

# Turn one capstone problem into an evidence-backed teaching improvement

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Use AI to help structure the work but keep the center of gravity on your course: teams, sponsors, design reviews, deliverables, and limited time.

course problem

search terms

memo

rubric

evidence plan

## Through-line for the session

**Start with your capstone course. Scholarship comes from documenting what you try, what you verify, and what you can honestly claim.**

### In your course

Teams make design choices without showing evidence, tradeoffs, assumptions, or next-test logic.

### What you leave with

A searchable problem frame, design-decision memo, rubric, evidence plan, handout, and abstract starter.

### Not required

A publication-first research agenda, a giant study, fake citations, or public claims before evidence exists.

# Pick the course problem that keeps showing up

You do not need to begin with a literature gap. Begin with a recurring capstone issue that affects design quality, team learning, or feedback.

## Common capstone pain point

## What you can turn it into

Teams pick the convenient or sponsor-preferred option.

Make decision rationale visible before commitment.

Design reviews show what they chose, not how they reasoned.

Require evidence, criteria, tradeoffs, and uncertainty.

Final reports describe activity but weak engineering judgment.

Use a rubric to assess reasoning, not just formatting.

Students use AI or web search without source discipline.

Ask for tool disclosure and human verification.

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The play: choose **one** problem small enough to improve this semester and concrete enough to document.

# Use the tools to build course materials, not just talk about AI

The useful workflow is concrete: better search terms, a stronger assignment artifact, a feedback rubric, and a defensible evidence plan.

## 1. Search better

- Turn a capstone problem into search terms
- Try Consensus, Elicit, Scholar, ASEE PEER
- Log what you searched
- Open and verify sources

## 2. Build the course tool

- Draft a decision memo
- Write student instructions
- Create a reasoning rubric
- Add AI/tool disclosure language

## 3. Make it shareable

- Choose normal course evidence
- Protect student data
- Write a planned-study abstract
- Remove claims you cannot support

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**Capstone instructor rule: if it does not improve the course artifact, feedback, or student reasoning, it is probably not worth adding.**

# Use ChatGPT to draft a course-ready workflow

Start with a recurring capstone problem and ask for practical teaching materials, not research findings.

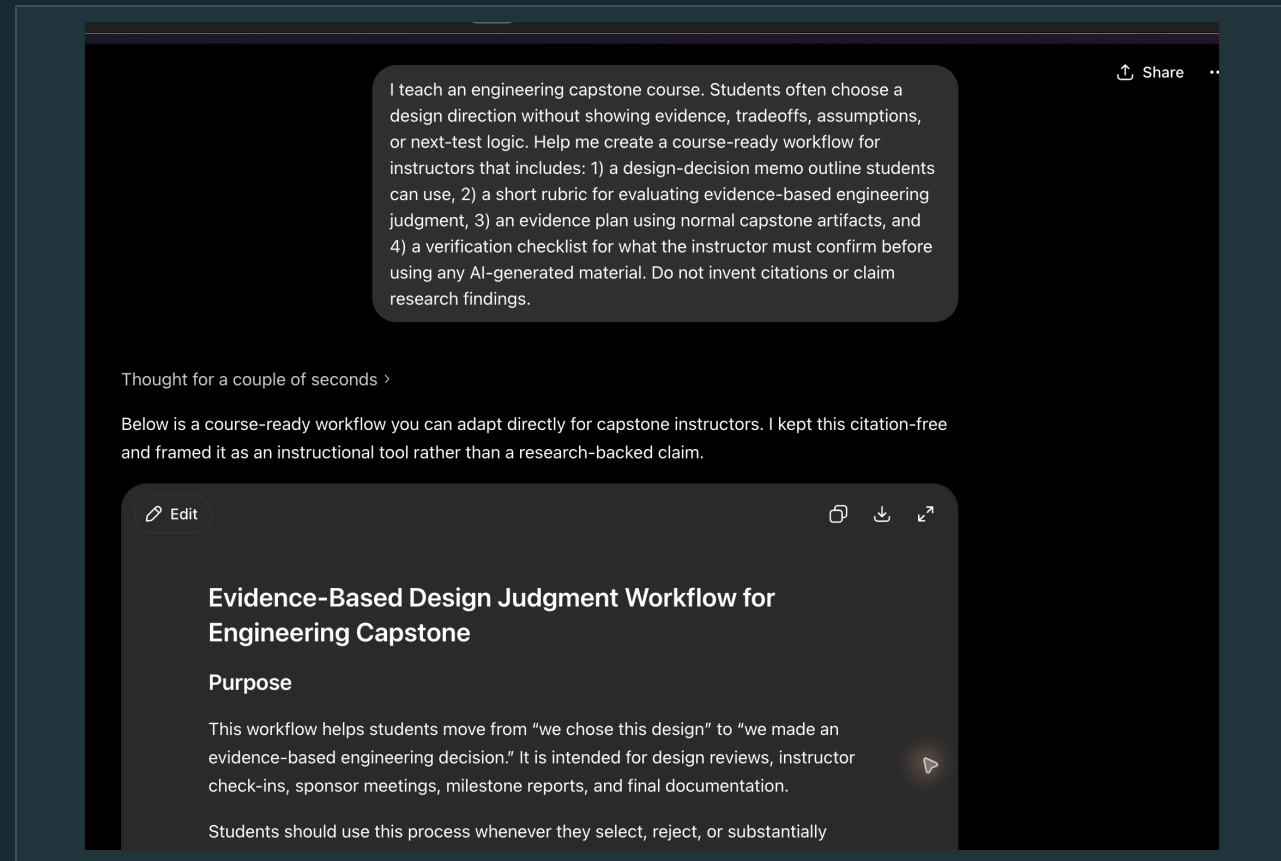
## What the audience should notice

The prompt asks for a memo outline, rubric, evidence plan, and verification checklist. It explicitly blocks invented citations.

ChatGPT

course artifact

no fake citations



Instructor move: treat the output as a first draft to adapt, not as evidence or authority.

# Use Consensus to locate the literature lane

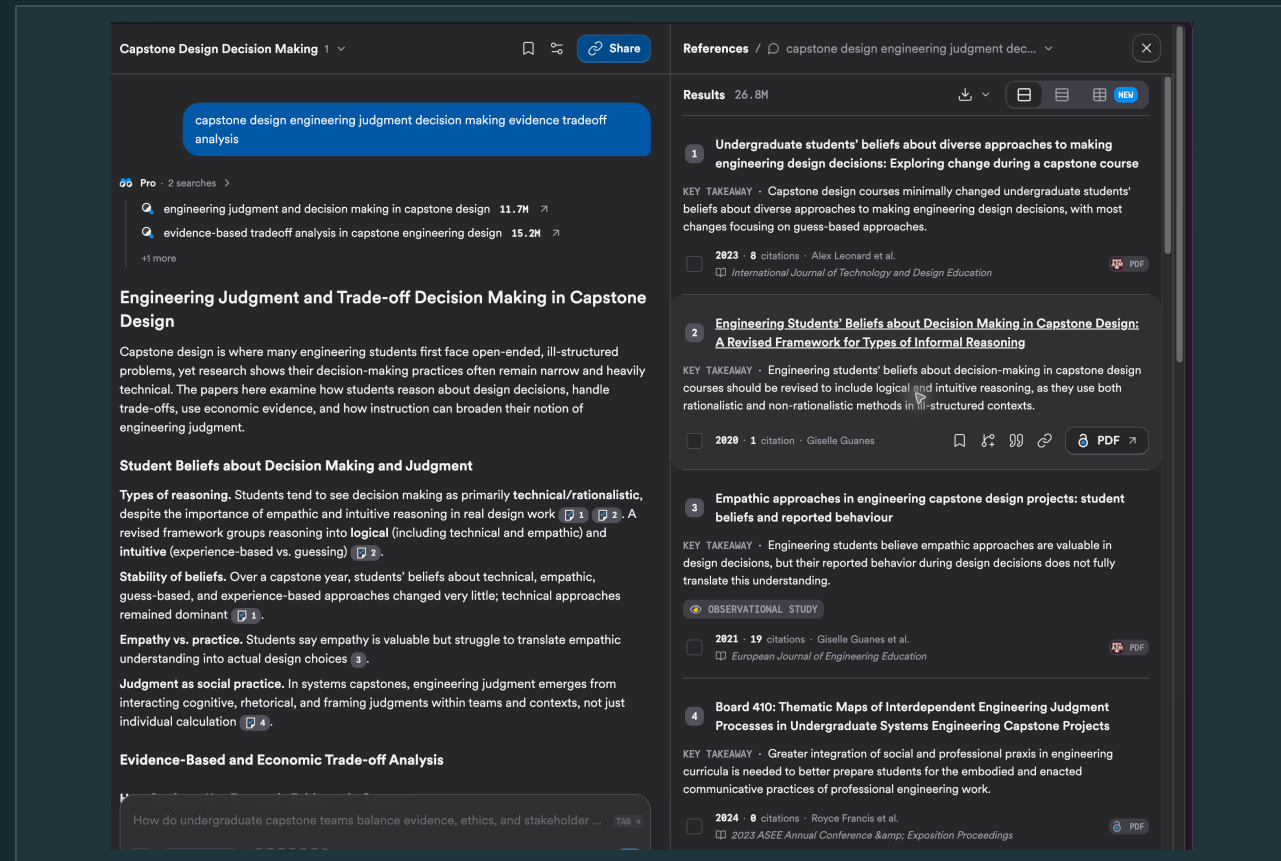
Move from course language into searchable scholarly language about capstone judgment, tradeoffs, and evidence.

Consensus is useful for finding candidate papers and themes. The instructor still has to open sources and decide what applies.

Consensus

search leads

source check



Boundary: a synthesis is a starting point. The scholarship claim waits for source-by-source verification.

# Use the references panel as a verification queue

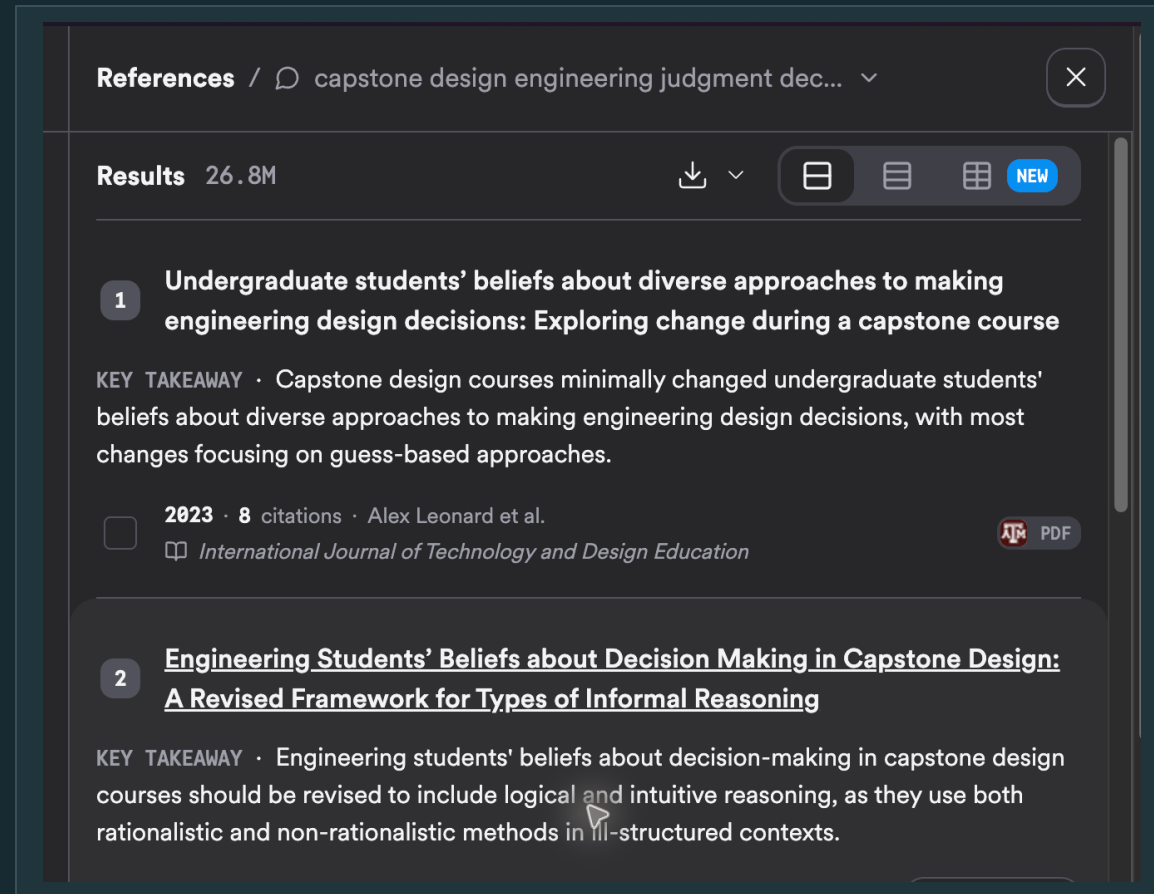
The useful move is not copying the AI summary. It is building a short list of papers to open, read, and record.

**Ask: Which papers actually speak to capstone design decisions? Which are methods leads? Which should be discarded?**

paper queue

open PDFs

search log



Instructor move: record what was checked before the paper becomes part of a teaching rationale.

# Keep the evidence boundary visible

AI can help organize a checklist, but it cannot verify claims or protect student data for you.

## What have we done now?

**A planned intervention, rationale, tool-use record, evidence sources, and verification checklist. Not learning gains or causal effects.**

IRB check

de-identify

verify claims

Instructor prompt:

“What feedback did you receive on this decision, and what did you do with it?”

## 4. Instructor Verification Checklist for AI-Generated Material

Before allowing students or instructors to use AI-generated material in capstone documentation, the instructor should confirm the following.

### A. Source and Use Transparency

Confirm that:

- The team disclosed where AI was used.
- The team described how AI contributed to the work.
- The AI-generated material is not presented as independent evidence.
- The team distinguishes between AI-generated suggestions and evidence from project artifacts.

Instructor check:

Instructor move: make this checklist visible before student work, citations, or findings enter the story.

# A starter path you can use

First version and not a perfect study. Make one capstone improvement more explicit, evidence-informed, and shareable.

01

## Name one problem

Write the recurring capstone issue in plain course language.

02

## Run 3 searches

Use the provided Consensus/Scholar/ASEE queries as starting points.

03

## Adapt one artifact

Revise the design-decision memo for your course.

04

## Pick evidence

Choose normal course artifacts you can ethically review.

05

## Bound the claim

Say what you can learn, not what you hope to prove.

## Slide Deck Reference

- Problem framing screenshot
- Search strategy screenshot
- Course artifact screenshot
- Evidence boundary screenshot

## Online Resources

- Combined audience packet
- Process walkthrough PDF
- Memo worksheet
- Reusable prompt bank

**We need a concrete course problem, a small intervention, and honest evidence boundaries.**