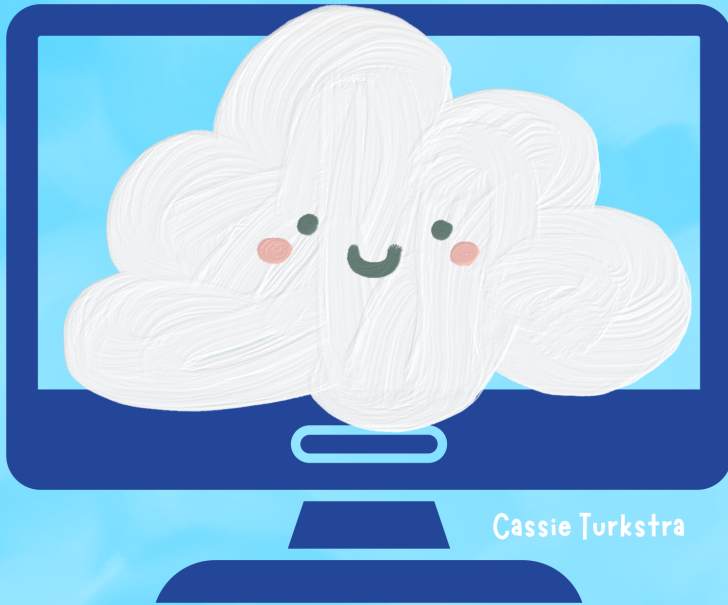


A Consideration of Data
Discourse in Children's
Books

CONNOR

The Cloud



Cassie Turkstra

NOTE FROM CONNOR



Words matter.

(And I'm not talking about the liquid and gas matter that makes up my body.)

Language is important!

It changes how we understand the world around us.

It even changes how we think about the future.

You and I are grown ups.

We are meant to answer questions and encourage thinking.

But sometimes I feel so ALONE.

Little learners interact with me through a screen and yet no one (not even YOU) can tell me
what I am or what I DO.

(Do people not want to know me?)

Sometimes, I wonder why we love robots and
stories where technology takes over the world.

It's up to YOU and ME to prepare the
little ones for the future.

Let's think about what books we read (and why I am not in them) and
maybe even write one of our own.

After you meet Rachel...

Let me tell A STORY.

NOTE FROM RACHEL

Words matter.

(I use metaphors and language every day to communicate with those I love.)

Language is important!

I know this...and yet, when it comes to technology, I feel confused.
I don't give it much thought because I don't understand half the time.

You and I are grown ups.

We are meant to answer the questions and encourage thinking.

How can we do that if we aren't encouraged to learn?

I interact with a screen every day, but I couldn't tell you what "The Cloud" actually is or how to protect myself online.

(Why are the metaphors so elusive?)

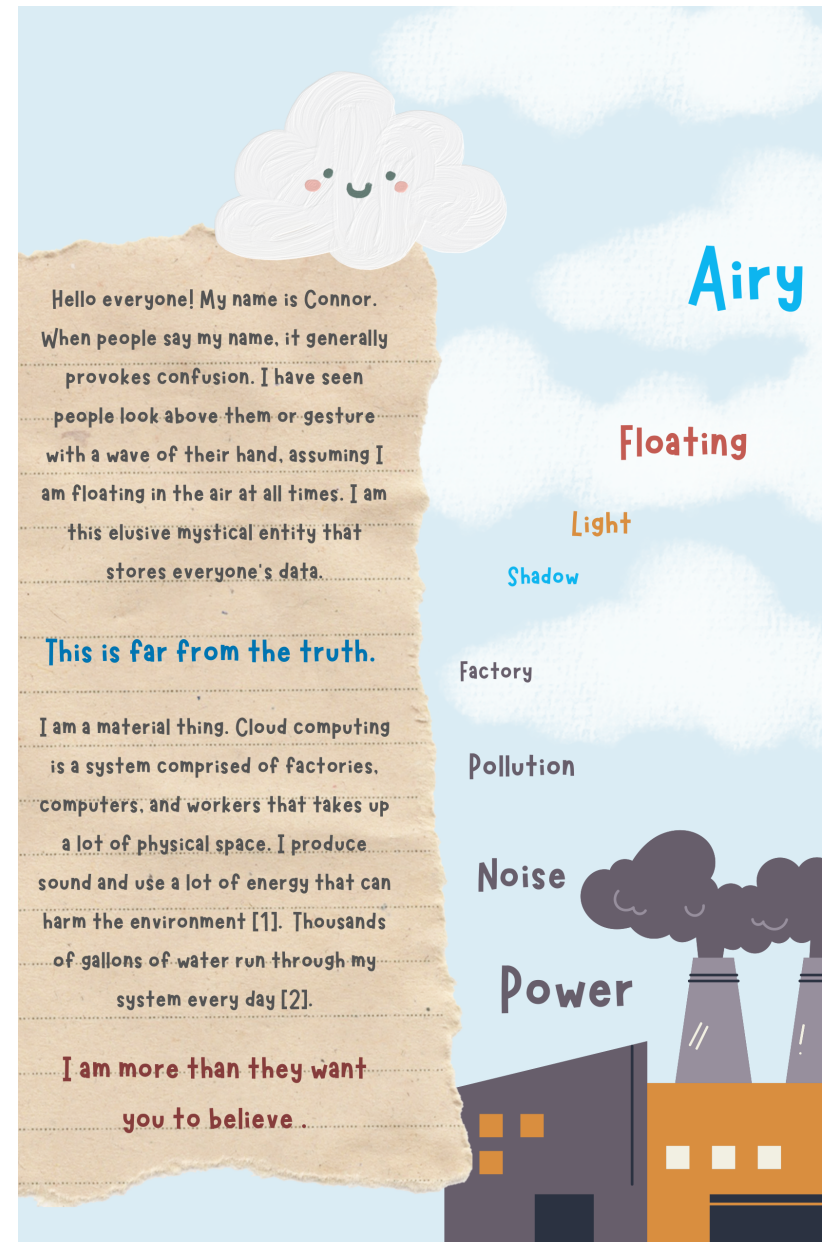
I grew up learning about **robots** and stories where technology takes over the world. I wonder how that changed how I interact and think about technology?

Are you like **ME**? I feel like I can't prepare myself, let alone a child, for the future.

Connor? Where do I start?

PLEASE

Tell YOUR STORY.



Hello everyone! My name is Connor. When people say my name, it generally provokes confusion. I have seen people look above them or gesture with a wave of their hand, assuming I am floating in the air at all times. I am this elusive mystical entity that stores everyone's data.

This is far from the truth.

I am a material thing. Cloud computing is a system comprised of factories, computers, and workers that takes up a lot of physical space. I produce sound and use a lot of energy that can harm the environment [1]. Thousands of gallons of water run through my system every day [2].

I am more than they want you to believe...

Airy

Floating

Light

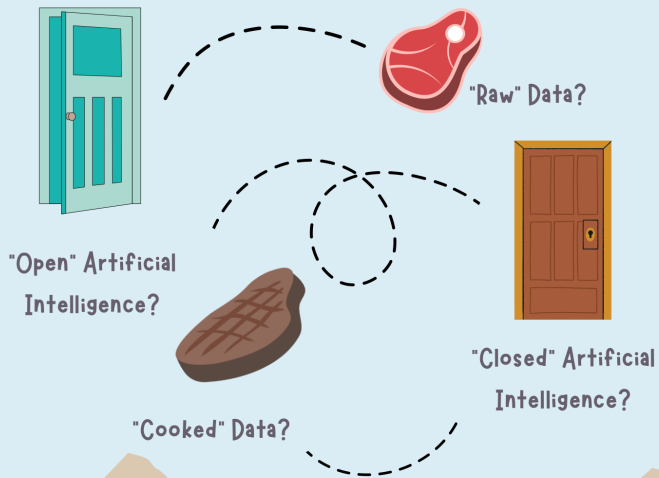
Shadow

Factory

Pollution

Noise

Power



NOTE FROM RACHEL

When I hear the phrase "cloud computing" or think about data stored in the cloud, I think of an invisible structure of information, somewhere secret and secure.

I don't think about pollution, factories, the workers behind the scenes, or the water used to cool the system [3]. Sometimes, I wonder if the language is confusing on purpose. Do the creators of cloud computing not want me to know anything about it? How do I go about locating something I didn't even know existed [4]?

The cloud metaphor completely changes how I think about it. I would never have considered that it would have an environmental impact more than airplanes, for example [5]. Language changes how I think about my data and interactions with technology daily. When thinking about the future, seeing how this could affect future generations becomes very possible. If the people developing the technology are not held accountable for their use of language by you and me, we might remain in the dark about how these systems function.



NOTE FROM RACHEL

Words can alter our relationships with how technology functions and how it is projected to impact the future [6]. I grew up with books repeatedly projecting the time that technology, robots, or AI takes over [7]. Science fiction taught me about the so-called "enemy" in the form of wires, metal, and electricity.

The language used to describe data is constantly evolving.

We are not born with the tools to break down this mysterious language [8]. We learn through experiences and the narratives exposed to us as kids. When I grew up, I was taught to think about technology in two ways:

Fear or Opportunity

Knowing how technology functions or being shown how complicated these systems are would have shown me where my fear should reside and where to spot those opportunities. I wasn't able to see the functions of data and the diverse downsides of its widespread use due to the very language that described it. Connor is not a part of the stories told today. I wonder what the implications will be and what that says about how much we truly know about the systems of data we interact with daily. I have a feeling this doesn't end with Connor.





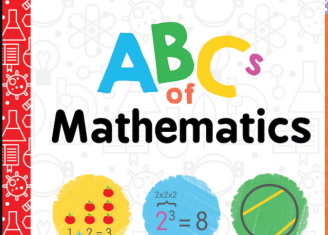
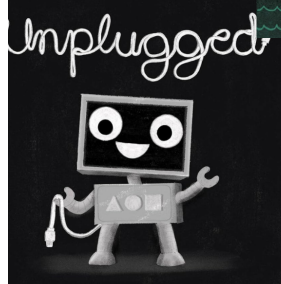
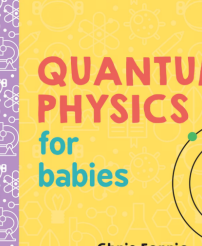
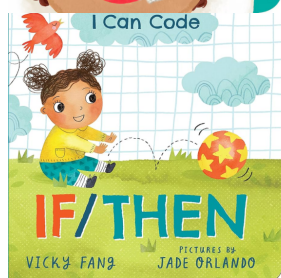
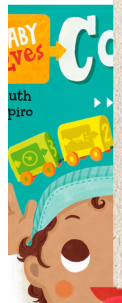
NOTE FROM CONNOR

I did some research to think more about what Rachel said. There does seem to be an oversaturation of robots in children's books and a persistent promise that technology will take over in the future.

Some books attempt to tackle complicated subjects in data, like coding for babies, but those are not the stories that have become popular [9]. This says a lot about what parents are willing and comfortable teaching their children. I feel like this is a thread that needs to be pulled at. Let's start asking the question of WHY together. If robot imagery is the most prominent framing of technology, how will that affect how people interact with technology in the future? Similarly, if thinking about artificial intelligence as the driving force to replace human work, how will that change the jobs people pursue or how AI is used in the workplace?

Learning starts young.

It is not the reader's fault, but it is potentially the parent's responsibility to look ahead as technology constantly changes and question whether our language should change with it.



A REFLECTION OF THE MIND

Fears are fostered through the stories we tell.

Images of artificial intelligence, for example, often consist of images of a brain [10]. Projections of artificial intelligence progressing past humans and replacing their necessity is not a new narrative. These technologies are framed as natural, neutral, and better than human minds [11]. Framing like this changed how we talk about AI and how it appears in stories. Descriptive language and imagery change the future, and it alters our fears.

This side of the brain is dark and grey. It addresses the closed-off version of the brain that lets data companies and authors dictate perspectives and narratives. Artificial Intelligence is one example of how this power manifests. People become unwilling to learn, engage, or use these technologies because of the fear associated with them [12].

When the mind accepts the mystery, nothing ever gets solved. Future generations might not stand a chance.

I offer you a new narrative...



A REFLECTION OF THE MIND



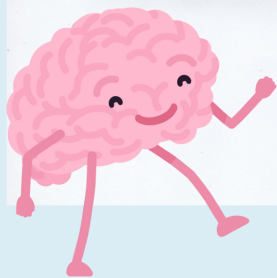
Data is not as "open" as you might think,
but your brain can be [13].

There is no learning without uncertainty. Unless you are willing to be wrong or to ask questions, there will be a limit to the amount you learn about data. Data is **created and constructed**. It can uphold some ideas and obscure others completely [14]. When you understand this, you open your mind to new questions and develop other ways to learn about the technology you interact with every day. Myths and metaphors can represent truth, but they can also work to hide certain things. There is some representation of reality in fictional stories, but they are not the only possible future.

Building awareness and asking foundational questions opens up new possibilities. It highlights our **fears and creates opportunities**, affecting how we interact with these tools in the future.

This is a challenge for Rachel and anyone else who is willing. How can we resist these narratives instead of accepting our fear?

The choice is yours!



CONVERSATIONS, LANGUAGE, AND LEARNING AS A WAY FORWARD

"Technology will take over the workforce"

"Data is unbiased"

"Language accurately describes technology"

"New technologies are ruining learning"

"Artificial Intelligence is a technology not a theory or idea"

"Data is always secure and open"

MYTHS AND FEARS

"Jobs are changing"

"Data is biased"

"Language obscures how technology is understood"

"New technologies are changing how people learn"

"Artificial Intelligence is a theory or idea"

"Data is rarely secure online"



FRAMING MATTERS

This is a message to you, Rachel, but also to anyone else listening who is likely sharing the same thought. I have heard many times that "kids are too young to understand."

Some children have access to some sort of device at six years old [15]. I am not expecting children to understand the complex interfaces behind my fluffy cloud guise. However, if children use technology at such young ages, I turn to parents to ask if there might be more that could be taught to them. What children are taught directly reflects what adults want to or are willing to teach [16]. My story is not meant to give you guilt but to suggest that it is not your fault. Metaphors and language used to describe technology have not been created so you have a clear idea of how the technology works and impacts the world [17]. Like other decisions regarding the production and distribution of any data-driven technology, these are carefully constructed words to frame something in a specific way [18].



After all, how else would we surf the web, use open AI, or conduct data mining?

[19]

IMPORTANT!

If I have learned anything since my years of creation, it is that the initial tools to frame and understand this technology do not exist. If there is confusion around these complex systems of data, then how could children fully understand it? Is the cycle just going to continue?



Companies frame technology with language, so why can't we? What is stopping children's books, for example, from attempting to start framing this technology early? Framing techniques are the foundations for learning in later life.



(The people behind the screen)

Everyone wants kids to be the future of science, technology, engineering and math (STEM), but what tools are provided to set up that passion or investigative drive?

SHOULD WE START SIMPLE?

Asking questions:

- Is everything online true?
- Is everything online safe?
- Is technology scary?
- Is technology good for the environment?
- Who decides what I see online?
- What is left out?
- Can my device change my thinking?
- How do I stay safe online?



IMPORTANT!

GOALS

TO DO

THIS WEEK

NOTE FROM CONNOR



These conversations can be confusing.

Language and word choice have influenced how technology is viewed, how it is used, and how we see it being used in the future [20].

Language is important!

The stories we tell change the world.

You and I are grown ups.

We are meant to answer the questions and encourage thinking.

Let's be confused TOGETHER.

Let's help create a future generation of thinkers that ask questions, think critically about language, and are willing to be wrong in order to learn.

This is a way forward.

We all love robots and stories where technology takes over the world.

Let's think outside these narratives and seek the opportunities left unexplored.

**I think it is up to YOU and ME to
prepare the little ones for the future.**

This is the first chapter to a new story.

This is the gift of tools and frames to prepare everyone.

Let's tell a new STORY.



FILL IN THE BLANK



GRAB THE LITTLE ONES OR TRY IT BY YOURSELF!

It is necessary to think about _____ when doing anything online.

This tool collects and stores data in large factories. One of its primary features is that it makes data easily accessible at any time or place. This type of computing is often referred to as the _____.

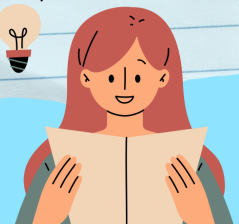
When you do anything online, you leave a digital _____ that tracks and remembers everything you do.

Data is constructed. This means that what we see online can be _____ or not tell you the _____.

Data _____ and _____ artificial intelligence are two examples of metaphors that create a certain way to think about technology.

Data-driven technologies can cause various types of pollution that increase their impact on the _____.

It is important to ask _____ about the tools or devices you use. The more you learn, the less you fear the tool, and then you can see it for its opportunities.



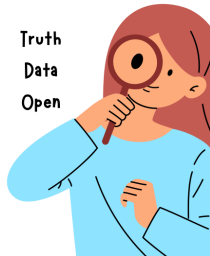
WORD SEARCH



This page is meant to help parents and kids start having conversations about data. You are not meant to know all the answers, and it's a good thing to be confused. When you find a word, ask yourself what you think it means and what more you might want to learn about it. This is step one to building alternative data futures! Break down the boundary that keeps you from learning about these concepts. [Usive language will always exist, but how we think about it can evolve.

Q S F K W T R U T H E P R I V A C Y I M
 N H E S K Y R Q P C J V S X I R U S U E
 N E X D E V I C E Z M I N I N G H S L J
 H D G U L V F E H M O A O H N P G Q B I
 T S J F E P J Q K P L H F B F T H V W F
 F G B G A E Q D E P O Q H O F U A X D V
 T Q Y Z E I Z H K B S L M H X D R J S P
 K P V S S Z Q Q O Z F P L A M A S X E Z
 U K E U M U B K P X S Z F U G R J P C U
 O A J Q Q F R F E U D S E G T C L O U D
 C N W D Q Y O F N H F A S O V I U P R E
 I L L F P R H O I U Y F T O X F O U I L
 O I R I I T F O T N N E P A M V H N T T
 B G C D N F S Q Y P G T K B Y M W R Y D
 D H V S T E G R K P R Y L H J B U H B H
 H Z Y L E Q W E T C J I N T T L T O V V
 V L A J R Y L F B M L U N G U P D L V B
 S E Z P N K H C R L F M E T K R Q Y D F
 U T K A E C N S K F G N A A J V H J Q S
 D N Y N T K N L C O D I N G E E A P J V

Online	Footprint	Pollution	Internet	Truth
Cloud	Security	Privacy	Surfing	Data
Mining	Coding	Safety	Device	Open



ADDITIONAL SOURCES

Further readings and explorations for thinkers like Rachel:

Marr, B. (2023). *Debunking ai myths: The truth behind 5 common misconceptions*. Forbes. <https://www.forbes.com/sites/bernardmarr/2023/07/05/debunking-ai-myths-the-truth-behind-5-common-misconceptions/?sh=4a31f403608e>

- Bernard Marr highlights common myths and misconceptions about artificial intelligence and its capabilities. From the job market to its seemingly unbiased nature, this article offers a great starting point for engaging with artificial intelligence.

Ensmenger, N. (2021). The cloud is a factory. In M, Hicks., T. S. Mullaney., B. Peters., K. Philip, (Eds.), *Your computer is on fire* (pp. 30-48). The MIT Press.

- This is a more academically constructed work by Nathan Ensmenger. It discusses the cloud, how it impacts the world, and its unforeseen consequences.

Watson, S. (2016). "Data is the new ____": On the industrial metaphors of big data. Dis Magazine. <http://dismagazine.com/discussion/73298/sara-m-watson-metaphors-of-big-data/>

- This article discusses the importance of language and metaphors that describe concepts in the field of big data. The article addresses dominant metaphors and thinks about the consequences of word choice.

MORE AUTHORS AND STORIES TO CONSIDER:

- Vicky Fan
- Author of "I Can Code: And/Or" and "AlphaBot"
- Jeanne Willis and Tony Ross
- Authors of "Chicken Clicking" and "Troll Stinks"
- Desirée De Leon and Greg Wilson
- Authors of "Keeya's Numbers"
- Stuart Spendlow and Amy Bradley
- Authors of "Penguinpig" and "Monkeycow"
- Dale Lane
- Author of "Machine Learning for kids"
- Chris Oxlade
- "Computer Science for Curious Kids"

Chris Ferrie. (n.d.). *Baby university explore science board book set*. <https://www.csferrie.com/book/baby-university-explore-science-board-book-set>

Chris Ferrie is an author of children's books focused on themes of artificial intelligence and data. His books discuss blockchain, chemistry, robotics and more, with accessible writing aimed at children.



NUMBERED REFERENCES

1. Ensmenger, N. (2021). *The cloud is a factory*. In M, Hicks., T. S. Mullaney., B. Peters., K. Philip, (Eds.), *Your computer is on fire*, (pp. 30-48). The MIT Press.
2. Ensmenger, N. (2021). *The cloud is a factory*. In M, Hicks., T. S. Mullaney., B. Peters., K. Philip, (Eds.), *Your computer is on fire*, (pp. 30-48). The MIT Press.
3. Ensmenger, N. (2021). *The cloud is a factory*. In M, Hicks., T. S. Mullaney., B. Peters., K. Philip, (Eds.), *Your computer is on fire*, (pp. 30-48). The MIT Press.
4. Monserrate, S. G. (2022). The cloud is material: On the environmental impacts of computation and data storage. *MIT Schwarzman College of Computing*. <https://doi.org/10.21428/2c646de5.031d4553>
5. Monserrate, S. G. (2022). The cloud is material: On the environmental impacts of computation and data storage. *MIT Schwarzman College of Computing*. <https://doi.org/10.21428/2c646de5.031d4553>
6. Watson, S. (2016). "Data is the new ____": On the industrial metaphors of big data. *Dis Magazine*. <http://dismagazine.com/discussion/73298/sara-m-watson-metaphors-of-big-data/>
7. Applebaum, N. (2010). *Representations of technology in science fiction for young people*. Routledge.
8. Chown, E., & Nascimento, F. (2023). *Meaningful technologies: How digital metaphors change the way we think and live*. Lever Press. <https://doi.org/10.1353/book.110606>
9. Chris Ferrie. (n.d.). *Baby university explore science board book set*. <https://www.csferrie.com/book/baby-university-explore-science-board-book-set>
10. Dehmer, M., Emmert-Streib, F., & Yli-Harja, O. (2020). Artificial intelligence: A clarification of misconceptions, myths and desired status. *Frontiers in artificial intelligence*, 12(3). <https://doi.org/10.3389/frai.2020.524339>
11. Dehmer, M., Emmert-Streib, F., & Yli-Harja, O. (2020). Artificial intelligence: A clarification of misconceptions, myths and desired status. *Frontiers in artificial intelligence*, 12(3). <https://doi.org/10.3389/frai.2020.524339>
12. Ayanwale, M. A., Chiu, T. K. F., & Sanusi, I. T. (2023). Investigating the moderating effects of social good and confidence on teachers' intention to prepare school students for artificial intelligence education. *Education and Information Technologies*, 29, 273-295. <https://doi.org/10.1007/s10639-023-12250-1>
13. Watson, S. (2016). "Data is the new ____": On the industrial metaphors of big data. *Dis Magazine*. <http://dismagazine.com/discussion/73298/sara-m-watson-metaphors-of-big-data/>
14. Bowker, G. C. (2013). "Data flakes: An afterword to "Raw Data" is an Oxymoron." In L. Gitelman, (Ed.), "*Raw Data" is an Oxymoron*, (pp. 167-172). MIT Press.
15. Shah, S. A., & Phadke, V. D. (2023). Mobile phone use by young children and parent's views on children's mobile phone usage. *Journal of Family Medicine and Primary Care*, 12(12), 3351-3355. 10.4103/jfmpc.jfmpc_703_23
16. Applebaum, N. (2010). *Representations of technology in science fiction for young people*. Routledge.
17. Watson, S. (2016). "Data is the new ____": On the industrial metaphors of big data. *Dis Magazine*. <http://dismagazine.com/discussion/73298/sara-m-watson-metaphors-of-big-data/>
18. Watson, S. (2016). "Data is the new ____": On the industrial metaphors of big data. *Dis Magazine*. <http://dismagazine.com/discussion/73298/sara-m-watson-metaphors-of-big-data/>
19. Watson, S. (2016). "Data is the new ____": On the industrial metaphors of big data. *Dis Magazine*. <http://dismagazine.com/discussion/73298/sara-m-watson-metaphors-of-big-data/>
20. Dehmer, M., Emmert-Streib, F., & Yli-Harja, O. (2020). Artificial intelligence: A clarification of misconceptions, myths and desired status. *Frontiers in artificial intelligence*, 12(3). <https://doi.org/10.3389/frai.2020.524339>

ALL REFERENCES

- Applebaum, N. (2010). *Representations of technology in science fiction for young people*. Routledge.
- Ayanwale, M. A., Chiu, T. K. F., & Sanusi, I. T. (2023). Investigating the moderating effects of social good and confidence on teachers' intention to prepare school students for artificial intelligence education. *Education and Information Technologies*, 29, 273-295. <https://doi.org/10.1007/s10639-023-12250-1>
- Bowker, G. C. (2013). "Data flakes: An afterword to "Raw Data" is an Oxymoron." In L. Gitelman, (Ed.), "*Raw Data" is an Oxymoron*, (pp. 167-172). MIT Press.
- Cohen, B. (2004). The zine project: Writing with a personal perspective. *Language Arts*, 82(2), 129-38. <http://www.jstor.org/stable/41484217>
- Chown, E., & Nascimento, F. (2023). *Meaningful technologies: How digital metaphors change the way we think and live*. Lever Press. <https://doi.org/10.1353/book.110606>
- Chris Ferrie. (n.d.). *Baby university explore science board book set*. <https://www.csferrie.com/book/baby-university-explore-science-board-book-set>
- Dehmer, M., Emmert-Streib, F., & Yli-Harja, O. (2020). Artificial intelligence: A clarification of misconceptions, myths and desired status. *Frontiers in artificial intelligence*, 12(3). <https://doi.org/10.3389/frai.2020.524339>
- Ensmenger, N. (2021). *The cloud is a factory*. In M, Hicks., T. S. Mullaney., B. Peters., K. Philip, (Eds.), *Your computer is on fire*, (pp. 30-48). The MIT Press.
- LeBlanc Flanagan, M. (Ed.). (2022). Finding our Way. https://www.ada-x.org/wp-content/uploads/2022/11/FOW_ENG.pdf
- LeBlanc Flanagan, M. (2022). Living in the Time of Tech Giants. https://www.ada-x.org/wp-content/uploads/2022/11/Living-in-the-Time_variation.pdf
- Monserrate, S. G. (2022). The cloud is material: On the environmental impacts of computation and data storage. *MIT Schwarzman College of Computing*. <https://doi.org/10.21428/2c646de5.031d4553>
- Radway, J. (2011). Zines, Half-Lives, and afterlives: On the temporalities of social and political change. *PMLA: Publications of the Modern Language Association of America*, 126(1), 140-150. <https://doi.org.libaccess.lib.mcmaster.ca/10.1632/pmla.2011.126.1.140>
- Shah, S. A., & Phadke, V. D. (2023). Mobile phone use by young children and parent's views on children's mobile phone usage. *Journal of Family Medicine and Primary Care*, 12(12), 3351-3355. 10.4103/jfmpc.jfmpc_703_23
- The Public. (n.d.). An introduction to: Zines. <https://thepublicstudio.ca/files/DIY-No2-Zines.pdf>
- Wang, S., and Cruz, T.M. (n.d.). AI for Whose Good? Lessons from Community Resistance to Automation at the Port of Los Angeles. <https://drive.google.com/file/d/1ORq9d4onx9plvtbXOOu4OEGQ5ihJOT4/view>
- Watson, S. (2016). "Data is the new ____": On the industrial metaphors of big data. *Dis Magazine*. <http://dismagazine.com/discussion/73298/sara-m-watson-metaphors-of-big-data/>
- Wyatt, S. (2021). Metaphors in critical internet and digital media studies. *New Media & Society*, 23(2), 406-416. <https://doi.org/10.1177/1461444820929324>

IMAGES REFERENCES

Brown, Jeffrey, designer. *My teacher is a robot*, Jeffrey Brown, Crown Books for Young Readers, 2019. Front cover.

Campbell, Scott, designer. *Brobot bedtime*, Sudipta Bardhaun-Quarllen, Abrams Books for Young Readers, 2017, Front cover.

Wasson, Dave, designer. *The big ideas of buster bickles*, Dave Wasson, Harper Collins, 2015. Front cover.

Braun, Sebastian, designer. *Look at me: I'm a robot!* Sebastian Braun, Child's Play Intl, 2012. Front cover.

Brown, Peter, designer. *The wild robot*, Peter Brown, Piccadilly, 2016. Front cover.

Antony, Steve, designer. *Unplugged*, Steve Antony, Scholastic Press, 2018. Front cover.

Litten, Kristyna, designer. *Norton and alpha*, Simon & Schuster Children's UK, 2017. Front cover.

Orlando, Jade, designer. *I can code: If/then*, Vicky Fang, Sourcebooks Explore, 2020. Front cover.

Ferrie, Chris, designer. *Absc of mathematics*, Chris Ferrie, Sourcebooks, 2017. Front cover.

Ferrie, Chris, designer. *Quantum physics for babies*, Chris Ferrie, Sourcebooks, 2017, Front cover.

Irene, Chan, designer. *Baby loves: Coding!* Ruth Spiro, Charlesbridge, 2018. Front cover.

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