

Exploring effective design of shareable teaching material in an engineering subject

A proposed master's thesis by Sebastian Everett Eriksson and Håkan Andersson

With modern computer technology, sharing digital resources is now easier than ever. This creates new possibilities for different actors, such as engineers and scientists, to share their knowledge with teachers of other educational institutions. However, what a teacher needs is not always obvious, as sharing digital resources often means the communication only goes one way. This leaves a lack of insight in how teaching materials are used, and how they can be designed effectively.

At their best, teaching materials help the teacher by doing some of the planning work for them. However, at their worst, the materials take more time than they give due to requiring adaptation to a given situation. For example, a lesson plan might not fit the students' previous knowledge, or the time schedule might be too long or too short. Effective teaching materials therefore take into consideration the needs of a teacher and their students, as well as leaving room for adaptation to different circumstances.

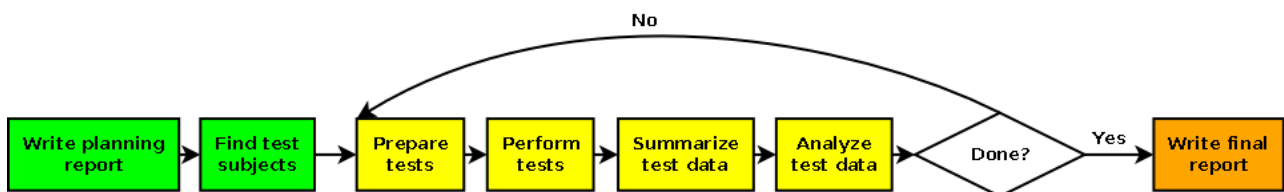
Purpose of the study

The master's thesis aims to provide insight in how shared teaching materials are designed according to a teacher's needs, answering questions such as:

- How does a teacher handle a lack of understanding of a subject that a teaching material covers?
- What challenges does a teacher face when tasked with adapting a given teaching material to a lesson or a series of lessons?
- What benefits do teaching materials bring to a teacher, such as lowering the time required to plan lessons, or providing new knowledge?

Proposed method and time plan

The proposed method is to design teaching materials in a chosen engineering subject for willing secondary or primary school teachers, then observe as the teachers use the materials in a school environment. The teaching materials can be of different types, such as materials for experiments, written lesson plans, slideshows, and more. Finding willing test subjects is done at an early point in the project due to being a critical part of the study, followed by an iterative testing phase running over approximately 10 weeks. The iterations will help in developing the testing method and spreading out the analysis, rather than writing everything at the end of the project.



	200 hours/person or until enough test subjects found	400 hours/person		200 hours/person
Planning phase				
Testing phase				
Report phase				