

Developing Disciplinary Data Literacy Competencies



To what extent are undergraduate chemistry instructors already teaching data literacy?

Would it be more comfortable for them if we changed the way we talked about data literacy and used terms that they were familiar with?

Obstacles

- Faculty may not be familiar with data literacy concepts.
- Adding additional material to their overburdened syllabi.
- Data literacy concepts that are critical in one discipline were not relevant in other disciplines.



THIS SOUNDS LIKE IT'S FOR GRAD STUDENTS...

Examine and Refine Concepts

Laboratory science classes instruct students in hands-on data use through the process of capturing, analyzing and reporting data. As a laboratory science, chemistry is a natural place to introduce data literacy.

Students are routinely taught the use of spreadsheets (data collection), correct graphing techniques (visualization), the importance of reviewing data to find errors (quality assurance) and how to use units correctly (metadata).

We examined Carlson's competencies and refined them so that they would be more recognizable to undergraduate chemistry students and faculty.

Energy required for a reaction

Using a catalyst requires less energy to start the reaction

Carlson's Data Information Literacy (DIL) Competencies

Introduction to Databases and Data Formats

Discovery and Acquisition of Data

Data Management and Organization

Data Conversion and Interoperability

Quality Assurance

Metadata

Data Curation and Re-use

Cultures of Practice

Data Preservation

Data Analysis

Data Visualization

Ethics, including citation of data

Data Literacy Competencies for Chemistry Undergraduates

Introduction to Databases

Data Discovery

Data Management

Data Conversion

Quality Assurance

Metadata

Cultures of Practice

Data Analysis

Data Visualization

Ethics of Data

Next Steps



Survey development and distribution for chemistry students and faculty.

Evaluate which data literacy competencies are being incorporated into chemistry undergraduate curricula



Develop data literacy modules for chemistry

Students become data literate!



References