

When Plating Matters: Delivering Data Literacy Through Graphical Handouts

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NUTRITION INFORMATION

In today's data-driven landscape, academic and research libraries are crucial in providing data management instruction and increasing researchers' data literacy. While traditional instructional methods such as drop-in sessions, consultations, and workshops can effectively engage scholars in open science principles and data management best practices, libraries with limited resources need to find innovative ways to effectively scale their communication to a campus-wide audience and increase their impact on campus research activities. One approach is using graphical handouts as an auxiliary tool to summarize complex content and cover essential concepts, tools, and techniques.

Infographic handouts can complement data instruction and help librarians promote data literacy in the broader campus community in several ways. First, they can make complex information more accessible. Second, they serve as entry points for deeper engagement on complex topics, sparking conversations and follow-up interactions with researchers and students. Third, they can be easily integrated both digitally and physically into existing library activities and programs and

can help promote library engagement across the board.

LEARNING OUTCOMES

By reading this recipe, the cook should be able to:

- develop graphical one-pagers and integrate them into existing library programming and services to promote data literacy and
- formulate a strategic and sustainable plan to launch a handout-based data literacy program, including defining objectives and selecting appropriate themes and distribution channels.

NUMBER SERVED

This is a versatile recipe that can be seamlessly integrated into the library's service menu. It can also be savored as a standalone option. Its scalability, accommodating gatherings of all sizes based on the chosen distribution method, enhances its appeal.

This recipe caters to diverse preferences, from small groups to the campus community at large, from undergraduates to senior researchers, and can be customized to better appeal to the target audiences. For best

results, we recommend that libraries consider adding this recipe to their monthly menu of services.

COOKING TIME

It should take about a month to formally launch a graphical handout series, but once the series is up and running, you will be able to create handouts more efficiently. After you have chosen a theme, outlined the expected learning outcomes, and identified the core content for your handout, the production process can take anywhere from two to three days, depending on the complexity of the graphical elements you intend to include.

Additional time is necessary if you plan to create supplementary materials like LibGuides, templates, videos, or podcasts, or if you want to incorporate interactive elements such as forms, quizzes, or polls for added engagement. Also plan to allocate extra time if you intend to gather and incorporate feedback from "tasters" before you publish/distribute the handouts.

DIETARY GUIDELINES

This recipe is designed to render data literacy content in a more enticing and digestible

format for the campus community. This approach offers a time-efficient, portable, and adaptable means to integrate data literacy into existing programming.

These handouts can cover an array data-related topics, including file naming conventions, version control, metadata standards, and data visualization, and reinforce the practice and principles of open science. Handout topics can be selected based on consultations with researchers and subject liaisons and/or designed around events, collaborative projects, emerging services, or instructional needs.

INGREDIENTS AND EQUIPMENT

You will need the following components to assemble a graphical handout similar to the one presented in figure 1:

- **personnel:** Include at least one data librarian or specialist with some graphic design skills to lead the kitchen; if you have a larger group of skilled chefs to join the *brigade de cuisine*, even better. In that case, make sure to assign responsibilities and set expectations. If your library has a dedicated marketing and communication team, invite them as creative sous-chefs to taste your samples and help you perfect the recipe along the way.
- **visual identity:** Craft cohesive branding elements (i.e., logos, color schemes, and typography) that harmonize with your existing library branding. Explore partnerships with marketing and communication teams for better results. Consider offering color contrast accessible op-

tions and print-friendly versions.

- **partnerships:** Welcome subject liaisons and other library staff to join your kitchen and assist you as specialized guest chefs to diversify your menu and infuse fresh perspectives and new flavors into your offerings.
- **graphic design software** (e.g., Canva, Kittl): Create visually appealing, engaging handouts with a short learning curve. Pre-

mum versions offer a broader collection of stock imagery, templates, font types, and effects. Create a workspace/folder dedicated to your handout series. If using a shared subscription, ensure you have clear policies around authorized access and permissions and that you safeguard additional copies of your handouts.

- **ancillary tools** (e.g., a short URL system, a QR code generator, file compressors, video and audio editors): to support the creation of supplemental and interactive objects to embed in the handouts. We advise you to stay consistent with the tools adopted by other departments.
- **email marketing distribution service** (e.g., Constant Contact, MailChimp): These services personalize email greetings, organize your mailing list, manage subscriptions, and collect valuable impact metrics. Some allow you to collect strategic data like successful deliveries, clicks, open rates, subscriber base growth, etc. (See figure 2.)
- **storage, preservation, and long-term access system:** Decide where the series and its issues will be hosted and establish an archiving and preservation strategy to ensure handouts are accessible and easy to retrieve via a website or repository. Adopt a file naming convention, and enhance searchability by applying informative tags and mint persistent identifiers or permanent links for each issue. Apply similar importance to digital objects you embed into the handouts to ensure they will remain accessible.



Figure 1. Sample handout uses a metaphor to organize content. The handout includes (1) branding elements for visual identity, (2) series and issue numbering, (3) catchy title, (4) main concept description and tips in bullet points, (5) learning objective, (6) embedded resource, and (7) contact information/help.

- licensing: Graphical handouts are considered creative work. Be sure to explicitly designate a Creative Commons license



Figure 2. Email campaign example; recipients can open the PDF or interact with the flyers and any links directly in the email.

- so others can correctly attribute, remix, and reuse them.
- creativity: Every good recipe has a secret ingredient that gives it that special touch. Infuse handouts with a dash of innovation and artistic flair, making them informative and visually delightful. Enhance the diversity of your handouts by incorporating a variety of graphical and textual elements. Use metaphors, anecdotes, and context-based scenarios when possible to make content more relatable and engaging. Consider including supplementary materials and interactive components (e.g., quizzes, polls) to further enrich the learning experience.

PREPARATION

Follow these steps to create, share, and integrate your handouts into the library's programming:

Step 1: Resources and Planning

- Make a clear outline of the objectives for the graphical handout series. Determine your target audience and identify the data-related topics or concepts you wish to cover.
- Gather selected tools and personnel.
- Decide on your first topic. Maintain a list of potential topics as you progress. When you run out of ideas, seek insights from others on current hot topics and data literacy knowledge gaps. Collaborate with subject liaisons and faculty members to identify topics aligned with academic

disciplines. Consider themed months, like a Halloween edition for Research Data Scares. Try to align your handouts with upcoming workshops and activities. For example, develop and plan to release a handout on how to choose a graph to coincide with a seminar on best practices in data visualization or create a handout on data cleaning to complement a workshop on OpenRefine.

Step 2: Content Creation

- Determine two or three learning objectives and key concepts for the handout. Identify relevant existing resources that can be embedded in the handout. Consider developing new digital objects to enhance the content. For example, a handout covering the importance of README files could link users to a customizable template. Always include your contact information and encourage engagement with your department.
- Use your graphic design software and data visualization tools to create a visually engaging handout. Test placement, balance colors, visuals, and text. Ask for feedback on style, readiness, and clarity as you progress. Be culturally sensitive with graphs and icon choices. Employ formatting tools (e.g., bullet points, headings, subheadings, text styles) to emphasize critical points, key takeaways, or recommended actions. Keep lists to no more than seven bullet points. Use charts, diagrams, or tables to condense data or illustrate concepts.

- Choose an attention-grabbing descriptive title for your graphical handout (e.g., How to Choose a Data Repository, Be FAIR to Your Data, and Why Should I Get an ORCID?)
- Once you have a more complete draft, get another round of feedback. Make sure to ask reviewers to test any links, QR codes, etc.
- Generate your final version in a user friendly, light, open, and portable format that holds URLs (e.g., PDFs).

Step 3: Distribution and Promotion

- Define a systematic workflow for creating, reviewing, and publishing the handouts. Assign responsibilities to team members and set expectations and deadlines.
- Decide on release frequency, whether monthly, quarterly, or another schedule. Identify the most effective channels for distributing your handouts, including library websites, social media platforms, email newsletters, and physical distribution within the library or department offices.
- Publish the handout online in a user-friendly manner, and include an option for the website’s visitors to subscribe to the series. Apply informative tags for easy reference (see figure 3). The publication of the handout must precede the announcement and distribution of the issue since your communications will include a link to an online copy of the handout.

The screenshot shows the 'Data Literacy Series' website. At the top, there's a title 'Data Literacy Series' and a subtitle 'A monthly series of infographics on research data'. Below this is a paragraph of text describing the series, with a callout '1' pointing to the text. A 'Subscribe' button is highlighted with callout '3'. Below the button is a search section titled 'Search the DLS handouts:' with a search input field, a 'Sort' dropdown menu set to 'Newest First' (callout '4'), and an 'Advanced Search' button. Below the search section are three handout cards. The first card is 'Crafting Effective Data Availability Statements' with callout '5' pointing to its 'Perma Link' and 'PDF - ALT' options, and callout '4' pointing to its tags and date. The second card is 'Bundle your Project and Computing Environment with Binder' with callout '4' pointing to its tags and date. The third card is 'Virtual Environments in Python with Venv' with callout '5' pointing to its 'Perma Link' and 'PDF - ALT' options, and callout '4' pointing to its tags and date. The fourth card is 'Reproducible Environments with RENV' with callout '6' pointing to its 'Perma Link' and 'PDF - ALT' options, and callout '4' pointing to its tags and date.

Figure 3. Web publishing example includes (1) description (goal, license information, etc.), (2) request for feedback and suggestions, (3) subscription option, (4) multiple ways to search and order the handouts (tags, free search, sorting), (5) an ALT version for contrast (PDF friendly format), and (6) persistent identification (permalink).

- Announce the new handout to email subscribers, and encourage them to provide feedback, spread the word about the series, and view previous handouts in the series (see figure 2).
- Share handouts through selected distribution channels. In digital form, promote them on the library’s website, official social media platforms, and email newsletters to maximize visibility. Encourage subscriptions through these channels and word-of-mouth. Distribute hard copies at campus events, orientation seminars, consultations, workshops, and classrooms.
- Explore opportunities to integrate these handouts into existing library programming; collaborate with subject liaisons and other library departments.
- Seek feedback from library users and stakeholders to facilitate ongoing improvements. Adapt content and design based on user input. If you use an email distribution service with access metrics, use that data to inform your strategies. Regularly assess the impact of your flyers on data literacy within your library community and be open to making improvements.

CHEF’S NOTES

This recipe is flexible and can be adapted to accommodate various dietary restrictions (library-specific needs) and preferences (visual style and content). Ensure your approach aligns with your library’s mission and goals.

Keep handouts uncluttered, clear, and understandable, in terms of visuals, content,

and language. Avoid large blocks of text and unexplained technical jargon; sequence handouts to cover large topics in digestible portions. For example, to address a topic like metadata standards, you might begin with

an overview handout and then follow up with handouts targeted at specific standards or disciplines (see figure 4). Ensure URLs, QR codes, or any links to external resources remain accessible as the series evolves.

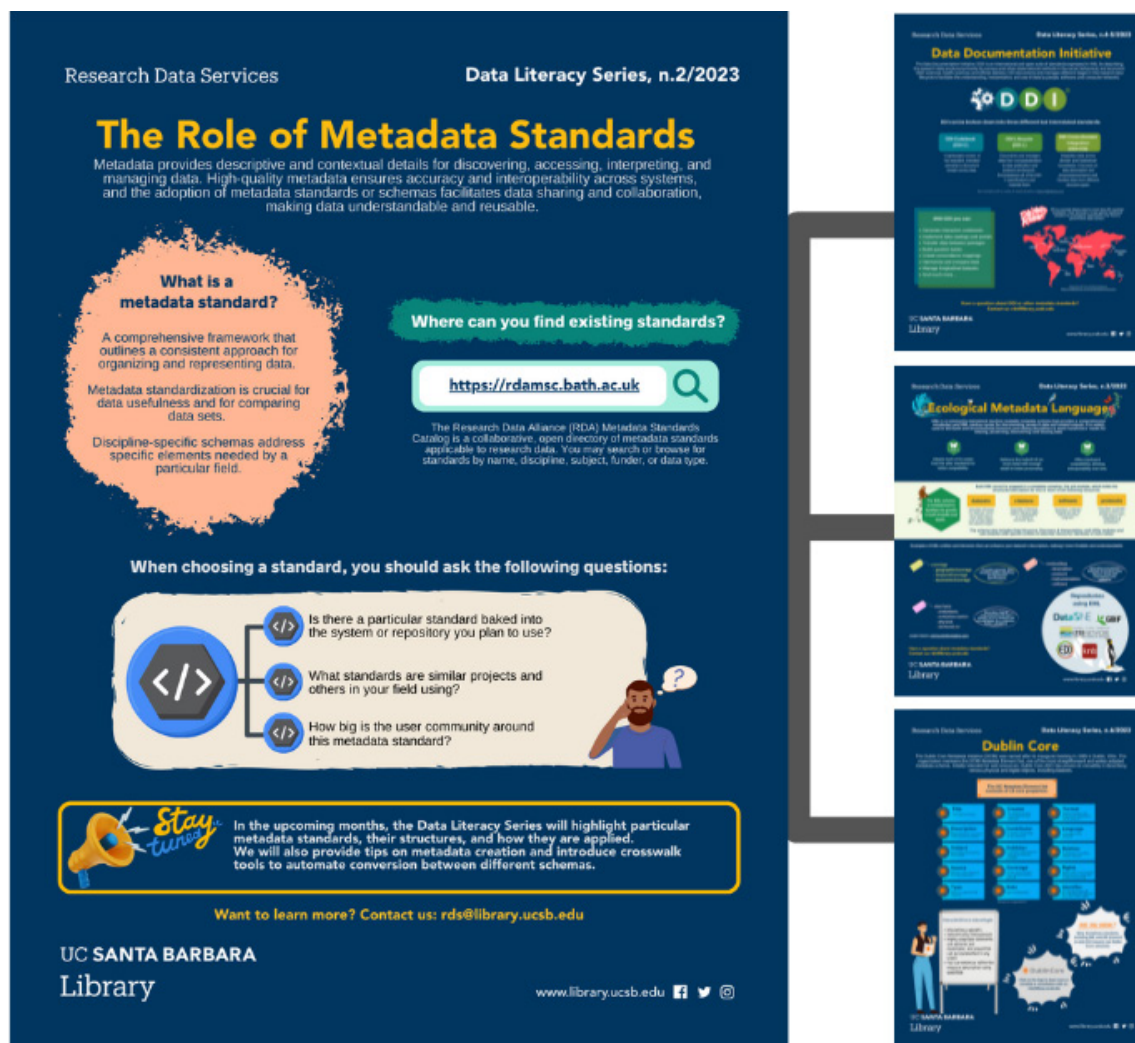


Figure 4. An introductory handout extends to interconnected handouts.

Finally, remember that collaboration and feedback from library staff and users are vital ingredients for success. Bon appétit!

ADDITIONAL RESOURCES

The Data Literacy Series (DLS) graphical handouts can be downloaded in PDF format

from the University of California, Santa Barbara (UCSB) Research Computing Data website: <https://rcd.ucsb.edu/data-literacy-series>.