



The Creation and Management of Research Data Sets and Laboratory Notebooks in University Laboratories of South Korea*

Jihyun Kim (kim.jh@ewha.ac.kr)

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Department of Library and Information Science, Ewha Womans University

PROBLEM STATEMENT

Good research recordkeeping practices have been an issue in South Korean research communities since the manipulation of data in stem-cell research was discovered and shocked society in 2006. In 2008, the Ministry of Science and Technology in South Korea established a decree to provide guidelines for managing lab notebooks produced from government-funded research projects. All research institutes and universities conducting such projects are recommended to adhere to the decree. Nevertheless, research data sets and lab notebooks have not been properly administered, especially in university settings.

RESEARCH METHOD

- Semi-structured interviews of 3 assistant professors and 4 graduate students in scientific laboratories of a private university in Seoul, Korea

	Physics	Chemistry	Biology
Faculty	1	1	1
Students	2 (Doctoral)	2 (Master)	0

- Group or individual interviews; 50 minutes on average
- Recorded, transcribed and coded

FINDINGS

Types of research data

- Raw data (mostly numeric data) created from laboratory instruments
- Photos of animal subjects or microscopic photos
- Data printed on X-ray film and observational data written by hand

Maintenance of research data

- Store raw data in multiple locations – instruments, external or PC hard drives, and disks
- Data in a physical form: keep both originals and scanned copies, if any
- Folder categorization based on materials used, characteristics of samples, dates of experiments, etc.
- No disposition

Significance of lab notebooks

- Work continuity
 - Lab notebooks enable new students to quickly learn and perform experiments.
- Replicability
 - Students understand the value, although say their lab notebooks are not detailed enough to support it.
- The ability to assert rights in intellectual property
 - Interviewees realize the importance, but without much emphasis since they focus less on patent than on publication
- Research ethics and responsibilities
 - Opportunity to educate students

Creation of lab notebooks

- Emphasize content over format and rules determined in the guidelines
- Integration of research data into lab notebooks
 - Attach printed copy of charts or note data file name and location on lab notebooks
- Learn the recordkeeping practice
 - Mostly from faculty and peers in labs – learning in community of practice
 - Courses
 - Self-taught based on lab notebooks made by senior students
- Resistance to adopting an Electronic Lab Notebook (ELN) system

DISCUSSION & FURTHER RESEARCH

- Interviewees give higher priority to making publications than maintaining research data and lab notebooks properly.
- For interviewees, preservation of the primary records means accumulation of the records with no discarding and a simple organization based on creation dates and names of creators for future access to them.
- Resistance to the ELN system
 - Learning how to use it reduces the efficiency of work
 - Difficulty in bringing laptops and typing in during experiments
 - Preference of writing by hand : a tablet-style device is recommended
- Future research
 - Perception of scientists in government-funded research institutes where adoption of the ELN system is encouraged