Navigating the information maze: understanding reading, writing, and research skills in the digital age

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What's happening?

Over the past five years, and rapidly increasing over the past two, we've noticed changing research habits and student research behaviors.

We set out to see if we could pinpoint what's happening and why.

Then we asked ourselves if we could figure out what to do about it.

The big switch

From information seeking to information receiving

How do we know how students interact with information? We asked.

Project Information Literacy (PIL) research confirmed our hypothesis.

- Surveyed Tufts undergraduates and students at eight other institutions in the United States (n=1,593) to ask how they construct their information worlds.
    - Social media is the main ingredient in students' information diet.

Research by Pew and Ofcom in the UK confirm these findings.

Two key numbers

20%

Undergrads nationwide that actively seek information

81%

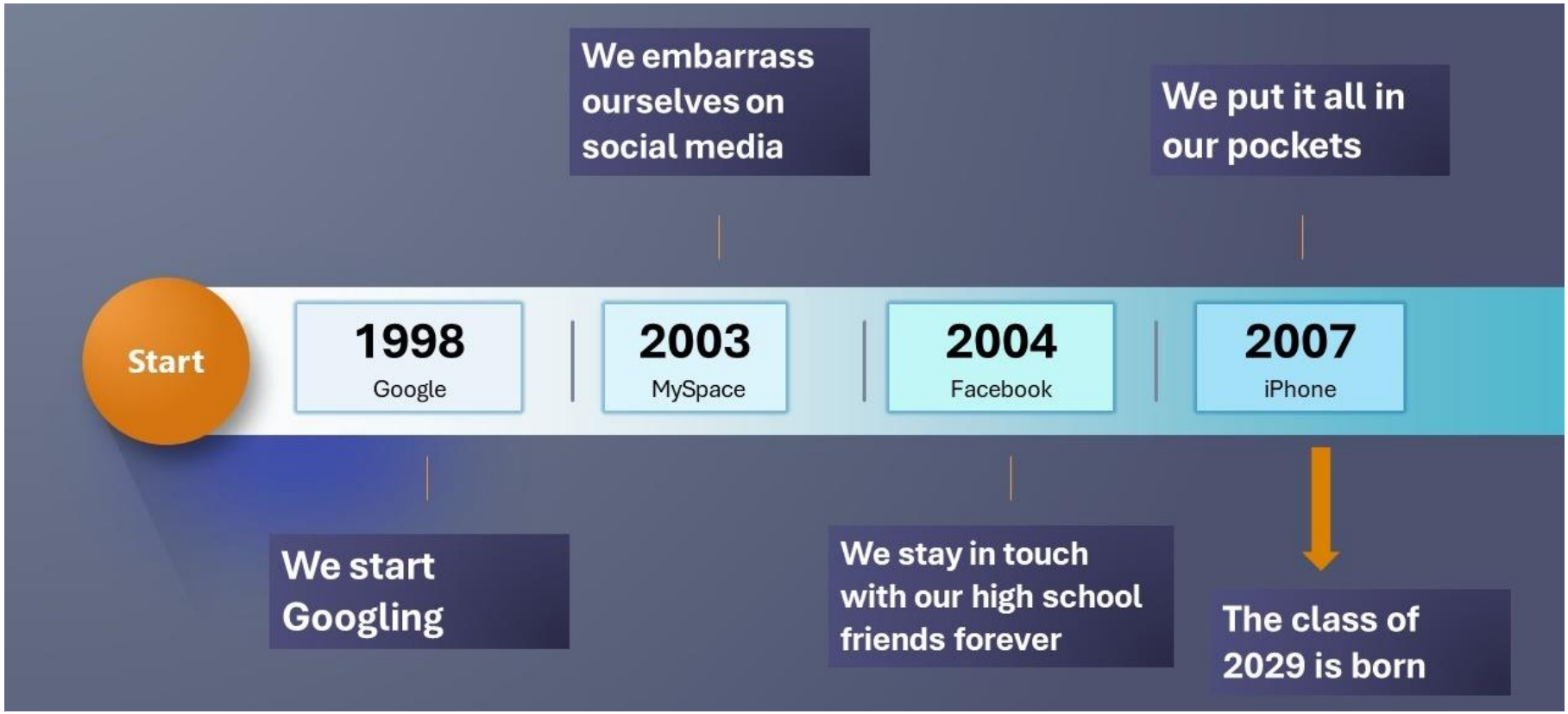
Tufts undergrads skilled at critical evaluation--the best in the survey

Why is 20% an important number?

Think about your own experiences as an undergrad or grad student:

- How did you do research?
- What stands out to you the most about your own experience?
- When did you first encounter social media?
- When did you get your first smartphone?

Consider: These are not the experiences of our current undergraduates and most of our incoming graduate students.



Understanding the switch

Let's talk about social media

Teens spend 5 hours per day on social media. What does that mean for reading and young brains?

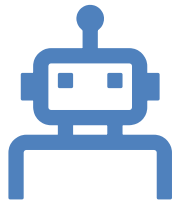
"Screen time and time spent reading showed different effects on functional connectivity between the visual word form area and language, visual and cognitive control regions of the brain. These findings underscore the importance of children reading to support healthy brain development and literacy and limiting screen time."

Horowitz-Kraus, T., & Hutton, J. S. (2018). Brain connectivity in children is increased by the time they spend reading books and decreased by the length of exposure to screen-based media. *Acta Paediatrica*, *107*(4), 685–693. https://doi.org/10.1111/apa.14176

Digital media, AI, and cognitive offloading

Students have developed processing strategies, such as cognitive offloading, to cope with information overload, and use AI to summarize complex information.

> "Our research demonstrates a significant negative correlation between the frequent use of AI tools and critical thinking abilities, mediated by the phenomenon of cognitive offloading. This suggests that while AI tools offer undeniable benefits in terms of efficiency and accessibility, they may inadvertently diminish users' engagement in deep, reflective thinking processes."



Gerlich, M. (2025). AI Tools in Society: Impacts on Cognitive Offloading and the Future of Critical Thinking. *Societies*, 15(1), 6. https://doi.org/10.3390/soc15010006

Digital media, AI, overconfidence, and authority

Searching and skimming result in overconfidence.

> "Specifically, a common feature of the online search environment (e.g., featured snippets) may increase users' confidence in their learning. Internet searching changes more than just the speed with which information is retrieved; it also changes the content people see and the type of processing and encoding they engage in."[1]

AI sounds authoritative

> LLMs are designed to "channel the aggregated knowledge and authority of a groups' collective past into a single agency or voice."[2]

[1]Eliseev, E. D., & Marsh, E. J. (2023). Understanding why searching the internet inflates confidence in explanatory ability. *Applied Cognitive Psychology*, 37(4), 711–720. https://doi.org/10.1002/acp.4058

[2]Öhman, C. (2024). We are Building Gods: AI as the Anthropomorphised Authority of the Past. *Minds and Machines* (Dordrecht), 34(1). https://doi.org/10.1007/s11023-024-09667-z

And it’s not just students. Offloading cognition to AI puts us all at risk

Microsoft found that “while GenAI can improve worker efficiency, it can inhibit critical engagement with work and can potentially lead to long-term overreliance on the tool and diminished skill for independent problem-solving.”

Confidence Effects From a Survey of Knowledge Workers. In *CHI Conference on Human Factors in Computing Systems* (CHI ’25), April 26–May 01, 2025, Yokohama, Japan. ACM, New York, NY, USA, 23 pages. https://doi.org/10.1145/3706598.3713778

A perfect storm

Our information environment is actively changing our brains—especially young brains.

Deep reading and critical reflection are acquired skills that are being lost.

AI accelerates trends in cognitive offloading and reduces our ability to think critically or solve problems independently.

The online search environment increases overconfidence and LLMs sound authoritative.

Summing up

Most students get their information from social media and other algorithmically driven systems, including AI.

The rise of digital media and algorithmic systems has had an impact on brain development.

As a result, traditional skills have eroded but expectations for students remain the same.

If we agree that deep reading and the ability to synthesize information are important, we can't ignore these changes. Algorithmic information systems aren't going way.

How do we help our students gain the skills they haven't yet developed—not just in terms of subject matter but in learning how to learn?

Observations from the Writing Center: Before ChatGPT release

- Increased writing anxiety, perfectionism, trouble getting started
- Desire to reduce the difficulty or "inefficiency" of writing
- Assignments (and discussions of writing) that do not get to the heart of all that writing can be
- Difficulty "getting into" reading, not knowing how to approach reading

Observations from the Writing Center: Since ChatGPT release

- Lack of confidence, interest, or time leads to using AI
- Focusing on answers rather than questions in brainstorming
- Using AI to summarize readings
- Inability to analyze AI output (what is or isn't good)
- Reliance on AI as an “authority” on everything from grammar to "feedback" to topic choices to genres of writing

Supporting Students' Writing

Clarify, explain, and demonstrate what about writing and the writing process is important--to the course goals, to educational experiences to the discipline, to you)

Foster meaningful writing experiences (engagement, exploration, connection)

Break down longer writing assignments

Engage students in more non-assessed writing and social aspects of writing

Faculty observations

Think-Pair-Share

What evidence (observable behaviors, etc.) do you use to determine if a student has “done the reading” for your course?

Supporting Students' Reading

Clarify expectations: What do you expect students to be able to do or understand as a result of completing the assigned reading?

Offer structure (i.e., CERIC method)

Normalize difficulty

Think of ONE course you teach in which students engage in research:

- What are your expectations/assumptions for what reading, writing, and research skills students come in with?

- What are the learning goals around reading, writing and research in the course?

- Do these goals reflect what students most need to know now? Or do the goals need to be revised?

- How will you gauge students' progress towards the new learning goals? Do your current assignments need to be reconceptualized to align with the new goals?

- Are there ways students could use AI critically to enhance their learning in your course? How can you teach students to use AI responsibly to improve their reading and writing skills? How will you discourage reductive uses?

- What do you need to learn or do to take the next step? (learn more about AI, set up consultation to discuss alternative assignments, etc.)