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Data Literacy: How to educate and train the next generation in chemistry and beyond

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As we navigate an increasingly data-driven world, advanced skills in using digital tools are mandatory in day-to-day life. This digitalization has also found its way into chemical research, where more and more electronic data are being generated. Handling and management of the collected data has become a considerable part of every researcher's work. Scientists need to be trained in these topics and concepts to apply them successfully in their research processes. To have the ability to effectively manage and utilize data, education in data literacy should start from the very beginning. However, research data topics are largely missing in chemistry curricular.

The chemistry consortium in the national research data infrastructure in Germany NFDI4Chem tackles these challenges by providing several teaching and training courses and materials. As we believe that young chemists and students are key to the cultural change, we are increasingly paying attention to education. Some lecturers, who did not want to waste time during the updating process of curricular (re-accreditation), have already introduced research data management topics in their courses. These leading examples, from institutions such as RWTH Aachen or RPTU Kaiserslautern-Landau, serve as best practice for others that are planning to integrate RDM teaching into their study programs.

The fact that data literacy education should start from the very beginning is not limited to chemistry, it applies equally to any other field. Members of several NFDI Consortia assembled to establish a platform for data literacy following the paradigm: "Data literacy for all from the very beginning!". The formed initiative DALIA (DAta LIteracy Alliance) is developing this platform as a user-centered knowledge graph to support establishing a data culture in the academic environment. On the DALIA platform, teaching materials can be openly shared for re-use to empower others to adapt these for their individual institutions with minimal effort.

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