Exploring Data Competencies and the Associated Data Skills, Training, and Education

A Response to Emerging Needs

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iConference 2023

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Facilitator: Ashley Thomas

Monday, March 27, 2023 | 2:00 to 3:30 p.m.

RDMLA RESEARCH DATA MANAGEMENT LIBRARIAN ACADEMY
DSCPE Data Services Continuing Professional Education

Agenda

- **Part I: Data Services Competency Frameworks**
  - Introduction and workshop objectives (5 minutes)
  - Comparative analysis of data services competency frameworks (10 minutes)
  - Small group discussion (15 minutes)
- **Part II: Data Services Training and Educational Programs**
  - Overview of RDMLA and DSCPE (15 minutes)
  - Small group discussion
    - Evaluation of how each program addresses the competency items (20 minutes)
  - Audience report (15 minutes)
- **Wrap Up** (5 minutes)

Logistics and Workshop Objectives

- Objectives:
  - Raise awareness of the value of competency-based education (CBE), in particular, with respect to data science
  - Seek to generate discussion about CBE and identify challenges and solutions to existing professional associations' frameworks
  - Examine educational models for data skill development and retooling the workforce

Part I:
Competency-Based Education (CBE) and Data Services Competency Frameworks

1. Medical Library Association (MLA) – Data Services Competency
2. Association of Research Libraries (ARL) – Librarians' Competencies Profile for Research Data Management

Background on Competency-Based Education (CBE)

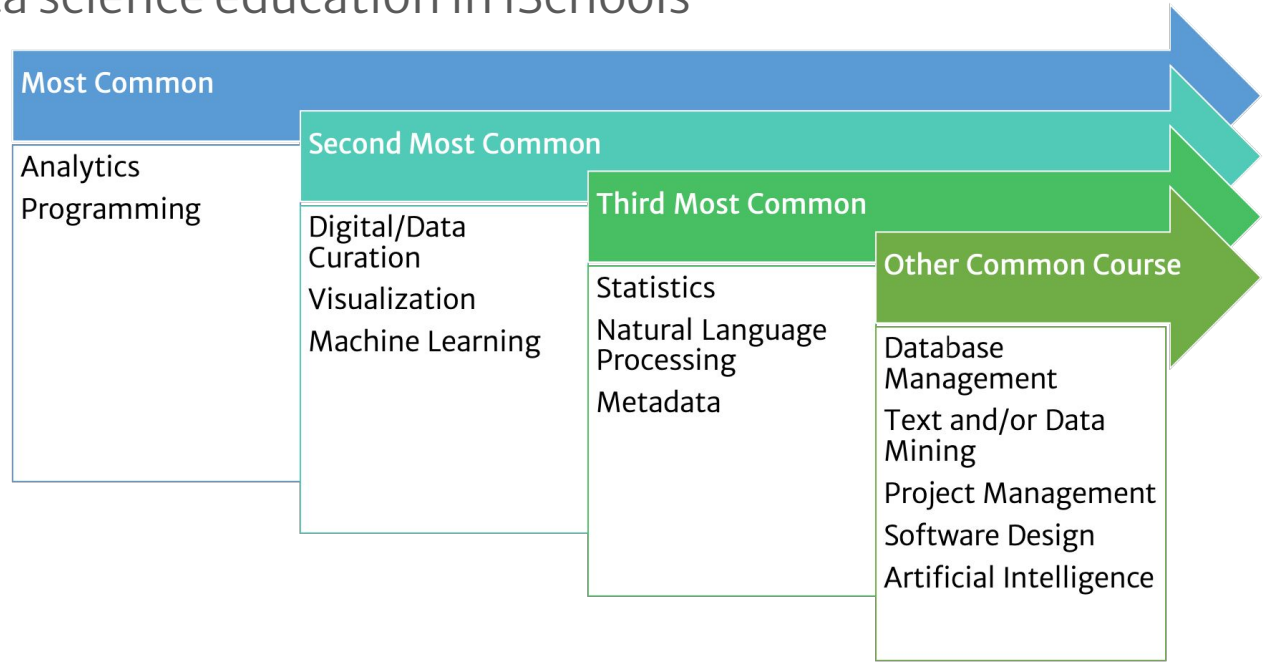
- CBE promotes equity and empowers the learners. It is "**the single-most important innovation in higher education**." (Ted Mitchell, cited in Lumina Foundation, 2017)
- "**CBE is built around clearly defined competencies and measurable learning objectives that demonstrate mastery of those competencies**." (Educause, 2014)
  - Instruction takes the form of facilitation and guidance for learners, who use new tools and supports to progress through the material until they demonstrate mastery of the content, related skills, or other competencies. (Educause, 2014)
  - Learners advance based on what they know and can do with high flexibility and individualized pathways to learning, rather than based on their social class, status, or economic situations.

Seven Components of CBE

1. Students are empowered daily to make important decisions about their learning experiences, how they will create and apply knowledge, and how they will demonstrate their learning.
2. Assessment is a meaningful, positive, and empowering learning experience for students that yields timely, relevant, and actionable evidence.
3. Students receive timely, differentiated support based on their individual learning needs.
4. Students progress based on evidence of mastery, not seat time.
5. Students learn actively using different pathways and varied pacing.
6. Strategies to ensure equity for all students are embedded in the culture, structure, and pedagogy of schools and education systems.
7. Rigorous, common expectations for learning (knowledge, skills, and dispositions) are explicit, transparent, measurable, and transferable.

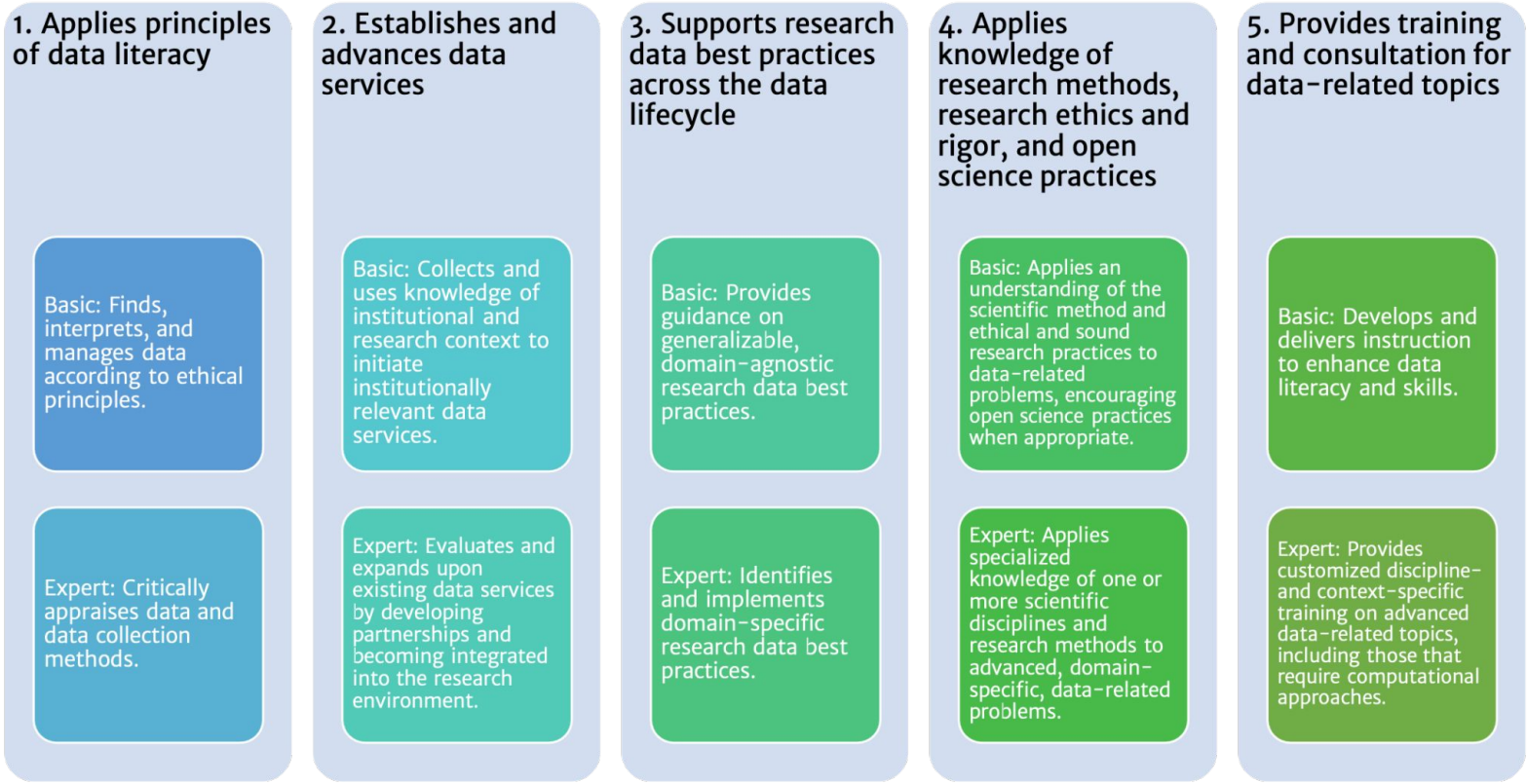
RDM Training and Education

- Data science education in iSchools



- Gaps in competency-based education in RDM education

MLA's Data Services Competency (2020)



ARL's Librarians' Competencies for RDM

1. Providing access to data

- **Knowledge of:**
  - Existing data centres, repositories and collections and data discovery mechanisms
  - Data manipulation and analysis techniques and tools
- **Understanding of:**
  - The way data are organized and structured within collections
  - Data licensing and intellectual property issues

2. Advocacy and support for managing data

- **Knowledge of:**
  - Funders' policies and requirements
  - Data centres, repositories and collections
  - Best practices for data structures, types, formats, vocabularies, ontologies and metadata
  - Where to find information about data structures, types, formats, vocabularies, ontologies and metadata
  - Data management plans and DMP tools
  - Data publication requirements of journals
  - Data sharing options, open access, IPR, licenses
  - Data citation and referencing practices
- **Understanding of:**
  - Research practices and workflows
  - Disciplinary norms and standards for data management
- **Ability to:**
  - Articulate benefits of data sharing and reuse
  - Undertake data audit and assessment tools

3. Managing data collections

- **Knowledge of:**
  - Metadata standards and schemes, data formats, domain ontologies, identifiers, data citation, data licensing
  - Discovery tools
  - Database design types and structures
  - Data linking and data integration techniques
  - Data repository and storage platforms
- **Ability to:**
  - Select and appraise datasets
  - Actively manage research data
  - Undertake digital preservation activities
  - Apply forensic procedures in digital curation

Group Discussion (15 minutes)

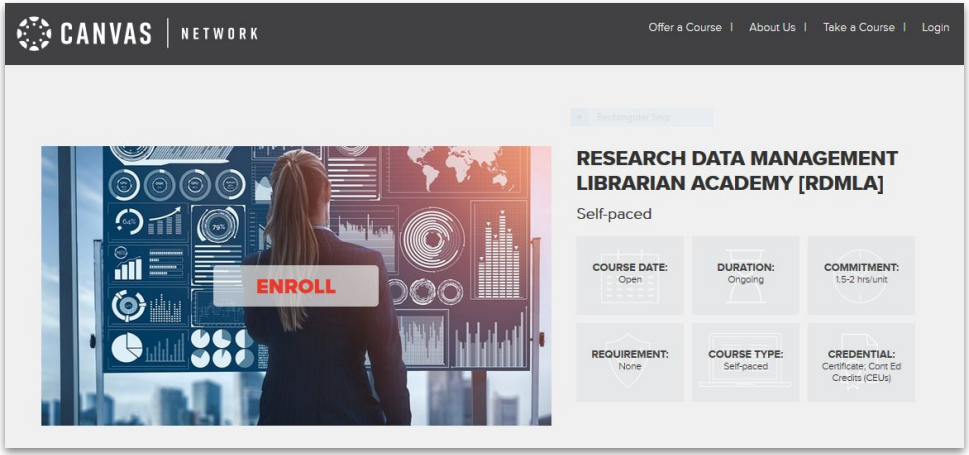
- What are the components of the framework assigned to your group?
- What do you consider as missing or should be enhanced/expanded in this framework?
- How could this framework be used to assess the data services competency of your students or the workforce?

Part II:
Data Services Training and Educational Programs

1. Research Data Management Librarian Academy (RDMLA)
2. Data Services Continuing Professional Education (DSCPE)

What is RDMLA?

- An online education program offering individuals an opportunity to learn about research data management practices
- Filling a gap in RDM training
- Developed in partnership with industry, teams of librarians and LIS faculty who have expertise with RDM
  - **15 partners and growing**
- Active learners to date: 7,503
- Financially funded by Elsevier



RDMLA Units

- The Academy currently offers **eleven units and two mini-modules**, which can be taken in sequence or out of order
  - Brief demonstration of the RDMLA

DSCPE Program

- Eight-week online intensive learning experience
- Preparing early-to-mid career working librarian for data services
- Pilot cohort (October – November 2022) admitted 15 students
- Fall 2022 pilot cohort members' tuition was covered by a gift from Elsevier


Data Services Continuing Professional Education (DSCPE)

DSCPE
Data Services Continuing Professional Education

Welcome to the Data Services Continuing Professional Education!

The Data Services Continuing Professional Education (DSCPE) fills a much-needed gap in professional development of practicing librarians. The objective of the curriculum is to train and develop a community of data service librarians.

This pilot cohort is funded through a gift from Elsevier.

In this Canvas course space, you will find all the information you need as you work through the educational content. If you have any questions as you navigate through, please contact the DSCPE Team.

Dates: October 1 through November 30, 2022

Meeting Location: Online/Remote

DSCPE Leaders: Elaine Martin, D.A. and Rong Tang, Ph.D.

DSCPE Contact: dscpe.info@gmail.com

The Data Services Continuing Professional Education (DSCPE) is a partnership between the Research Data Management Librarian Academy (RDMLA), Countway Library of Medicine at Harvard Medical School, and Simmons University School of Library and Information Science.

DSCPE

DSCPE Program

- Collaboration and Leadership live session
- Self-paced learning of RDMLA module content
  - Unit instructor live guest sessions
- 70-hour virtual capstone field experience
  - Matched with data librarians/informationists
  - Shadowing daily work
    - Data analytics, data services, data instruction projects
- Brief demo of the DSCPE

Examples of DSCPE Capstone Projects

- Develop a libguide and corresponding materials about university's institutional repository, highlighting how the repository meets NSTC's "desirable characteristics of data repositories" for federally funded research
- Development of a game to quiz researchers understanding of the new NIH Data Management and Sharing Policy, titled "Share FAIR"
- Assist with revision of the NIH Domain-Specific Data Sharing Repositories grid
- Creation of tutorial and engagement materials highlighting and sharing key points of the NIH DMSP for a medical school

Group Discussion (20 minutes)

- Each group assigns a recorder and someone to report out
- Answer the following questions:
  - Does the RDMLA or the DSCPE program cover all aspects?
  - What areas are missing?
  - What else can be done to fill the existing gaps in the workforce competency-based training?
  - What other options are there to retool professionals for these data skills?

Report

Session Summary

- Competency-based data services training fits working professionals learning needs and styles
- Published data services competency frameworks and research on data skills provide basis for competency-based training
- RDMLA and DSCPE are two examples of competency-based learning for working professionals
- These examples aim to establish a community of RDM and data services information professionals by:
  - Nurturing cohort learning clusters
  - Learners contribute to the curriculum for future competency-based training

Wrap Up

Thank you!