

Data Advocacy for All (DA4All): The Final Report

Principal Investigator:

Laurie Gries (CU Boulder)

Co-PIs:

Cameron Blevins (CU Denver)

Nickoal Eichmann-Kalwara (CU Boulder)

David Glimp (CU Boulder)

Nathan Pieplow (CU Boulder)

Aditya Ranganath (CU Boulder)

John Tinnell (CU Denver)

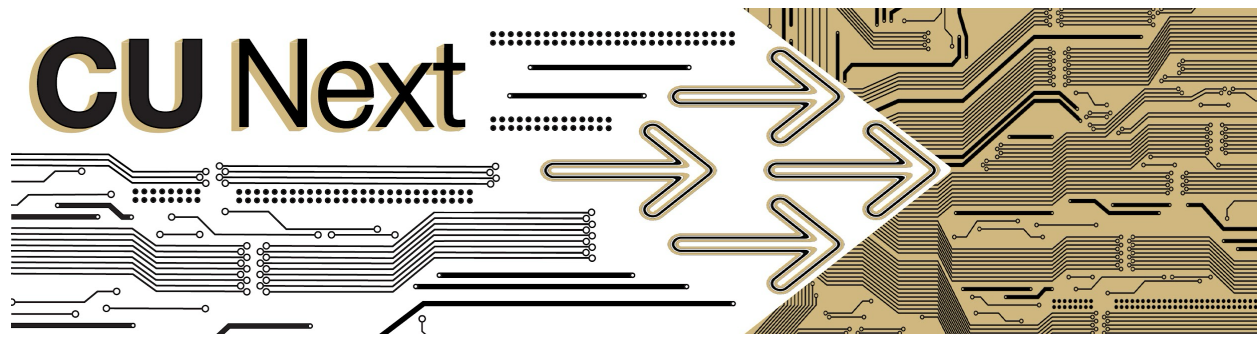
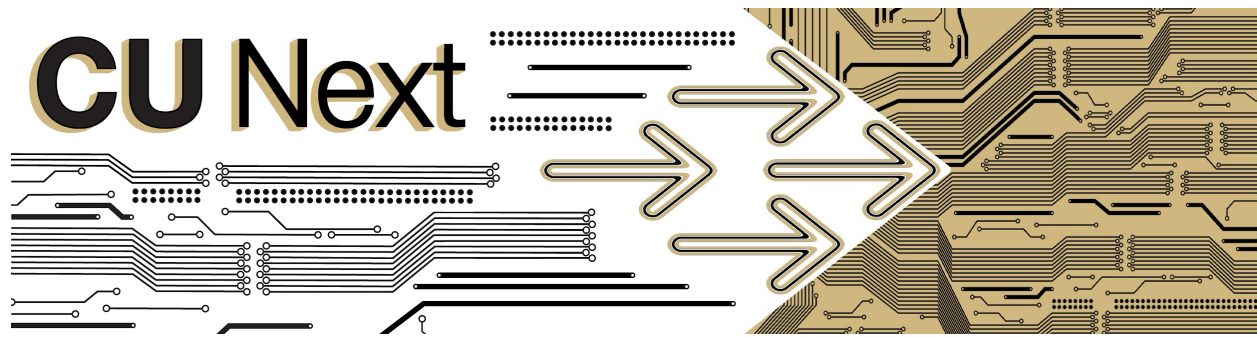


Table of Contents

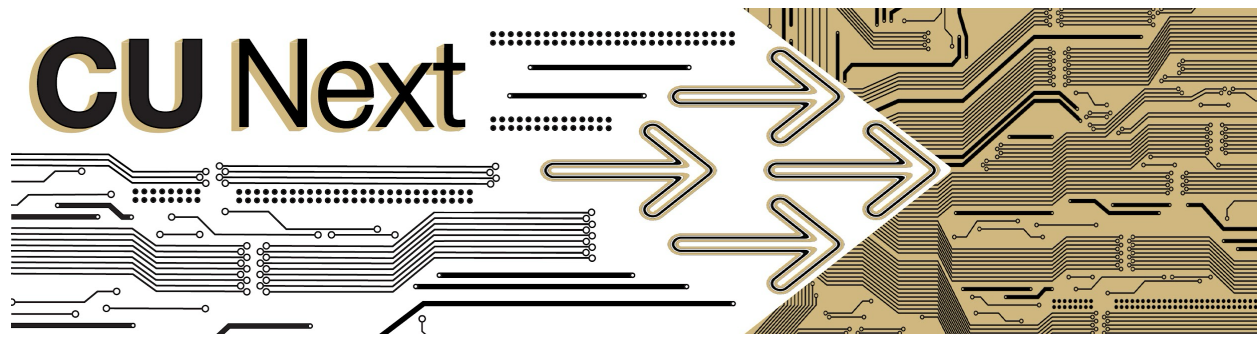
- Description and goals of the project page 3
- Lessons learned page 4-5
 - Building on responses to the prompts from the three interim reports:
 - What has your team accomplished?
 - What are the challenges you encountered?
 - Did you modify your direction? If yes, in what ways?
 - Did the collaboration evolve, grow, encounter obstacles or challenges?Please provide all examples.
- Results - data and analysis relative to learning outcomes page 6-9
- Overall conclusions, recommendations, and outcomes page 9-12
- Appendix page 13



Project Description and Goals

Data Advocacy for All is a CU Next Award project that infuses rhetorical studies with data science and critical data studies in order to enhance data humanities education throughout and beyond the University of Colorado system. With a specific aim to assist the teaching of data advocacy, we have designed and curated an accessible, searchable toolkit of educational resources for teachers and students across multiple disciplines who have no prior data science or computing experience.

Data advocacy is a deeply ethical and rhetorical practice of integrated analysis, design, and communication in which insights from a dataset are effectively gleaned and conveyed to raise public awareness and drive social change. Whether used by nonprofits to catalyze social action, think tanks to argue for policy change, or organizations to promote legislative equity, data advocacy is an increasingly important means of communication in the era of ubiquitous data. Yet while more and more undergraduate students are being exposed to the technical aspects of data science, too few students are being taught the complex array of data skills, ethical mindsets, and communication practices needed to use data responsibly and effectively to advocate for social change. Data Advocacy for All addresses this curricular gap by offering a toolkit of educational resources to help students think critically and ethically about data; learn minimal computing and data processing skills; and practice generating data-driven stories and arguments in order to ethically translate data into effective real-world action.



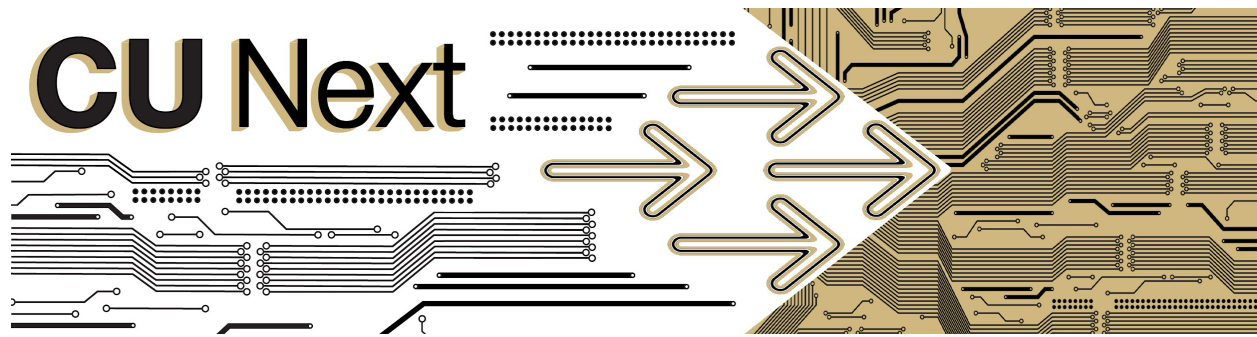
Lessons learned

Building on the responses to the prompts from the three interim reports:

1. What has your team accomplished?

Fall 2024--Fall 2025:

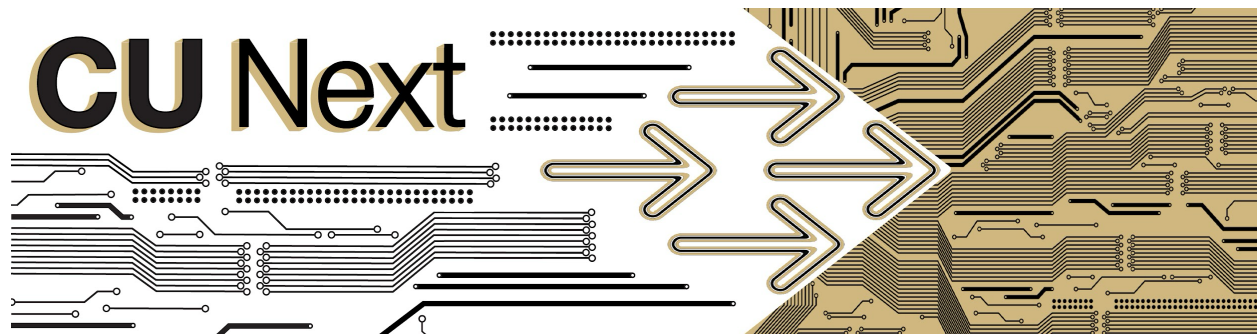
- Completed the DA4All Toolkit and published the Data Advocacy for All digital repository, which can be accessed here: <https://da4all.github.io/>. The website has the following structure:
 - **Home Page:** Provides Project Overview
 - **Toolkit:** Curated collection of educational resources that have been specifically designed for teachers and students across multiple disciplines who have no prior data science or computing experience. Inspired by three [critical frameworks](#) and centered around three [literacy domains](#) of data advocacy, this [toolkit](#) of flexible curricular resources includes open-access readings, activities, assignments, and lesson plans. Resources can be filtered buttons by their Literacy Domain /Subdomain and Resource Type or specific keywords across the resources.
 - **Literacy Domain Page:** Includes descriptions of three key literacy domains (and their respective subdomains) in which students need to gain experience to develop the critical-rhetorical capacities to ethically and effectively work with data to instigate social change.
 - **Student Showcase Page:** Provides access to examples of data advocacy projects completed by students at the University of Colorado Boulder and University of Colorado Denver between 2023-2024. These examples illustrate how resources from the [Data Advocacy for All toolkit](#) can be successfully applied in the classroom to teach students core skills of data advocacy.
 - **About Page:** Provides information about project, methodology, team, CU Next Award, and DA4All Events and CV.
- The DA4All team hosted a hybrid one-day symposium in March 2025 titled “Working with Data for Social Change.” This symposium attracted over 100 participants from over five different countries.
- Laurie Gries and Cameron Blevins presented a panel about DA4All at the 2025 International Digital Humanities Conference in Lisbon, Portugal (July 2025).
-



- Nickoal Eichmann-Kalwara and Aditya Ranganath presented a panel titled *The Data Advocacy for All Toolkit: Critical Data Education for Social Change* at the 2025 Digital Library Federation Forum held in Denver, CO (November 2025).
- Nathan Pieplow presented a talk titled “From Dataviz to Data Advocacy: Visual Quantitative Rhetoric in the Classroom” at the 2025 Gordon Research Conference on Visualization in Science and Education in Lewiston, Maine (Summer 2025).
- Laurie Gries and Nathan Pieplow submitted a proposal for a scholarly article titled “Data Advocacy for All (DA4All): A Toolkit and Approach for Teaching toward Social Justice” for inclusion in a special issue of *University of Toronto Quarterly* dedicated to Writing and Social Justices (December 2025).
- Fall 2025: Nathan Pieplow drew on DA4All to design and teach a new WRTG 3020 course for the Writing and Public Engagement minor titled *Data Storytelling for Social Justice*, which had priority enrollment for first generation students and students from underrepresented communities enrolled in the Miramontes Program at CU Boulder. This course is the second course Pieplow has developed that emerged from his work on this CU Next Award grant. The other course, WRTG 3070: *Advocating with Data*, is now officially on the books and counts toward both the new WPE minor and new data science minor at CU Boulder.
- After two years of working on DA4All, our graduate research, Lore Whittemore, left DA4All to pursue a PhD in Media Studies at University of Wisconsin-Madison. Lore largely credits DA4All for giving her the skills, knowledge, and expertise to gain admissions to the PhD program.

2. What are the challenges you encountered?

- In Spring 2025, the DA4All team received feedback from a user-centered study that was designed by Laurie Gries and Cameron Blevins to gather qualitative feedback based on the advisory board member’s experience navigating the content and toolkit on the DA4All website. The feedback was extensive and detailed, ranging in suggested revisions related to content, navigation, format, layout, resources, and toolkit features. Gries and Blevins analyzed the data from the user-centered study, identified priorities that could be adequately addressed by our Summer 2025 deadline, and assigned various team members revision assignments. The revisions were time consuming, especially because revisions required much back end redesign, but we believe that the revisions helped to polish and strengthen the toolkit and website in general.
- We are still trying to figure out how to promote the project. As evident above, many team members are presenting at national and international conferences about the project and some



are beginning to write scholarly articles grounded in DA4All; however, we need to find even more ways to promote the project.

3. Did you modify your direction? If yes, in what ways?

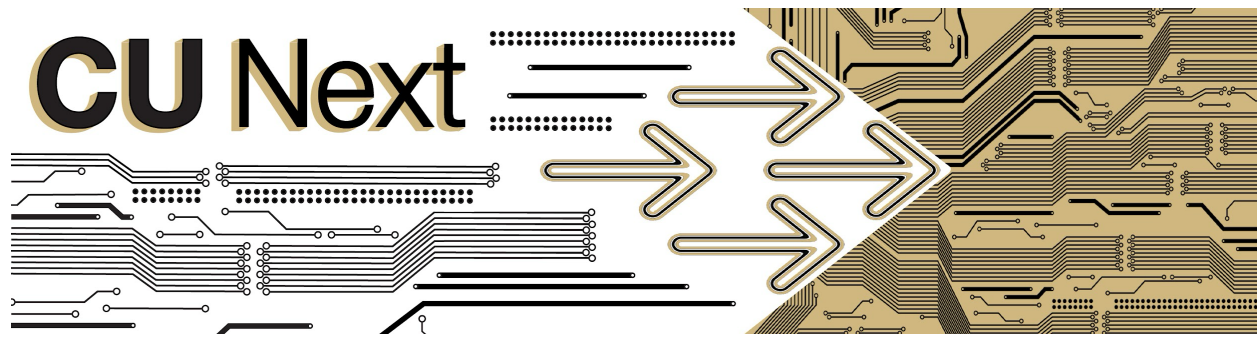
- We did not modify our direction since Fall 2024, the date of the last interim report.

4. Did the collaboration evolve, grow, encounter obstacles or challenges? Please provide all examples.

- Our graduate research, Lore Whittemore, left DA4All after two years of working as the web designer to pursue a PhD in Media Studies at University of Wisconsin-Madison. When Lore left, Cameron Blevins had to take on the web design and maintenance position, and thus for the final year of the project, Laurie Gries and Cameron Blevins worked very closely to address both back end and front end issues raised by the user-centered study. The final website and toolkit design is a true CU Boulder and CU Denver collaboration.
- Our team members, especially at CU Boulder, grew closer to form a tightknit community who are still collaborating and supporting each other. For instance, Nathan Pieplow and Laurie Gries are co-writing a scholarly article to hopefully be accepted for publication in the *University of Toronto Quarterly*. Aditya Ranganath and Laurie Gries have submitted a proposal about DA4All for the 2026 IASSIST conference (IASSIST, which stands for the International Association for Social Science Information Services and Technology is an international organization of professionals working with information technology and data services to support research and teaching.) David Glimp, as another example, recently served on Nathan Pieplow's PUEC committee to help assess whether Professor Pieplow should be promoted from Associate Teaching Professor to Teaching Professor. As AHUM at CU Boulder continues to explore the data humanities and as the DA4All team continues to consider future steps, I am confident such collaborations will continue to unfold.

Results - Data and analysis relative to learning outcomes

We originally planned to assess student learning based on the pedagogy of John Tinnell (CU Denver) and Nathan Pieplow (CU Boulder) who were supposed to be drawing on modules created specifically for DA4All to teach data advocacy in their 1000 level and 3000 level courses at CU Denver and CU Boulder, respectively. Over the three-year grant project, however, we quickly realized that such data would not



be helpful, as the main target of our website are teachers, not students, from across the disciplines with no prior experience with computer science and data advocacy. We did not complete the website until

the very end of our grant period, so we have not had time to survey teachers who have used the website to get their feedback.

We do have qualitative data from our data advocacy advisory board members, who are college professors in Communication, History, Writing Studies, and Library Studies, who provided the following statements that give us some sense of whether or not DA4All met our goals. Please keep in mind that these comments were extracted from the user-centered study issued in Fall 2024, and thus the comments are responding to a previous version of our website. We took all the recommendations from these advisory board team members to improve the site, and thus we believe their final overall impressions of the website would be even more positive now.

In addition, we can also share impressions about audience responses from DA4All team members who have presented about DA4All at national and international conferences. We include that qualitative data below.

Overall Assessment of DA4All website from Advisory Board Members:

1. Do you think the website achieved its intended mission? If not, what should be revised, added, subtracted, etc. to achieve this goal?

Yes. I especially liked that there were a few assignments, example projects, assignments, and lesson plans for each literacy domain along with many readings across each as well. Everything was well organized and easy to navigate.

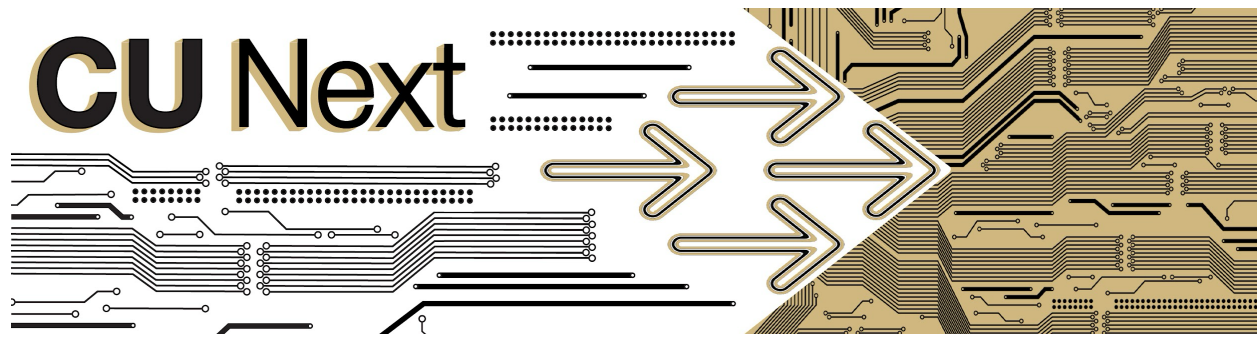
Yes, I do. My recommendations above are low-level reorganization ideas, adjusting links and the like. In general, the site achieves its mission.

Overall, I think the website achieved its intended mission to aggregate meaningful teaching resources that can support the development of student data literacy. This is a tremendous resource you have put together.

2. In terms of your overall impression of the website, what feelings, thoughts, and words come to mind for you?

Detailed, challenging, interesting, multi-disciplinary

The first words that come to mind are “robust” and “comprehensive.”



The website is much needed and offers valuable resources, but I think it's still in the beta testing phase. There are areas where improvements could be made, such as clarifying certain terms, adding more guidance for users, and enhancing the overall user experience. With further refinement and feedback, I believe the website could become a useful tool.

There were a lot of helpful elements here (I've already bookmarked a bunch of toolkit items that I will want to return to when I teach my own first year writing seminar on data storytelling again). I really appreciated the sample student work as well as my students often need models when doing more "out of the box" activities. It was great to see examples of this work in classes outside of the traditional data/stats courses as well to show that it can be done!

3. Based on such impressions, would you recommend this website? Why or why not? If so, who would you recommend it to?

I think these materials would help a variety of instructors, from those looking to sprinkle in a little data advocacy into more traditional data courses, to those wanting to build a whole class around the topic. Having a place where there are vetted readings, sample slides, and classroom tested activities can help ease the way in getting these elements into the broader curriculum.

I would describe the website as very modular. I think it provides some good resources for instructors to draw on in designing a class. I would recommend it to instructors looking for additional materials to supplement their pedagogy.

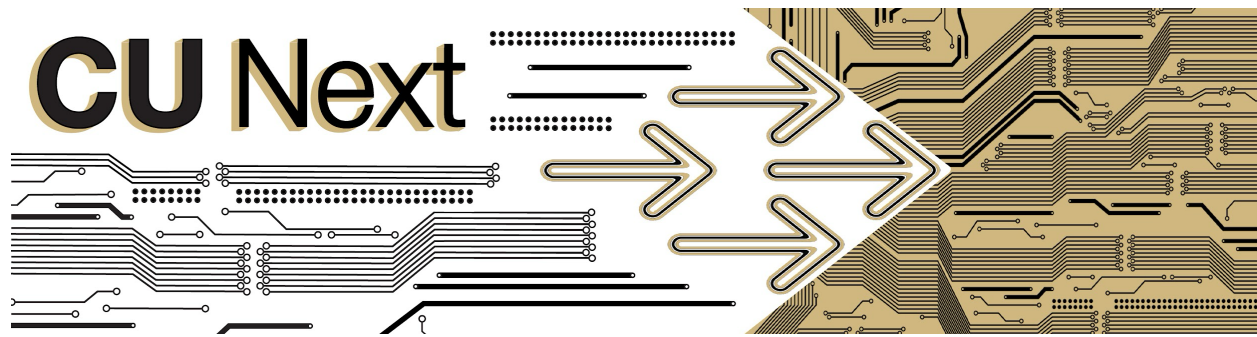
Some more work is needed before I could confidently recommend the website to others. If I were to recommend it, I would likely suggest it to fellow educators, teachers, and higher-ups in education, such as those involved in teaching conferences. The resources and content seem valuable, but with a few enhancements, it could be more effective.

Yes, I would...If I were teaching anything related to data, I'd want to have this as a teaching resource. Indeed, I think the resources are so good when it comes to how to ask challenging questions of data that I am considering integrating this material into an undergraduate honors research class even though it is not directly about any domain of data literacy...

I would absolutely recommend this site - especially to instructors looking to increase data literacy in the humanities, without knowing where to begin.

Audience Impressions of DA4All project as articulated by DA4All Team Members:

People seemed to be excited about the resource and using it in their own work. We got a few questions



about future directions and whether we're open to resource contributions from others. We encouraged people who had ideas along these lines to reach out by email, but said that since the grant is over, we

don't yet have a clear sense of what the process for updating the resource might look like.

...[o]n the whole my sense was that people are seeing a lot of potential value in the toolkit and it's definitely worth our time to present at these sorts of venues to get the word out.

--Aditya Ranganath after presenting about DA4All at DLF in Fall 2025

Our presentation at the 2025 DH Conference in Lisbon stimulated a really robust and meaningful conversation with the audience, which was very international. Folks seem to be convinced that data advocacy pedagogy is a missing gap in data science education, and they were interested in learning how they could work with their Deans and administrators to enhance data humanities education at their various institutions. Many also seemed interested in the ethics of doing and teaching data advocacy, and of course, some audience members wanted to know how emerging technologies such as AI are changing the landscape of data advocacy. Overall, I walked away from this conference convinced that DA4All has identified a unique area of research and teaching that faculty across the world are hungry for.

--Laurie Gries after presenting about DA4All at the Digital Humanities Conference in Summer 2025

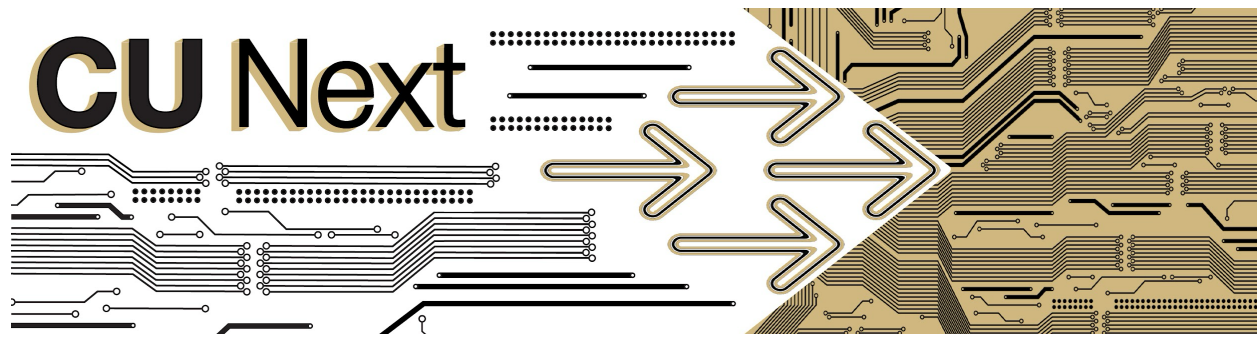
Overall conclusions, recommendations, and outcomes

As Principal Investigator of this project, I personally found this project to be a very rewarding experience, and I believe that I can speak on behalf of all my team members in saying that we are very grateful to have had the experience to work on this CU Next Award collaborative project.

This project has theoretical and practical implications.

1. **The invention of *rhetorical data studies* as a methodology.** Through my work on the DA4All project, which was inspired by a public humanities project I directed titled *The Swastika Counter Project*, I have developed a new methodology called rhetorical data studies, which we define on the DA4All website *as an emerging framework that merges insights from critical data studies, the digital humanities, and rhetorical theory to shed light on the power, persuasive, and social dynamics of data and data storytelling. As a critical and a constructive framework, rhetorical data studies explores how data-driven stories, arguments, and visualizations communicate knowledge, garner public attention, and, among other actions, mediate socio-cultural change in order to help establish more ethically-minded and effective data-informed practices.* As argued on the DA4All website, this methodology, when put into conversation with critical data studies and data science, has the means to offer a powerful approach for studying and teaching data advocacy.

This methodology has been written about in one publication so far:



Gries, L. (2023). "Rhetorical data studies: A Methodology for doing scholarly activism through data advocacy." *Rhetorica Scandinavica* 87: 15-34.

It has also been explicated in a white paper created specifically for the DA4All website:

Gries, Laurie. 2024. "A Rhetorical Data Studies Approach to Data Advocacy." *Data Advocacy for All*. University of Colorado Boulder. CC BY-NC-ND 4.0.

In summer of 2026, I plan to revise this paper for publication in the top tier journal *College Communication and Composition*.

- The invention of a Data Advocacy Literacy Model.** As articulated on the DA4All website, Data Advocacy for All has identified three key literacy domains in which students need to gain experience to develop the critical-rhetorical capacities to ethically and effectively work with data to instigate social change. To be clear, *a literacy domain is a specific area or aspect of literacy development that encompasses certain mindsets, abilities, and practices that enable one to advocate with data in meaningful, ethical, and transformative ways.* We identify these three broad domains as **Understanding Data**, **Processing Data**, and **Persuading with Data**, and in each arena, we have identified four subdomains of knowledge, abilities, and skills.

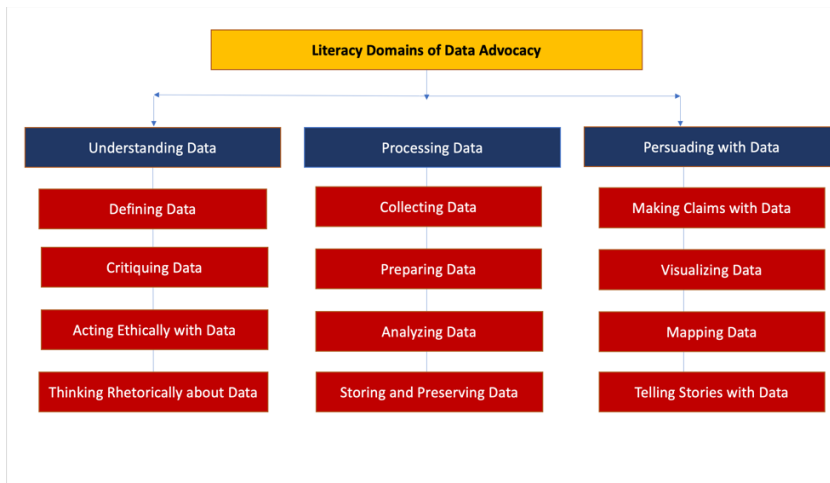
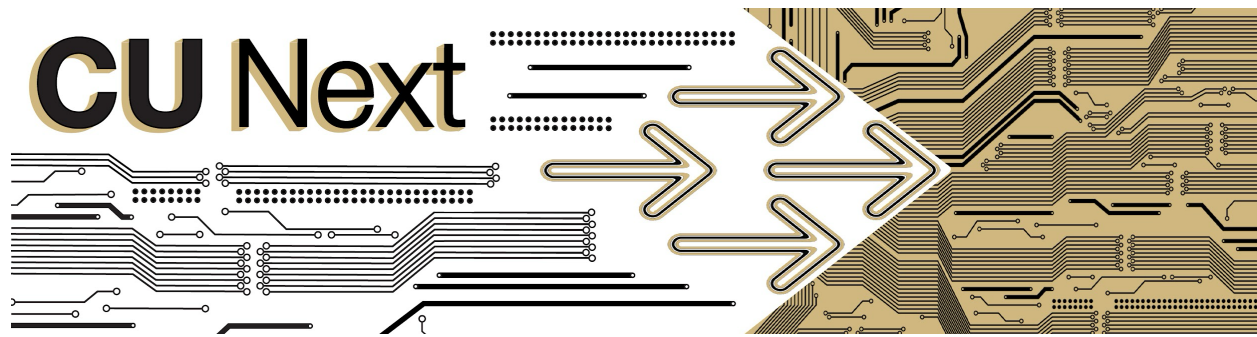


Figure 1. This graphic showcases how all of the literacy domains of data advocacy are interrelated, including each of the three primary domains in navy—Understanding Data, Processing Data, and Persuading with Data—as well as the subdomains beneath each one in red.

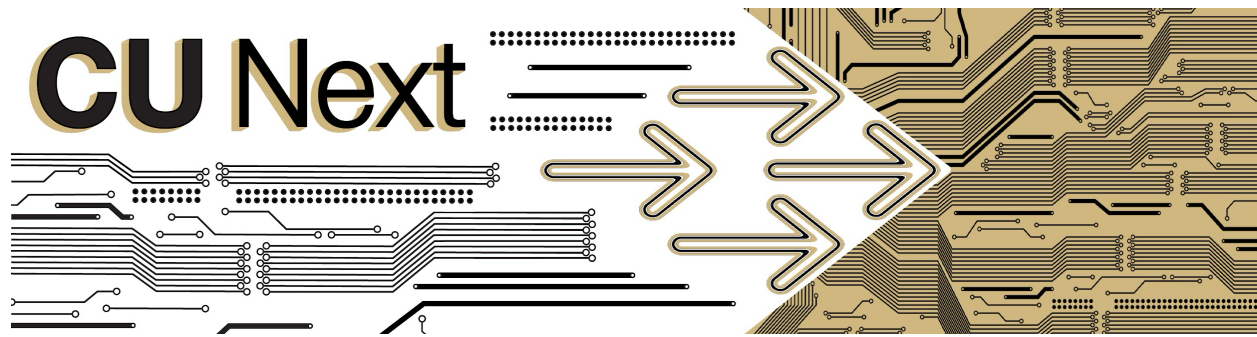


As so organized, these literacy domains are presented as distinct and linear. But we envision these domains as overlapping and reciprocal. When we create maps with data, we are often telling stories. When we tell stories with data, we are often thinking rhetorically and using persuasive devices. However, for the sake of teaching data advocacy, we have separated out these domains so that teachers can think about each of these domains more deeply, teach more systematically, and find relevant resources as needed.

In addition to helping organize our DA4All toolkit, we believe that this literacy model will prove useful for helping teachers organize their pedagogy when teaching data advocacy. As such, these literacy domains will be the primary focus of an article currently being written by Laurie Gries and Nathan Pieplow for the *University of Toronto Quarterly*. We can also imagine this literacy domain being the structure for a new textbook on Data Advocacy that Pieplow and Gries are currently in discussion about.

- 3. The opening up of a new area of research and teaching: Data Advocacy and Justice Studies.** As evidence of interest in this emerging area, a local hybrid one-day symposium that DA4All hosted in Spring 2025 titled “Working with Data for Social Change” attracted over 100 participants from over five different countries. As we argued at that symposium, what would it mean for scholars to begin paying closer attention to how various communities leverage data to work toward social justice via digital projects such as [Mapping Police Violence](#) and the [MMIW/P Resource Map](#), and perhaps even work with local communities to help generate data-driven projects such as the [Virulent Hate Project](#). In terms of teaching, how can we do more to teach students how to critically understand the links between data, power, and community; how to collect and organize data in ethical ways; and how to use data rhetorically to tell compelling data-driven stories and participate in ongoing conversations about pressing social matters? Especially in an era of increasing data distortion and data erasure and intensifying attacks on the humanities in higher education, we believe that data advocacy and justice is more pressing than ever, and many on the DA4All team are interested in moving forward to draw more attention to this important area of study.
- 4. The publication of an open-access toolkit for teaching data advocacy for teachers within and beyond the CU system to help boost data advocacy education.** As we articulate on the About Page of our website:

We believe that all students—no matter their computing background, their disciplinary major, or their socio-economic background—deserve to be taught how to use data critically, ethically, and effectively to advocate for the social change they want to manifest for themselves and their communities. We also believe that because data advocacy is pertinent today to so many



fields of study, professional careers, and civic matters, it should not be the responsibility of any one program or department to teach the skills of data advocacy. This is especially important in that we know that students from historical marginalized communities do not often engage in STEM disciplines where learning about data and data processing often takes place due to issues of underrepresentation, educational disparities, and implicit bias and discrimination. We thus believe that data advocacy should be taught all across the curriculum in order to ensure that all students learn the skills needed to effectively advocate with data in their personal, professional, and civic lives.

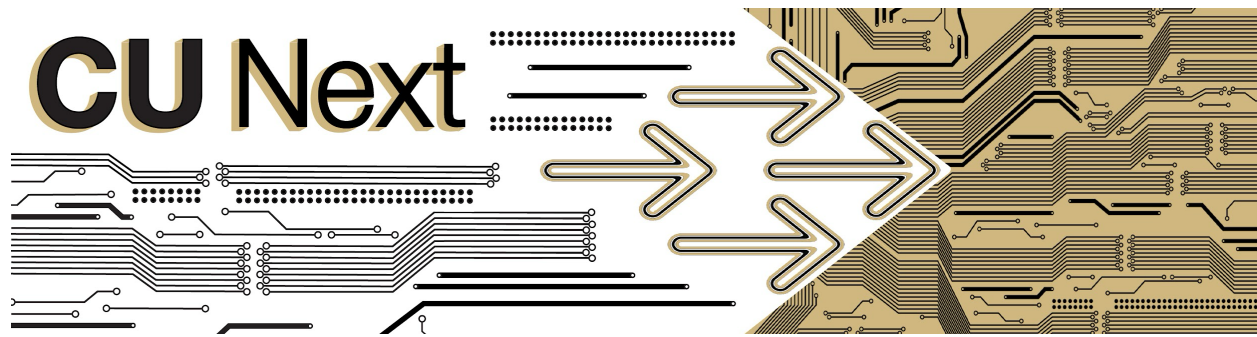
With these ethics in mind, we designed a toolkit that prioritizes interdisciplinarity, inclusivity, and accessibility in the following ways:

Interdisciplinarity: Our toolkit of educational resources has been designed for teachers in higher education across multiple disciplines—whether they are teaching a first-year composition course, a junior level course in history, or a capstone course in the social sciences. In the toolkit, teachers will find a variety of resources (terms, readings, lesson plans, tutorials, data advocacy examples, etc.—that have been either collected or designed by our team of researchers and instructors. These resources come from multiple fields of study and diverse organizations and career domains.

Inclusivity: We have made concerted effort to ensure that diverse students can imagine themselves as powerful data advocates by including resources that represent diverse perspectives and demonstrate how various and diverse communities have used data ethically and effectively to advocate for social change. In order to model inclusive thinking, our toolkit also includes resources that speak into how data has impacted communities disproportionately as well as how data can be harnessed in ways that respect diverse community needs.

Accessibility: In creating our toolkit, we have not assumed that teachers or students have prior experience with data science, computing, data processing, rhetoric, or digital storytelling. Many of the resources are thus introductory in nature, creating opportunities for teachers and students to learn about data advocacy together while also leaving room for teachers to delve further with their students into any given area of data advocacy.

In making these ethical choices, our ultimate hope is to both promote and expand data advocacy education in higher education. We believe our toolkit offers visitors a first-hand experience to learn about the many merits of data advocacy education and useful resources for embarking on this exciting pedagogical adventure.



Future Outlook and Recommendations:

Because the Website and Toolkit took 3 years to complete, we feel this project has yet to reach its fullest potential. There is still much to be done, in other words, and we articulate future steps we believe are worth pursuing.

1. This project's most glaring limitation is the lack of attention to generative AI both in theory and practice. If we were to continue on with this project, we would need to configure AI into each of the literacy domains and subdomains and add an abundance of resources to help teachers integrate AI into the teaching of data advocacy. We would love to be able to apply for another round of CU Next Award funding to enhance DA4All in this way. This would also help us adequately assess our project and make other revisions as needed.
2. Response to this project has been very positive but also very limited. We need to find more ways to promote this project. We wonder if the CU Next Award Team might be able to help not only our team but other teams promote our accomplishments toward the entire CU System and beyond. Our team participated in a video interview that we assume will be published somewhere sometime, but we have yet to hear what exactly will be done with those videos. We also wonder what other ways CU Next Award might help us spread the word about this project.
3. In general, we would recommend that the CU Next Award be a continuous grant opportunity made available to faculty at all ranks within the CU system. We believe that this grant opportunity helps to build interdisciplinarity, community, and collaboration across within and among campuses in the CU system. It would be fantastic even for the CU Next Award to offer 1st and 2nd tier grants to help get projects off the ground and to further support grounds already off the ground.

Appendix:

<https://da4all.github.io/>