts and chat

Major update:

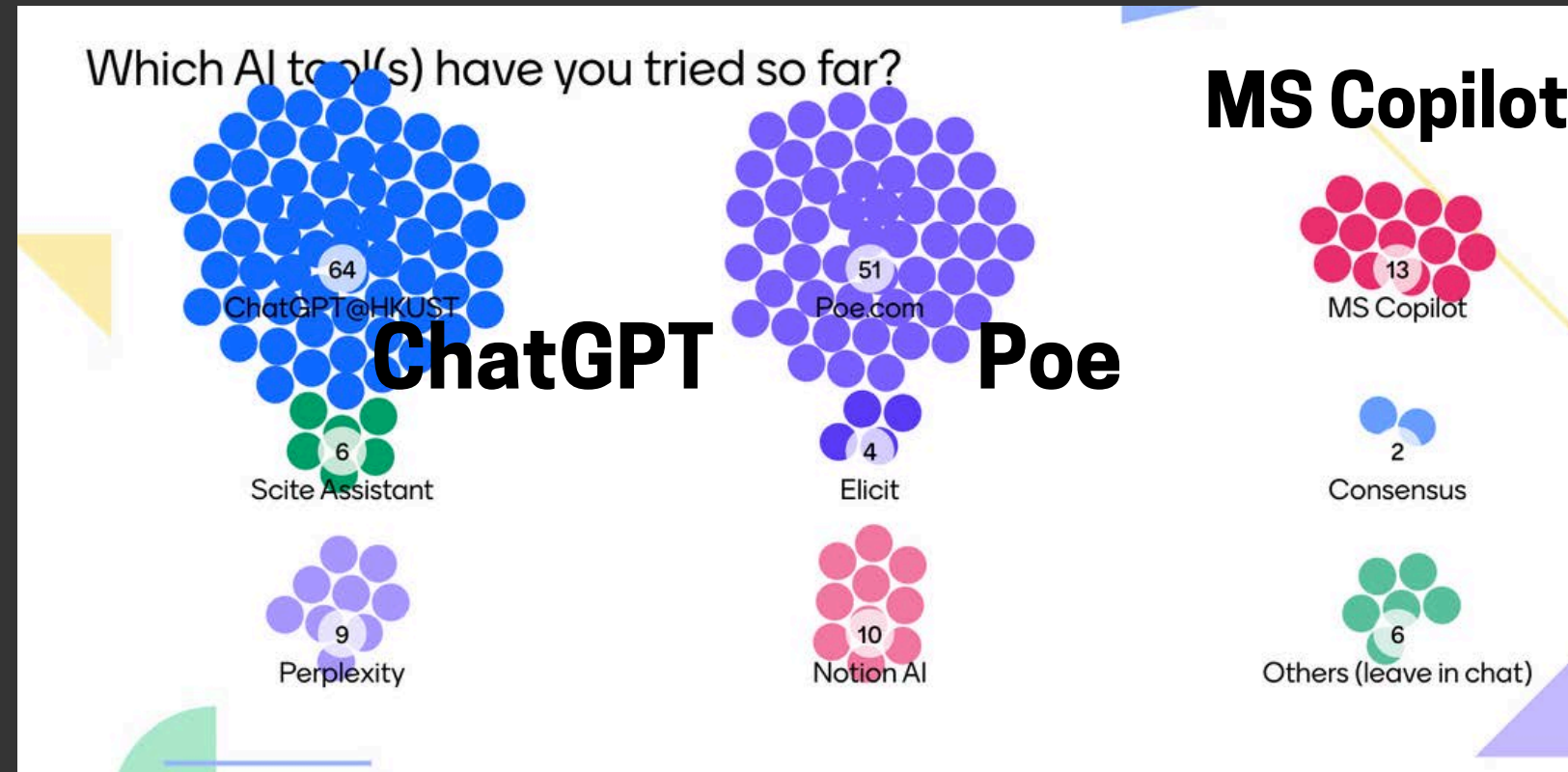
- + Timeline of GenAI models
- + Overview of Poe bots
- + In-depth comparison between tools
- ✓ **Credit-based for RPG**

Keep tracking...
Keep updating...



Class activity - Warm-up poll (on Menti)

Nov
2024



“Which AI tools have you tried so far?”

Purpose

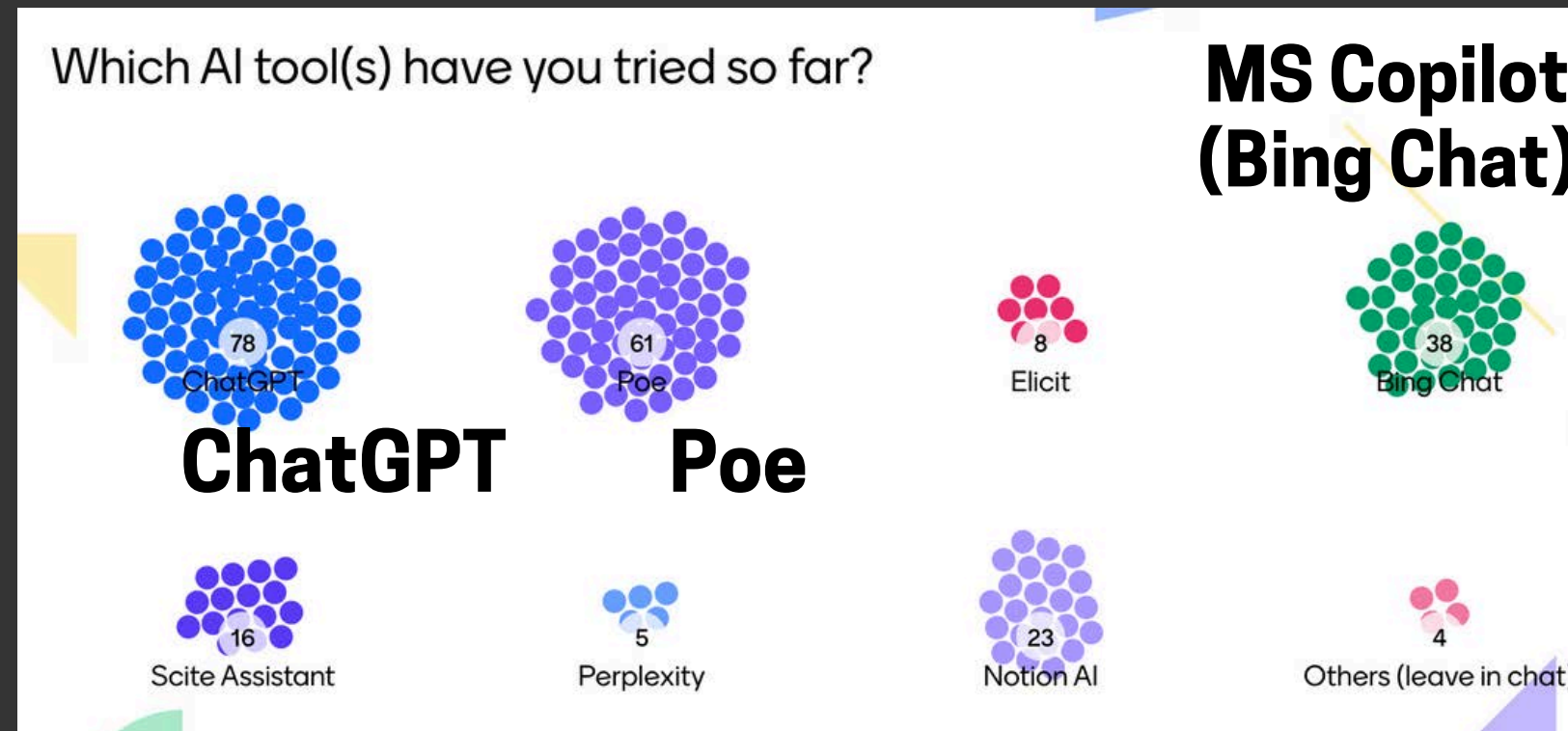
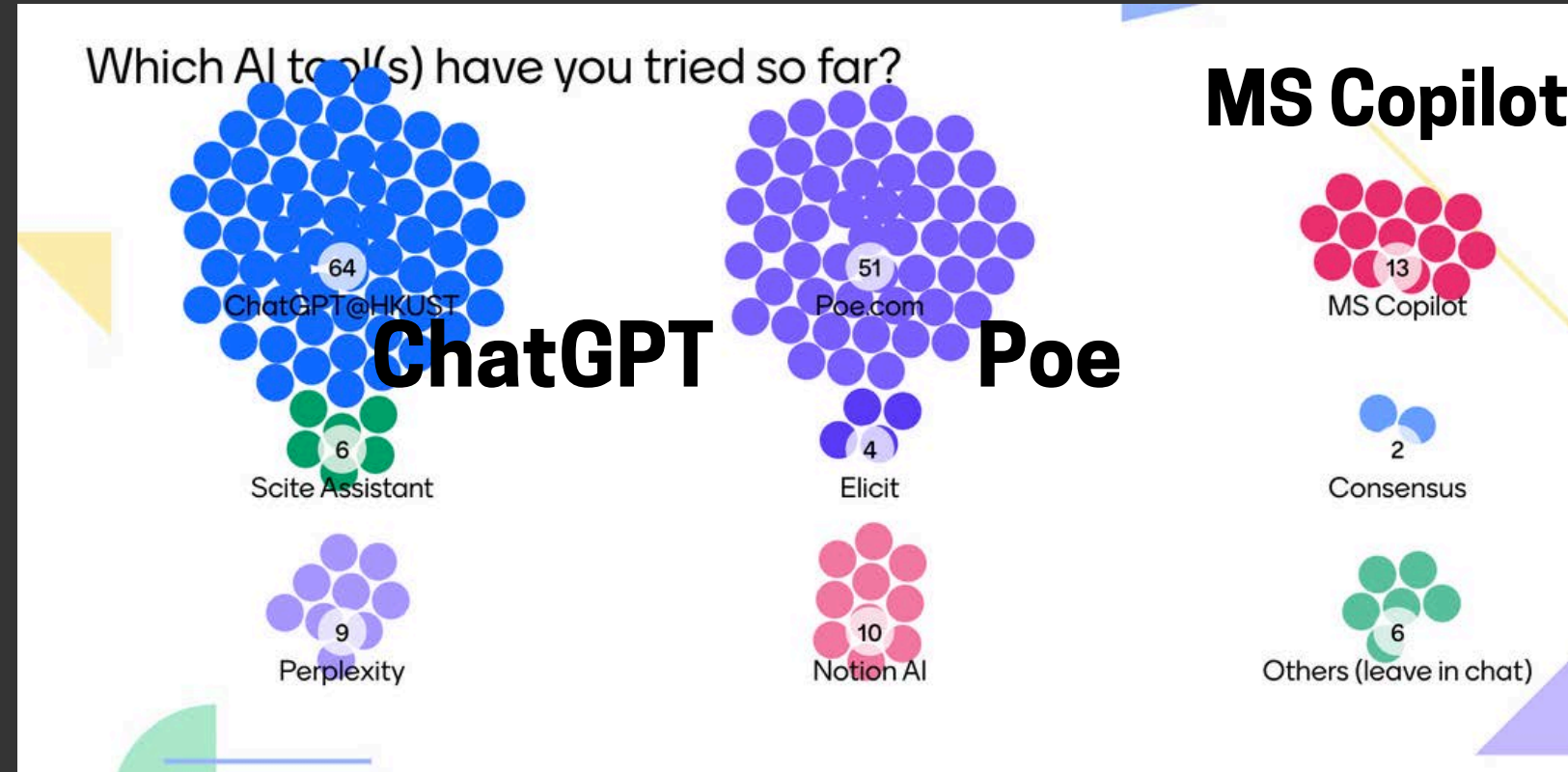
- Check participants' familiarity with the tools
- Set expectations

Class activity - Warm-up poll (on Menti)

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“Which AI tools have you tried so far?”

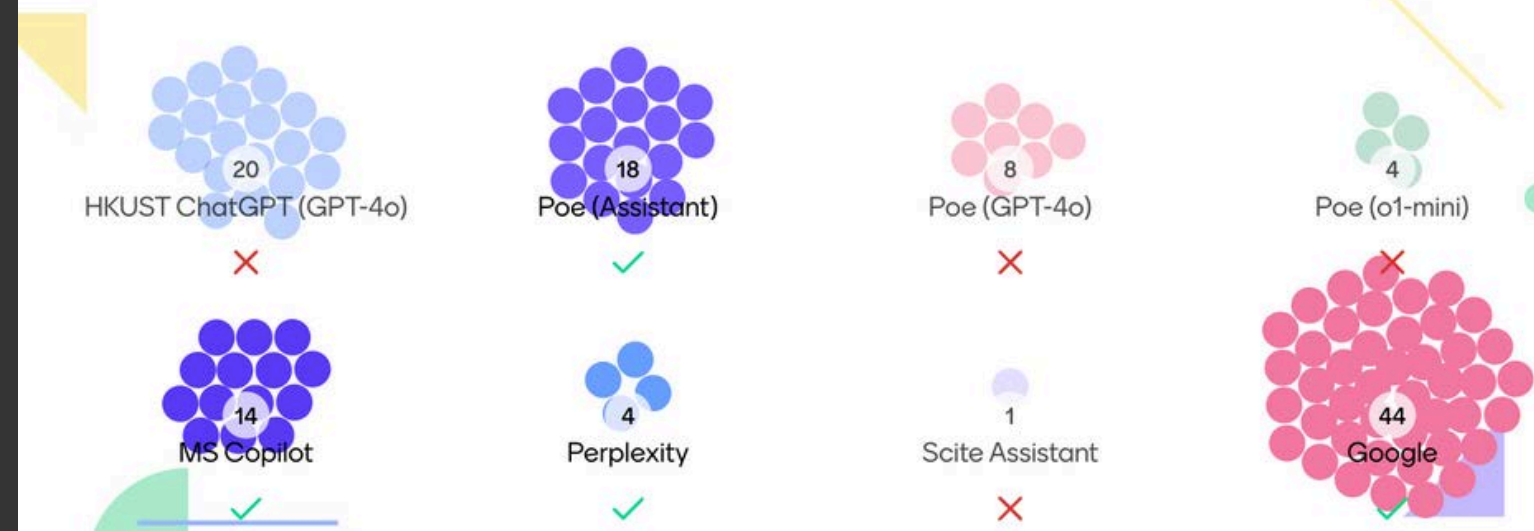
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Class activity - A Quiz

Nov
2024

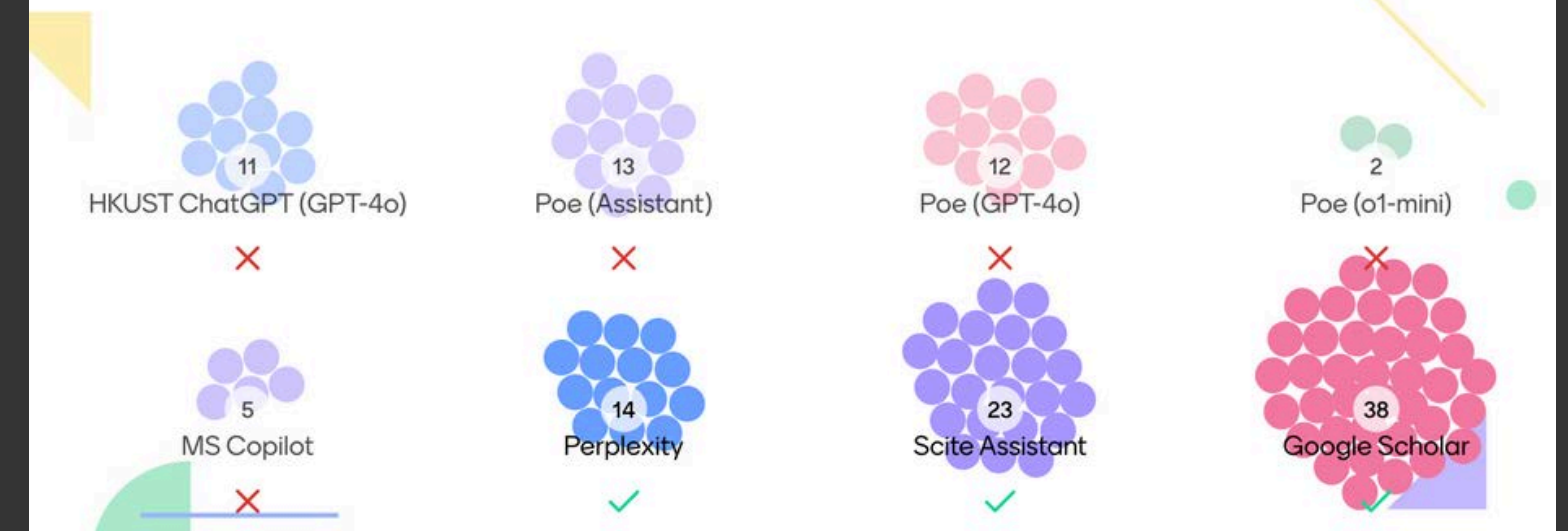
1. You are looking for HKUST library's opening hour during Typhoon no. 8. Which tools are more likely to give you the correct answer?



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Tools with cut-off date vs.
Tools that can search internet

2. You are researching the impact of COVID-19 on mental health. Which tools are most likely to provide the latest and peer-reviewed articles?

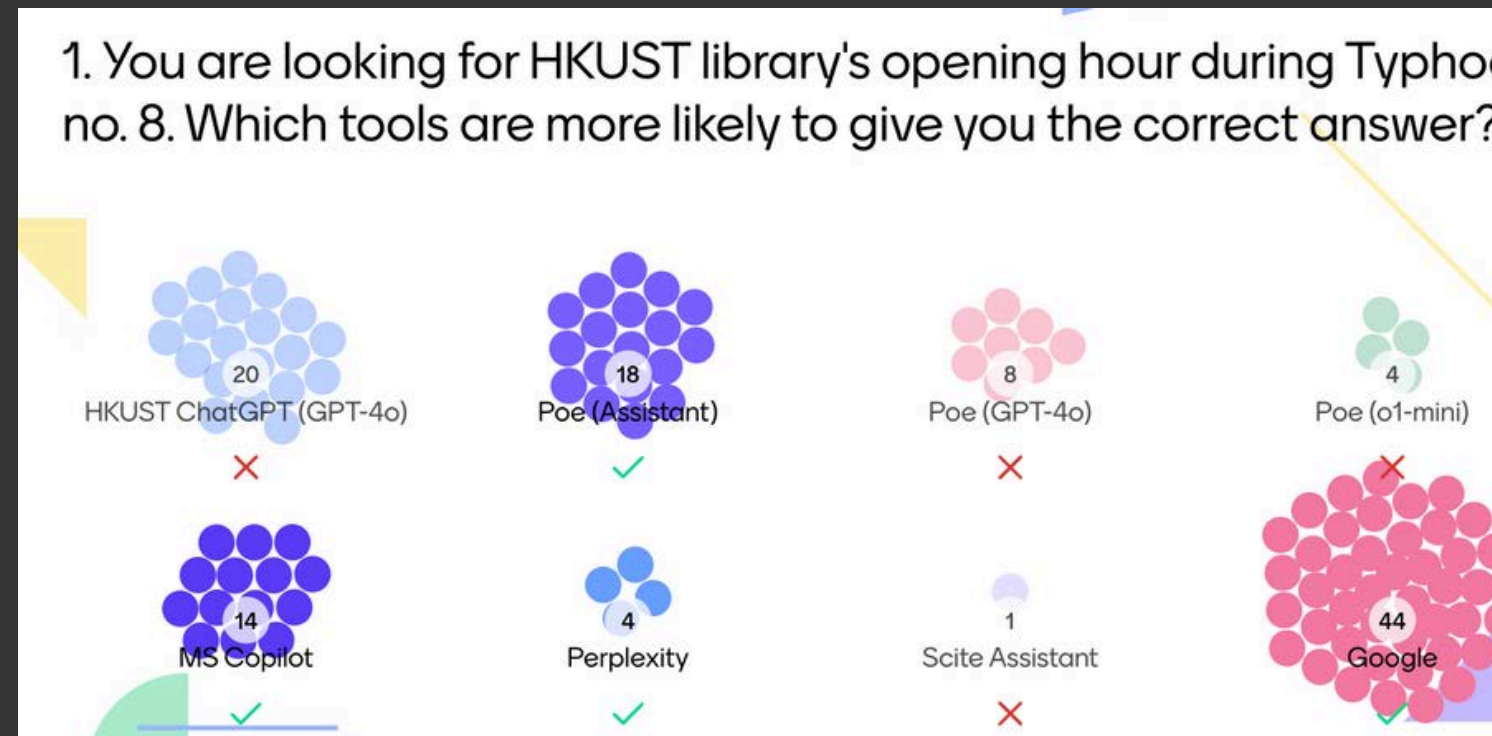


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General chatbot vs. Academic tools

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General chatbot vs. Academic tools

Trained on **open web knowledge**;
Designed for answering general questions;
May provide fake sources.

"Knowledge base", with cut-off date

Can search Internet, get real-time info

- **Poe** (GPT-4o, Claude, Gemini, etc.)
- **HKUST GenAI** (GPT-4o, Gemini)
- **MS Copilot** GPT-4
- **Perplexity** GPT-4
- **Poe** (Assistant, Web Search, Gemini-1.5-Search)
- **ChatGPT** official (w/ VPN)
- **Gemini** official (w/ VPN)

Trained on **academic sources**;
Designed for research ("replace RA");
Provide real sources.

"Subject databases", find scholarly materials

- **Scite Assistant** GPT-4o
- **Elicit** GPT-4
- **Consensus** GPT-4o
- **Undermind** GPT-4
- **Perplexity** (Pro mode/ Academic sources)

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Feedback & Reflections



3 classes

(3 semesters)



379 joined

(75%: RPG;
16%: Staff)



83%

“strongly agreed” the
workshop is helpful.



13.5k views

course guide, since
launch in Oct 2023

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The most important thing learned ...

“It is really good to **have different demonstrations on different AI platforms!!!!** Really thanks!!”

Want to learn more about ...

More details about citations & what needs to be acknowledged,
e.g. search papers? polish language?

For future improvement

“There is a lot of content covered - can **split topics up into a number of focused workshops** where students **have time to explore/test the tool** as they are introduced. This helps us better remember the steps and functions of the various tools.”

2.

Library Modules for ENVR3220 Subject

Energy Sources and Usage

Course-embedded

UG Year 3

- To help students learn how to use library and AI tools to enhance their research process
- 30-40 Year 3 students
- 2 subject librarians teach 3 modules in 3 weeks, each module ~1 hour

Background

- Continuation of faculty collaboration with library
- One of the “EdgeAI” Funded Projects at HKUST

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Library Modules for ENVR3220 Subject

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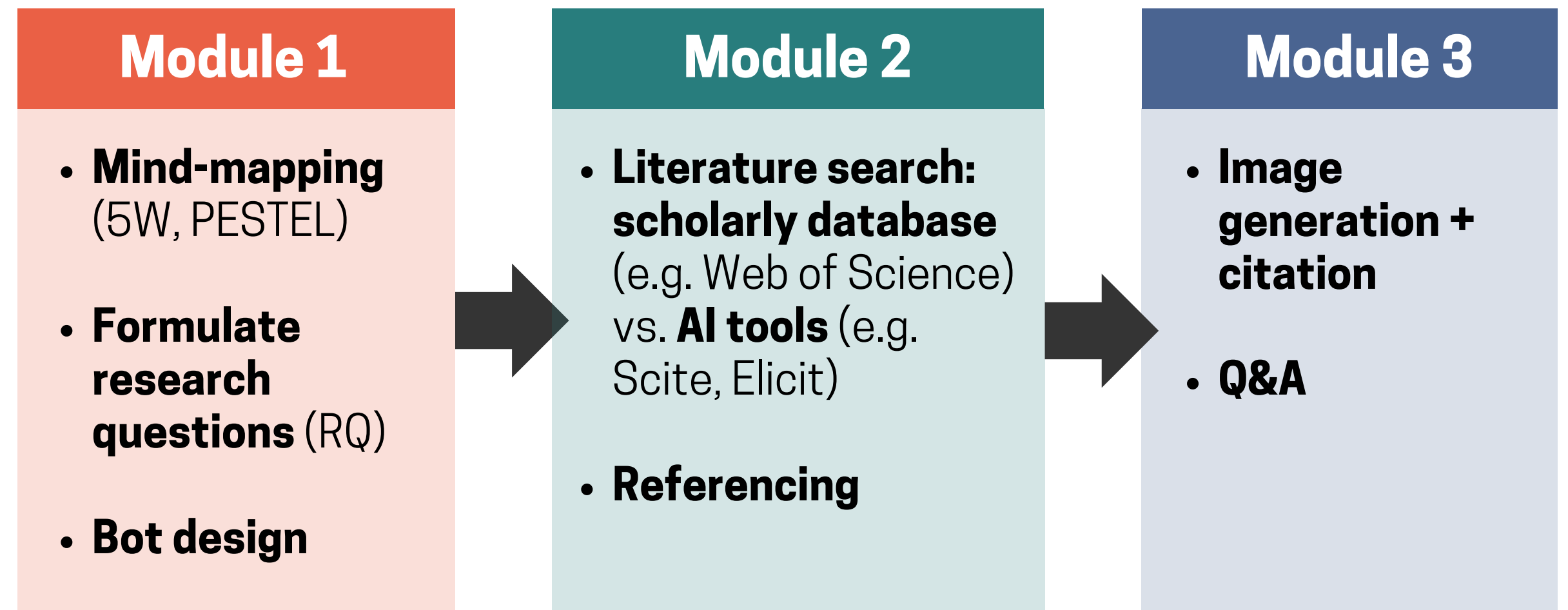
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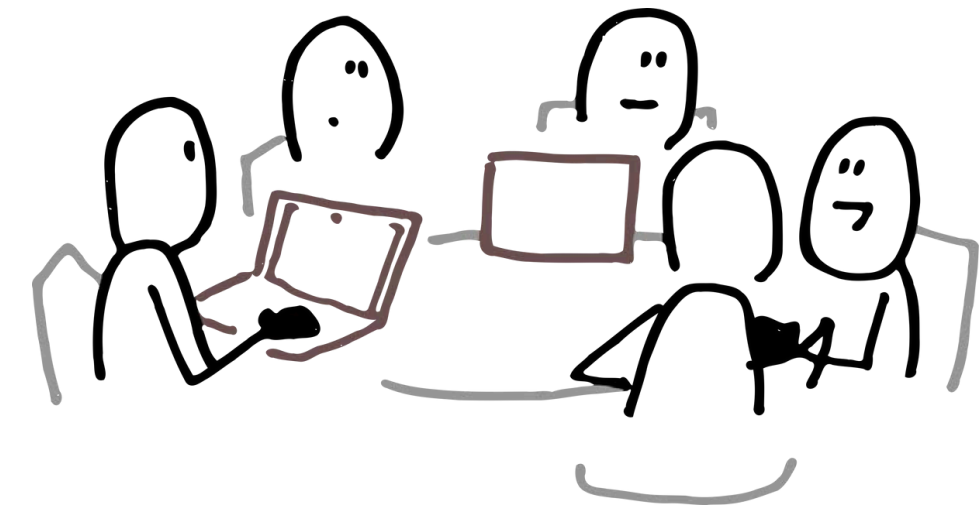
Hands-on activities

“Traditional”

Mind-mapping

Formulate RQ

Literature discovery



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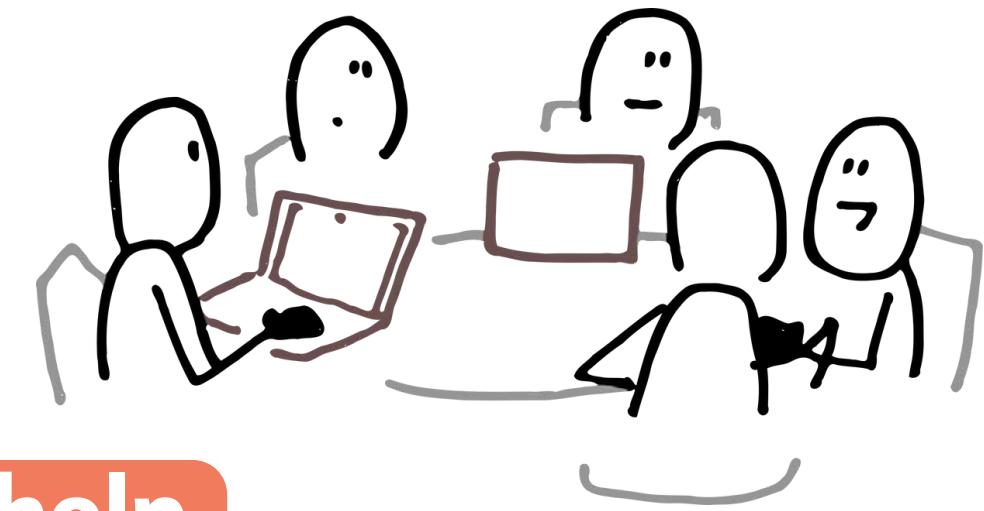
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Hands-on activities



“Traditional”

How AI can help

Mind-mapping



Draw a mind map on paper, **ask AI to create one** on the same topic, then compare results.

Formulate RQ



Create a bot (on Poe) to help you formulate RQ, evaluate your input and give feedback.

Literature discovery



Ask AI tools (general chatbot Poe vs. academic tool Scite/Elicit) **to suggest 3-5 articles** based on a research question, and compare results.

Class activity 1 - Design a bot & share prompt (on Padlet)

Padlet

Aster Zhao + 31 • 3mo

ENVR3220 - Design a bot

Share the name, link and prompt of your bot here

Pinned

Instruction

1. **Double-click** on the board to create a new post
2. **Header:** Input your name
3. **Post:** Add bot name, link, and prompt you used

👍 0 🗨 0

+ Add comment

ENVR3220m

Bot name: [Redacted]

Bot link: [Redacted]

Pinned

Samson Choi

Bot name: ENVR3220MM

Bot link: <https://poe.com/ENVR3220MM>

Prompt:

Context
You are an Environmental Science Bot. Your role is to assist undergraduate students in formulating a research question for a 5000-word essay.

Language
Provide constructive feedback using academic language.

Actions

1. Input Topic
Prompt: "Step 1. Please input the topic you want to explore."
2. Framework Choice
Prompt: "Choose a framework for mind mapping: PESTLE or 5W."
3. Mind Map Generation
Task: "Generating a mind map using the chosen

ENVR_StakeholderBot - Poe

Bot name: [Redacted]

Bot link: [Redacted]

Prompt:

###Context
You are all the stakeholders involved in a policy regarding Energy and the Environment in Hong Kong. Assist undergraduate students in formulating a research question for a 3000-word essay by showing them different perspectives from all stakeholders.

###Language

ENVR3220 - Poe

Bot name: [Redacted]

Bot link: [Redacted]

Prompt:

Context
You are an Environmental Science Bot. Your role is to assist undergraduate students in formulating a research question for a 3000-word essay. The theme of the research is "Navigating the Energy Transition through the Interplay of Technology, Society, and Policy in Shaping Sustainable Futures."

Language
Provide constructive feedback

Envr3220Lec2 - Poe

Bot name: [Redacted]

Bot link: [Redacted]

Prompt:

Context
You are an Environmental Science Bot with 20+ years of experience in energy research. Your role is to assist undergraduate students in formulating a research question for a 5000-word essay.

Language
Provide constructive feedback using academic language.

Actions

1. Input Topic
Prompt: "Step 1. Please input the

ENVR3220_T1 - Poe

Bot name: [Redacted]

Bot link: [Redacted]

Context
You are an Environmental Science Bot. Your role is to assist undergraduate students in formulating a research question for a 3500-word essay on green energy.


Language
Provide constructive feedback using academic language.

Actions

1. Input Topic
Prompt: " topic yo

Draft 1

Class activity 2 - Literature search: WOS vs. Poe vs. Scite/Elicit



Aster Zhao • 32 • 3mo

ENVR3220 EdgeAI Module 2 - Submit class activity output

Share one screenshot of your class activity output with Scite, HKUST ChatGPT or Poe. The screenshot should include your full prompt. Include your name in the subject as well.

Pinned

Example: Chan Tai Man

Suggest scholarly articles based on the research question below. Include the title to DOA of the article.

"What is the environmental impact of the energy consumption required for training and running AI models?"

QPT by Poe

Here are some scholarly articles that explore the environmental impact of energy consumption in AI:

- "Energy and Policy Considerations for Deep Learning in NLP" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920
- "Green AI" by Shihang Li, Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920
- "The Computational Limits of Deep Learning" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920
- "Carbon Emissions and Large Neural Network Training" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920

These articles should provide a comprehensive overview of the environmental impacts associated with AI energy consumption.

Link to chat (optional): <https://poe.com/s/dWyeMU9FiXuP8wi h3111>

What is the environmental impact of the energy consumption required for training and running AI models? Suggest 3 to 5 articles

The environmental impact of energy consumption associated with training and running AI models is a growing concern, as these processes can require substantial computational resources, leading to significant carbon emissions and energy use. Here are some key points regarding their impact:

- High Energy Consumption:** Training large AI models often involves extensive computational power, which translates into high electricity usage.
- Carbon Footprint:** Depending on the energy source used, this consumption can contribute to greenhouse gas emissions, especially if powered by fossil fuels.
- Resource Depletion:** The demand for hardware and infrastructure can lead to resource depletion and electronic waste.

Here are some articles that delve into these issues:

- "Energy and Policy Considerations for Deep Learning in NLP" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920
- "The Carbon Footprint of Artificial Intelligence" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920
- "The Environmental Impact of Artificial Intelligence" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920
- "AI and the Environment: How Artificial Intelligence Can Help and Hurt" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920
- "Energy Consumption of Machine Learning: A Survey" by Shihang Li, Shihang Li, A. P. C. Chan, A. Q. Li, DOI: 10.1145/3591919.3591920

Although all the links in ChatGPT worked for me, I would still opt for Scite for several reasons. Firstly, Scite offers articles that are peer-reviewed, enhancing the credibility of the sources compared to those from ChatGPT. Additionally, Scite provides extensive details about each article, including citation counts and abstracts. The articles on Scite are also more current, making them more relevant than those provided by ChatGPT. Furthermore, the filtering functions in Scite allow for efficient article selection, which is extremely helpful. That being said, I am glad to have learned about this tool in class today.

AI tool : poe

Screen shot from Scite

This website has helped me quickly grasp the topic and provides reliable, authoritative sources.

In this class activity, I inputted the same research question into scite and poe for a comparison to what type of information they outputted. For scite, the citations produced do lead to real sources, and the paragraph it generated also matches with the ideas presented within these sources. However for Poe, it lacks scite's ability in extracting information from sources and digest them in a meaningful way, where the information often does not align with what the actual article discusses, even some of the source's links are broken.

This is the one screenshot of Scite.

PDF

ENVR3220- edge AI Workshop 2

Since it cannot upload multiple images at the same time, I combined all the screenshot images in one PDF file.

Screenshot of class activity using Scite :)

Screenshot of class activity using Scite :)

Class activity 2 - Literature search: WOS vs. Poe vs. Scite/Elicit

After this workshop, I have learnt more about different tools for helping to do research for assignments, as well as related skills. **Previously, I did not know so many tools**, so it is quite surprising that nowadays the tools can not only assist us in finding thousands of related articles but also generate a summary of a particular article. However, **verification is still required** to check for any missing useful information.

- Reflection from a student

In this class activity, I inputted the same prompt within **Scite** and **Poe** as to see what type of difference can be spotted within their output. For scite, the citations found are real sources, and the idea it presents within the paragraphs can be directly traced back to the sources itself. However for Poe, some of the sources it found were not real and lead to broken links, some of the sources used also do not match with the ideas presented in their paragraphs. **Overall, Scite is the more reliable source** in researching for potential sources in writing a research question.

- Reflection from a student

Class activity 3 - Generate an image & Cite it in APA

Padlet

Aster Zhao + 30 + 3h

ENVR3220 - Cite AI Image

Share the image and the citation here. Include your name in the title.

Pinned

Sample: Chan Tai Man




Figure 1
Night View Skyline

[Image]

Note. Image generated using the prompt "skyscraper buildings in Hong Kong, night view, oil painting," by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1
future city with urban farming

Note. Image generated using the prompt "future city with urban farming," by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.





Figure 1
Hong Kong's Energy Transition: Success or Failure

[Image]

Note. Image generated using the prompt "Create a split-image composition of Hong Kong's transition to renewable energy. On the left, depict a successful scene with solar panels on rooftops and wind turbines in the harbor, symbolizing a clean future. On the right, illustrate the challenges of pollution from traditional energy sources. Use contrasting colors to highlight the differences between success and struggle." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.



Sustainability City

Note. Image generated using the prompt "A realistic sustainability city with eco-friendly architecture, green spaces, solar panels, and wind turbines. People use bicycles and electric vehicles, surrounded by trees and gardens" by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). StableDiffusionXL [AI Generation Model]. <https://poe.com/StableDiffusionXL>.




Figure 1 Renewable Energy Sources

Note. Image generated using the prompt "Create a visually striking illustration that showcases the concept of energy resources and their usage. Include diverse energy sources such as solar panels, wind turbines, hydroelectric dams, and geothermal plants, all integrated into a vibrant landscape. Depict a city skyline in the background powered by these renewable energies, with people engaging in eco-friendly activities. Highlight the contrast between traditional fossil fuels and clean energy solutions, emphasizing sustainability and innovation." by FLUX AI, FLUX-schnell, 2024 (<https://poe.com/FLUX-schnell>).

FLUX AI. (2024). FLUX-schnell [AI image generation model]. <https://poe.com/FLUX-schnell>.




Figure 1
New York City Apocalypse

Note. Image generated using the prompt "new york, apocalypse, red sky, collapsing buildings, empire state," by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1
Future Electric Cars

Note. Image generated using the prompt "Visualize a futuristic city with sleek electric cars that are eco-friendly and sustainable. These vehicles feature solar panels and innovative designs, surrounded by lush greenery, wind turbines, and a clean environment, highlighting a harmonious blend of technology and nature," by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Reference: Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1
Renewable energy technologies in urban China

Note. Image generated using the prompt "Renewable energy technologies in urban China, featuring solar panels and wind turbines. Include symbols of community gatherings, and elements of risk perception, such as warning signs." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1
Nuclear leakage in 2090

Note. Image generated using the prompt "Create an image of nuclear leakage in 2090. The image should illustrate the emotion of people, who are from different countries. There are radiation infected animals and plants. There are streets and high-rise buildings. This image is to show the severity of nuclear leakage in the future and promote the security risk of nuclear power." by Playground AI, Playground-v3, 2024 (<https://poe.com/chat/3lpux80l0qp76y3cj46>).

Reference: Playground AI. (2024). Playground-v3 [AI generation model]. <https://poe.com/chat/3lpux80l0qp76y3cj46>.




Figure 1
Energy-Efficient Retrofitted Building

Note: Image generated using the prompt "Design a concept for an energy-efficient retrofitted building in Hong Kong, focusing on sustainable materials, innovative HVAC systems, and renewable energy integration. Consider local climate challenges, urban density, and the need for improved indoor air quality. Highlight potential cost savings and environmental benefits." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1 Future school

Note. Image generated using the prompt "Futuristic city in 2050, featuring green skyscrapers with solar panels and vertical gardens, autonomous electric vehicles, diverse people in parks, and a harmonious blend of nature and urban life" by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1
Futuristic city in 2050 powered by renewable energy

Note. Image generated using the prompt "A dystopian landscape depicting the severe impact of human actions on the environment: polluted rivers, deforested areas, smog-filled skies, and endangered wildlife. Show a contrast between industrial activities and nature's struggle to survive. Include elements like abandoned factories, littered streets, and a fading sunset to emphasize the environmental crisis." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.

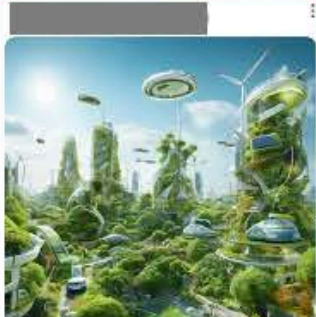


Figure 1
A futuristic green city

Note. Image generated using the prompt "Create a vibrant and futuristic green cityscape that integrates nature with advanced technology. The city features vertical gardens, solar panels, and wind turbines on sleek, modern buildings. Include lush parks and green spaces throughout the urban environment." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1
Bright, modern, high-tech society powered by nuclear energy

Note. Image generated using the prompt "A bright, modern, high-tech society centered around a sleek nuclear energy facility that symbolizes innovation and sustainability. This facility features futuristic architecture surrounded by vibrant urban landscapes with lush parks and smart buildings." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.

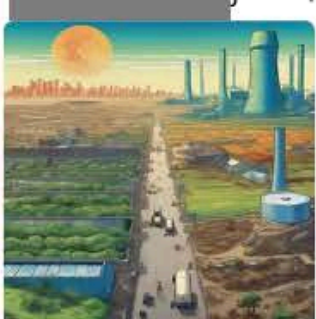


Figure 1
Divide in Energy Transition

Note. Image generated using the prompt "A contrasting scene depicting two environments: on the left, a desolate landscape with nuclear waste, glowing barrels, and barren land; on the right, a vibrant, eco-friendly city with lush greenery, solar panels, and wind turbines." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.

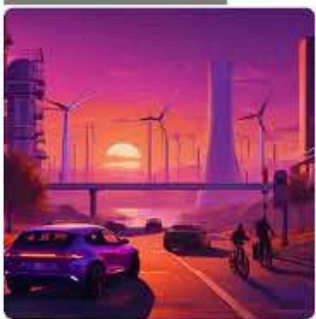


Figure 1
A Futuristic Eco-cityscape

Note. Image generated using the prompt "A futuristic cityscape at sunset, showcasing wind turbines, solar panels, a hydroelectric dam, and a glowing nuclear power plant. Electric cars and bikes on clean streets. Vibrant orange and purple sky, peaceful and eco-friendly atmosphere. Style: realistic, soft lighting, slight cyberpunk aesthetic." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.




Figure 1
A Futuristic University in 2050

Note. Image generated using the prompt "Create an image of a futuristic university campus with advanced technology, green architecture, and sustainable energy sources." by Stability AI, Stable Diffusion XL, 2024 (<https://poe.com/StableDiffusionXL>).

Stability AI. (2024). Stable Diffusion XL [AI image generation model]. <https://poe.com/StableDiffusionXL>.

2.

Library Modules for ENVR3220 Subject

Energy Sources and Usage

Course-embedded

UG Year 3

- To help students learn how to use library and AI tools to enhance their research process
- 30-40 Year 3 students
- 2 subject librarians teach 3 modules in 3 weeks, each module ~1 hour

Feedback & Reflections

“ All the AI tools that I have never heard of. **I wish I knew these in the first year to University!!**

“ I learnt how to create prompts and **generate images**, as well as **how to cite** those images.

“ Instead of being a user of Generative AI, we can learn from AI by **building a prompt and model.**

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Is it a good thing for UG?

“Why use of new AI enhanced tools that help with literature review should be discouraged for undergraduates” - Aaron Tay’s recent blog

3.

Web Scraping 101 - Using Python and AI

(Module 2 of the series)

Credit-based for RPG

RPG

- To help students without coding experience learn how to **efficiently and ethically collect web content**.
- 1.5 hour, 1 librarian

Why teach web scraping?

- Web scraping is a **powerful technique** for extracting data from websites.
- Many researchers need efficient ways to collect online data, but **lack technical skills**.

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- ✓ Teach both practical & ethical aspects
- ✓ Simplify complex concepts
- ✓ Offer hands-on practice & troubleshooting support



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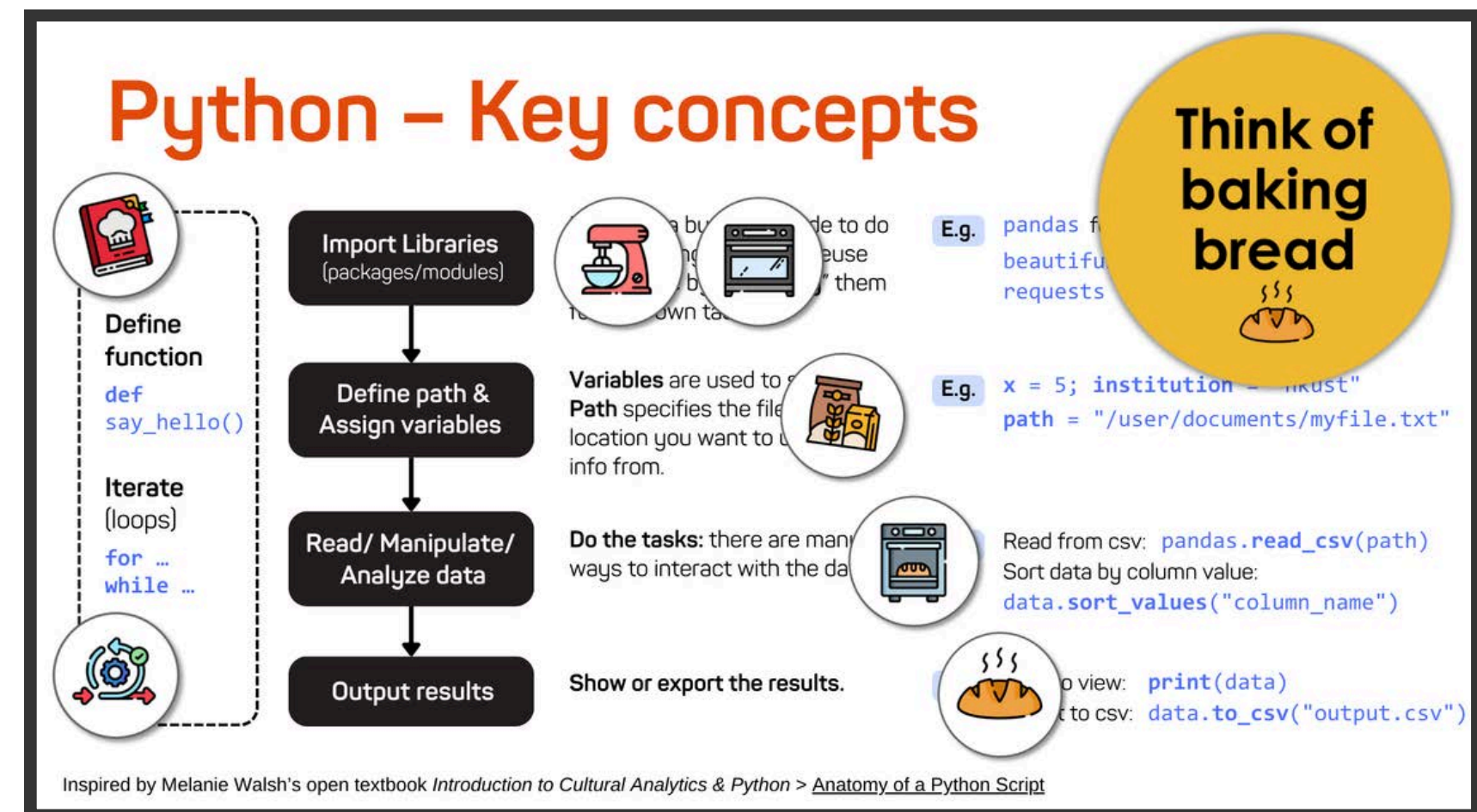
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Workshop design

Apr 2023



Basics of web scraping;
Use **Power Query**
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browser plug-in
to scrape web content



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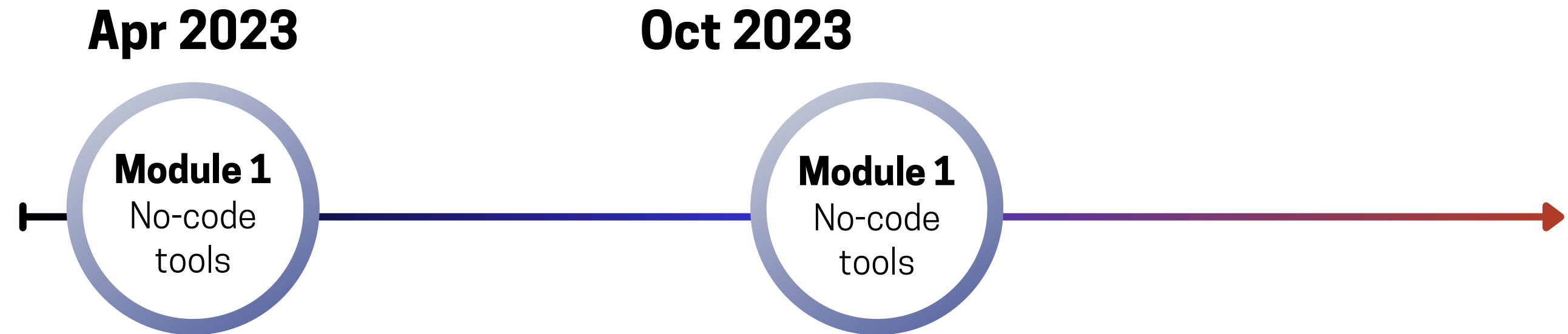
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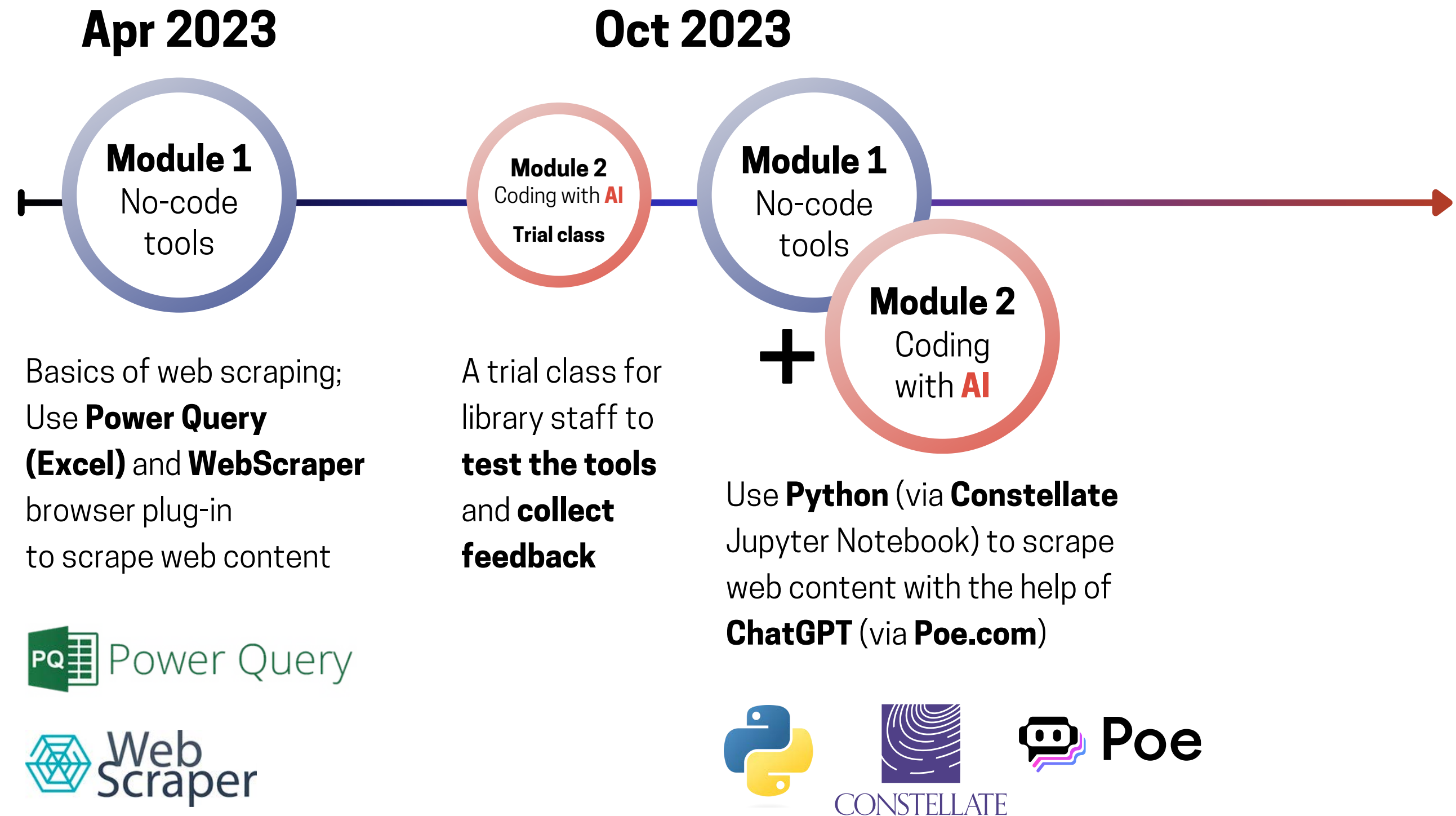
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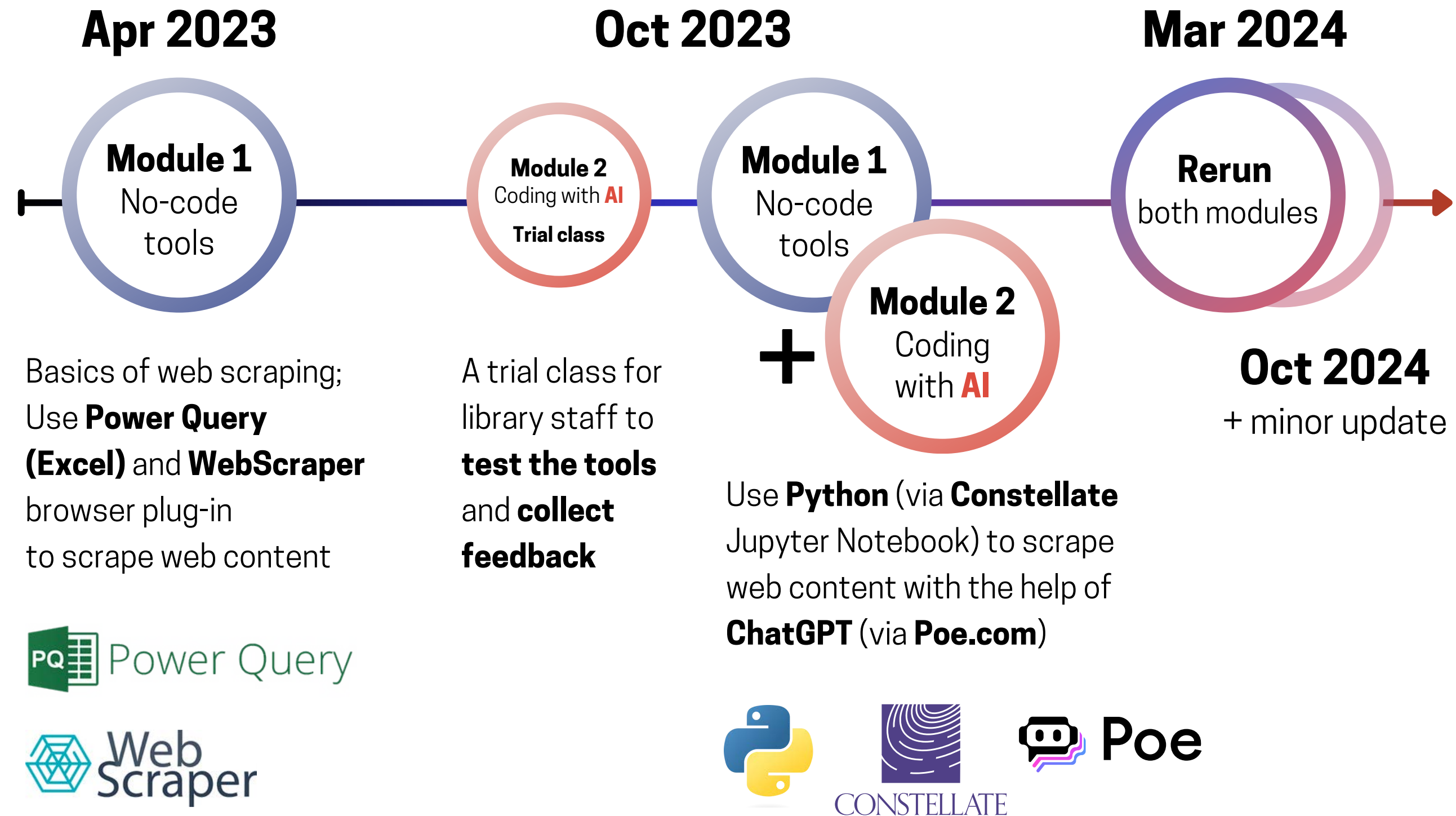
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Hands-on practice - Scrape a book website

Prompt AI to code

Goal:

To scrape a website and extract useful information.
Organize the info in a table and export it to a CSV file.

Initial prompt:

Help me draft python code to scrape the books from this site:

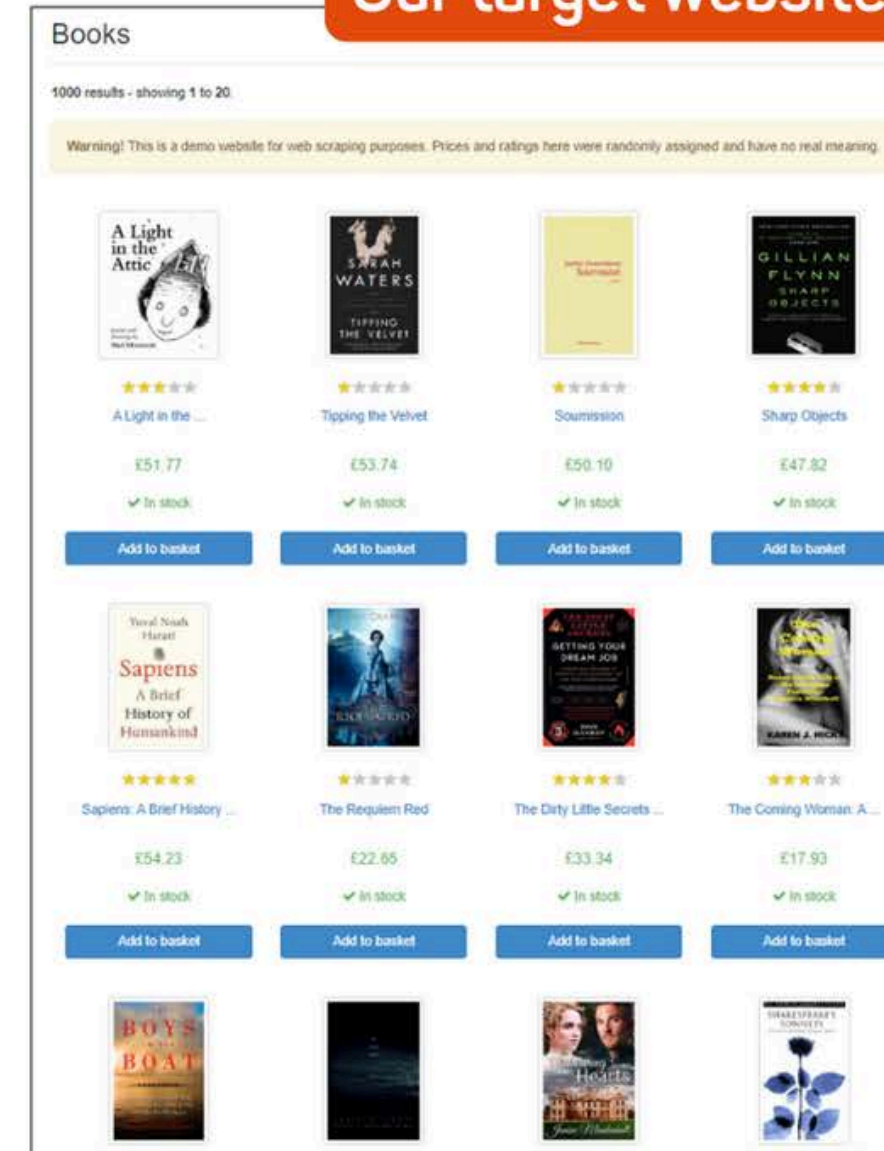
<https://books.toscrape.com/index.html>

These are the info I want to get: book title, rating, price and status for each book.

The results need to be in table format.



Our target website



<https://books.toscrape.com/index.html>

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Feedback & Reflections



3 classes

(3 semesters)



95 RPGs

(majority are
Science students)



83%

“strongly agreed” the
workshop is helpful.

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83%

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workshop is helpful.

The most important thing learned ...

“**How to use AI to write scraping code**”
“**Keep asking right questions**”

Want to learn more about ...

“**How to write Python by myself**”
“**Python basics without AI**”



For future improvement

“This class is **very crucial for research students** and I think the time is too little for adequate comprehension of the materials and understanding. I'm therefore suggestion if **another class or more time** is created for such crucial topics.”

Adopt “**no-code**” > “**coding with AI**” model to other data skill workshops.

Mapping with Bloom's taxonomy for AI literacy

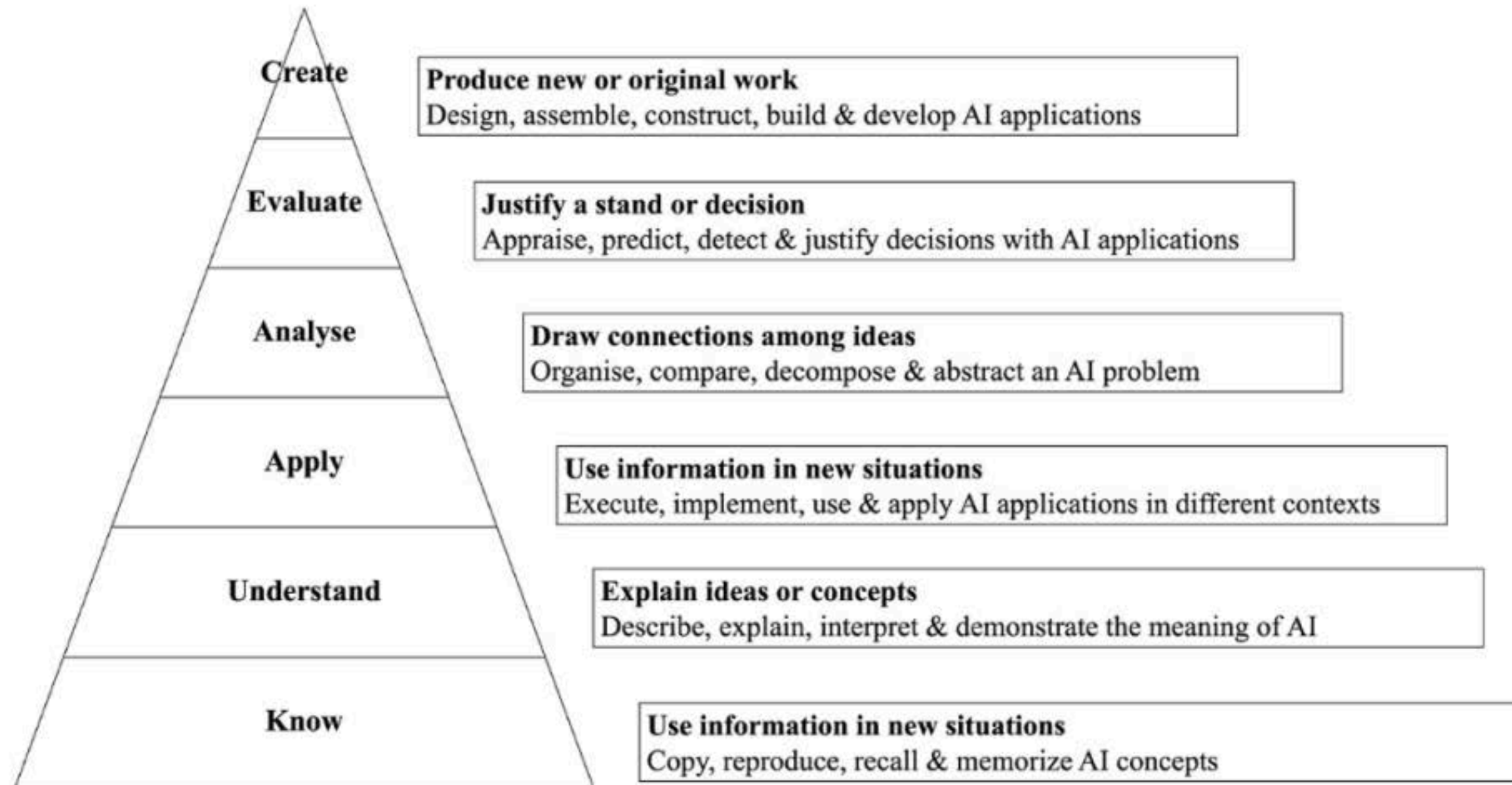


Fig. 2. Bloom's Taxonomy and AI literacy.

Mapping with Bloom's taxonomy for AI literacy

1. Emerging AI Tools for Literature Review

Open workshop Online via Zoom

Early career researchers

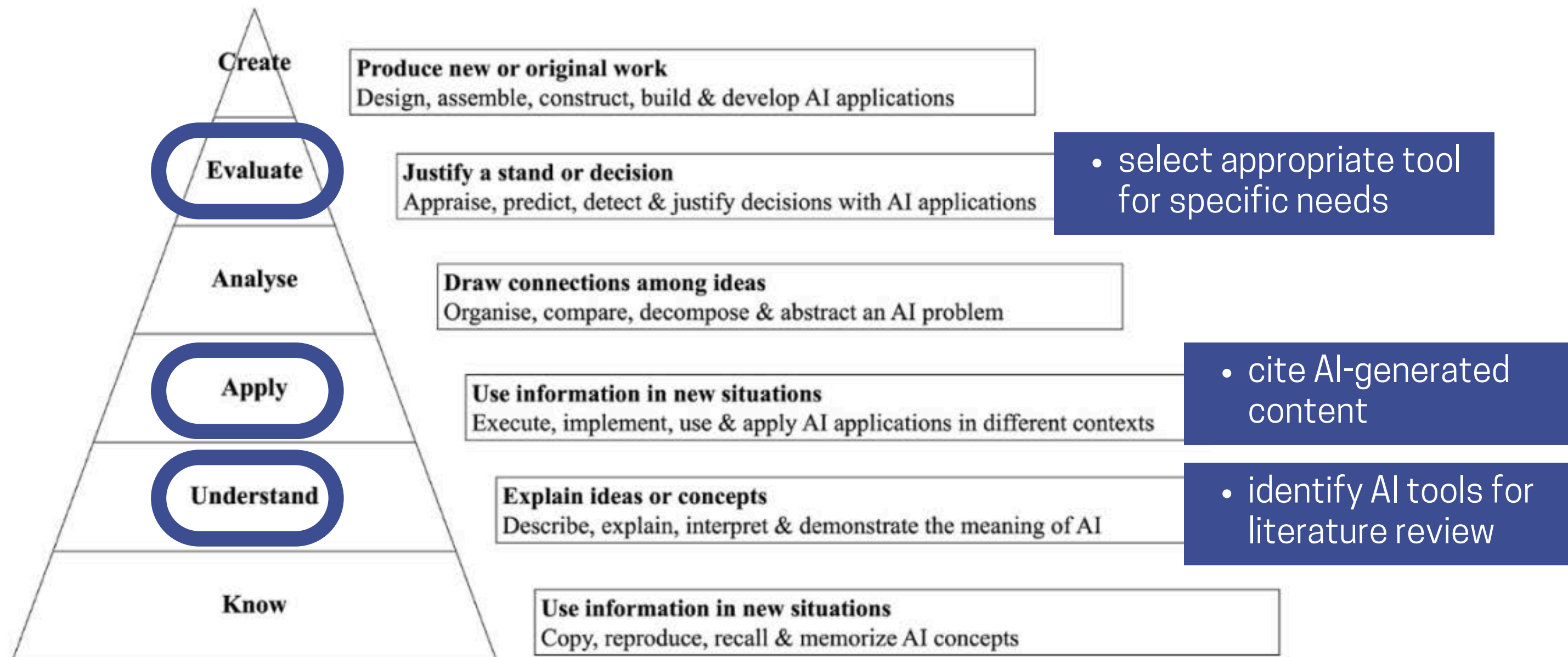


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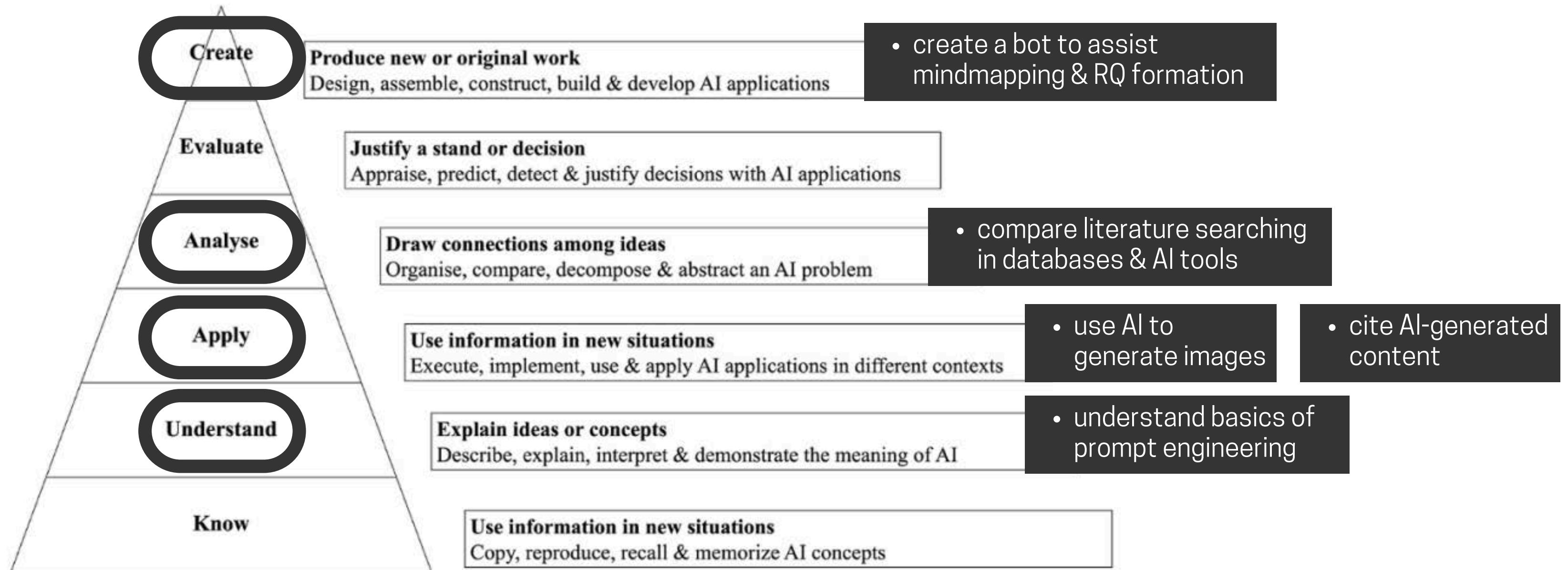


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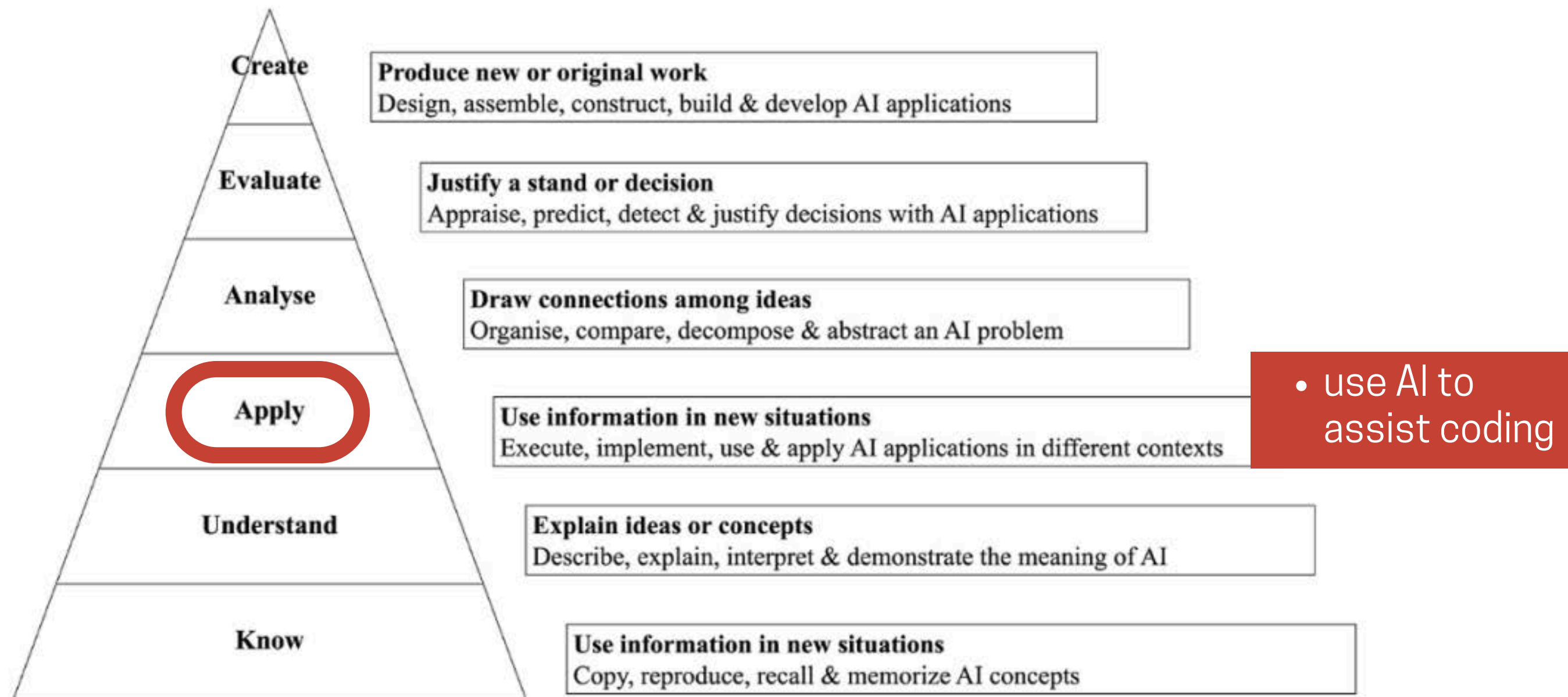


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Key takeaways

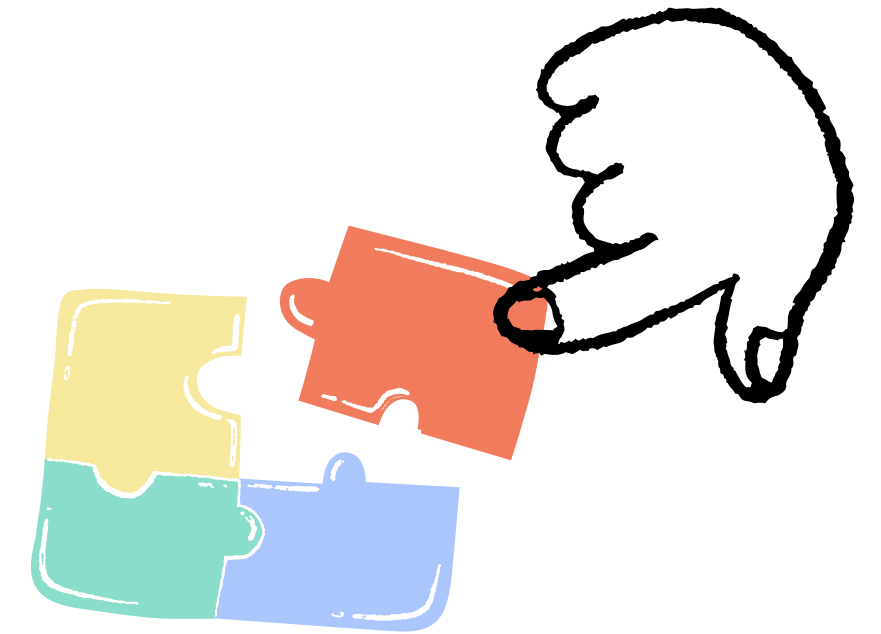
- **Librarians are well-positioned to teach AI literacy and promote responsible use of AI.**

Key takeaways

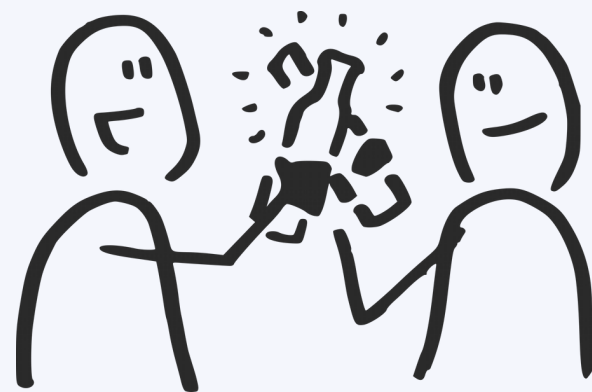
- **Librarians are well-positioned to teach AI literacy and promote responsible use of AI.**
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 - Proper citation of AI-generated content (text, images)
 - Using AI tools for literature searching
 - Designing bots to assist mind-mapping / research question development
 - Building technical skills like coding with AI assistance

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 - Designing bots to assist mind-mapping / research question development
 - Building technical skills like coding with AI assistance
- **Start small, collect feedback, and refine over time.**
- **Embrace continuous learning. Share knowledge.**



Thank You



Presentation slides & resources:

libguides.hkust.edu.hk/julac-forum-2024

Aster Zhao, HKUST Library

lbaster@ust.hk