

A Carpentries Collaboration: Teaching Foundational Coding and Data Science Skills to Researchers Great Plains Conference 2025



Kansas State University
Libraries
Center for
Scholarly Publishing

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The Need for Computational Data Research Skills

- Identifying the Gap at K-State
 - “The skills needed to do computational, data-intensive research are often not included as a part of basic research training in many disciplines.”
 - Hands-on instruction previously available only through course enrollment with 2 prerequisites.
- Meeting researchers at the point of need
 - Best taught at the point-of-need
 - Difficult to anticipate needs in advance (in school)
 - *Use it or lose it!*
 - Allows new researchers need to ***hit the ground running***

Why the Carpentries?



The Carpentries teaches foundational coding and data science skills to researchers worldwide. We exist because the skills needed to do computational, data-intensive research are often not included as a part of basic research training in many disciplines. Our global community works together to provide:

- A suite of open source, collaboratively-built, community-developed lessons.
- Evidence-based, proven pedagogical training.
- Workshops based on a learn-by-doing, 'code with me' approach.
- A supportive learning culture.
- A global community which subscribes to an inclusive [Code of Conduct](#).

<https://carpentries.org/about-us/#our-mission>

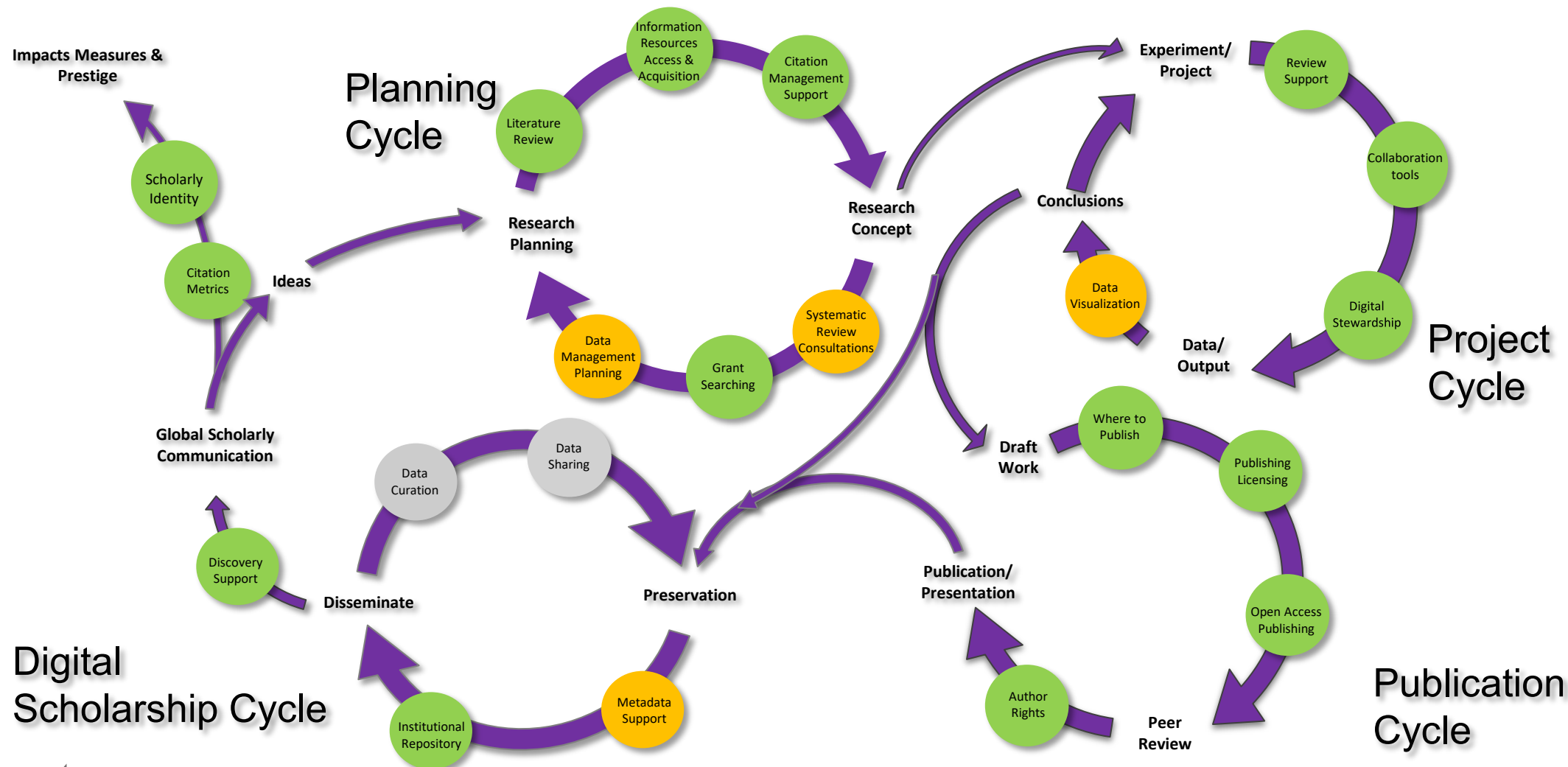
Why the Libraries?

- Research data is an increasingly critical component of Scholarly Communication and the scholarly record.
 - Publications
 - Supporting Data
 - Data Papers
 - Improving Research Integrity
 - Transparency
 - Reproducibility
 - Repeatability
- Research Services in Libraries to support the mission and goals of the University
 - Scholarly Impact
 - Higher quality research
 - Publishable results
 - Grants

Why the Libraries?

- The Libraries are ultimately interdisciplinary – the Hub on the University
- FAIR (Findable, Accessible, Interoperable, Reusable) information is what libraries do.

K-State Libraries Research Lifecycle Resources & Services



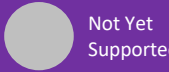
Legend



Library Services



Limited/Specialized Library Services



Not Yet Supported

Based on the model and design *Research Lifecycle at University of Central FL Version 2.0* available at <https://library.ucf.edu/about/departments/scholarly-communication/overview-research-lifecycle/>

Getting Started

Starting over

- 2018 Hale Library Fire
- COVID Shut-down
- New Dean

An Opportunity

- A New Dean
- Strategic Planning
- Support



Building Support

- Library & Departmental Support
 - Academic Services Research Data Interest Group
 - Internal library Grant
 - Library IT
- University Support
 - Institute for Computational Research (BeoCat)
 - Departments

Building Support

- Carpentries Instructors
 - Robert McCowen & Myself
 - Dave Turner – BeoCat
 - David Molik – USDA Arthropod-Borne Animal Diseases Research (USDA ARS ABADRU)
 - National Bio and Agro-Defense Facility - Foreign Arthropod-Borne Animal Diseases Research Unit (NBAF FABADRU)
 - Teresa Shippy – Department of Biology
- Carpentries Support through GPN
 - Membership – support and discounts on training
 - Instructor Training Support – **4 new instructors!**
 - Mentorship

Collaborators' Roles

Kansas State University

- Planning and organization
- Instructors
- HPC support
- Venue
- Grant funding
- Registration platform

Agricultural Research Service (USDA ARS)

- Planning and organization
- Instructors

Great Plains Network (GPN)

- Carpentries membership
- Carpentries instructors mentoring group
- Professional development

Workshops

Four workshops, 2023-2024

- Tidy Data Library Carpentry
- OpenRefine Library Carpentry
- Ecology Data Carpentry
- Genomics Data Carpentry

- 2025

- 5-Day Data Carpentries Genomics Workshop – K-State and USDA-ARS
- Data Carpentries Social Sciences
- Upcoming - Genomics Workshop in August

Moving Forward: Goals & Aspirations

- Continue to help researchers build foundational computational and data science skills
- Connect researchers to high-performance computing (HPC) tools
- Fulfill local educational requirements for grants
- Cultivate communities – Break down Silos
- Undergraduate Research
- Beyond Campus – fulfilling the Land-grant mission

Moving Forward: Challenges & Needs for growth

- Recruiting more Instructors
- Building relationships across campus
- Dedicated position description
- Assessment to show impact
- Building in sustainability
 - Bandwidth
 - Funding

Questions?



KANSAS STATE

U N I V E R S I T Y