



Rethinking Study Prep: A Workshop Using NotebookLM

Tobin Shields, M.Ed, M.S.





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My name is Tobin Shields, **I am a high school CTE Computer Science teacher** in Gresham and **professor of Cybersecurity** at Mt. Hood Community College. I am also a licenced ELA teacher.

I have a **Masters of Education** and a **Masters of Cybersecurity and Information Assurance**, along with a alphabet soup of certifications related to I.T.



Learning Outcomes



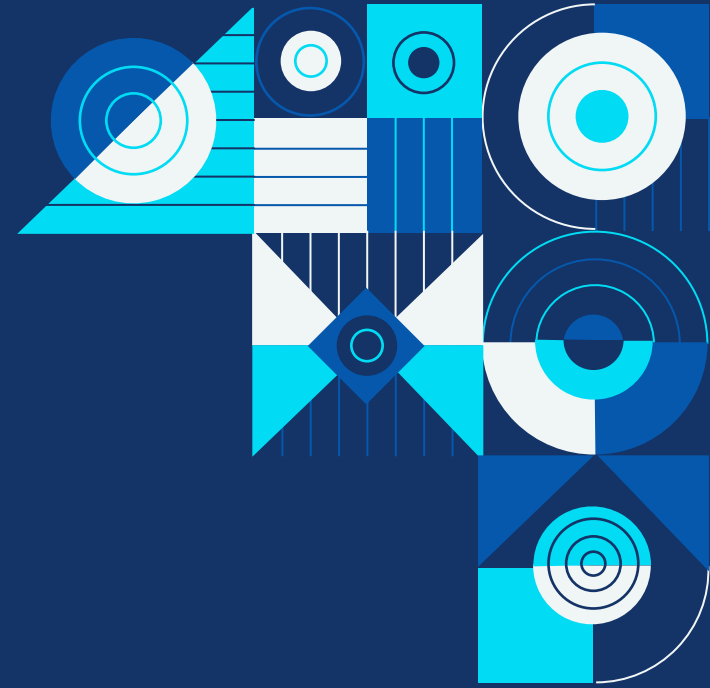
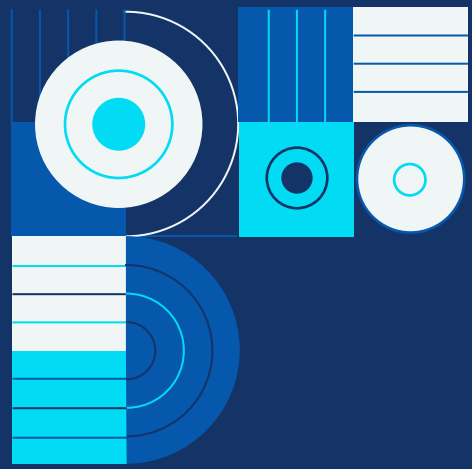
By the end of today's session, you should be able to..

Define role of metacognition in the study and review process

Create a new NotebookLM “notebook” and practice assembling course resources

Generate specific, targeted, and actionable study artifacts rooted in a metacognitive-forward approach





01

**What is Metacognition? And how
can this concept cut through A.I.
murk?**

Does AI Harm Critical Thinking?

Exploring Critical Thinking and Overreliance

"[AI] could completely reorient our relationship to knowledge, prioritizing rapid, detailed, abridged answers over a deep understanding and the consideration of varied sources and viewpoints."

- Matteo Wong, technology journalist at *The Atlantic*

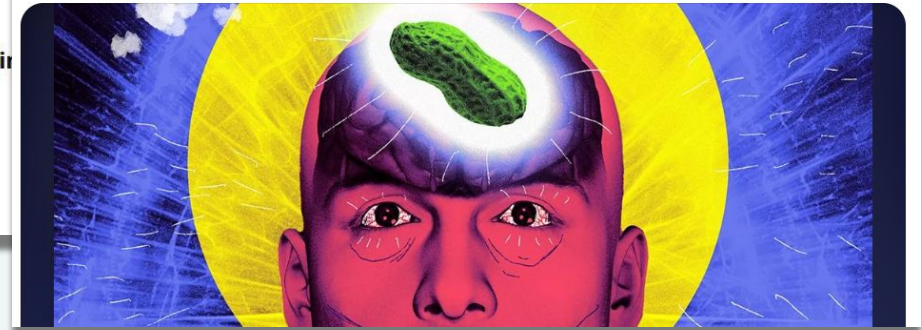
Letters

Students' use of AI spells death knell for critical thinking

Prof Andrew Moran and **Dr Ben Wilkinson** on the ramifications of the explosion in university essays being written with artificial intelligence

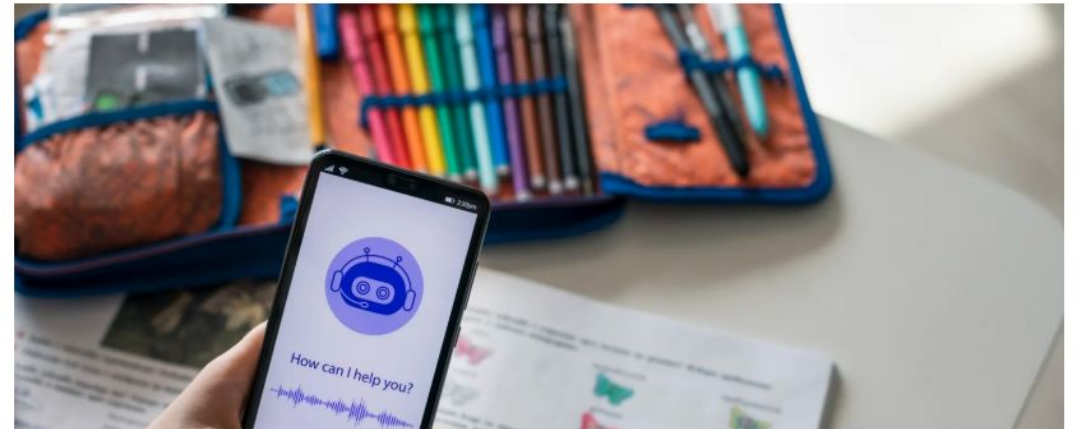


Study Finds That People Who Entrust Tasks to AI Are Losing Critical Thinking Skills

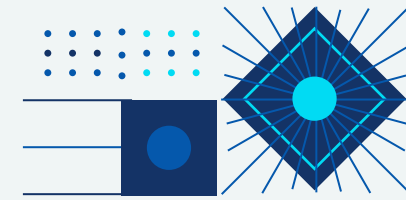


Is AI Eroding Our Critical Thinking Skills?

By Alexandra Schirn • August 18, 2025



“Death Of Critical Thinking”



How concerned are you with the “death of critical thinking” as it might relate to the overuse of A.I. tools, or the overuse of it in schools?



THINK

Use the pencils and paper in front of you to process that question independently



PAIR

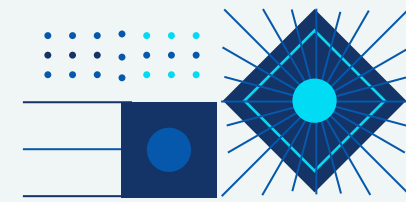
Discuss your thoughts with the person sitting next to you, or your table group.



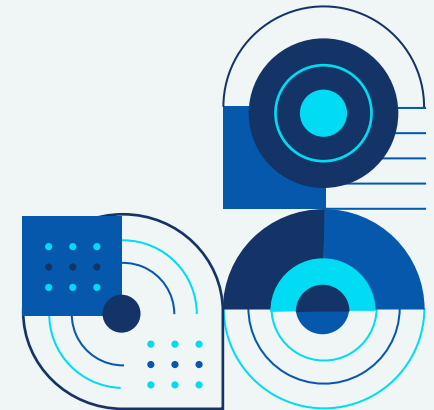
SHARE

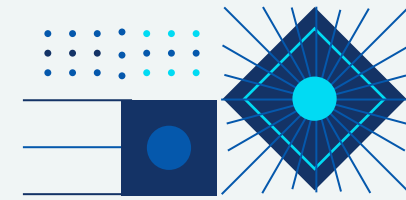
Share a thought or idea that was shared at your table that you felt like deserved air time





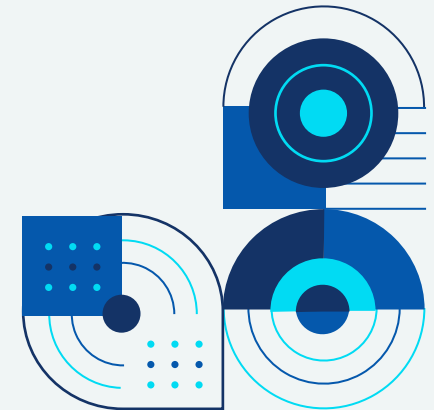
Metacognition

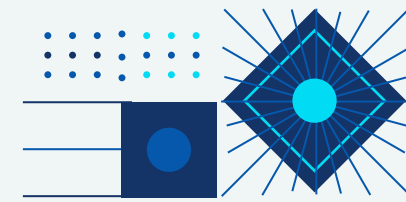




Metacognition

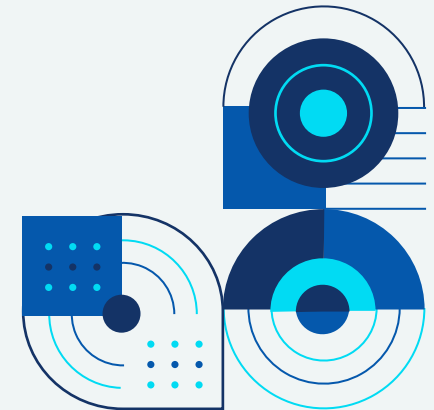
“To think about, or to be self aware about”

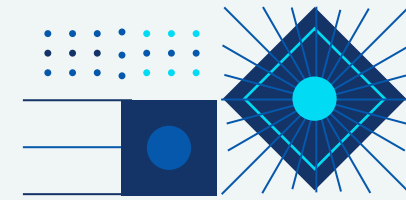




Metacognition

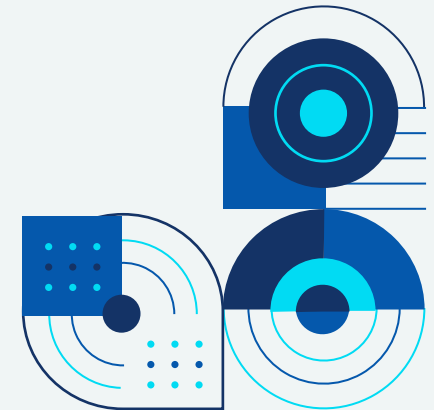
“The mental processes involved in acquiring knowledge and thinking”

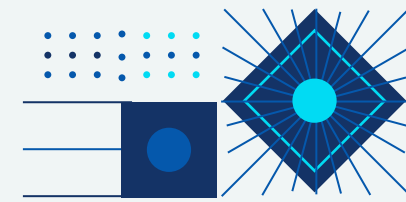




Metacognition

“To be self aware about one’s own thinking and learning process”



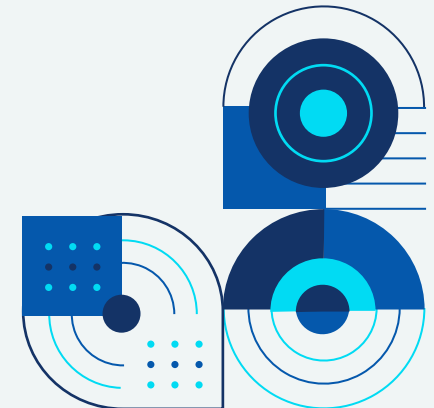


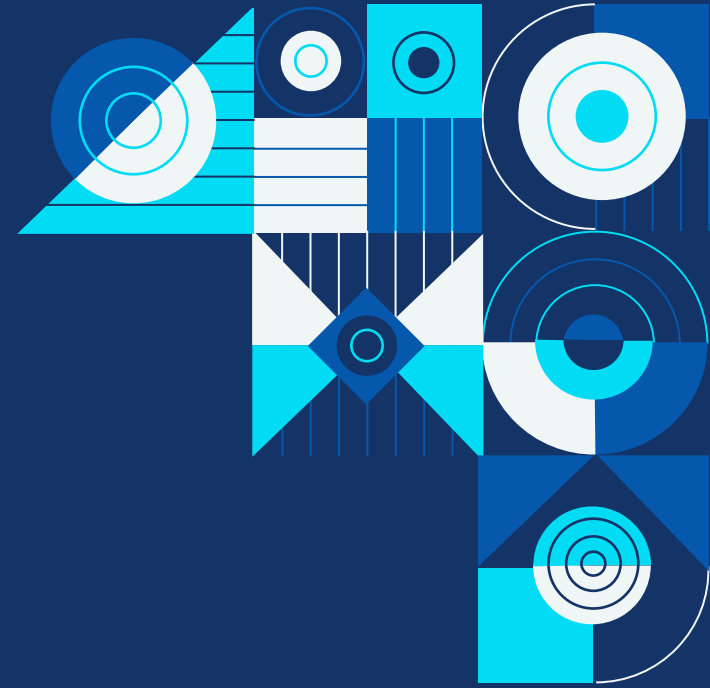
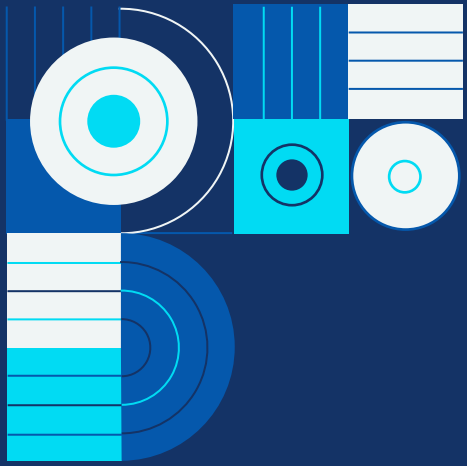
The Role Of Metacognition + A.I.



If students have a magical all-knowing answer machine are students able to:

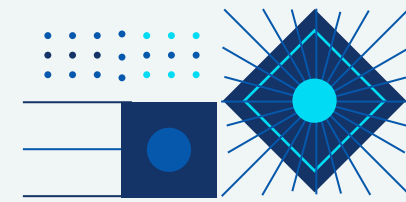
- Pick which questions might give them the best results?
- Build questions to ensure that their questions don't reinforce existing bias?
- Identify holes in their current understanding so that they don't overlook key information?
- Vet and gather resources that will help shape a more reliable and robust answer?





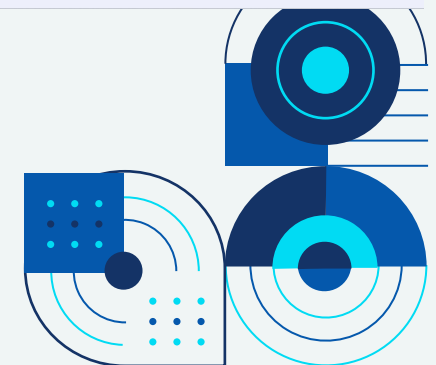
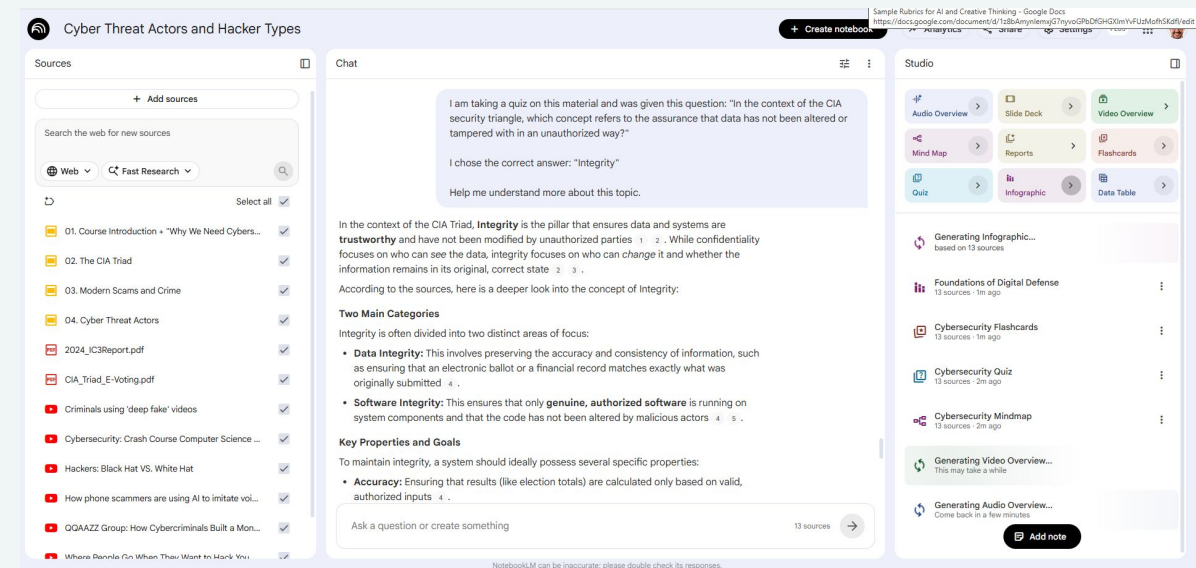
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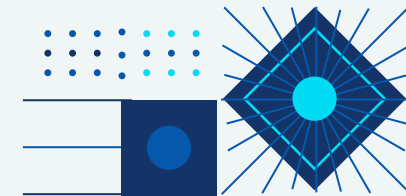
Introducing NotebookLM



What Is NotebookLM?

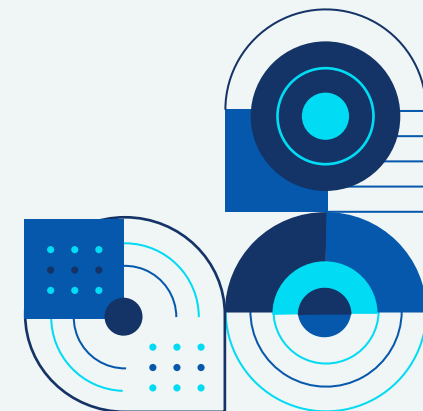
“NotebookLM is a Google AI-powered research and note-taking assistant that analyzes user-uploaded documents—such as PDFs, Google Docs, websites, and YouTube videos—to provide summaries, answer questions, and generate insights. It acts as a personalized, “grounded” AI, using Gemini 3.0 to focus solely on provided sources to minimize hallucinations”

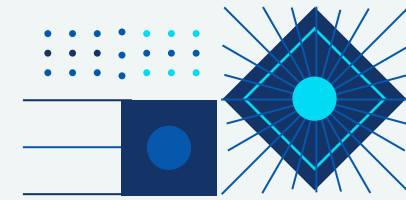




Demo:

Walking you through how to build out a notebook



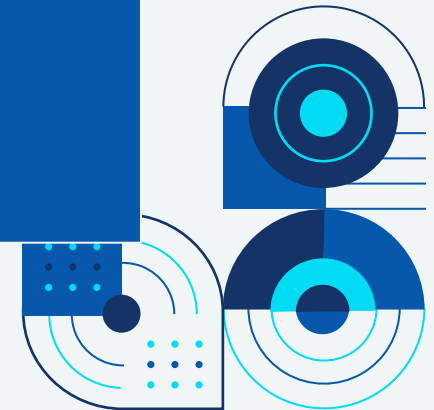


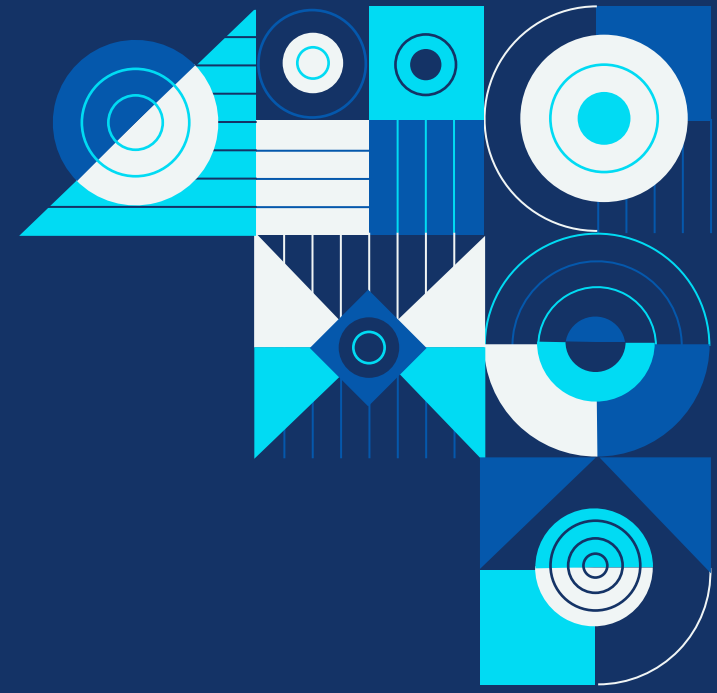
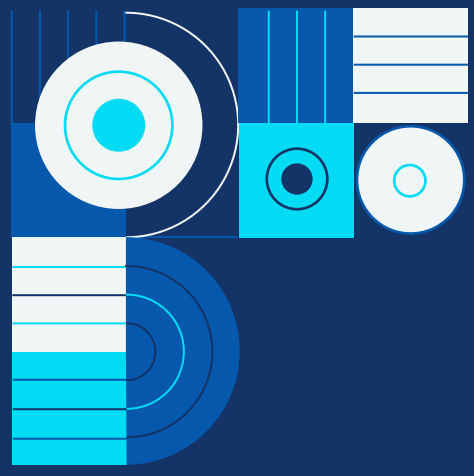
Hands-On Activity: Build Your Own Notebook

Pick a unit that has lots of resources. Load the following in:

- **All slideshows** and lecture materials
 - If your lectures refer to information-dense videos include those as links
- **Include textbook chapters** if you can, and links to any/all websites or resources with key info
- **Include assignment materials** and reference materials

Generate some artifacts in the studio





03

Elevating NotebookLM With Prompts Rooted In Metacognition

I am going to take a test that covers a lot of this content, but I really don't know if I am prepared or not. Can you help me walk through the process of identifying what I don't know and then at the end, help me draft a prompt I could use to generate a quiz or report that only focused on the things I don't know?

To help you identify gaps in your knowledge, we can break down the course material into five core categories based on the sources. As you read through each, ask yourself if you can explain the concepts without looking at your notes.

1. Foundations: The CIA Triad and Usability

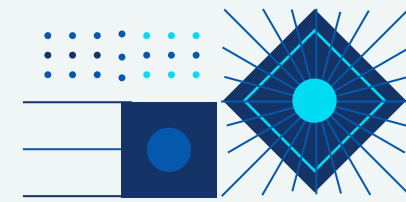
- **The Concept:** Can you define **Confidentiality, Integrity, and Availability** and provide a real-world example of an attack on each 1 2 ?
- **The E-voting Case Study:** Do you understand how these principles apply specifically to voting? For example, do you know the difference between **ballot secrecy** (Confidentiality) and the **accuracy** of election results (Integrity) 3 4 ?
- **The Trade-off:** Can you explain why security professionals must balance the CIA Triad against **usability and ease of use** 5 6 ? Why is a computer locked in a safe with no internet connection "secure" but useless for business 7 8 ?

2. Security Models and Technical Controls

- **Access Control Models:** Are you familiar with the **Bell-LaPadula Model** and its "no read up, no write down" rules 9 10 ? Do you know what **Zero Trust** or **Defense in Depth** mean in a security context 9 11 ?
- **Authentication:** Can you identify the **three factors of authentication**: what you know (passwords), what you have (tokens), and what you are (biometrics) 12 ?
- **Security Mechanisms:** Do you understand the purpose of **hashing, digital signatures,**

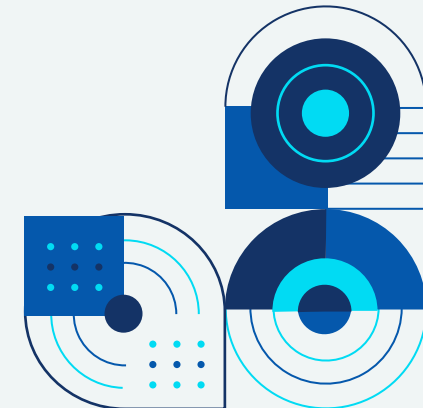
Ask a question or create something

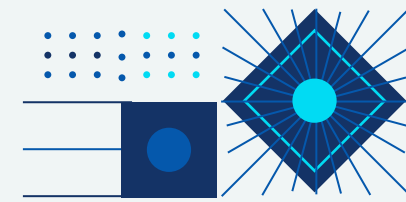
13 sources



The first thing that students should do, is “suss” out what topics this unit covers, and where they have gaps in their understanding.

Only then can they move onto building artifacts that will support exactly where they are in the learning process.





Critically Thinking About The Learning Process

Customize Quiz

Number of Questions

Level of Difficulty

What should the topic be?

Things to try

- Create a quiz to help me prepare for my history exam on Ancient Egypt
- The quiz must have 30 questions (maximum of 50 questions allowed)
- The quiz must be restricted to a specific source (e.g. "the article about Italy")
- The quiz must focus solely on the key concepts of physics

Generate

Create report

Study Guide

Quiz with answer key plus glossary

Choose language

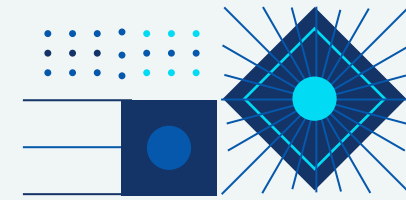
English (default)

Describe the report you want to create

You are a highly capable research assistant and tutor. Create a detailed study guide designed to review understanding of the sources. Create a quiz with ten short-answer questions (2-3 sentences each) and include a separate answer key. Suggest five essay format questions, but do not supply answers. Also conclude with a comprehensive glossary of key terms with definitions.

Generate





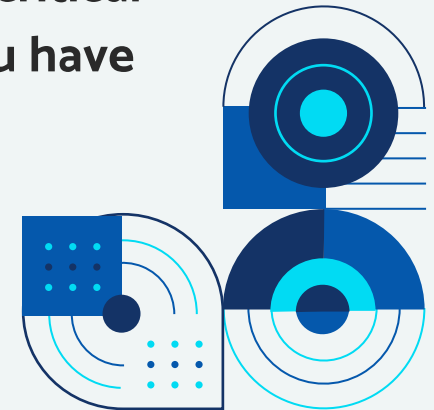
Hands-On Activity: Revise Studio Artifacts

Compare the artifacts
you made with a
single click to the
revised ones.

Assume the personality of one of your students. Assume that you have identified where you know you are strongest and where you need to brush up.

Revise your studio artifacts to only focus on the topics that you are weak in.

What was that process like? What critical thinking and SEL processes did you have to activate?



How would you “teach” skills to build up student’s abilities to engage in strong metacognitive activities?