

Inspire,
Advocate,
Communicate

Data Storytelling for Libraries

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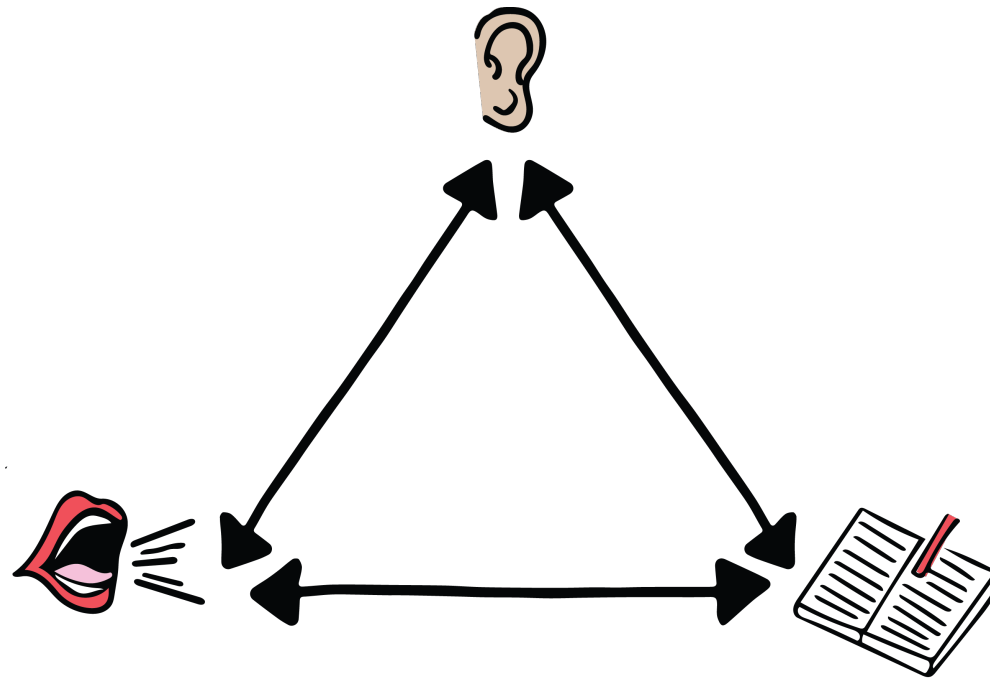
DATA STORYTELLING FOR LIBRARIANS

DSTL MISSION

- Building a data storytelling toolkit
- Supporting public and community college libraries
- Using data libraries are already collecting
- Creating data visualizations and strong story structures
- Advocating for libraries with data storytelling

JOIN US ↓





THE STORYTELLING TRIANGLE
TELLER × TALE × AUDIENCE

The background of the slide is a collage of colorful sticky notes in shades of yellow, pink, blue, and green. Each sticky note has a large black question mark drawn on it. The notes are scattered and overlapping, creating a textured, busy appearance. A white rectangular box with a slightly torn bottom edge is positioned on the left side of the slide, containing the main text.

Agenda for today's talk

- What kinds of **data** do you have as evidence?
- What kinds of **audiences** do you need to reach?
- What is the best **narrative structure** for your story?

130 Years of LIS Storytelling

Augusta Baker, first to hold the position of Storytelling Specialist at the New York Public Library, emphasized the story rather than the storyteller,

“who is, for the time being, simply a vehicle through which the beauty and wisdom and humor of the story comes to the listeners.”
(Baker & Greene, 1977)



Caroline Hewins, Reading of the Young reports (1882-1898)
Betsy Hearne, ethics of folktale retelling in children's books

Consulting



PAHO



Pan American
Health
Organization



World Health
Organization
REGIONAL OFFICE FOR THE Americas



CARLI

Consortium of
Academic and Research
Libraries in Illinois



國立中興大學
NATIONAL
CHUNG HSING UNIVERSITY



Data Storytelling

Courses in ethical and accurate information communication, situated in a world of burgeoning data and new storytelling challenges. We take on those challenges directly, acknowledging the flexibility of expression available in data and story while being honest.

Co-created by Dr. Kate McDowell and Dr. Matt Turk. Instructors include Dr. Jill Naiman, Dr. Sharon Comstock, Brad Miller, and doctoral students Courtney Richardson, Andy Zalot, and Morgan Lundy, Xihui Hu, and Christy Moss.



Comfort levels: data, story, both, neither?



Data Storytelling

means any presentation of
data using narrative
strategies in story form

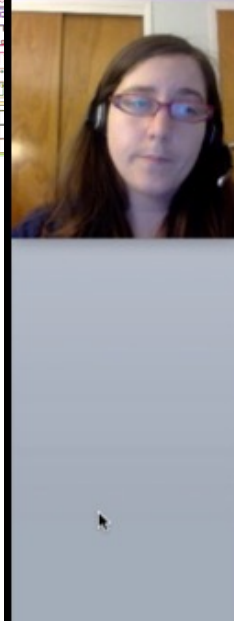
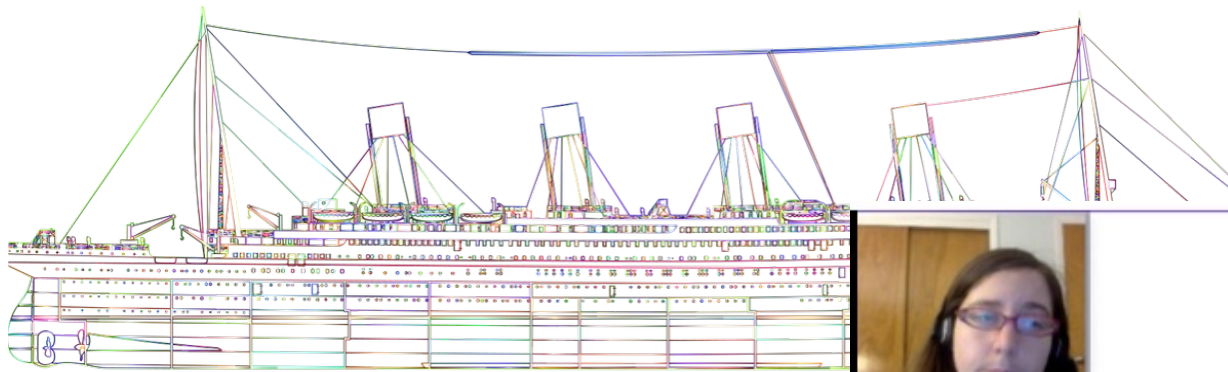
Surveying the Field: The Research Model of Women in Librarianship, 1882-1898

- Women introduced the systematic use of empirical evidence to librarianship.
 - They were 20% of the profession *and could not speak at conferences*.
 - They created a series of qualitative survey-based reports, the *Reading of the Young* reports, which were presented at ALA conferences.
- This research model changed the field, introducing a collaborative model of discourse.

McDowell, K. (2009). Surveying the Field: The Research Model of Women in Librarianship, 1882–1898. *The Library Quarterly*, 79(3), 279–300. . Won ALA LHRT Donald Davis award



Data Storytelling as Humanizing Data Literacy



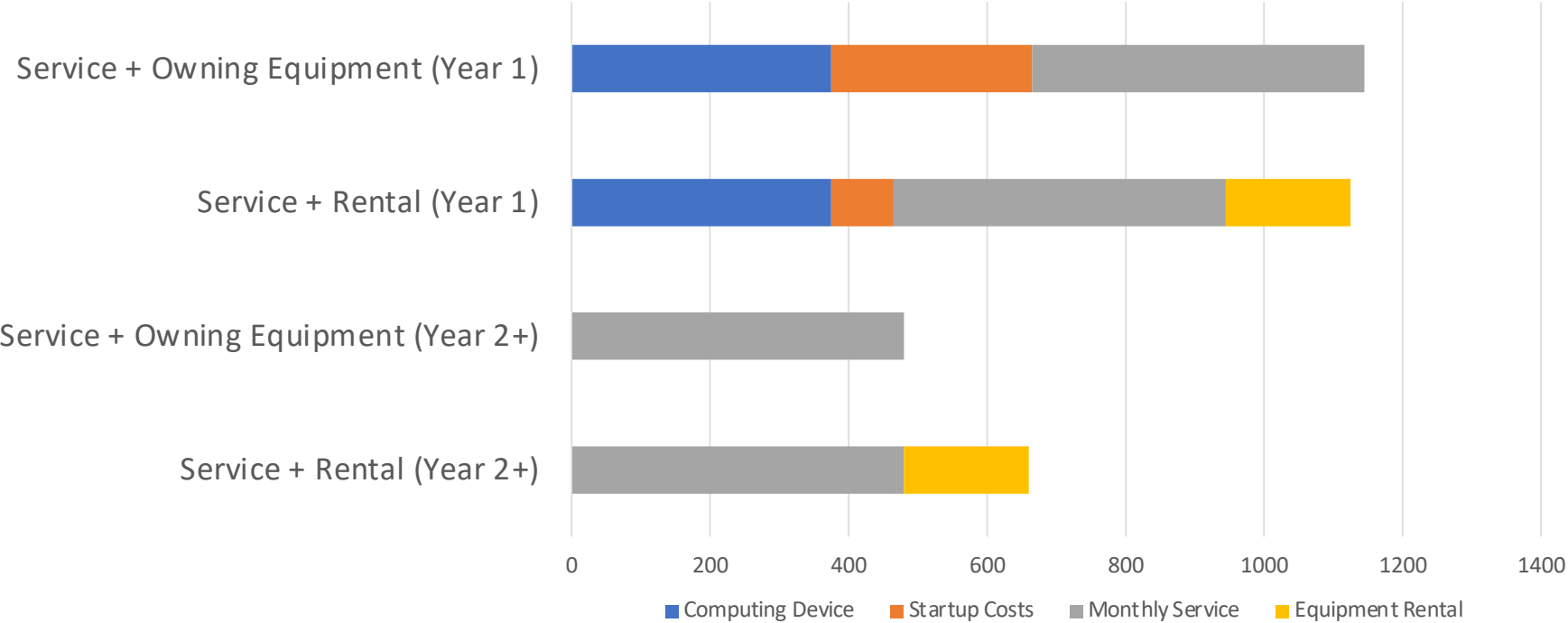
1309 passengers



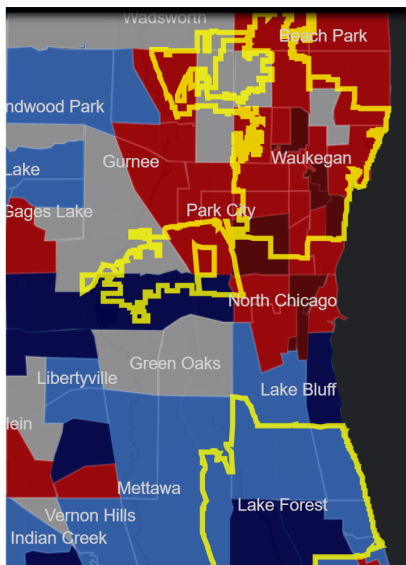
● Survived ● Died

👤 = 4.7 people

Annual Costs of Being Online



How does this disparity impact library patrons?



<https://www.chicagobusiness.com/static/section/chicagos-wealth-divide.html>

	Waukegan Public Library	Lake Forest Library
Service Area Population	89,078	19,375
Estimated Median Household Income	\$48,752	\$167,404
Estimated % in Poverty	17.5%	2.6%
Total Library Revenue Per Capita	\$50.48	\$221.66
Print Materials Per 100 People	166	→ 629 ⇒
Ebooks Per 100 People	116	→ 369 ⇒
Programs Per 100 People	1.4	→ 3.1 ⇒
Consortium Participation	No	Yes

>3x more printed materials

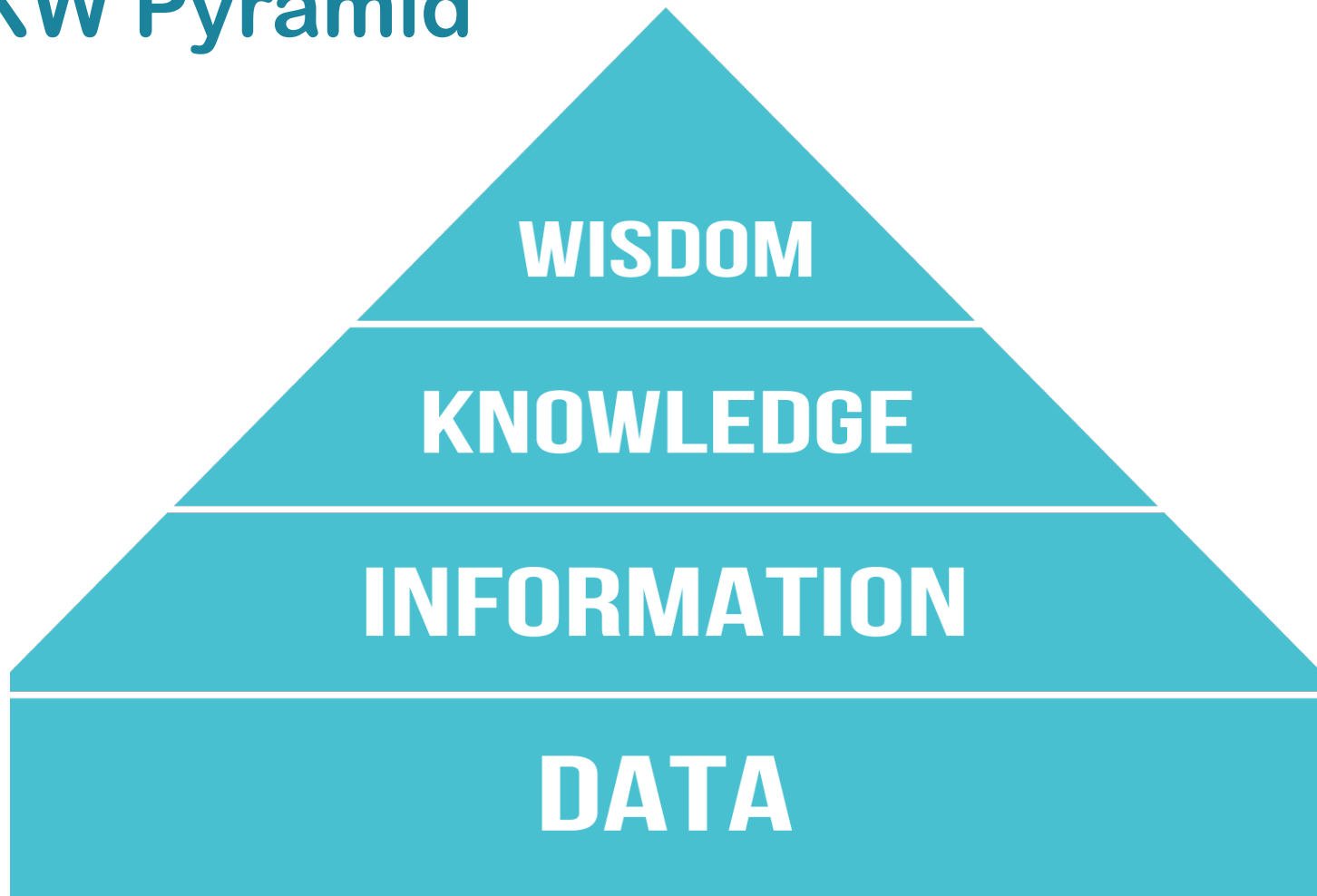
3x more ebooks

2x more programs

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Storytelling as Information

DIKW Pyramid



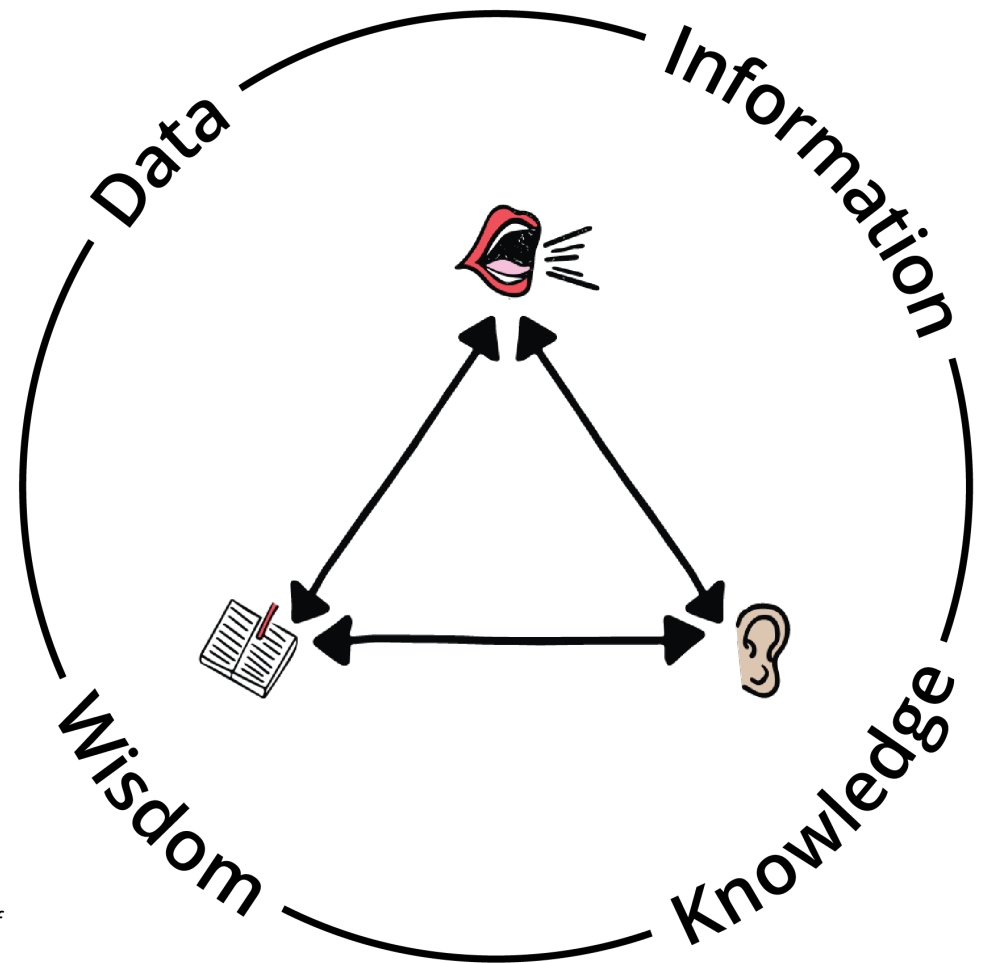
“Where is the wisdom that we
have lost in knowledge?/Where is
the knowledge that we have lost
in information?”

T. S. Eliot, *The Rock*, 1934



Storytelling Wisdom

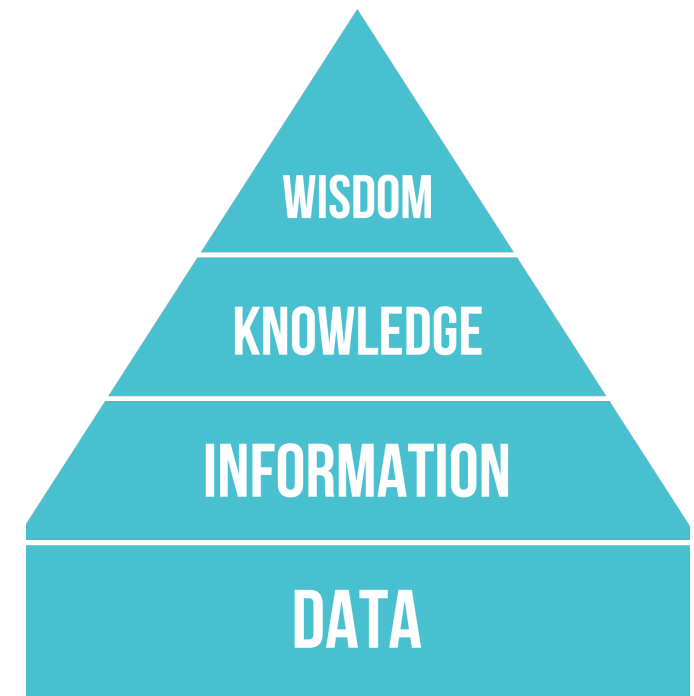
- Story is a fundamental information form
- Storytelling is central to understanding social, collective, and community meaning-making
- “In story, wisdom often means discovering a way beyond the ways that seem obvious.”




McDowell, K. (2021). Storytelling wisdom: Story, information, and DIKW. *Journal of the Association for Information Science and Technology*, 72 (10) (Special Issue: Paradigm Shift in the Field of Information), 1223–1233.

Storytelling Wisdom and S-DIKW

- **S-Data** Basis of information in story
- **S-Information** Data interpretation with context as story
- **S-Knowledge** Actionable information in story
- **S-Wisdom** Which story to tell when, how, to whom, and more



McDowell, K. (2021). Storytelling wisdom: Story, information, and DIKW. *Journal of the Association for Information Science and Technology*, 72 (10) (Special Issue: Paradigm Shift in the Field of Information), 1223–1233.



**What kinds of
data
do you have as
evidence of
library value?**

Ending Late Fees: A Case for Equity

A Story
Worth
Retelling

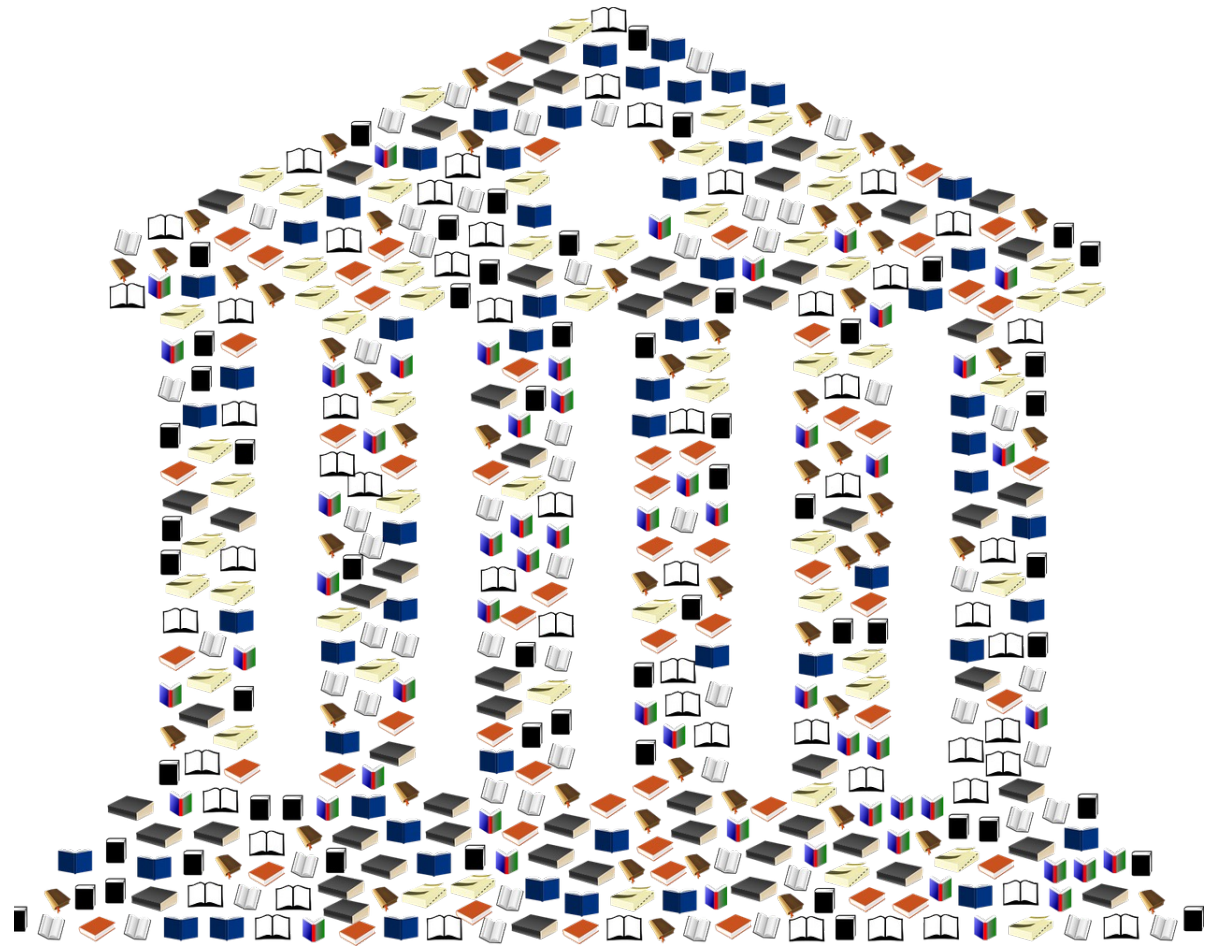


by [Grace McGann](#) on November 1, 2021

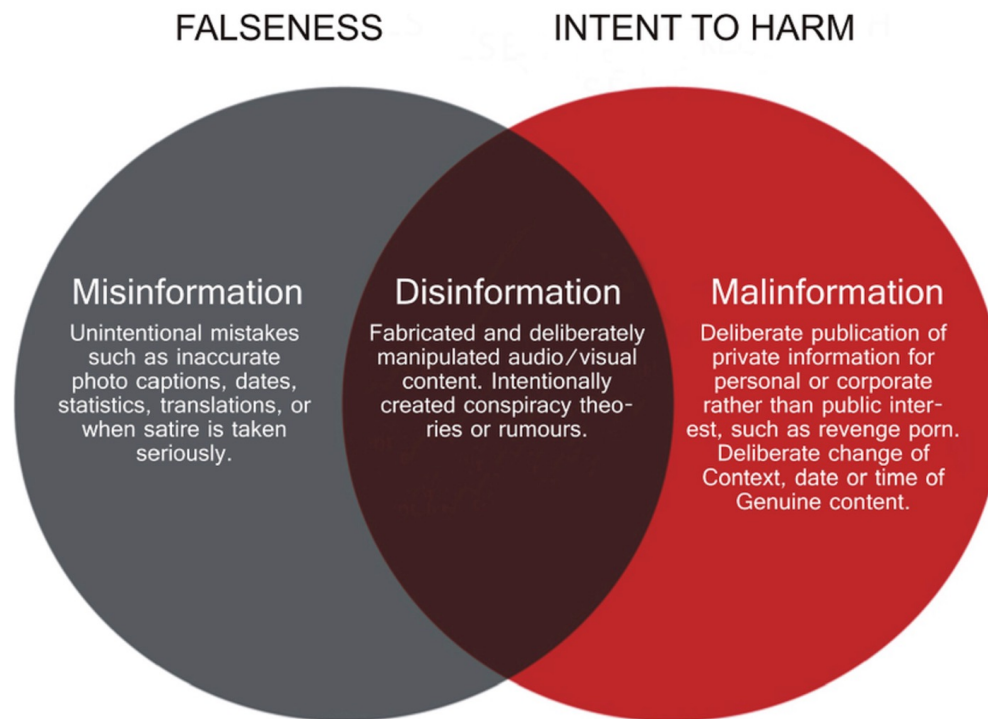
On October 5th, public libraries in New York City announced the permanent cancellation of library late fees. Area libraries paused late fees in 2020 in response to the pandemic, but this intentional

The background is a dark blue color with a complex, embossed pattern. It features several interlocking gears of various sizes, some of which are partially obscured by a dense arrangement of puzzle pieces. The puzzle pieces are also interlocking and cover most of the surface. The overall effect is a textured, mechanical, and interconnected appearance.

Library Misinformation



Mis- Dis- Mal- Information



Venn diagram for misinformation, disinformation, and mal-information Source: Wardle et al. [179]

Misinformation S-DIKW Framework

- **Bad S-Data:** Evoking cultural cues that imply factuality for data that is false
- **Bad S-Information:** False data with context that misinforms in story
- **Bad S-Knowledge:** Stories based on false information that lead to ineffective or harmful actions
- **Bad S-Wisdom:** Reactivity that leads to retelling misinformation as story without checking sources in ways that amplify harm

McDowell, K. (2023). Storytelling Dynamics and Misinformation: The Bad S-DIKW Framework. *Information Matters*.
<https://informationmatters.org/2023/04/storytelling-dynamics-and-misinformation-the-bad-s-dikw-framework/>

USA Public Library Threats

- “Parents’ rights” groups
- Most challenged books were by or about people of color or L.G.B.T.Q. people
 - “Free speech advocates warn that the next phase of the movement may be harder to quantify and counteract,” as some libraries stop buying books that could be controversial.

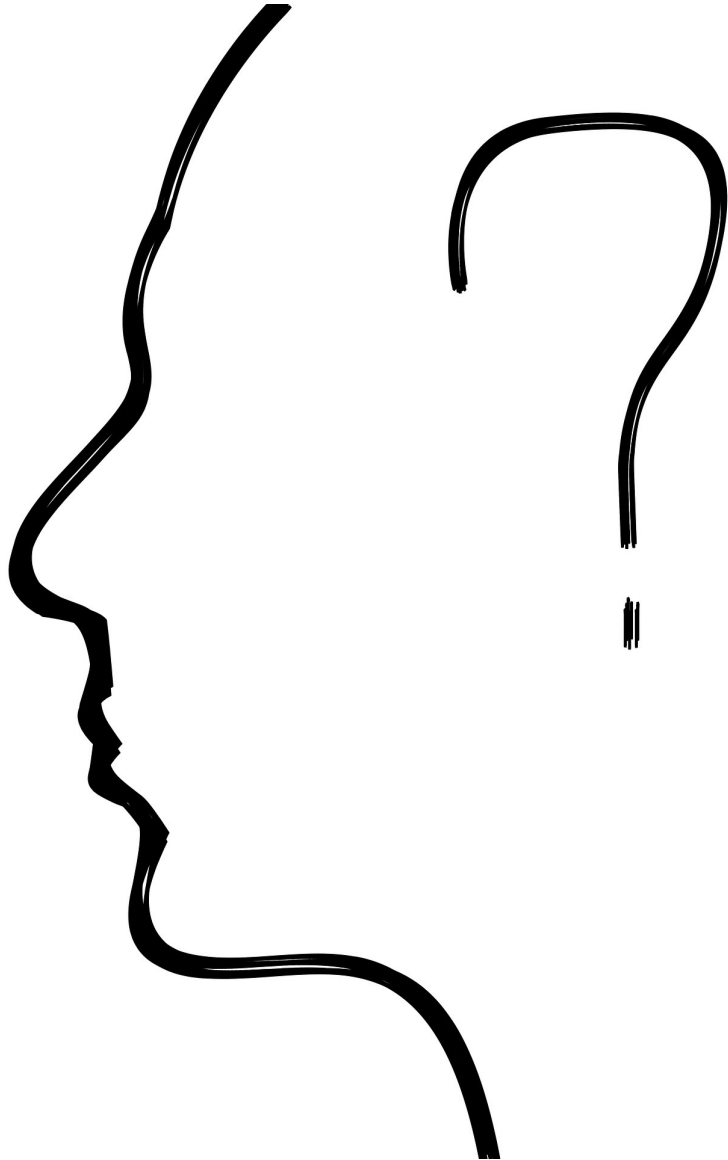
<https://www.nytimes.com/2023/09/21/books/book-ban-rise-libraries.html>

USA Book Banning, 2022-23

American Library Association's
Office for Intellectual Freedom

- 2021
 - **729** attempts to censor, **1,597** unique titles
- 2022
 - **681** attempts, **1,651 unique titles**
- 2023:
 - **695** attempts to censor library materials and services and
 - documented challenges to **1,915 unique titles.**
 - Challenges to unique titles increased 20%
- 2024?

<https://www.ala.org/news/press-releases/2023/09/american-library-association-releases-preliminary-data-2023-book-challenges>





DSTL

Data Storytelling Toolkit for Libraries

- USA nationally funded by IMLS
- co-PI Matt Turk
- DIY guide to data storytelling for common data uses in libraries





DSTL Research Methods

- interviews (34 participants, 2016-2022)
- questionnaire (28 participants, September 2021)
- ranking exercise (25 participants, April 2021)
- workshop discussions (942 participants, 6 workshops, 2021-2022)
- structured focus groups (5 groups, 55 participants, September-October 2023)
 - ranking, sorting, and writing exercises plus discussion
- user persona development (spring 2024)

A photograph of a kitchen shelf with a white subway tile backsplash. The shelf is filled with various items: several glass jars containing different types of grains and nuts, a row of small blue bottles with white labels, a stack of white plates, and several white bowls. The text "Library data needs story before storage" is overlaid in white on the left side of the image.

Library data needs
story before storage

Process for DSTL User

- Introduction to toolkit and navigation (text and video)
- **Reach Audiences (tutorial)**
- **Choose Motivations and Goals (interactive)**
- **Structure Narratives (tutorial)**
- Visualize Data (interactive)

The background is a deep blue color with a complex, embossed pattern. It features several interlocking gears of different sizes, some of which are partially obscured by a dense arrangement of puzzle pieces. The lighting creates a slight 3D effect, highlighting the ridges and grooves of the gears and puzzle pieces.

Audiences

Reach Audiences

- Knowledge
- Demographics
- Attitudes



Audience Knowledge and Demographics

- Knowledge levels
 - Of organizational context
 - Of data, in general and in context
- Demographic Data
 - Numbers of people, patrons or students
 - Languages spoken
 - Household income levels
 - Neighborhoods or other geographic factors (colleges within a university)
 - Age ranges
 - Cultural groups (ethnic, religious, social, etc.)
 - Employment (sectors and industries)



Types of Audience

Audience Type	Requirements	What to represent
General Public	Understand data	An appealing overview of insights
Executives	High-level overview of data trends to aid strategic decision-making	Highlight critical metrics and trends influencing business outcomes
Professionals	Detailed insights to understand the phenomenon behind data	Add numbers, statistics, and helpful information to understand insights deeply and communicate them effectively

Audience Knowledge and Goals/Strategies

Audience	Knowledge Before the story	Goals or strategies After the story
General Public	lower knowledge levels	more variation of attitudes, but the goal is to persuade for democratic support
Executives	high knowledge levels but may lack a detailed understanding of data	decision-making power and how they can be persuaded but also retell the story to others to justify decisions
Professionals	high knowledge level, most detailed understanding of data	persuade executives as decision-makers, but they do not need to persuade the public

Quick Guide to Audience Attitudes

Attitude	Shared reality?	Tone	Tactics
Positive		Open	Build trust. Don't take audience sympathy for granted. Make the story easy to retell.
Negative		Calm	Focus on persuasion. Restate concerns in positive terms to build common ground. Find compromises, even if disagreements continue. Slow down to de-escalate conflict.
Mixed		Open and calm	If some are persuaded, consider the story they need to tell about why.
Indifferent		Curious	Start with why it matters for these specific people. Model the interest that you hope to instill. Keep it simple. Ask questions and wait for responses.
Polarized		Non-reactive	Stay on message. Do not repeat false information. Consider the value of debate strategically. If the intent is to confuse the voters, avoid debate.


Critical Data Storytelling: Addressing Polarized Audiences

1. Identify the problem
 2. Determine what to do about the problem
 3. Determine when to try to persuade and when to avoid debate
1. Stay on message

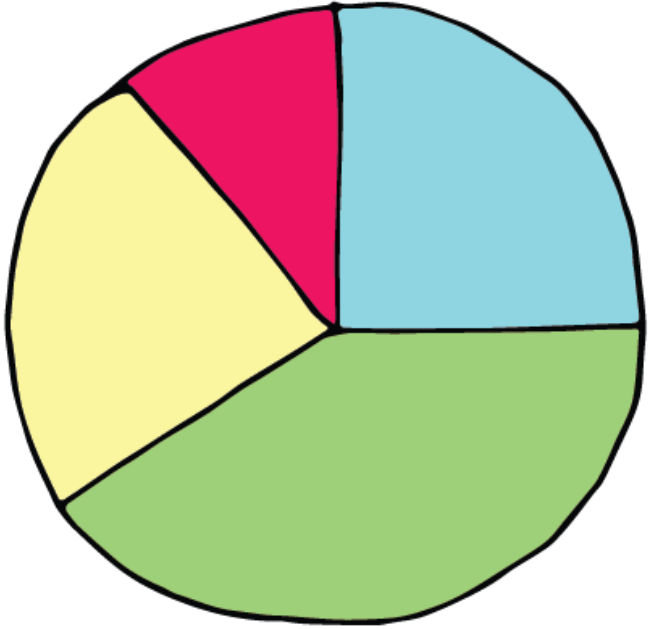


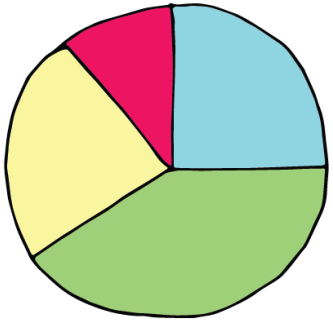


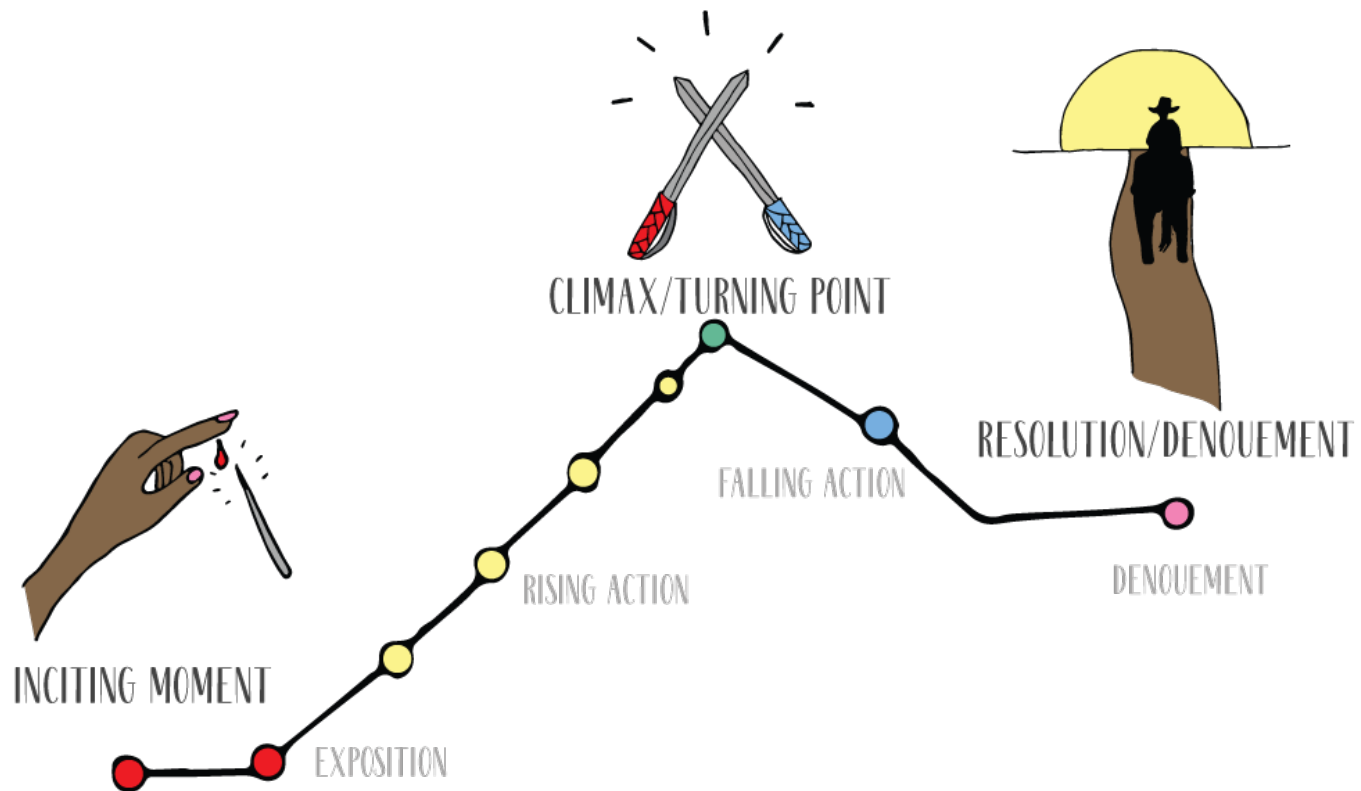
**What kinds of
audiences
do you need to
reach?**

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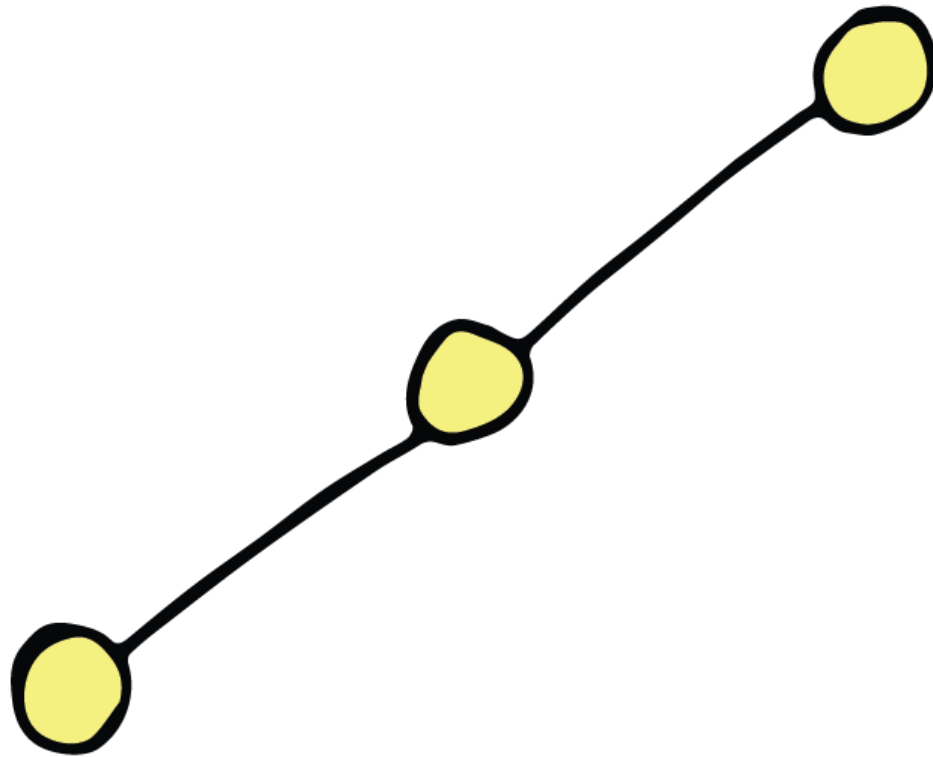
Narrative Structures







CHRONOLOGICAL STRUCTURE

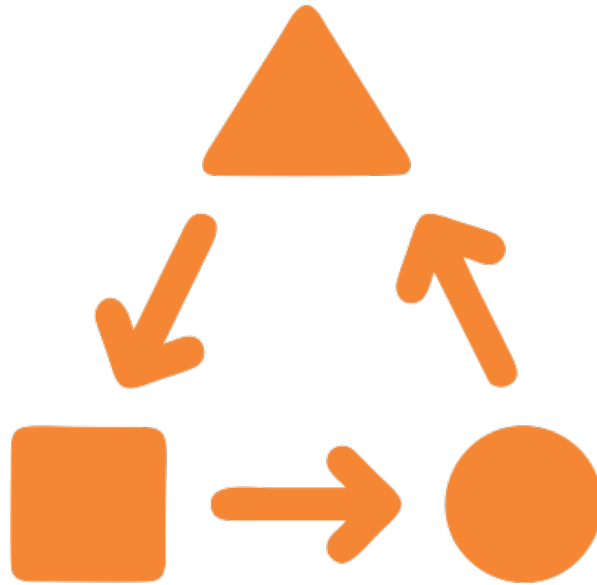


RISING ACTION

Structure Narratives



Continuity



Transformation



Discovery



Continuity



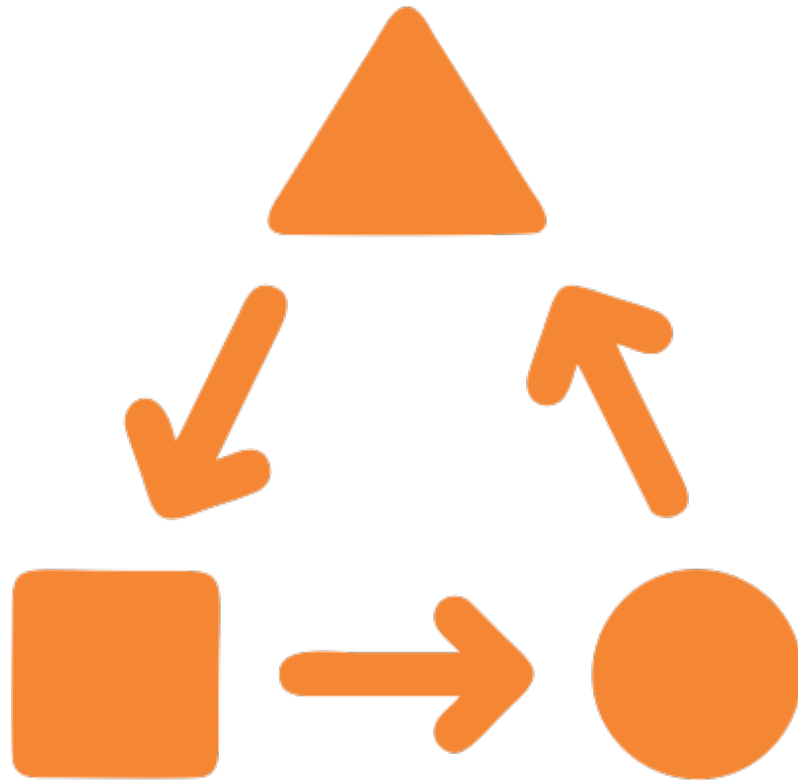
Achievement through Building on Strengths

Book Stories: 20 Years of Library Book Plate Celebrations

- Faculty promotion book plating ritual at the University of Illinois at Urbana-Champaign library to celebrate promotion and tenure.
- “Libraries in the midst of pandemic reinventions should consider sustaining, reviving, and innovating new forms of storytelling to extend the impact of the **library as the bedrock of academic community.**”

McDowell, K. (2023). *Book Stories: 20 Years of Library Book Plate Celebrations* | McDowell | *College & Research Libraries*. <https://doi.org/10.5860/crl.84.1.49>





Transformation

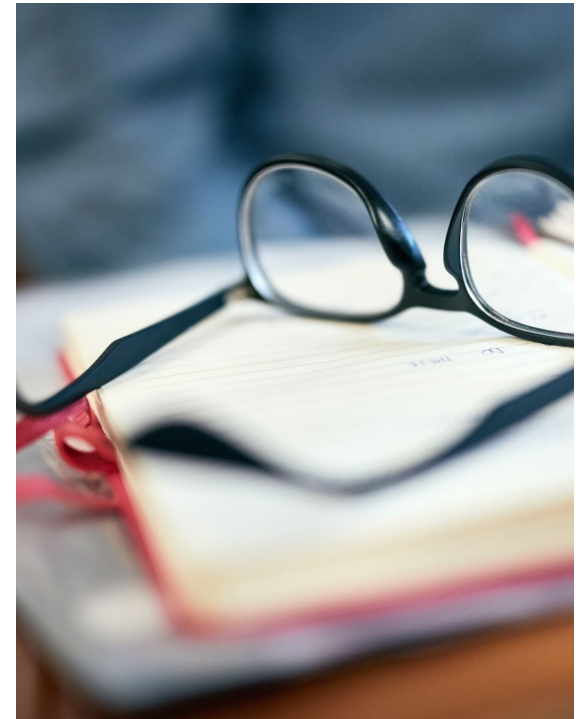


Justification for Serving Needs

Academic Library use
increases student success

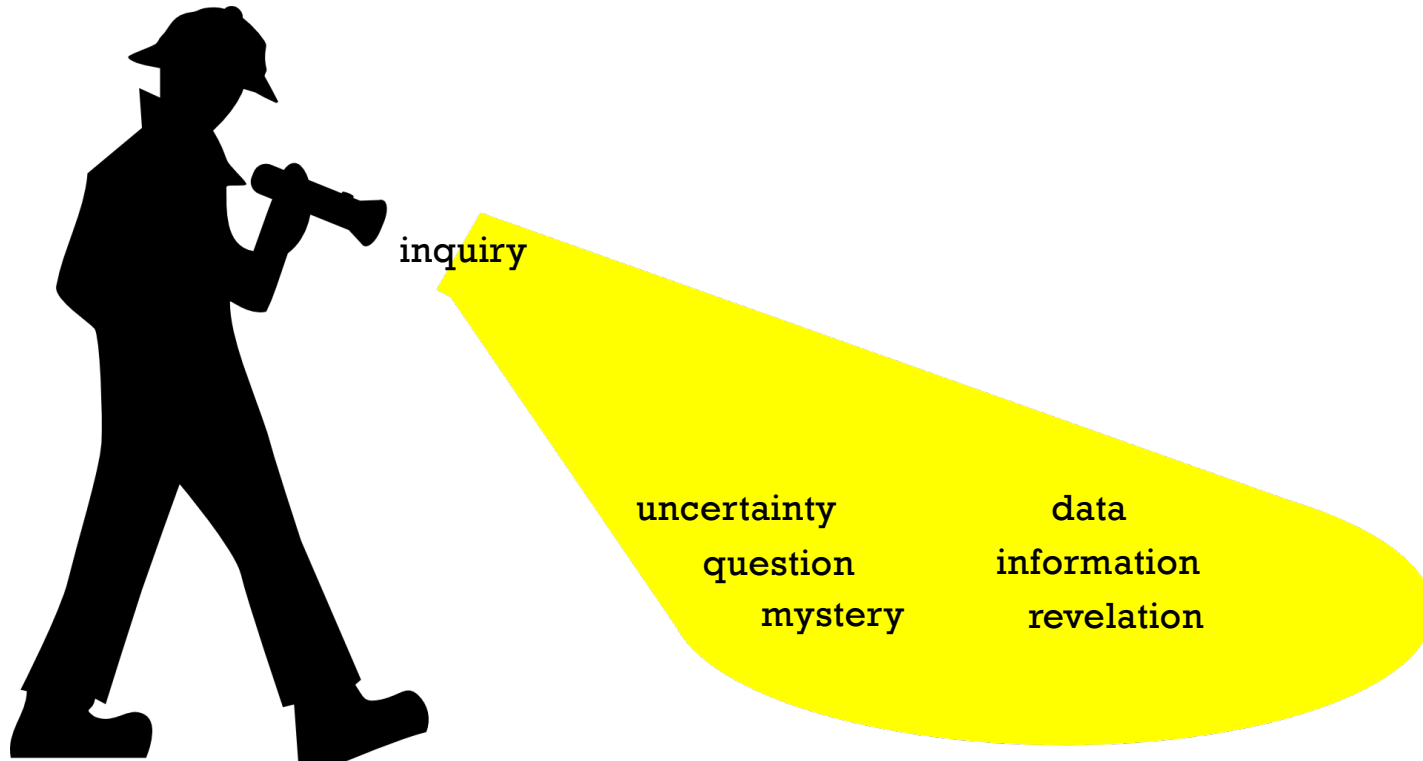
“The analysis of multiple data points (e.g., circulation, library instruction session attendance, online database access, study room use, interlibrary loan) shows that students who **used the library** in some way **achieved higher levels of academic success** (e.g., GPA, course grades, retention) than students who did not use the library.”

https://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/value/y3_summary.pdf





Discovery



inquiry

uncertainty

question

mystery

data

information

revelation

Achievement of Serving Real Needs

User survey leads to new technology investments


- “We have analyzed results from a patron survey and have changed our investments in technology. We are ready to showcase the new computer workstations, laptops, and other equipment ready for checkout.”

https://news.emory.edu/stories/2023/12/er_library_improvements_04-12-2023/story.html



Structure Narratives

Narrative Structure	Originating Theory	Emotional Impact
Continuity	Todorov and Weinstein “Structural Analysis of Narrative”	Stability and resilience despite challenges
Transformation	Campbell, <i>The Hero with a Thousand Faces</i>	Awe at transformation, joy of watching a hero triumph
Discovery	Roland Barthes <i>S/Z</i>	Mystery, suspense, intrigue, and satisfaction of coming to understanding



**What is the best
narrative
structure
for your story?**

The background is a dark blue color with a subtle, embossed pattern of interlocking puzzle pieces and gears. The puzzle pieces are arranged in a way that some form larger gear-like shapes, creating a complex, mechanical texture. The lighting is slightly darker towards the edges, giving it a three-dimensional feel.

Motivations and Goals

Motivations and Goals

- Craft the foundational **logic** of a data story
- Based on **wisdom** distilled from the “folklore” of public institution justification
- Set attainable **goals** for a story

Motivations

- **Why** are you crafting a data story?
- What do you need the story to demonstrate, prove, reveal, or **show**?

Goals

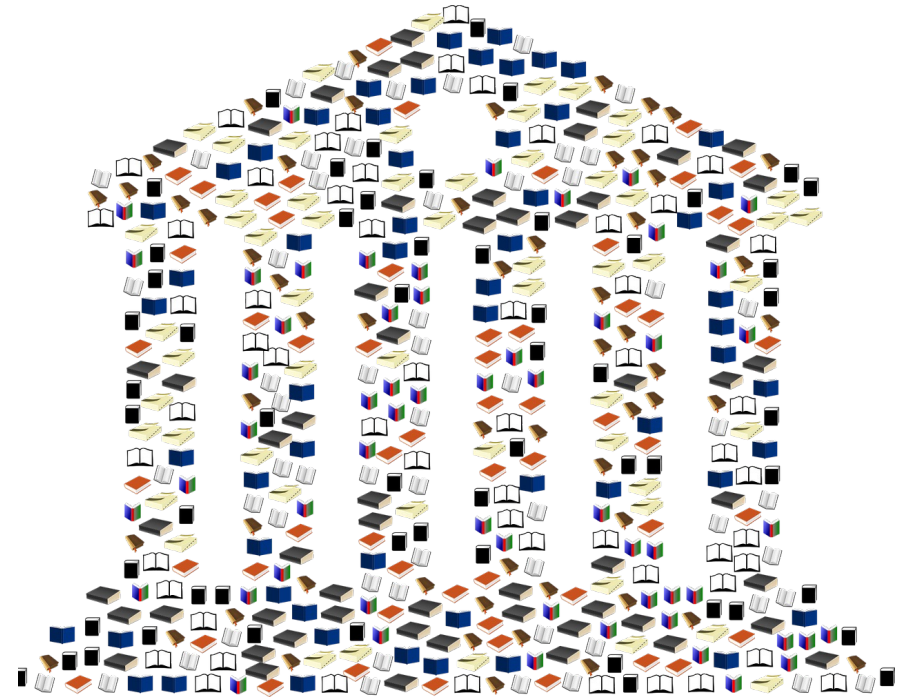
- What do you expect the audience to be able to **retell**?
- What meaning or insights do you want the audience to **take away** after the story?

Choose Motivations and Goals

	Motivations: Justification	Benchmark	Achievement
Goals: Understanding real needs	Use evidence of needs to justify resources (investments, time, money).	Use evidence of needs to compare with outside standards or trends.	Demonstrate that needs are understood and next steps to meet needs are clear.
Serving real needs	Design or maintain services based on evidence of needs.	Use evidence of needs met through services to compare with outside standards or trends.	Demonstrate that services are successfully meeting needs.
Build on strengths	Use assessment of strengths to justify resources that sustain or expand those strengths.	Use evidence of strengths to compare with outside standards or trends and contribute to the larger library community.	Demonstrate that investments to build on strengths are effective and valuable.
Address deficits	Use assessment of deficits to justify resources that can make improvements.	Use evidence of deficits to compare with outside standards or trends and keep up with the larger library community.	Demonstrate that investments to address deficits are effective and valuable.

Justification & Build on Strengths

Public libraries have measurable positive effects on their communities, including improved reading test scores after a \$200 or greater per-student capital investment. (Gilpin, et al., 2024)



The background is a dark blue color with a subtle, embossed pattern of interlocking puzzle pieces and gears. The puzzle pieces are arranged in a grid-like fashion, while the gears are of various sizes and are scattered throughout the scene. The overall effect is a textured, mechanical, and interconnected appearance.

Example for a Data Story

MAKING SENSE OF A GAP

DATA STORYTELLING AND LIBRARIES





TABLE 1. GAPS BETWEEN TWO LIBRARIES (NUMBER PER 100 PEOPLE)

	Library 1	Library 2	
Print Materials	166	629	= 3x more printed materials
E-books	116	369	= 3x more e-books
Programs	1.4	3.1	= 2x more programs

TABLE 3. STORY ELEMENTS

Data in visual form: Gap	A table showing a gap between what our library provides and what a similar library in our region can provide.
An argument: Address deficits	We want to make improvements to address these deficits for our library.
A narrative structure: Transformation	We plan to transform by growing our print materials, e-books, and programs.

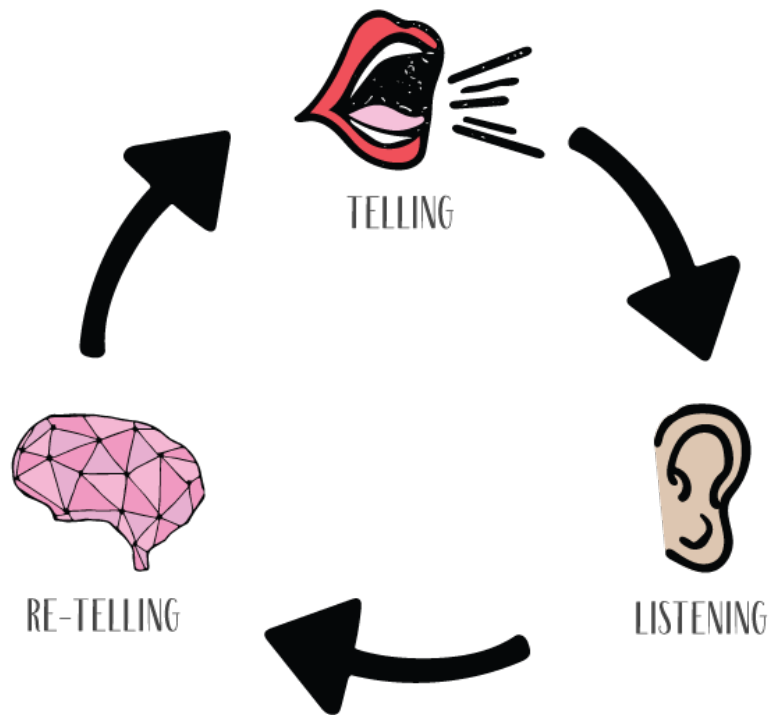


Story plan

TABLE 4. STORY ELEMENTS FOR AUDIENCE

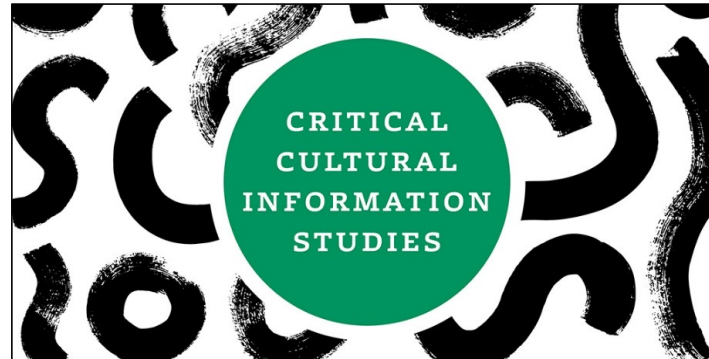
Data in visual form: Gap	A table showing a gap between what our library provides and what a similar library in our region can provide.
An argument: Address deficits	We want to make improvements to address these deficits for our library.
A narrative structure: Transformation	We plan to transform by growing our print materials, e-books, and programs.
Audience attitudes: Polarized	We prepare to calmly assert the data, argument, and narrative structure, hoping to find common ground with the polarized audience. If some of the audience tries to draw library staff into debates designed to confuse the voting audience, then we focus on calmly re-asserting the data and argument so that those who are able to vote can understand the issues and what is at stake for the library.

McDowell, K. (2023). Making Sense of a Gap: Data Storytelling and Libraries. *Public Libraries Magazine*, 62(6), 28–35.



CYCLE OF STORY ACROSS TIME

RECEPTION × REITERATION × REVISIONING × RECREATION



Critical Data Storytelling for Libraries

- ❖ **Critical Storytelling**
- ❖ **Data Collection:** Transaction or Interaction?
- ❖ **Narrative Strategies:** Structures, Plots, and Step-by-Step Transformation
- ❖ **Reaching Audiences**
- ❖ **Storytelling Against Misinformation**



Implementing the Data Storytelling Toolkit for Librarians 2024-2027

- IMLS-funded, Laura Bush 21st Century Librarian program
- With PLA and co-PIs Dr. Matt Turk and Dr. Jill Naiman
- Online toolkit for public libraries, two interactive pathways, guidance, story templates



Long Term Vision

The long term vision is to cultivate data storytelling expertise as a signature expertise of our field, so that when communities have data storytelling needs, they are met at libraries and by librarians.

Questions?
Thank you!

Dr. Kate McDowell

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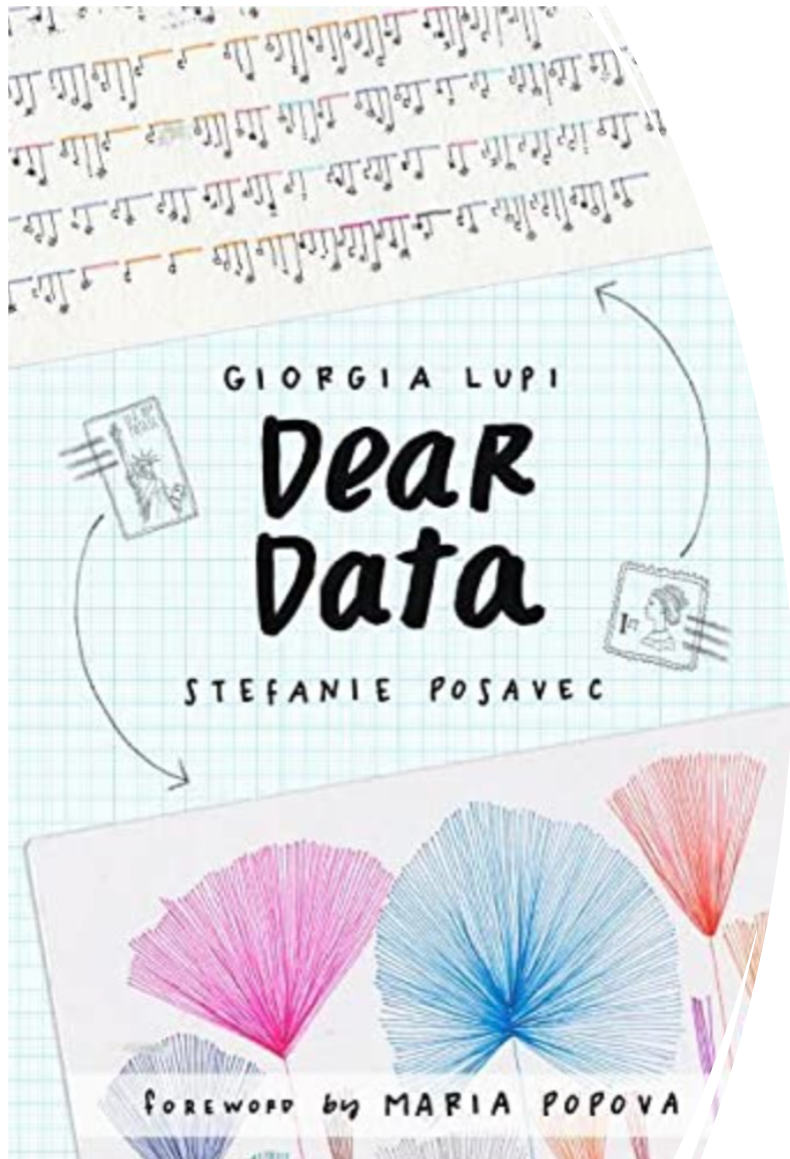
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<https://uiucdstl.wixsite.com/uiucdstl>



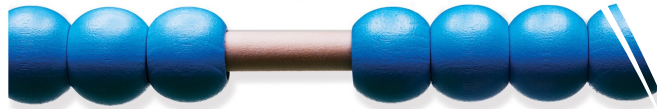
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- Stone, Deborah. (2020). *Counting: How We Use Numbers to Decide What Matters*. Liveright.
- Tzvetan Todorov & Arnold Weinstein. (1969). Structural Analysis of Narrative. *NOVEL: A Forum on Fiction*, 3(1), 70–76. <https://doi.org/10.2307/1345003>



Dear Data: Visual Strategies for Developing Stories

- Anything can be measured, objects to experiences and beyond
- Full of creative hand-drawn data visualization



COUNTING



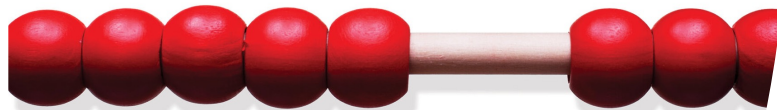
How We Use



Numbers to Decide



What Matters



DEBORAH STONE



Counting and What Counts

- Numbers are not more real than other kinds of data
 - “Counting is a lot like being a judge. Before we can *count up* ‘somethings’ we have to decide what *counts* as a something.” (p. 179)
- Finding ways to measure value requires both creativity and integrity

More by Kate McDowell and Collaborators

- McDowell, K. (2024). Library Data Storytelling: Obstacles and Paths Forward. *Public Library Quarterly*, 43(2), 202–222. <https://doi.org/10.1080/01616846.2023.2241514>
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