

From Information Literacy to Data Literacy Education

A Case Study from Switzerland

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Abstract

Data literacy is considered a key competence for responsible, mature citizens of the 21st century. In this poster the interrelatedness of information literacy and data literacy is addressed. It then elaborates on how universities can make their students fit in dealing with data and information using the example of a new research project about the development of open educational resources to promote data literacy at Swiss universities. Thirteen universities work together in a unique cooperation to promote the key competence data literacy among university teachers and students. The project aims to ensure responsible, critical, ethical and sustainable handling of data during university education and builds upon existing initiatives to promote data literacy (e.g., by the Stifterverband in Germany).

Keywords: information literacy; data literacy; digital skills; future skills; OER; OEP

1 Introduction

Universities face the challenge of preparing their students for the digitalized world of work and research in teaching them so-called future skills. Data literacy, the responsible, critical, ethical and sustainable handling of data, is considered a key competence for responsible, mature citizens of the 21st century. In this poster we address the interrelatedness of information literacy and data literacy. We then elaborate on how universities can make their students

fit in dealing with data and information using the example of a research project about the promotion of data literacy at Swiss universities.

2 The interrelatedness of information and data literacy

The term information literacy was introduced by Paul Zurkowski in 1974 in a letter to the National Commission on Libraries and Information Science, USA (Kelly, 2013). At a time when the information industry changed, he recognized the need for techniques and skills to make the fullest possible use of the new information services. Information literacy is defined as “the ability to think critically and make balanced judgments about any information we find and use. It empowers us as citizens to develop informed views and to engage fully with society” (CILIP, 2018). It involves a set of skills and abilities to undertake information-related tasks, e.g., to discover, access, interpret, analyze, manage, create, communicate, store and share information. It incorporates also critical thinking and a sensibility and awareness of ethical and political issues regarding the use of information.

Today, in our data-driven world the concept of and need for data literacy is expressed (Hochschulforum Digitalisierung, 2018). It is defined as the ability to collect, manage, evaluate and apply data in critical ways (Ridsdale et al., 2015). Data literacy is considered a central competence for digitization and the global knowledge society in all sectors and disciplines, a central competence in the 21st century. When comparing the two concepts information and data literacy, it becomes clear, that they relate to each other and overlap. The concept information literacy can be understood as an overarching, receptive competence as it refers to the handling of all forms of information including data (Schüller et al., 2019). Data literacy describes the handling of data for the purpose of transforming data into knowledge. It requires an understanding of the possible reception as well as an understanding of the data-generating process, e.g., the origin of data, its limitations and the analysis tools used.

3 Promoting data literacy – an approach for Switzerland

The University of Applied Sciences of the Grisons has a strong track record regarding the education of information literacy in Switzerland (Blumer et al., 2013). With its focus on information science and data science, it is only natural to expand the teaching of information literacy to include data literacy. Therefore, a research project “develop data literacy” for the promotion of data literacy is to be developed, implemented and evaluated. The project is part of the large-scale project “Swiss Digital Skills Academy”, a cooperation of thirteen Swiss universities. The academy will target the development of digital skills, especially skills associated with the conception, the creation, and the implementation of open educational resources (OERs) and open educational platforms (OEPs), as well as the actual development of such open resources and their deployment in shared learning modules. “Develop data literacy” addresses the implementation and measurement of data literacy among lecturers and students. The project aims to ensure a responsible, critical, ethical and sustainable handling of data during higher education and beyond based on the data literacy framework developed by Schüller et al. (2019). The project builds upon existing initiatives to promote data literacy (e.g., by Stifterverband in Germany)¹. In order to meet students’ heterogeneous and individual needs, the didactical design of the modules will be organized based on a skills taxonomy of data literacy. Hence, students can acquire a basic, advanced or professional level of skills. The project is composed of five modules:

- a. develop OERs to foster basic data skills
- b. develop OERs to foster the application of data literacy
- c. develop OERs for critical data literacy and digital ethical sensibility
- d. develop OERs for responsible handling of data and data management
- e. develop tools to assess data skills.

As described above, the project focuses on knowledge about basic data skills (from understanding, analyzing to interpreting data), the application of data literacy, the responsible handling of data and data management as well as ethical aspects and critical thinking regarding the use and interpretation of

1 For more details about projects to promote data literacy in Germany funded by the Stifterverband see <https://www.stifterverband.org/data-literacy-education#netzwerk>.

data. Educational concepts may vary, depending on the students' previous knowledge and educational needs of the respective university. The project will develop modular training courses, lectures within study courses address students at the beginning of their studies, knowledge is deepened and applied in courses within a study program. Based on experience on teaching information literacy (Bättig, 2005) the courses are integrated in study programs where possible, the courses are developed in collaboration with other universities, the teachers will be trained in teaching data literacy and the courses will be developed methodically and pedagogically thought out with the help of teacher educators. All teaching and learning materials will be developed as OERs and will be published on an OEP for free re-use by other universities. The project finishes with the evaluation of the acquired competences by students and lecturers.

4 Conclusion

In this poster we describe a research program to promote data literacy in higher education in Switzerland. The modular approach aims for flexibility, expandability regarding the integration of sub-competencies and the strategic alignment to different universities programs. The four pillars strategic alignment, curricular integration, networks and provision of the materials as OERs on an already existing OEP secures a sustainable implementation and fosters re-use of teaching and learning materials regarding the promotion of data literacy.

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