Searching for information, scientific sources and scientific reporting

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Searching for information and scientific sources

Searching for information is a process

- Information searching begins with a need for information and the topic of the search.

- When you are planning the search:
  - you parse your topic and **pick the relevant keywords**
  - you **select the information sources**.

- As you are doing the searches you **evaluate the success of the search** and edit it as needed.

Source: https://libguides.tuni.fi/information-searching-guide

Searching for information is a process

- Then you **select and locate the most relevant documents** and full texts, both electronic and printed as needed.

- Once it is time to use the information you **evaluate it for relevance** and **use the information ethically.**

- **In practice the different parts of the process happen at the same time.**

Source: https://libguides.tuni.fi/information-searching-guide

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Scientific documents and sources

- **Masters thesis**
  - When you will graduate from University you will write a masters thesis. A masters thesis can be a research you have made and contain new scientific knowledge.
  - Many master thesis are available both online and in University libraries.
- **Articles**
  - After graduation you can start working as on researcher.
  - When you want to publish the research you have done you can write a scientific article. **In the article the scientific work done is introduced to other scientist**.
  - The Scientific articles are **published in scientific journal** such as “Nature” and “Science”.
  - **The scientific article is always peer-reviewed**. This means that 2-3 scientist from the same the area of expertise have read them before they are published.
  - Only the best articles get published.

Scientific documents and sources

- **Dissertations**
  - When you have written enough articles (the number of articles needed depends on the area of expertise), you can write a doctoral theses based on your articles and graduate as a doctor.
  - After you have graduated you can and probably will still continue publishing scientific articles.
- **Patents**
  - If you invent something new, you can apply a patent.

Google vs. Google Scholar

What is the difference between **Google** search and **Google Scholar**?

While Google searches the entire Web, Google Scholar limits its searches to only academic journal articles produced by commercial publishers or scholarly societies. Google Scholar eliminates material from corporations, non-scholarly organizations, and from individuals.

Source: Google.com

Other academic web search engines

- Windows Live Academic
- CiteSeer

Scientific reporting:

Laboratory report vs. Building report

Scientific reporting

Laboratory report

1. Introduction

Introduce the work: What is the aim of the work and why it is done. What kinds of experimental methods are used. What are the expected results?

Building report

1. Introduction

Introduce **what kind of building** you have made and why you have chosen to build, particularly it. Tell the reader where the building is located (*somewhere in Minecraft…*).

Scientific reporting

Laboratory report

2. Theoretical background

Introduce all the **theoretical knowledge that is essential to your work**. What knowledge does the reader need in order to be able to understand your work?

Building report

2. Theoretical background

Introduce the building you have made (hospital, railroad station etc.) **Why the building is essential for the city?**

Briefly introduce at a general level the **energy production method or methods** you have chosen.

How is the energy produced in the method in question?

Scientific reporting

Laboratory report

3. Experimental methods

Describe accurately everything that you have done in the laboratory.

- What chemicals did you use?
- List all the equipment used in different stages of the work
- Describe the laboratory work done (what was added to what…).
- **Based on your description the reader should be able to repeat the experiment in question.**

Building report

3. Experimental methods

Describe accurately your building process:

- How did you plan your construction work?
- How did you divide the work between the group members?
- What kind of materials and tools were used? Why did you choose them?
- **Describe the construction process itself as a whole process.**

Scientific reporting

Laboratory report

4. Analysis and results

In this chapter you will introduce the calculation of the results from the raw data measured in the laboratory.

Present all the graphs you can draw from the results. **Present clearly the numerical results.**

Building report

4. Analysis and results

Introduce the readymade **building and its energy production method.** Don’t introduce in general level. **Introduce the actual outcomes you have constructed yourself.** Add pictures and remember to explain what is presented in them.

Scientific reporting

Laboratory report

5. Evaluation

Calculate the numerical uncertainties and present them with the numerical values.

Discuss what may have caused error to the measurements. Analyze the **strengths and weaknesses of the experiment** and **suggest improvements**.

Building report

5. Evaluation

Discuss the **strengths and weaknesses** of your building and the construction process.

Suggest improvements to both your building and the process.

Evaluate critically the energy production method chosen.

Scientific reporting

Laboratory report

6. Conclusions

What was the aim of the experiment? What kinds of methods were used?

What where the results and what caused error to them?

Was the work successful?

The conclusion is supposed to be a short summary of the work. **By reading only the conclusions the reader should get a clear idea of what was done, why, how and what were the results.**

Building report

6. Conclusions

What did you build? Why? How?

Did the ready-made building meet your expectations?

What could have been done better?

The conclusion is supposed to be a short summary of the work. **By reading only the conclusions the reader should get a clear idea of what was done, why, how and what were the results.**

Scientific reporting

Laboratory report

7. References

Your references should be listed in the alphabetical order or in the order in which you have used them in your text.

You should always have references!

Building report

7. References

Your references should be listed in the alphabetical order or in the order in which you have used them in your text.

You should always have references!

Scientific reporting

Laboratory report

8. Appendices

You can add to the appendices of the work for example pictures of the measurement setup or more detailed version of the calculation performed in the work.

Building report

8. Appendices

You can add to the appendices of the work for example **pictures of the city in Minecraft.**

Building report

Building report

- The building report must contain the following chapters:

1. **Introduction**
2. **Theoretical background**
3. **Experimental methods**
4. **Analysis**
5. **Evaluation**
6. **Conclusion**
7. **References**

Building report

- Length: approximately 2-3 pages (without appendices)
- **Each student should write about 700-1,300 characters** so that everybody contributes to the final, joint building report. (*Chapter headlines and captions are not included to the character count*)
- Language: **English**
- **Deadline:**
- Return to:
- Done as **a group work** with your building team
- **Make sure you write down all the names of your team members who contributed to building and the building report.**

To do:

- Use both Google and Google scholar to find information about the **“Small modular reactor”**

- Gather at least 5 links with both Googles on a separate document and introduce them to the teacher.

- Prepare yourself to estimate the reliability of you references orally

References:

- https://libguides.tuni.fi/information-searching-guide [Cited 10.5.23]