



18 Things for Bachelor and Master Students

An overview of practical, free, online resources and tools that you can begin using today in your work with digital data.

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... to help bachelor and master students succeed in research data management!

Learning Resources

There are many things to learn about research data. This knowledge will help you to work with digital data efficiently and to manage the data you are handling in your research projects, including personal data of your participants.

1. If you want to learn about the importance of sharing data with other researchers, watch the video by the NYU Health Sciences Library, [edu.nl/nac9y](https://www.eduhub.nl/nac9y)
2. If you are interested in learning more about data management, check out the MANTRA training modules for students, [edu.nl/bujwq](https://www.eduhub.nl/bujwq)
3. Go through the CESSDA Data Management Expert Guide for practical advice on handling research data; it has a focus on social science data but contains very useful practical suggestions that are relevant for everyone working with digital data, [edu.nl/mfuuy](https://www.eduhub.nl/mfuuy)

For advanced students

4. Relevant concepts are presented in a glossary at the Essentials 4 Data Support training website, [edu.nl/emgym](https://www.eduhub.nl/emgym)
5. Understand the life of research data with examples of data life cycles at JISC and at RDNL, [edu.nl/p4nke](https://www.eduhub.nl/p4nke) & [edu.nl/j8cr6](https://www.eduhub.nl/j8cr6)

Data Management Plans

Research projects are often financed by external research funders, like NWO or ZonMw in the Netherlands. Many funders require researchers to submit a data management plan (DMP) before



they start working on their projects. If you are considering a career in research, it is useful to look at the templates of such data management plans to understand what information a data management plan contains. If your project is a part of a large-scale research project, it might be a good idea to familiarize yourself with the existing data management plan so that you know how your work fits into a larger picture. Your institute might also require that bachelor and/or master students submit data management plans for their projects.

6. One example is DMPonline, an online tool that helps to set up data management plans by asking you to answer a series of questions,
[edu.nl/qxtbt](https://www.dmponline.nl/)
7. Consult Digital Curation Center (DCC) catalogue of public data management plans,
[edu.nl/7abtb](https://www.dcc.ac.uk/resources/catalogue-of-public-data-management-plans/)
8. Check recommendations in LCRDMs Ten Tips for Writing a DMP,
[edu.nl/rqf6u](https://www.lcrdm.nl/ten-tips-for-writing-a-dmp/)

Metadata

To be able to make sense of the data you're working with, you need information about those data. This information is called metadata. Metadata describes the context in which a dataset was created and answers the questions of Who, What, When, Where, and Why about that dataset. For example, if you are providing columns in your data sheet with a name, you're creating metadata. And if you indicate that you are the creator of a file, this is also metadata. Information that is added to data should be understandable by others. That's why metadata typically follow a certain standard, which may be discipline-specific.

9. Learn about the FAIR principles to understand the importance of metadata, FAIR data can be explained as an adventurous journey - and in a more serious manner,
[edu.nl/btuj6](https://www.fair4research.nl/)
10. See how many standards exist that are generic and discipline or data type specific in the RDA adopted FAIRsharing,
[edu.nl/egc6f](https://www.fairsharing.org/)

Licensing

When collecting and sharing data and code, researchers need to deal properly with licenses.

11. The 'Can I reuse someone else's research data?' OpenAIRE guide helps to decide if data can be (re)used,
[edu.nl/3ujnt](https://www.openaire.eu/)

Ethics, Integrity & Personal Data

When collecting and sharing data, researchers need to protect confidential and sensitive data.



12. When collecting personal data, data that can lead to the identification of an individual; if you are considering a career in research, watch this video by Anne Mérat on Data Protection Impact Assessment,
[edu.nl/kty43](https://www.edu.nl/kty43)

13. Check the Health-RI ELSI website and LCRDM's Guidelines on Privacy,
[edu.nl/nxprx](https://www.edu.nl/nxprx) & [edu.nl/qaj6j](https://www.edu.nl/qaj6j)

Data Repositories

Trustworthy data repositories provide an important step towards data preservation and data sharing. Data uploaded to a repository will usually be assigned a persistent identifier, will be described with metadata according to the standard chosen by the repository, will be released with a license and will be made available via a standard, open protocol. Before uploading any data to a data repository, check with your supervisor.

14. Find an appropriate repository by searching the re3data.org registry of research data repositories; take a look at how this repository is organized and which standards are used,
[edu.nl/uq3qj](https://www.edu.nl/uq3qj)
15. Find appropriate repositories by searching the RDA adopted FAIRsharing, also seeing which standards the repositories use and which journals recommend them,
[edu.nl/a834b](https://www.edu.nl/a834b)
16. Take a look at the national repositories DANS EASY and 4TU.ResearchData; try to find data that is relevant for your discipline or data that was produced by researchers from your university; ask your supervisor about datasets and data repositories that you could use,
[edu.nl/vnmrx](https://www.edu.nl/vnmrx) & [edu.nl/kk7xc](https://www.edu.nl/kk7xc)

Citing Data & Software

If you use existing data in your research, it is important that you cite these data (or software) correctly, similarly to adding references to literature used, you should make references to data you used.

17. Learn how to cite data in publications and learn to explain data citation principles,
[edu.nl/jnvxv](https://www.edu.nl/jnvxv)

Support Networks

At various institutions, there are local communities of researchers who promote the values of open science and help each other with various data-related questions.

18. Use the overview of Open Science Communities, expert networks and other local support groups to find a group close by,
[edu.nl/8wwvb](https://www.edu.nl/8wwvb)



Contact Information

This document is an audience-specific version (for bachelor and master students) of the 23 Things for/by the Dutch community, created by the LCRDM task group RDA 23 Things (lcrdm.nl). The original 23 Things can be found at edu.nl/w7e34, the LCRDM adaption for the Dutch community can be found at doi.org/10.5281/zenodo.3465895. If you have any relevant resources for the 23 Things, please contact the LCRDM coordinator.

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