

# Developing a Novel Research Question

Each of the five assignments in the course includes a task requiring you to formulate a novel question about the topics covered by the assignment. This will involve reviewing the class material, identifying gaps or areas of curiosity, and framing a question that could guide future exploration or research. This document describes a recommended process for formulating good questions; it adapts a process designed by the [Right Question Institute](#).

**Note:** Remember to document your work on each of the three steps below in your live journal, which must be submitted together with the assignment.

## **Step 1: Generating Ideas**

### **1. Review Lecture Content:**

- Use slides, lecture notes, videos and assignments to review the covered content.
- Identify topics or concepts that you found particularly interesting or challenging.
- Reflect on "big picture" questions related to these topics, such as:
  - What are some unresolved issues in this area?
  - How might this concept apply in a real-world context?
  - Are there limitations to the current understanding or methods we discussed?

### **2. Brainstorm Topics:**

Choose one or two areas of interest and list several open-ended questions. For instance:

- "How could [concept from class] be applied in [specific situation]?"
- "What are the limitations of [method/approach] in addressing [problem]?"

## **Step 2: Refining the Research Question**

### **1. Characteristics of a Strong Research Question:**

- **Relevant:** Directly tied to the course material.
- **Nontrivial:** Doesn't have an obvious answer.
- **Feasible:** Potentially answerable if you had the entire semester to work on it.
- **Novel:** At the frontier of knowledge; hasn't been answered before. (This is addressed in more detail in Step 3.)

## **2. Using Class Content:**

- Frame your question in a way that connects explicitly to material covered in the course.
- Use terminology and concepts from lectures or assignments.

## **3. Anticipating Challenges:**

- Consider potential obstacles in addressing your question (e.g., lack of relevant data or computational complexity).
- Ask yourself, "What smaller questions or steps would help break this problem down?"

## **Step 3: Searching for Related Work**

### **1. Research Existing Literature:**

Identify what research has already been done and how your question might build on or differ from prior work.

- Google and Google Scholar are commonly used.
- Search for keywords related to your topic to find relevant sources.
- Once you've identified a relevant paper, you can find more by:
  - i. Reading the paper's "related work" section.
  - ii. Searching for the paper on Google Scholar and using the "cited by" link.

### **2. Evaluating Sources:**

- Look for peer-reviewed articles, books, or reputable websites.
- Focus on recent studies to ensure your understanding is up to date.

### **3. Using AI:**

- Large language models like ChatGPT are rarely useful for finding related work.
- In particular, ChatGPT-4o will give pointers for every research question that's posed to it, regardless of whether the question has actually been investigated. In case it hasn't, provided citations (which may look realistic at first glance) are hallucinations.
- Always critically evaluate AI outputs. These tools could be helpful for brainstorming but do not replace in-depth critical thinking or review.