

Investigating and Understanding Library Data Services to Support Law Graduates Data Literacy Competencies: A Conceptual Framework.

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Abstract: *Data literacy is an important ability to have in our modern knowledge culture. Data literacy and its application are gaining traction in society. We need to consider a wide range of tools for accessing, converting, and altering data. It is also necessary to grasp relational databases (such as MS Access), statistical software tools (such as SPSS, STATA, Minitab, MS Excel, and so on), data manipulation techniques, and data presenting software tools (such as MS PowerPoint and MS Excel). The increase of available data offers distinct issues for library services. How might libraries help, for example, with reskilling efforts to build a data-driven mindset? This study examines the investigation and understanding of library data services in order to support law graduates' data literacy competencies. This article discussed data literacy and its connections to statistical literacy and information literacy. It also offers data library competencies for law graduates and demonstrates how to become data literate.*

Keywords: Data Literacy Competencies, Information Literacy, Statistical Literacy, Data Life Cycle. Library data services, Law graduates

I. INTRODUCTION

Information evaluation is an essential component of information literacy, statistical literacy, and data literacy. They are all connected in some way. It may be impossible to promote information literacy or data literacy without also promoting statistical literacy. The majority of librarians are interested in information literacy; archivists and data librarians are interested in data literacy. Both should view statistical literacy as a service to users. Organizations must have data if they are to make data-driven decisions and avoid wasting time, money, and opportunities. Employees across all departments, including law graduates, must possess data literacy abilities. However, studies show that more instruction is required in this field. In order to improve the data literacy support libraries offer to students getting ready for the workforce, this study suggests a minimum set of data literacy competences for all law graduates, independent of their academic track.

What is Data?

According to Webster "Facts or information used usually to calculate, analyze, or plan something".

Text, images, and numbers are all forms of data. Data must be structured and machine-readable in order for computers to recognize it. Structured meaning that it should be of a predetermined length within a file or record. Structured data is found in spreadsheets and relational databases. Data might be unstructured or semi-structured. Most data is unstructured. Unstructured data is everywhere. It contains photographs, movies, emails, audio, online pages, and so on. Semi-structured data is data that does not exist in a structured format. For example, we could remark that some fields in a record or file are missing or include information that is difficult to represent in a database system.

Data Life Cycle:

A life cycle is a set of stages that something goes through during its lifespan. In general, there are six stages of data life cycle: creating, processing, analyzing, preserving, providing access (disseminating), and re-using data. Data can be

created in various formats for various purposes, such as text, photos, music, video, and so on. For example, while discussing the drainage system of a location, we require photos (digital aerial imagery) of that location together with other numerical data, whereas when discussing the census report of the same location, we mostly require table format data. We can extract relevant information by data processing, which includes manipulating data elements. Because data formats differ, multiple data processing techniques are required. Although many software programs are now accessible to process data.

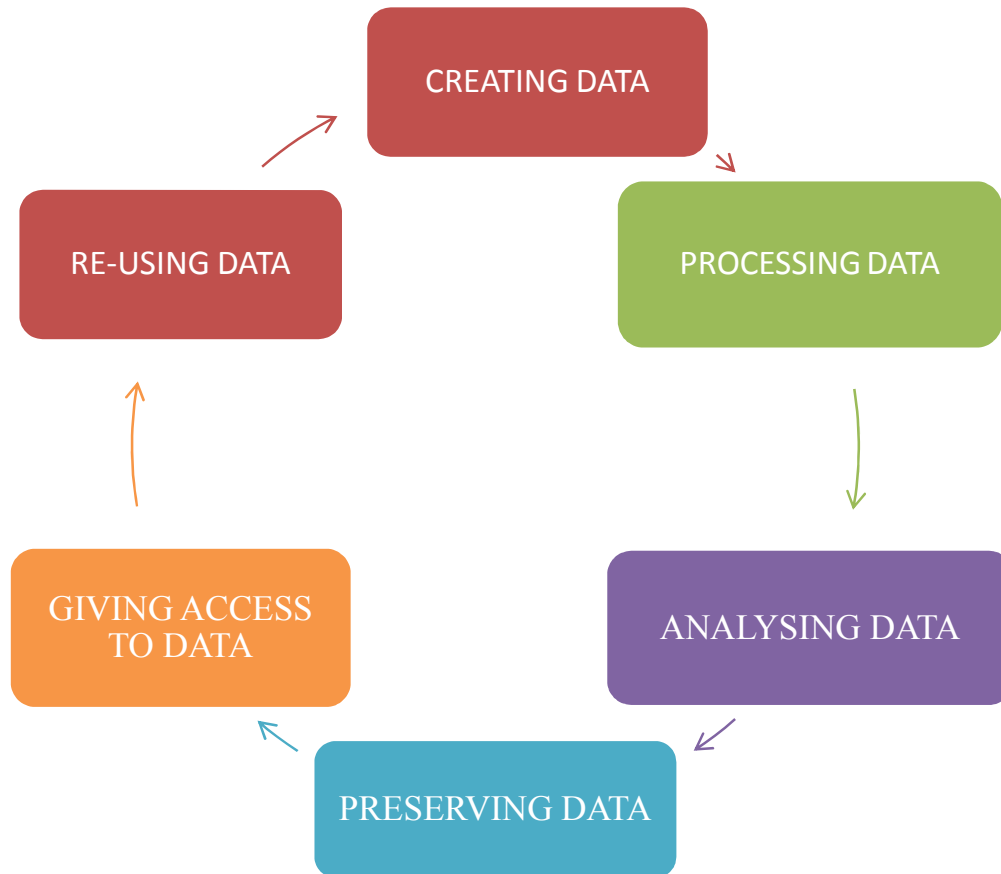


FIGURE 1: DATA LIFE CYCLE

II. DEFINING DATA LITERACY

Data literacy refers to a person's capacity to read and grasp the meaning of data, as well as to apply data information to his or her life and/or job and utilize it to make data-informed decisions.

A basic definition of data literacy is “the ability to read, understand, create, and communicate data as information”.

According to **Wikipedia**, “Data literacy is the ability to read, understand, create and communicate data as information. Much like literacy as a general concept, data literacy focuses on the competencies involved in working with data.”

According to **Carlson et.al.** “Data literacy involves understanding what data mean, including how to read charts appropriately, draw correct conclusions from data and recognize when data are being used in misleading or inappropriate ways.”

D’Ignazio & Bhargava, “Data literacy includes the ability to read, work with, analyze and argue with data as part of a larger inquiry process. Reading data involves understanding what data is, and what aspects of the world it represents. Working with data involves acquiring, cleaning, and managing it. Analyzing data involves filtering, sorting, aggregating, comparing, and performing other such analytic operations on it. Arguing with data involves using data to support a larger narrative intended to communicate some message to a particular audience”

Data Journalism Handbook defines, "Data-literacy is the ability to consume for knowledge, produce coherently and think critically about data. Data literacy includes statistical literacy but also understanding how to work with large data sets, how they were produced, how to connect various data sets and how to interpret them."

III. DATA LITERACY COMPETENCIES

Normally, the Australian Bureau of Statistics (ABS 2010) lists a few abilities in the public domain, such as data awareness, comprehending statistical ideas, the capacity to analyze and assess statistical information, and the ability to communicate. According to **Stephenson and Caravello (2007)** in social science, the competencies are like ability to read and critical evaluation, ability to produce correct bibliographic citations, ability to represent the data and ability to describe the context, and so on. The definition of data literacy competencies for undergraduate and graduate researchers has received a lot of attention over the last ten years. According to **Calzada Prado and Marzal (2013)**, the library and information science sectors are where the majority of this work is coming from. Because data literacy is a supplementary skill to information literacy, it fits well in the domains of library and information science.

INFORMATION LITERACY:

The United States National Forum on Information Literacy explains information literacy as the ability to know when there is a need for information, to be able to identify, locate, evaluate and effectively use that information for the issue or problem at hand **Zurkowski (2009)**. Information literacy enables the effective use of information technologies to locate and handle information.

STATISTICAL LITERACY:

Statistical literacy studies the use of statistics as evidence in arguments (**Schild, 1998,1999**). While information literacy sets the overall condition for assessment of the data, statistical literacy plays the role of guiding the steps sources and performs the suitable manipulations. Data literacy defines the context of evaluating the sources of data and also to access, manipulate and summarize the data, while statistical literacy defines the required process.

IV. DATA LIBRARIES AND SERVICES

According to Wikipedia⁵, A data library is a collection of numeric data sets for secondary use in research. A data library is used to serve the data users of the organization. The data library tends to collect local data and provides access to them through various means. A data library may also subscribe to licensed data resources for its users to access.

Most of the data libraries provide several services mainly divided into seven parts. Like

i) Technical support: This includes managing various statistical methodologies for cleaning, reformatting, and data analysis. Additionally, it details all troubleshooting steps used throughout the procedure.

ii) Reference support: Giving consumers the information they need in response to their queries usually involves data sets.

iii) User guidance: It offers a series of instructions or recommendations to the group of users, such as the format of the data, how to read the data into spreadsheet, statistical, database, or GIS packages, how to interpret codebooks and other documentation, etc.

iv) Collection development: This entails gathering and keeping track of data files for secondary analysis as well as serving as a data supplier.

v) Data preservation and sharing services: Data preservation for future or re-use. The curation of data is also a part of it. Data migration, updating records, and other data preservation techniques are all part of the process.

vi) Maintaining data accuracy: For any type of research, it is preferable to use current or recently updated data. The user should have access to recency data, which is data that is current in quality or status. Inaccurate data may provide misleading information, which can result in inaccurate research conclusions.

V. BIGDATA

Big Data is a trendy term right now. Large-scale data/datasets are typically referred to as "big data." Common software tools are not equipped to manage big data, it is outside their capabilities. Describe big data analytics now. **Webopedia3** claims that, the method is called big data analytics of gathering, arranging, and analyzing big data (huge data sets) to find patterns and other important information. Big data analytics can assist organizations in better understanding the information present in the data as well as in its identification. Making better decisions with fewer labeled errors is the main objective of big data analytics. The five Vs—Volume, Velocity, Variety, Variability, and Veracity—make up the majority of it. Big data analytics can be used in a wide range of industries, including the public and private sectors, the health and media industries, sports, and many more. How does the librarian fit into big data analytics right now?

Librarians will need to be familiar with big data's uses and sources in order to make the research process easier. Many librarians are equipped to support researchers since they are service-oriented and knowledgeable. Massive data can be gathered in libraries for analysis, and the job of the librarian is to give advice on how to store and make massive data sets accessible.

VI. DATA LITERACY COMPETENCIES FOR LAW GRADUATES

Employers like new workers to have excellent data literacy abilities, and students believe they will learn these skills in school, but legal education and libraries find it difficult to keep up with both student and employer demands. Data analytics and database courses and concentrations have been added to legal education programs as one strategy to address the need for data capabilities. All law graduates must have a strong understanding of data analytics. Law school graduates must have a fundamental understanding of data and how it is used in the legal system, including in databases used to prepare cases.

Based on the level of knowledge and proficiency needed to execute tasks involving data, **Wolff et al. (2016)** classified citizens into four categories according to their data literacy. Despite the fact that the authors admit that these categories are not all-inclusive, they do offer a framework for communicating the various levels of ability that different people need depending on how much they interact with data. Scientists "combine strong technical data skills with communication skills and in-depth knowledge of the domain of the data" **Wolff et al.(2016)**. Communicators "tell stories from data," readers "critique and interpret data," makers "ask and answer real-world questions," and readers "use data as part of decision making."

These categories can be used to address the many skill sets needed by law graduates and to draw attention to the fundamental abilities necessary for a more data-centric approach to all aspects of a business.

We picked the qualities we believe are most important for law graduates by extrapolating from the competency frameworks for data literacy that are already in use. This is the start of a discussion; it is not an exhaustive or conclusive list. As we clarify how data literacy competencies can be addressed and applied more broadly, a conversation between data librarians and legal professionals is taking place. It is a dialogue about developing learning experiences for incorporating such competencies into curriculum and outlining data literacy competencies for law graduates between law academics and librarians.

We identified following data literacy competencies which would help law graduates become data literate employees

Storage and retrieved of data.

Being familiar with information utilized in legal circumstances

Considering how reliable the data sources are

Interpreting facts, and making decisions based on it

Making efficient use of data while communicating and presenting

The security and ethics of data

VII. CONCLUSION

The article talks about how legal education and library are becoming more data-centric, the discrepancy between library data needs and recent law graduates' data-related skills, and the requirement for data literacy competencies. It outlines seven crucial data literacy skills for law graduates and how librarians may help them become part of the curriculum. Data literacy abilities are necessary for the modern technology workforce, and incorporating these competencies into

legal curricula can assist address the problem of under qualified people. In workplaces that are discipline-specific, law librarians can play a critical role in identifying and putting these competences into practice. The paper urges librarians to include a foundational set of data literacy skills in legal education curricula. Discussions between librarians, legal professionals, and employers should take place in the future to improve. Libraries are very important in encouraging data literacy, which is essential. Although it is not primarily their duty, libraries have the knowledge, skills, and expertise necessary to deliver it successfully. Researchers, data management specialists, and the general public all profit from this knowledge. The importance of staff training programs, cross-institutional collaboration, and well-defined future plans cannot be overstated.

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