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Designing Instruction Activities to Guide Students Through the Research Lifecycle: A Science Librarian Approach

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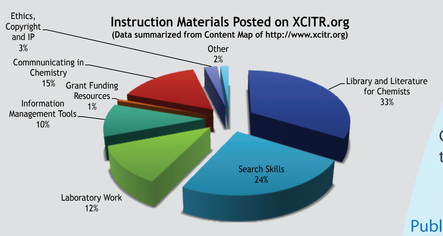
Trends in Instructions Provided by Librarians in Research Institutions

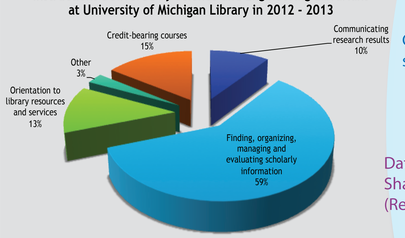
Collection Centered → Research Focused

Informaition Literacy → "Research Literacy" ←

- InformationLiteracy
- Research Methodology
- Data Literacy
- Laboratory Safety
- Ethics
- .....

Instructions Provided by Chemistry/Science Librarians Now





Still focus on finding, organizing, managing, and evaluating information but start to extend to other steps of the Research Lifecycle

What Did Students Say?

Undergraduate Students

"I participated in UROP (Undergraduate Research Opportunity Program) during my first year here. Although I was super busy in the lab, I didn't think I learned how to do research. I still have no idea how to approach a new research project."

Graduate Students

"I know how to obtain 'good enough' articles quickly. Is there anything else I need to learn (from you)?"

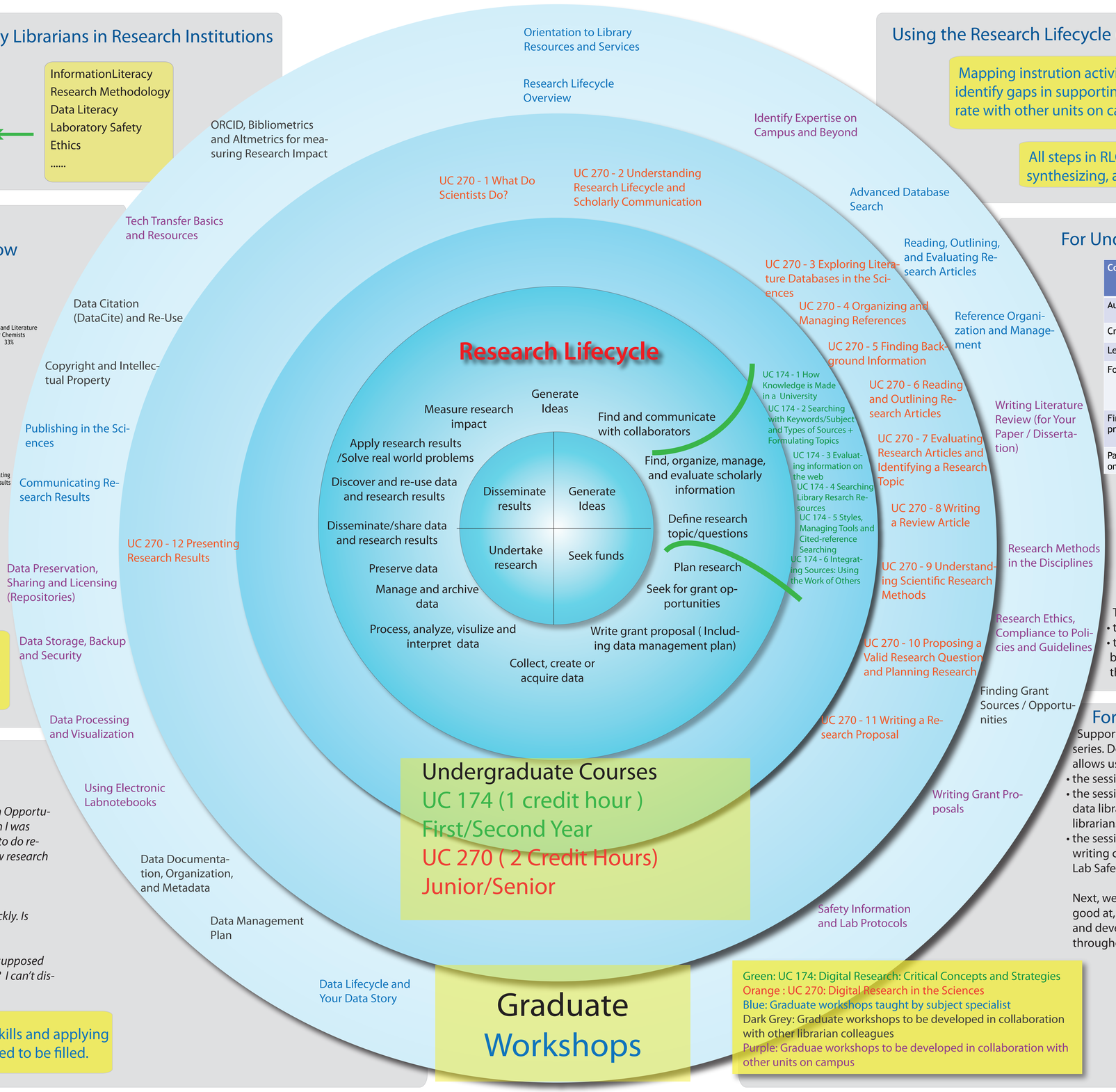
"I've read ten articles on this topic, but how am I supposed to come up with an original proposal from them? I can't discuss this with my advisor."

Gaps between learning knowledge/skills and applying the knowledge/skills into research need to be filled.

Using the Research Lifecycle (RLC) to Guide Instruction Design

Mapping instrution activities to the RLC can guide librarians to identify gaps in supporting research and opportunities to collaborate with other units on campus for instruction development.

All steps in RLC involve obtaining, digesting, managing, synthesizing, and disseminating information



Green: UC 174: Digital Research: Critical Concepts and Strategies
Orange : UC 270: Digital Research in the Sciences
Blue: Graduate workshops taught by subject specialist
Dark Grey: Graduate workshops to be developed in collaboration with other librarian colleagues
Purple: Graduae workshops to be developed in collaboration with other units on campus

For Undergraduate Students

Course	UC 174: Digital Research: Critical Concepts and Strategies	UC 270: Digital Research in the Sciences
Audience	First- and second-year undergraduates	Junior and senior undergraduates
Credit	1 Credit Hour	2 Credit Hours
Length	2 hours / week, 7 weeks	2 hours / week, 12 weeks
Focus	Basics of "finding, organizing, managing and evaluating scholarly information"	Expanding the "basics" and Extending to "write a research proposal / presenting research"
Final project	An annotated bibliography on the topic selected by the student	A mini literature review and a mini research proposal
Participation	~100 undergraduates / year ; ~30 in Sciences	A trial in 2013

The two-tiers for-credit courses help undergraduates get started with conducting research independently. Comparing to writing projects often assigned to Students in other subject classes, these two courses will provide a guided experience and allow students to find, digest, manage, synthesize, and disseminate scholarly information with clear clues and more consciously.

The challenges we learned from the trial of UC 270 includes:

- the course load may be more appropriate for 3-credit hours
- the instructor needs to be familiar with various subjects or be able to learn about a specific research topic together with the students

For Graduate Students

Supports for graduate students can be provided as workshop series. Designing the workshops to guide them throughout the RLC allows us to identify the following types of sessions:

- the sessions subject specialists can teach
- the sessions to collaborate with other librarian colleagues, such as data librarians, metadata librarians, copyright librarians, and grant librarians etc.
- the sessions to collaborate with other units on campus, such as the writing center, IT departments, Office of Vice President for Research, Lab Safety Officers, data visualization experts, and Tech transfer etc.

Next, we will use this blueprint to go in-depth with the area we are good at, seek for collaborations for the areas broaden our horizons, and develop the complete workshop series to support researchers throughout the RLC.

Acknowledgement

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