

Eight Digital Literacy Skills Students must Have

October 2025



WINONA STATE UNIVERSITY
COLLEGE OF EDUCATION
Leadership Education Department

Teacher Motivations & Perceptions Survey for one of our master's students



CREATE THE FUTURE

What are the eight key skills that teachers need to encourage their students to learn and use effectively to prepare for a world with ubiquitous generative AI tools.



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A Little Context About Me

- Loras College
- University of Iowa
- Northern Ill. University
- Loyola University of Chicago

- Secondary history teacher
- Technology administrator
- Building principal
- 13 years as PK-12 superintendent
- 20 years as adjunct professor
- 8 years full time faculty



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Learning Objectives

- Understand the changing nature of literacy over the last 2500 years.
- Recognize the impact of AI and digital technologies on literacy.
- Recognize the need for data literacy as well as digital literacy.
- Identify emerging literacies for the future, including AI and algorithmic literacy, critical digital literacy, and global and cultural literacy.



**AI IS HERE
TO STAY**

**THE GENIE IS
NOT GOING
BACK INTO THE
BOTTLE**



The Changing Nature of Literacy Over the Last 3000 Years



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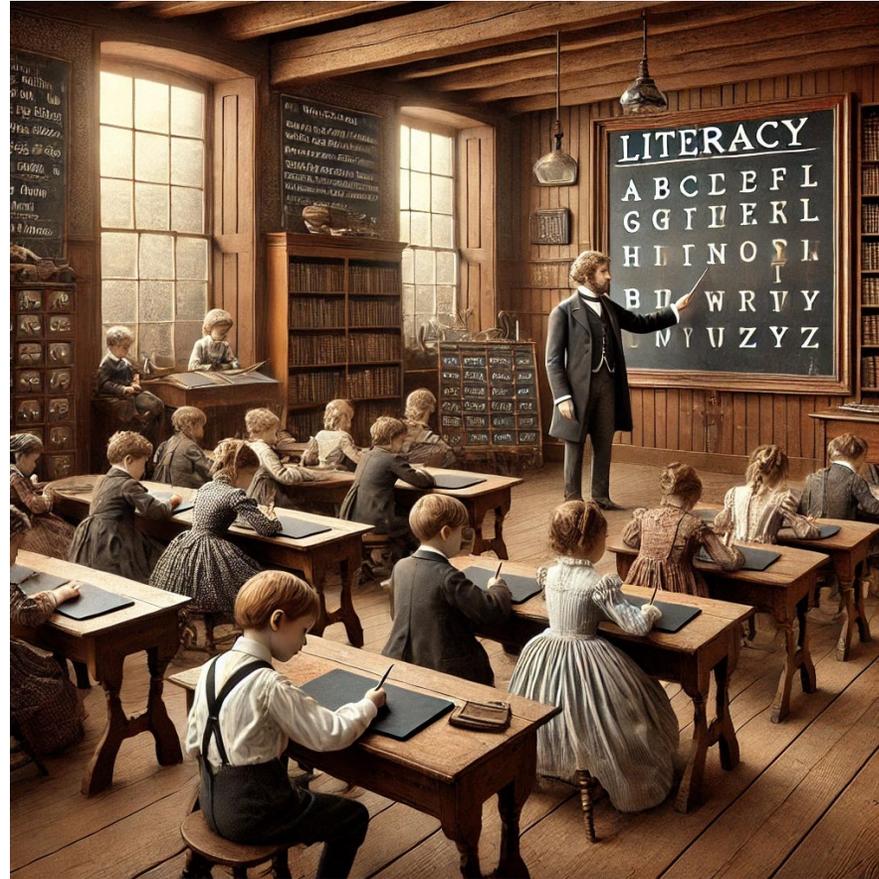
New technologies cause problems

The invention of writing will ruin the memory of scholars ~ Socrates

The story of Thamus and Theuth (Thoth)



Industrial Revolution and Common Schools (19th Century)



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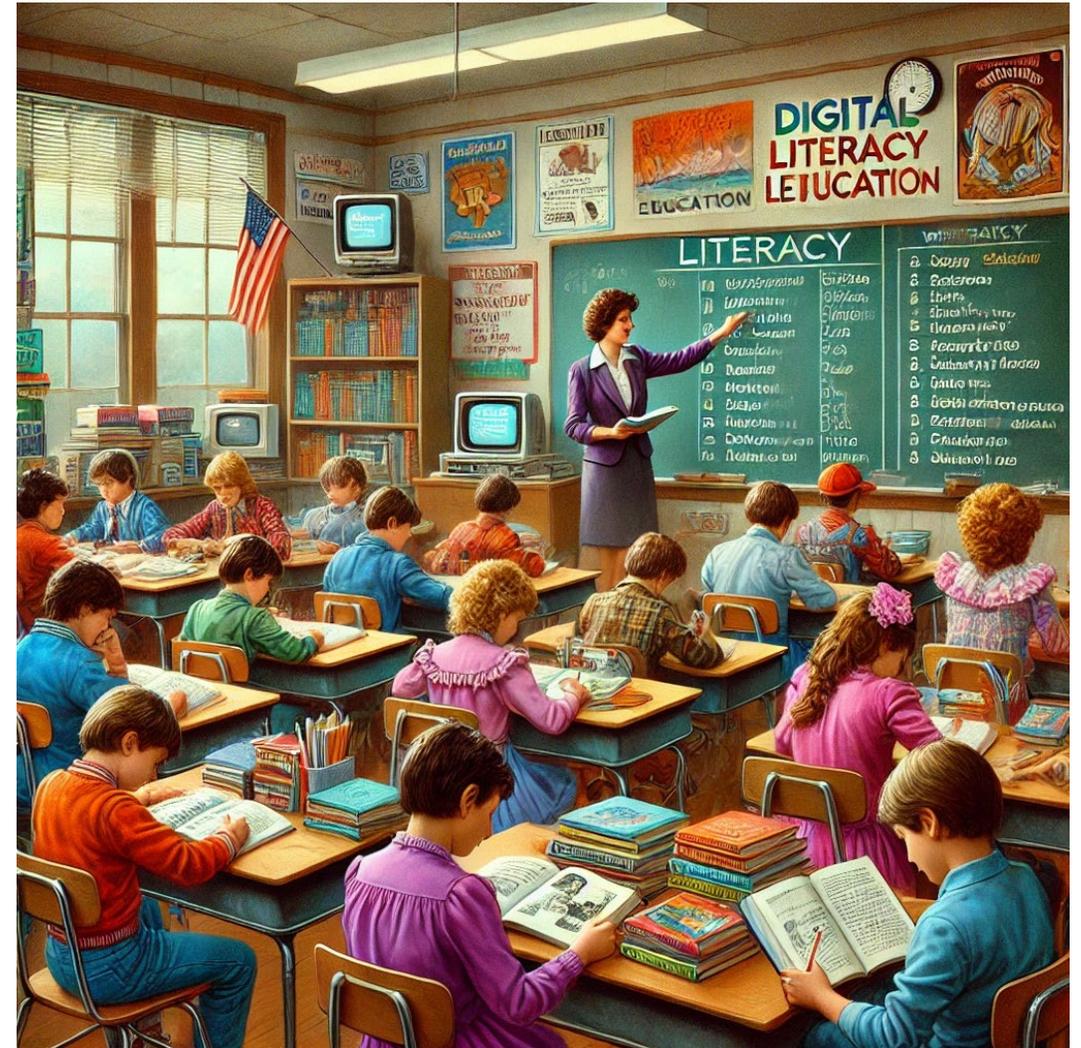
Mass Literacy and Print Culture (Late 19th - Mid-20th Century)



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Emergence of Media Literacy (Early 20th Century)

- Rise of mass media: newspapers, radio, and early television
- Public education includes media literacy elements, such as critical reading and comprehension skills
- Influence of propaganda and advertising raises concerns about media influence on public opinion



Literacy from the 1950s

Alphabetical Indexing and Dictionary Navigation

- Before digital tools, students were explicitly taught how to:

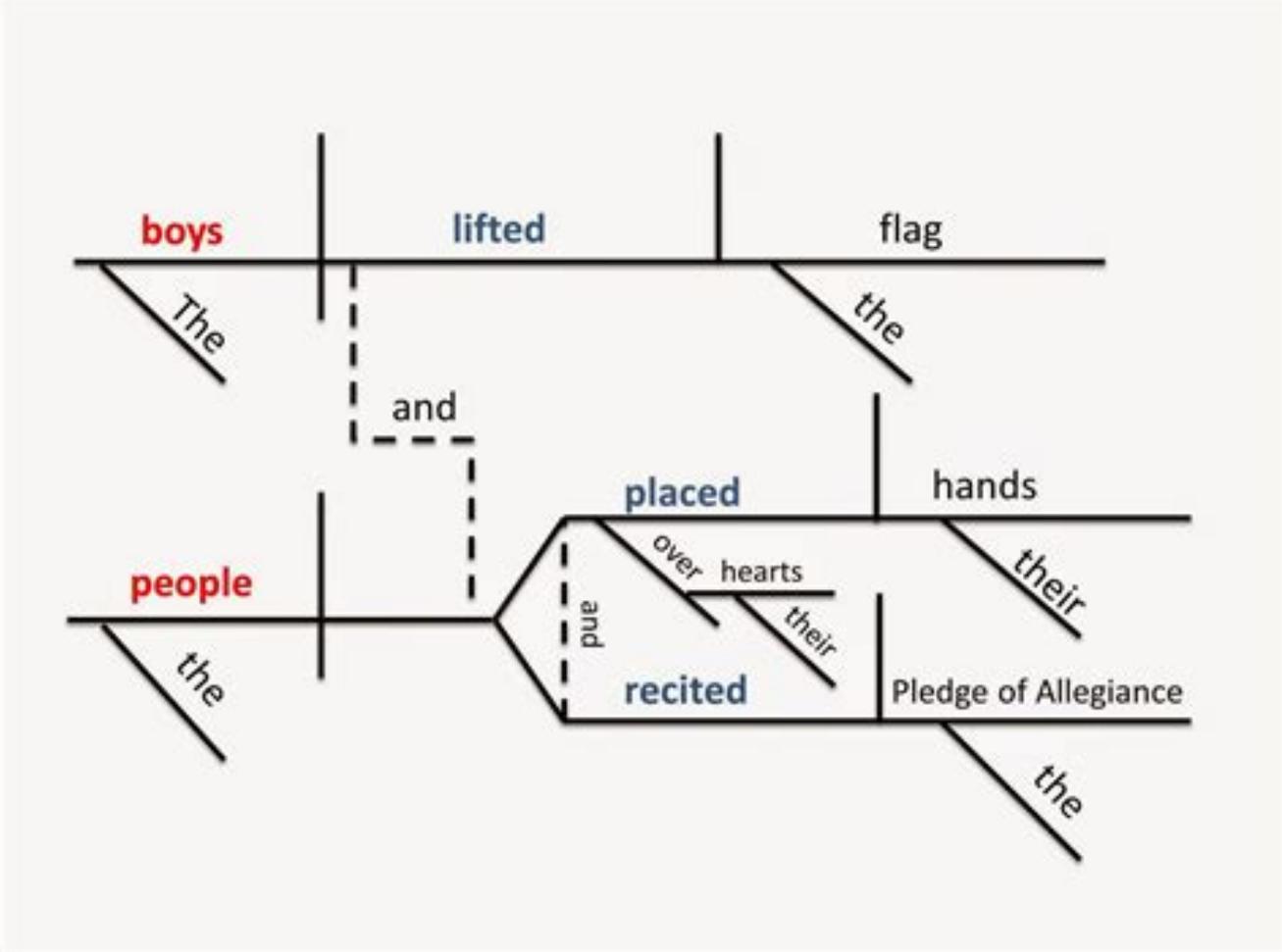
Alphabetize words and names with precision (often to the third or fourth letter),

- **Use guide words** at the top of dictionary pages,
- **Efficiently locate entries** in encyclopedias, thesauruses, and card catalogs.



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Diagramming Sentences



Digital and Technological Literacy (Late 20th Century - Early 21st Century)

Rise of the Computer Age

- Basic literacy expands to include digital literacy (ability to navigate computers, email, and word processing)
- Online communication introduces new literacy forms (hypertext, multimedia content)
- Information overload leads to need for critical evaluation skills

Rise of the Information Age

- Proliferation of social media, online news, and digital content consumption
- Increased focus on media literacy to combat misinformation and digital manipulation
- Multimodal literacy: reading and interpreting texts, images, videos, and interactive content



Digital Literacy 2030



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STEM and Computational Literacy

- Shift towards coding and computational thinking as part of literacy in education
- AI, automation, and data-driven technologies influencing workforce expectations
- Emphasis on logical reasoning, algorithmic understanding, and problem-solving skills



Today's Basic Digital Literacy Principles (Howard Rheingold, 2012)

- Comprehend digital content critically,
- Recognize the **interdependent nature** of online information and networks,
- Understand the **social dynamics** of digital participation, and
- **Curate** information responsibly in an era of information overload.



Today's Basic Digital Literacy Principles (Hiller Spears, 2019)

- Reading and Consuming Content
- Creating Content
- Sharing Content



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THE INEVITABLE

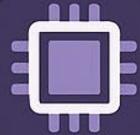
12 TRENDS SHAPING THE FUTURE

KEVIN KELLY

B

BECOMING

Constant change
and evolution



COGNIFYING

Integration with
artificial intelligence



FLOWING

Real-time
stream of data



SCREENING

Accessing
stream



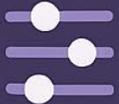
SHARING

Collaboration
& exchange



ACCESSING

Accessing
stream



FILTERING

Personalization
& recommendations



REMIXING

Rearrangement
of content



INTERACTING

Merging of
humans and
technology



TRACKING

Monitoring
& feedback



QUESTIONING

Increasing
enquiries



BEGINNING

Post-human
era



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Emerging Literacies for the Near Future (2020s - 2030s)

AI and Algorithmic Literacy

- Understanding how artificial intelligence and algorithms shape information access and decision-making
- Ethical concerns around AI bias, surveillance, and data privacy

Critical Digital Literacy and Misinformation Awareness

- Growing need to evaluate sources, detect misinformation, and recognize deepfakes
- Navigating digital ecosystems responsibly and ethically

Multimodal and Immersive Literacy

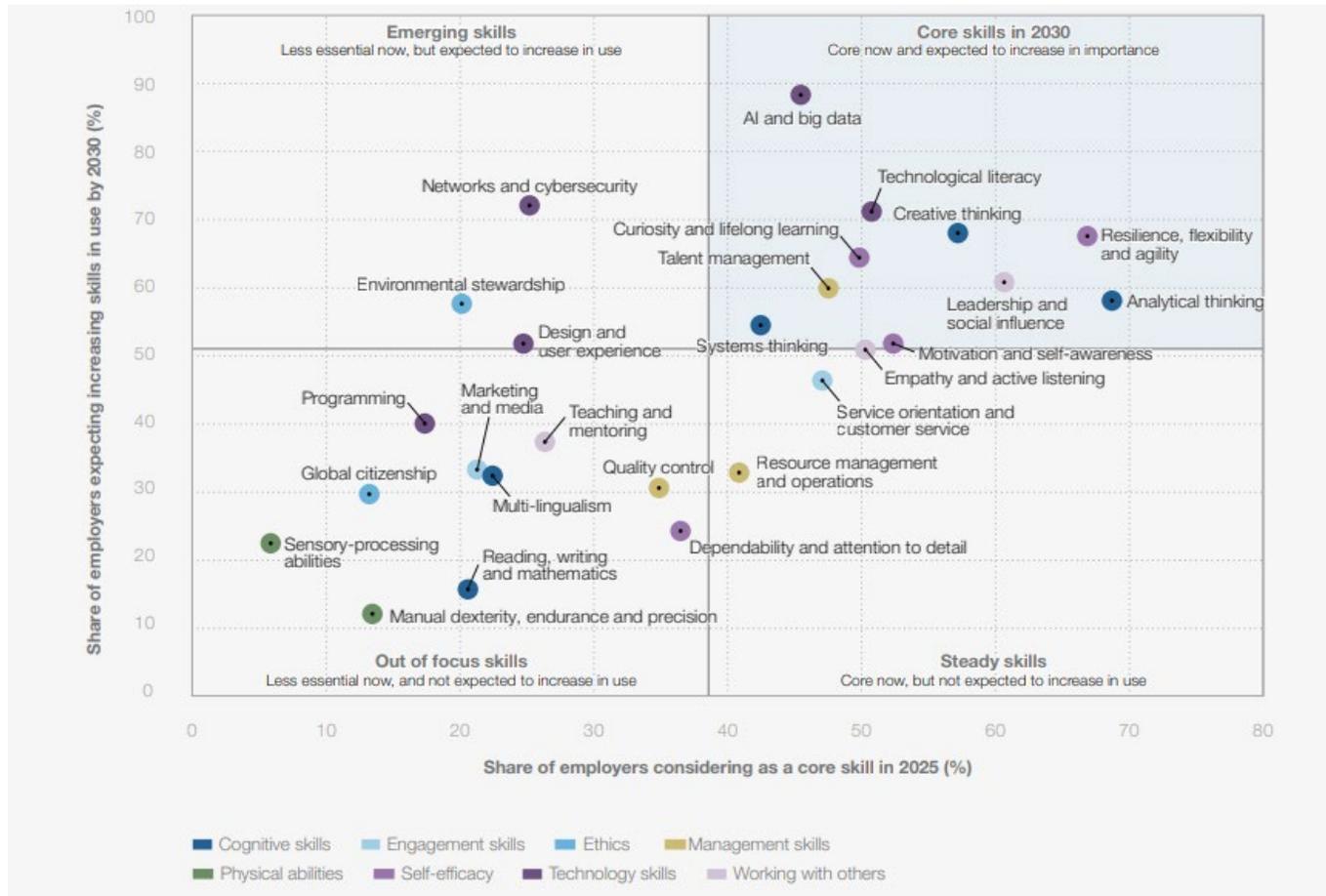
- Literacy in virtual and augmented reality environments (VR/AR)
- Interactive and gamified learning experiences requiring new cognitive skills

Global and Cultural Literacy

- Increased interconnectedness through digital globalization
- Cross-cultural communication and multilingual digital literacy becoming essential

Skills on the Rise from 2025 to 2030

World Economic Forum, 2025

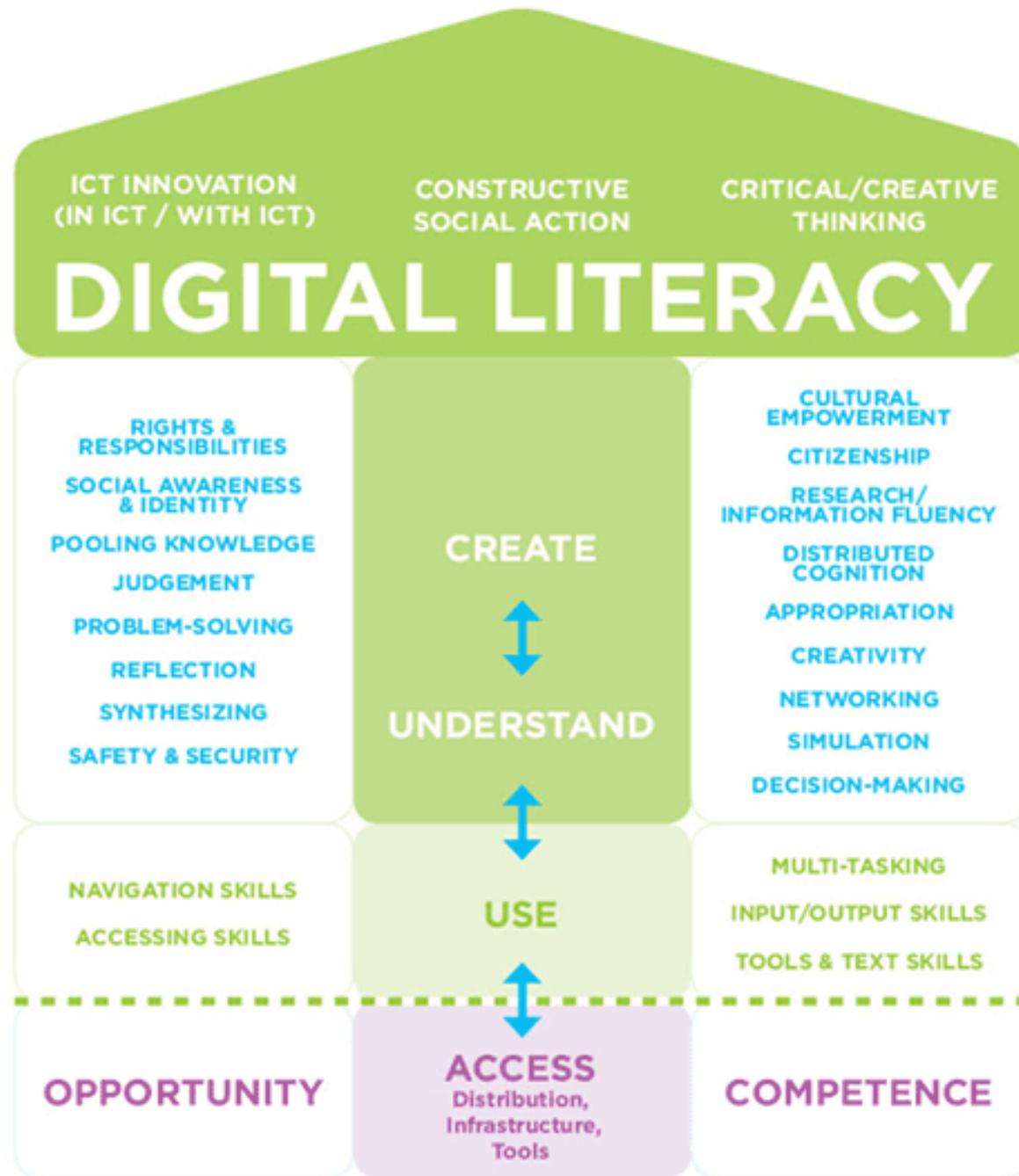


Core 2030 Skills

- Use of AI and big data
- Technology literacy
- Analytical / Systems thinking
- Creative thinking



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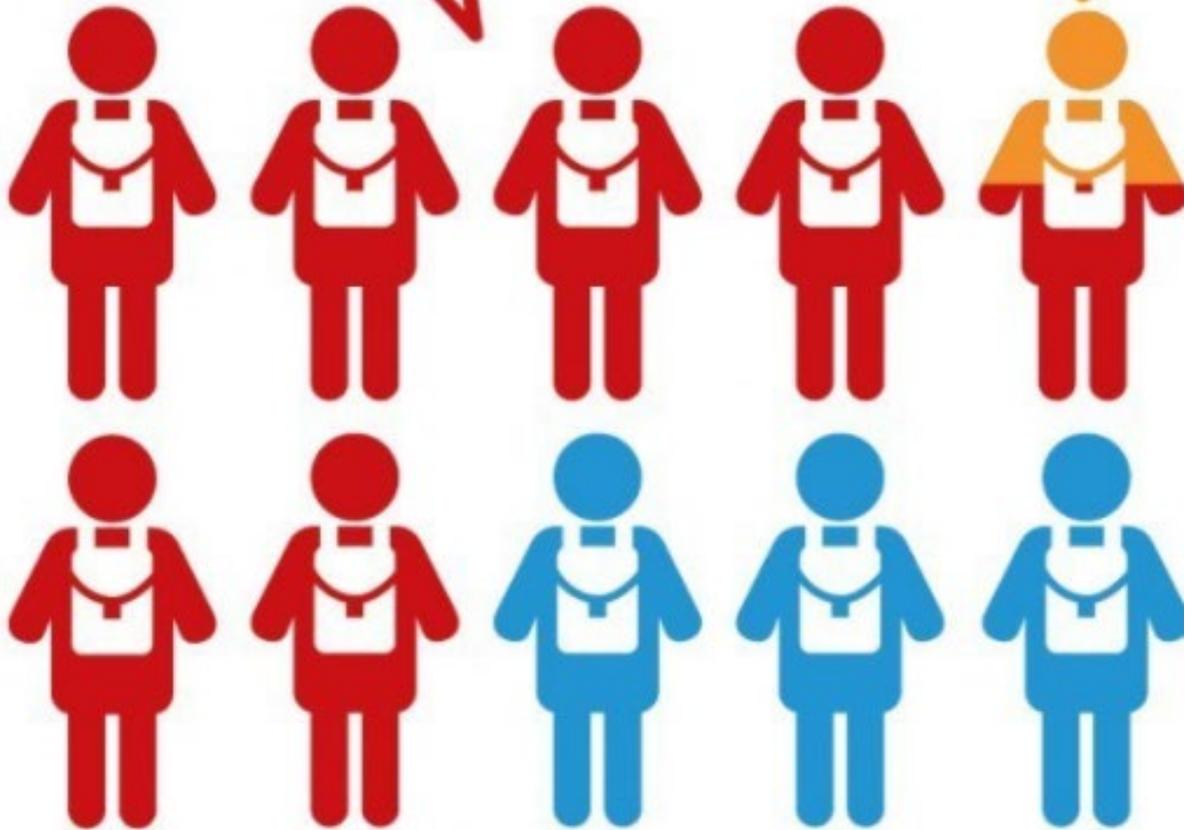




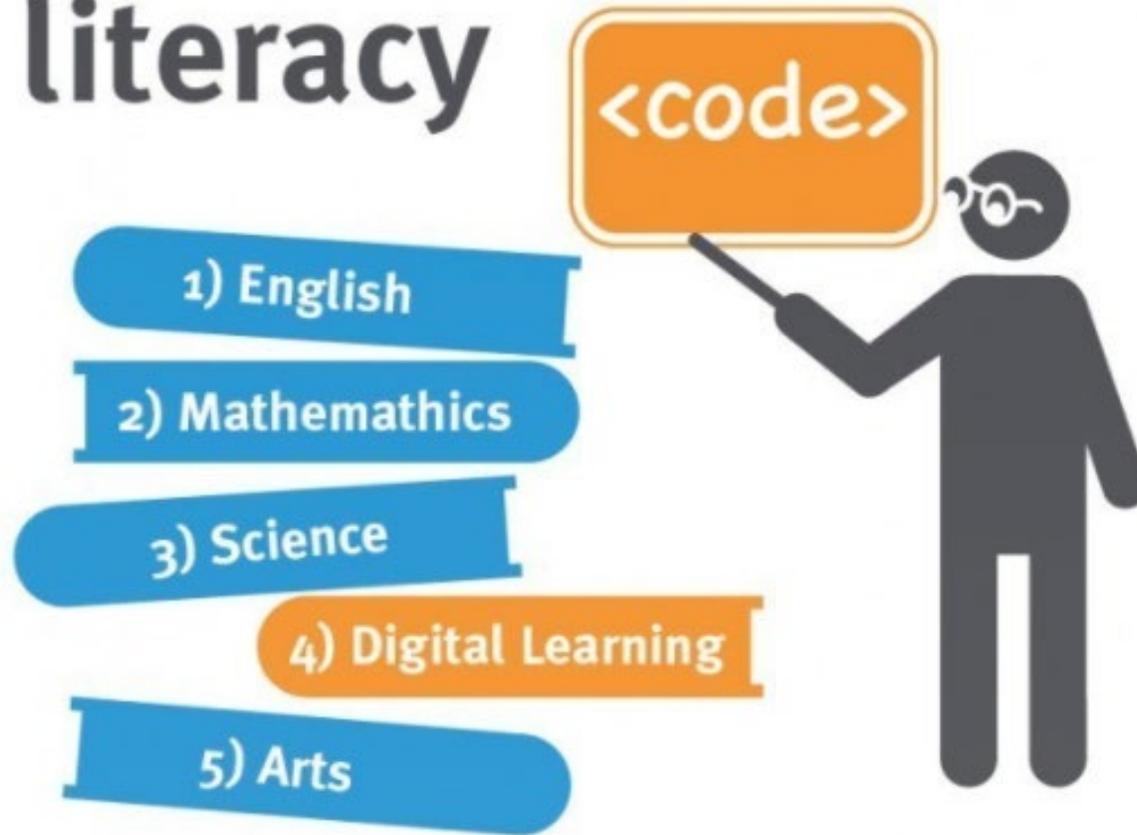
[Hague and Payton (2010) [Digital Literacy Across the Curriculum](#), Future Lab

67% of British children (aged 8-15) say they are interested in learning how to code

But only **3%** know how to code



Digital learning becomes fourth literacy



Digital Literacy Skills for 2030

1. Prompt Engineering and AI Interaction
2. Critical Thinking and Evaluation
3. Creativity and Innovation
4. Ethical Reasoning and Judgement
5. Complete Problem Solving
6. Adaptability and Lifelong Learning
7. Interpersonal, Cultural, and Collaboration Skills
8. Data Literacy Skills



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Prompt Engineering

- Be Clear and Specific
- Provide Context
- Use Role Assignment When Helpful
- Break Down Complex Tasks
- Iterate and Refine



Some Prompt Cheats (thanks to ChatGPT)

- TL;DR
- ELI5
- FAQ
- YOLO
- TMI
- IMHO
- Pros/Cons
- SWOT
- FAQ



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Critical Thinking and Evaluation

- Evaluating digital content for credibility, bias, and purpose
- Identifying misinformation, deepfakes, and algorithmic manipulation
- Applying logic and evidence-based reasoning in digital environments
- Teaching students how to validate sources across multiple platforms



Creativity and Innovation

- Leveraging digital tools to generate original ideas and multimedia content
- Remixing, adapting, and enhancing digital content in new contexts
- Using design thinking and prototyping in digital problem-solving
- Embracing failure as part of creative iteration in online spaces



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Ethical Reasoning and Judgement

- Navigating digital privacy, surveillance, and data consent issues
- Understanding the ethical use of AI-generated content and intellectual property
- Encouraging digital civility and empathy in online discourse
- Modeling responsible behavior in digital communities



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Complete Problem Solving

- Identifying digital-age problems with multiple variables and stakeholders
- Using digital simulations, AI tools, and data to analyze and resolve challenges
- Collaborating across platforms to co-create solutions
- Documenting and communicating solutions using appropriate digital media



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Adaptability and Lifelong Learning

- Keeping pace with evolving platforms, tools, and AI systems
- Engaging in self-directed, just-in-time learning through online resources
- Building a mindset of resilience and curiosity in digital environments
- Regularly updating one's digital skill set through microlearning or upskilling



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Interpersonal, Cultural, and Collaboration Skills

- Navigating diverse virtual teams with cultural competence and situational sensitivity
- Using collaboration tools (e.g., shared documents, project boards, AI co-pilots) effectively
- Understanding digital body language and tone in virtual communication
- Building inclusive online spaces that value diverse perspectives



Which is More Dangerous?



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Death by Type of Incident



Data Literacy

Chart 1: Annual Assault Events & Major Incidents (2016–2025)

(Note: "Assaults Jan–Jun" reflects the first half of the year; full-year data unavailable except for those intervals.)

yaml

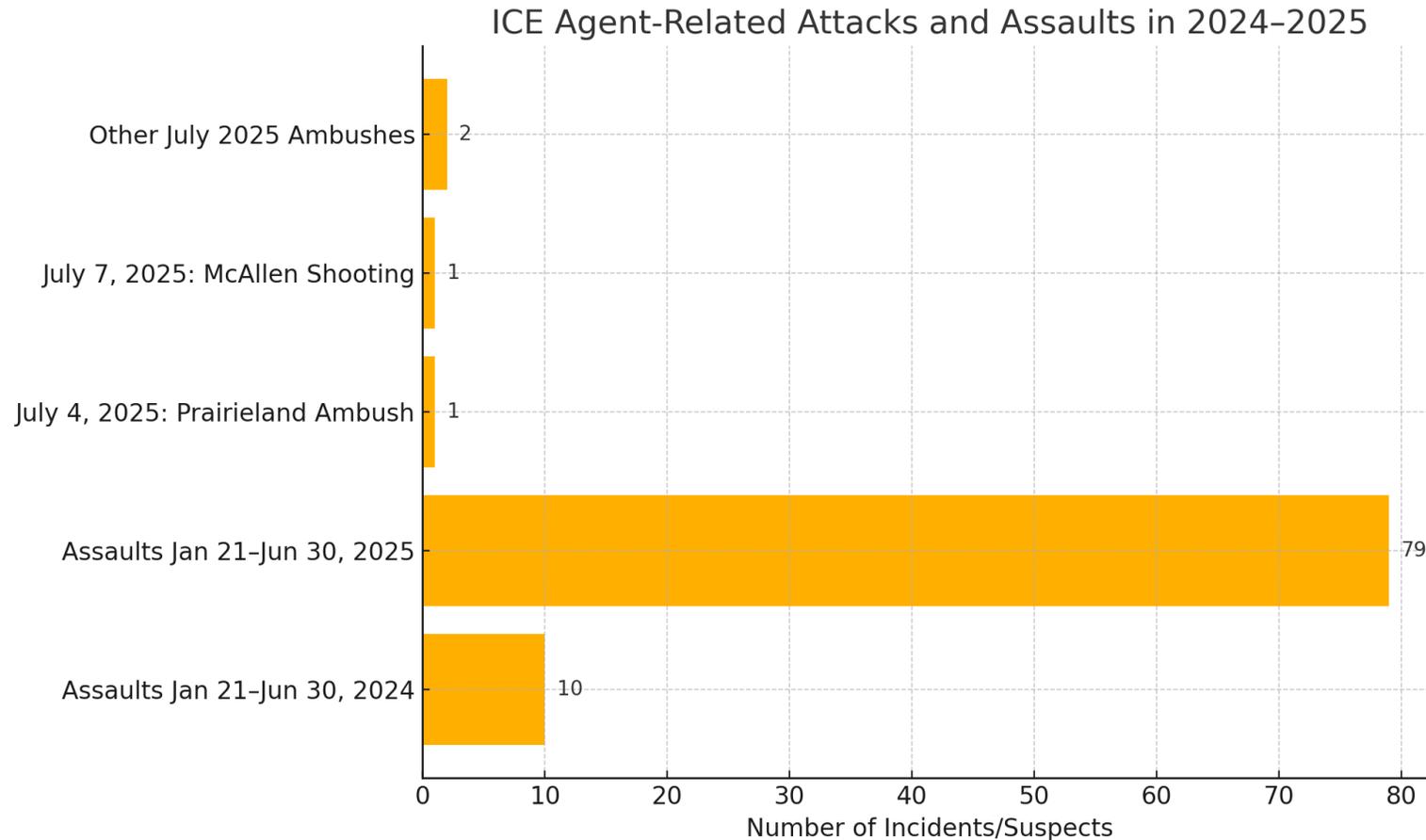
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Year	Assaults (Jan–Jun)	Notable Incident(s)
2016	Data unavailable	-
2017	Data unavailable	-
2018	Data unavailable	-
2019	Data unavailable	-
2020	Data unavailable	-
2021	Data unavailable	-
2022	Data unavailable	-
2023	Data unavailable	-
2024	10	-
2025	79	July 4 ambush, July 7 McAllen shooting, 2+ other ambushes



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An Example of Data: 800% Increase in attacks on ICE Agents



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Data Literacy

- Interpreting charts, dashboards, and predictive analytics
- Understanding how data is collected, stored, and used by digital systems
- Making decisions based on valid and reliable digital data
- Communicating insights visually and contextually for different audiences
- Understand how data can be manipulated



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Key Skills in a Generative AI World

- Understanding the difference between data-driven and data-informed decision making
- AI Ethics
- Data curation and confirmation
- Human - AI collaboration Cyborg v Centaur
- Understanding the need for human agency in decision making



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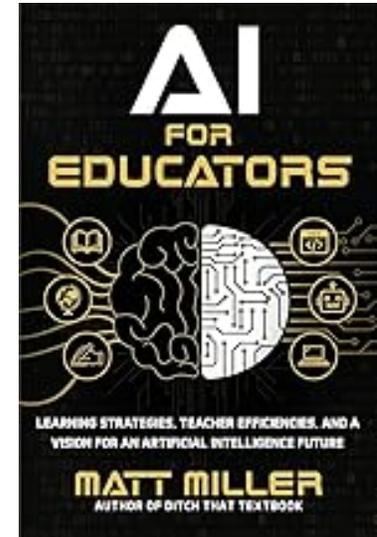
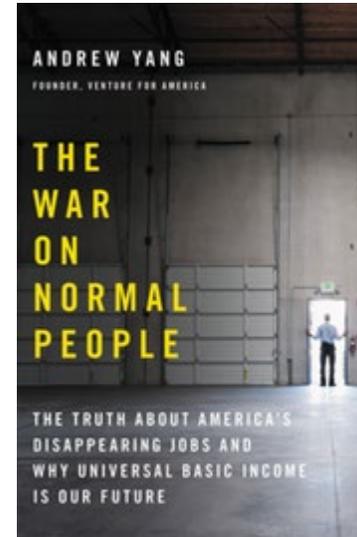
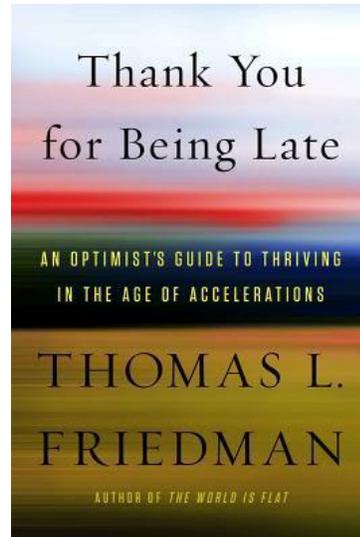
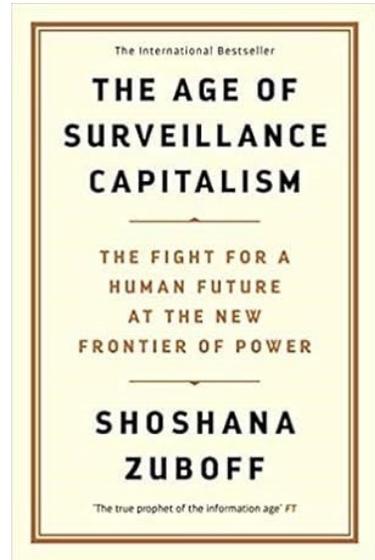
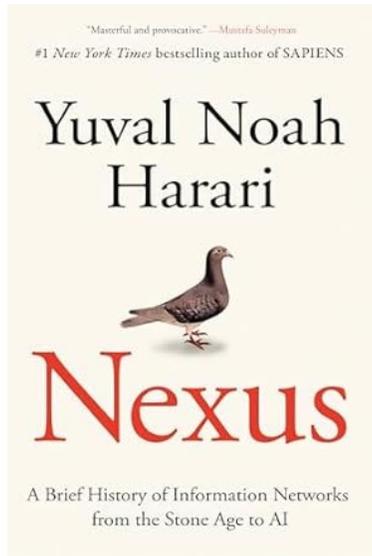
Conclusions

- Literacy has evolved from simple reading and writing to a complex set of digital, media, and computational skills.
- The next phase of literacy will require critical thinking, adaptability, and ethical engagement with digital technologies
- Education systems must continue to adapt to equip individuals with the skills necessary for a rapidly changing information landscape.



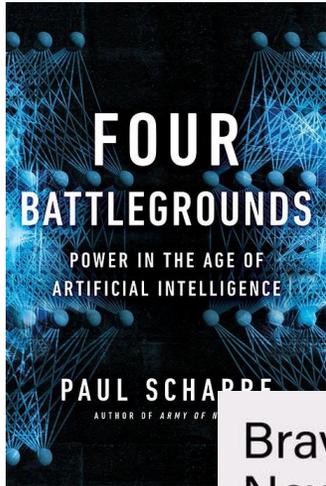
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Digitally Rich World Reading List



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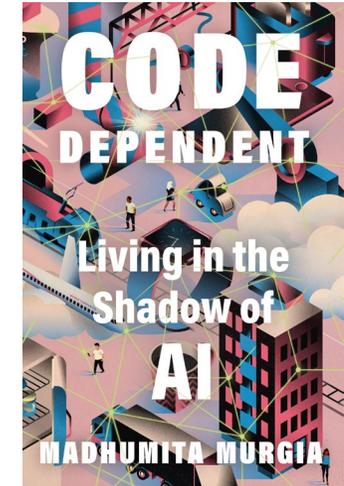
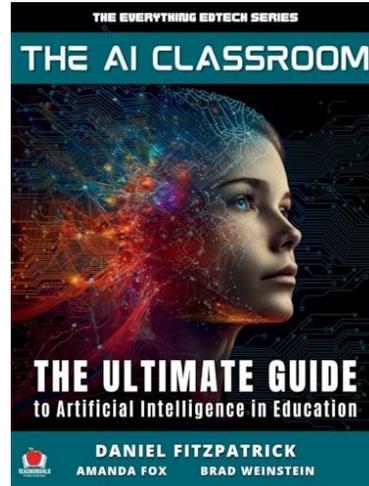
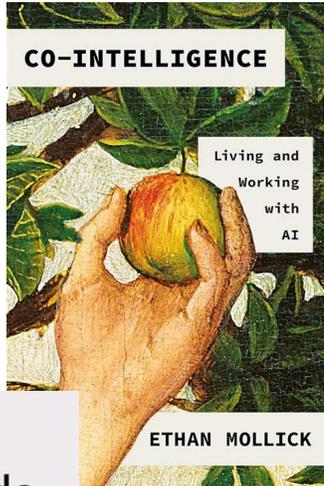
A Brief Reading List on AI



Brave
New Words

How AI Will
Revolutionize
Education (and
Why That's a
Good Thing) ☀️

Salman Khan
Founder of Khan Academy



[9 Suggestions For Your AI Reading List | Tech & Learning](#)

[Exploring generative AI through the lens of science fiction: A framework for educational dialogue - eCampus News](#)



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