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Data informed learning: A next phase data literacy framework for higher education

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Data informed learning

A next phase data literacy framework for higher education

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Aim of project

Modeled after skills-based information literacy, current data literacy models do not address the contexts in which people learn and work with data.

The aim of this project is to develop a data literacy framework for higher education that places learning about using data in the context of disciplinary learning.

Data literacy models

Descriptions of data literacy identify data-related skills and competencies, but fall short of discussing how data is understood and used with different contexts.



Methods

1. Analyze existing data literacy frameworks and curricula to identify key foci.
2. Identify the key aspects of frameworks in which information literacy is viewed as an element within disciplinary learning contexts.
3. Adapt a select information literacy model to develop a new data literacy framework capable of enabling students in higher education to engage with data within disciplinary learning contexts.

Informed learning

Informed learning (Bruce, 2008) is an approach to information literacy that addresses context by placing an emphasis on disciplinary learning as an outcome of using information. What is considered information, and how it is used, is determined by how it is experienced within a given disciplinary or professional context.

Data informed learning

Drawing from the principles and characteristics of informed learning (Bruce, 2008), data informed learning shifts the focus from acquiring generic data-related skills to learning how to use data in disciplinary contexts. Data informed learning:

- Guides data-related instructional design (type of data and data usage are determined based on how they support subject-focused learning outcomes)
- Encourages relevancy (outcomes related to data use are determined by learning context)
- Supports lifelong learning (using data in the context of learning and applying prepares learners to use data to learn in professional and personal settings).

Principles

1. New ways of using data must build on students' prior experiences

2. Learning to use data should occur at the same time as learning about a disciplinary subject

3. Learning should result in students becoming aware of new ways of using data as well as developing new understandings of the subject being studied

Course examples

In an accounting course, the instructor may have students reflect on their own experiences of balancing a checkbook and then relate that to a journal ledger or a general ledger.

A nuclear engineering course might apply the concepts of authority, quality, and accuracy to the use of data repositories by looking up evaluated nuclear reaction data in two different databases, and compare the results (Zilinski, Sapp Nelson, & Van Epps, 2014).

A computer programming course may have students swap documented computer code with another team, and rerun a script to see if they can replicate the process, having them learn about using and managing data in the context of programming.

Future directions

The evolving construct of data informed learning needs to be further explored through research into the different ways that data are experienced, such in business, social media, research labs, or through class projects.

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