

AP Research Summer Thinking

Ms Pronko 2023-2024

1. **Sources:** Familiarize yourself with at least four publications on several topics that interest you. These can include podcasts, journals, periodicals, videos, etc. Keep a list of potential research ideas, good publications, and names of researchers in that academic discipline. Spend a little time regularly reading Wikipedia or other sources for background knowledge, too.

2. **Experimental design:** Work through the links below; read and/or watch the relevant videos. Take notes in such a way that you can clearly explain the content to someone else when we return. You do NOT need to write up anything formal.

- a. <https://libguides.newcastle.edu.au/researchmethods>
- b. <https://libguides.macalester.edu/c.php?g=527786&p=3608583>
- c. <https://www.youtube.com/watch?v=RZcfmA1l6cE>

3. **Identifying and understanding components of research:** Watch the first video below and then choose 4-5 short videos from the second link from NSF (or something similar) to watch on topics that interest you. Practice identifying the research question, the data collection method, and the strongest finding. Be ready to show/talk about your favorite.

- a. <https://www.youtube.com/watch?v=fZ-LGZdqWLU>
- b. <https://www.youtube.com/c/VideosatNSF/videos>

4. **Mental models:** Discover and reflect on mental models in general starting here:

<https://fs.blog/mental-models/>.

Mental models can help us shape our thinking when tackling a complex problem. Before step 5, check out the website and read through the mental models that pertain to the academic discipline you are most interested in. Take note of any that make you stop and think.

5. **Mental models in books:** The books below make use of mental models as they investigate topics with many avenues for exploration. Reading a book will also allow you a more comprehensive look into a specific topic of interest than journal articles will. These books should be available from the public libraries, or I may have a copy I can lend you. Choose and read one book in a field of interest for you. There is no need to take specific notes while reading. You might use a sticky note or two to flag a particularly remarkable section, or you may want to jot down ideas about topics or particular terms of interest. In the fall, you will lead a casual book talk/discussion about what you found notable.

What to bring to class after the summer:

1. A list of favorite sources and the research topics/ideas they've helped you generate
2. Notes on research design, including types of and any questions you have
3. Your favorite NSF video link and notes on the research question, hypothesis, data collection method, and findings
4. An interesting mental model
5. The book you chose to read and any notes from it

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Book suggestions containing mental models:

General/Statistics/Data/Tech

The Signal and the Noise by Nate Silver

Everybody Lies: Big Data, New Data, and What the Internet Can Tell Us About Who We Really Are by Seth Stephens

Invisible Women by Caroline Criado-Perez

More than a Glitch- Confronting Race, Gender, and Ability Bias in Tech by Meredith Broussard

Psychology/Linguistics

Thinking, Fast and Slow by Daniel Kahneman

Superforecasting by Philip Tetlock

Drunk Tank Pink by Adam Alter

Nabokov's Favorite Word is Mauve by Ben Blatt

Situations Matter by Sam Sommers

The Man Who Mistook His Wife for a Hat and Other Tales by Oliver Sacks

Whistling Vivaldi by Claude Steele

Predictably Irrational: The Hidden Forces That Shape Our Decisions by Dan Ariely

Beyond Trans: Does Gender Matter? by Heath Fogg Davis

Think Again: The Power of Knowing What You Don't Know by Adam Grant

Saving Time – Life Beyond the Clock by Jenny Odell

Education

The Teachers – A Year Inside America's Most Vulnerable Profession by Alexandra Robbins

Politics/History/Sociology/Economics

Stamped from the Beginning by Ibram X Kendi

The Sum of Us: What Racism Costs Everyone, by Heather McGhee

Freakonomics by Steven Levitt & Stephen J. Dubner

Think Like a Freak by Steven Levitt & Stephen J. Dubner

Poverty by America by Matt Desmond

Young and Restless – Girls who sparked America's Revolution by Mattie Kahn

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The Tipping Point by Malcolm Gladwell*

Flash Boys by Michael Lewis*

The Island at the Center of the World: The Epic Story of Dutch Manhattan and the Forgotten Colony that Shaped America by Russell Shorto

Alexander Hamilton by Chernow

Physical Sciences

Alchemy of the Air by Thomas Hager

A Brief History of Time by Stephen Hawking

Six Easy Pieces by Richard Feynman

The Extended Mind: The Power of Thinking Outside the Brain, by Annie Murphy Paul

Finding the Mother Tree: Discovering the Wisdom of the Forest, by Suzanne Simard

Food and Climate Change Without the Hot Air by Sarah Bridle

<https://earth.org/climate-change-books/> (make sure you are thinking mental models)

Arts/Design

Musicophilia: Tales of Music and the Brain by Oliver Sacks

The Design of Everyday Things by Don Norman

A Whole New Mind: Why Right-Brainers Will Rule the Future by Daniel Pink

*These books are much more narrative than scientific