RESEARCH INTEGRITY AND DATA MANAGEMENT

—

Research integrity training for PhD students and a small survey of AU LabBook users

AARHUS
UNIVERSITY
CENTRE FOR SCIENCE STUDIES

ELABBOOK WORKSHOP | KRISTIAN HVIDTFELT NIELSEN
13 APRIL 2018 | ASSOCIATE PROFESSOR

SOLIDUM PETIT IN PROFUNDIS
UNIVERSITAS ARHUSIENSIS

WHAT IS RESEARCH INTEGRITY?

—

Basic principles that researchers as individuals and as a community (should) adhere to

- Honest and transparent reporting of results
- Critical and objective assessing of one's own and others' results
- Quest for novelty and recognition of others' work
- Responsible handling of resources

WHAT IS RESEARCH INTEGRITY?

Codes of conduct

- Based on the basic principles
- Standards for each step of the research process:
  - Research planning
  - Data management
  - Publication and communication
  - Authorship
  - Collaboration (incl. conflicts of interests)

The Danish Code of Conduct for Research Integrity

Danish Code of Conduct for Research Integrity

Danish research should be performed in a culture where honesty, transparency and accountability are respected

Download publication (pdf)

Date of publication: Nov 05, 2014
ISBN: 978-87-93151-36-9
Internet ISBN: 978-87-93151-35-2

A national Code of Conduct for research integrity in Denmark has been finished. The Code aims to ensure credibility, integrity and thereby quality in Danish research through common principles and standards for responsible conduct of research.

The Code is aimed at both public and private research institutions, including universities, the research council system, foundations and enterprises. It is a common framework meant to be implemented and developed across fields of research.

The Danish Code of Conduct for Research Integrity was drafted by a working group set up by the Ministry of Higher Education and Science and the organisation Danish Universities. A draft Code was sent for public consultation in the spring of 2014 and was also presented and discussed at an open conference in May 2014.

🖶 Print
💬 Read aloud
f Facebook
in LinkedIn
🐦 Twitter
➤ Send

RESEARCH INTEGRITY AND eLABBOOKS

—

eLabBooks as tools for implementing codes of conduct in some (maybe even most) research fields

- Useful in all phases of research from planning through data management to collaboration

- Facilitate automated storing and storage of data (increasingly digital)

- Provide forums for (internal) communication and dedicated spaces for collaboration

AARHUS
UNIVERSITY
CENTRE FOR SCIENCE STUDIES

ELABBOOK WORKSHOP | KRISTIAN HVIDTFELT NIELSEN
13 APRIL 2018 | ASSOCIATE PROFESSOR

SOLIDUM PETIT IN PROFUNDIS · UNIVERSITAS ARHUSIENSIS

RESEARCH IS A SOCIAL PRACTICE

Codes of conducts are useful guidelines, but always limited in their field of application

- Making sense of codes is an ongoing and complex achievement in organizations
  - Identity (identification)
  - Social interaction
  - Retrospection (narratives)
  - Ambiguity and controversy

INTRO DAY FOR ALL PHD STUDENTS AT S&T

Introduction to research integrity

- What is it? And why is it important to you?
- Discussion exercises on fictional cases

Authorship

- Who qualifies to be an author?
- What is "appropriate" authorship?
- Use guidelines pro-actively (and not after the work has been done)

2.4 Authorship

Authorship is of considerable academic, social and economic importance, as it plays a decisive role in the assessment of the individual researcher and his or her research. Correct attribution of authorship contributes to the credibility and transparency of research and is thus a central element in the development of responsible conduct of research.

At Aarhus University, attribution of authorship, co-authorship and responsibility must be based on the principles laid out in the Danish Code of Conduct for Research Integrity. This entails that authors must meet the following criteria:

1. Substantial contributions to the conception or design of the work, or the acquisition, analysis or interpretation of data, and
2. Drafting the work or revising it critically for important intellectual content; and
3. Final approval of the version to be published; and
4. Agreement to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

INTRO DAY FOR ALL S&T PHD STUDENTS

Data management

- All primary data belongs to the university
- All primary data must be stored at the university, which makes servers, archives etc. available
- All research plans, protocols, notes, laboratory books, primary data etc. must be stored for five years after the completion of the research project

AARHUS
UNIVERSITY
CENTRE FOR SCIENCE STUDIES

ELABBOOK WORKSHOP | KRISTIAN HVIDTFELT NIELSEN
13 APRIL 2018 | ASSOCIATE PROFESSOR

SOLIDUM PETIT IN PROFUNDIS
UNIVERSITAS ARHUSIENSIS

FEEDBACK FROM PHD STUDENTS

—

Authorship

- Why do local practices differ from the overall guidelines (Vancouver)?

- How does one handle authorship controversies?

Data management

- What about external servers such as Dropbox?

- What is LabBook? Why use it?

WANTED: MORE INFORMATION ABOUT AND DOCUMENTATION OF eLABBOOK PRACTICE

AARHUS UNIVERSITY

Incentives for responsible data management
The case of Labbook, an electronic laboratory notebook system

Kristian H. Nielsen (Centre for Science Studies) & Ebbe Sloth Andersen (Interdisciplinary Nanoscience Center, iNANO)

About Labbook

The Faculty of Science and Technology, Aarhus University (AU) recommends Labbook for responsible data management.

Research documentation

Labbook is an electronic laboratory notebook (ELN) based on Atlassian's Confluence that allows researchers to set up a space for sharing information and data within their research group.

Each space has pages, arranged in a hierarchical structure, with text, images, attached files and other data. A simple user interface is used to view and edit all content.

Research collaboration

Labbook makes it easy to collaborate within and between research groups. You can do this in many ways:

- Each research group or center usually have their own, private space for sharing information internally
- Groups make their own space accessible to other groups, or to all users of Labbook
- Dedicated spaces for larger collaborative projects are set up, and accessed by all involved groups
- For ad-hoc collaborations, dedicated areas are created
- Access rights are fine-tuned by defining access restrictions for individual pages or trees of sub-pages

Interviews with Labbook users

We conducted interviews with a convenience sample of four researchers (2 professors and 2 postdocs) that all use Labbook on a daily basis. We seek to understand how they see Labbook as an incentive to responsible data management. This is our results:

Labbook facilitates responsible data management, but...

All interviewees support Labbook as an incentive to responsible data management. Labbook enhances transparency by means of shared storage space for research groups and sharing of data among groups members. Moreover, best data management practices can be made more visible.

> PROFESSOR1: "All members of my research group know that I am looking over their shoulders on Labbook, which is an important feature in terms of enhancing research integrity."

However, just implementing Labbook does not in itself eradicate the possibility of dishonesty and questionable research practices.

Young researchers adopt Labbook if encouraged to do so...

Our two professors promote Labbook in their groups, which means that all groups members use Labbook. However, senior researchers insisting on traditional lab notebooks may block the transition. For both postdocs, using Labbook is "natural".

> POSTDOC2: "We introduce new members of our group to Labbook and then that's it. They adopt Labbook as *the* notebook standard without thinking about other possibilities."

Using Labbook in the lab

In-lab tablets allow researchers to enter data directly into their Labbook pages. Template protocols and other research guidelines can be made available.

In the lab Labbook is used logging experiments. A file size limit of 20 MB is used to encourage users to store larger files on dedicated file servers.

Andersen Lab

A Labbook space containing many different pages such as:

- Personal lab books
- Collaborative projects
- Internal communication
- Lab manual
- Templates (protocols etc.)
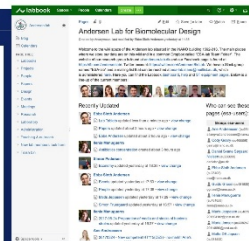
Responsible data management at AU

In 2014 Aarhus University adopted a policy for responsible conduct of research based on the Danish Code of Conduct for Research Integrity. Clear standards are intended to help researchers initiate, execute and complete research projects in a transparent and credible manner.

Responsible handling and storage of research data

For research carried out at Aarhus University:

- All primary material and data must be stored at Aarhus University which makes servers, archives etc. available
- All protocols, plans for experiments/studies, notes, laboratory books, data and primary material must be stored for five years after the completion of the research project
- Open public access to the material (unless this is in conflict with other regulations or professional standards)

Interviews with Labbook users (cont.)

Labbook makes research collaborations easier, but not always...

It is easy to establish research collaborations on Labbook by setting up a common space and giving all collaborators access. It does require, though, that everyone agrees to use Labbook.

> PROFESSOR2: "We have sometimes found that not everyone is open to the idea that all research material will be and should be openly available to all collaborators on Labbook."

Labbook as a mediator of supervisor-supervisee relationships

Using Labbook means that supervisors have immediate access to the supervisees' experiments and can supervise in "real time".

> POSTDOC1: "We used to comment on each others' work on Labbok, but not so much any more. My supervisor often 'like' my pages. However, one has to get used to the fact that also 'rookie mistakes' become more transparent."

UNDERSTANDING HOW eLABBOOKS WORK

—

The literature is scarce, but growing

- Many technical reports describing electronic laboratory notebooks (ELNs)
- No extensive studies of how researchers actually use ELNs

Test interviews with four AU Labbook users

- Two professors and two postdocs
- AU Labbook facilitates research integrity, but...

"All members of my research group know that I am looking over their shoulders on Labbook, which is an important feature in terms of enhancing research integrity.

- PROFESSOR1

"We used to comment on each others' work on Labbook, but not so much any more. My supervisor often 'like' my pages. However, one has to get used to the fact that also 'rookie mistakes' become more transparent.

- POSTDOC1

"We have sometimes found that not everyone is open to the idea that all research material will be and should be openly available to all collaborators on Labbook.

- PROFESSOR2

"We introduce new members of our group to Labbook and then that's it. They adopt Labbook as *the* notebook standard without thinking about other possibilities.

- POSTDOC2

CONCLUDING REMARKS

eLabBooks and research integrity

- Strong institutional incentives to promote eLabBooks as integral part of research integrity
- Implementing eLabBooks is a complex **technical and social** process

Research on eLabBooks and research integrity

- Testing performance in research groups
- Understanding eLabBooks in actual practice

AARHUS
UNIVERSITY