



METRIC SYSTEMS IN PHYSICS

Brief description: diagrams can be very useful to understand various metric systems in natural sciences and in mathematics. How to use diagrams for exploring metric systems and various quantities in Physics? This is an example of using Class and Object diagrams in the context of Physics.

Target group: 7th grade

Subject: Physics

Background: Computational Thinking, Diagrams

Duration: ~45min.

Diagram type: Class and Object diagram

Language: English

MODELING AT SCHOOL



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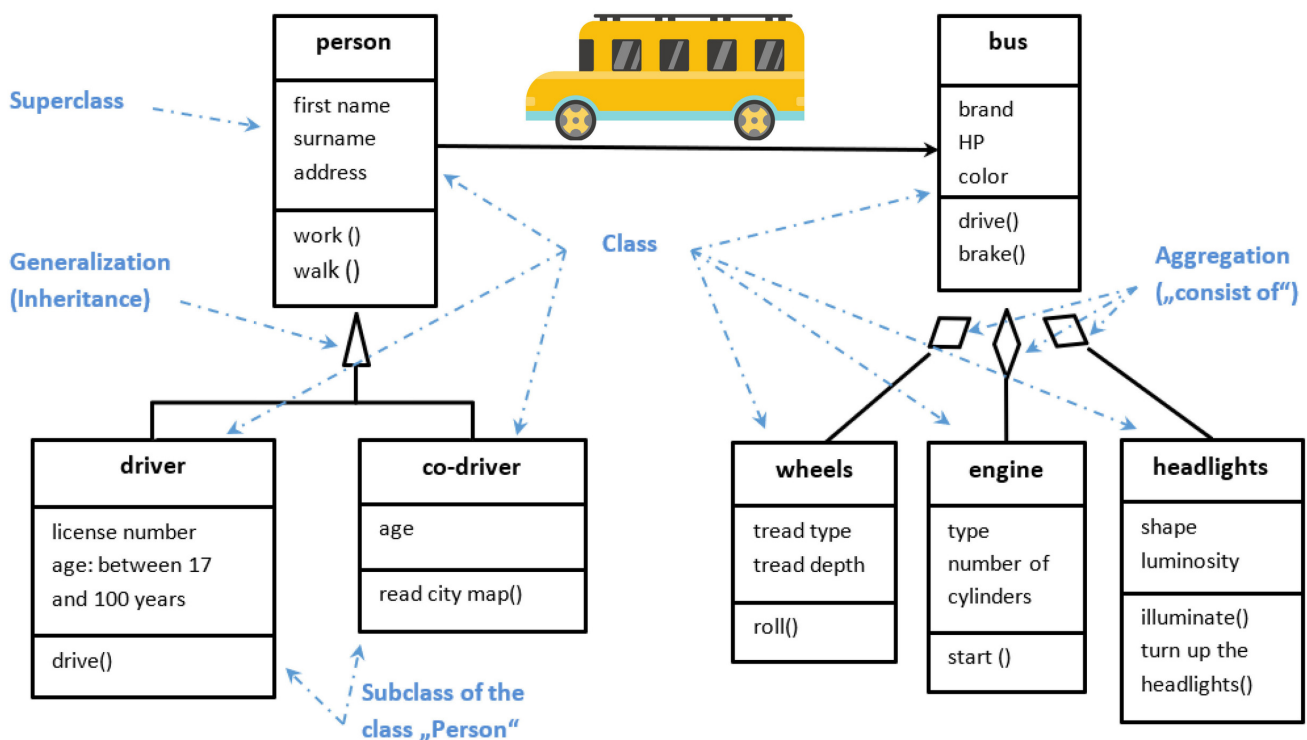


CLASS & OBJECT DIAGRAM


STRUCTURE, CATEGORIZE AND BRING IMPORTANT TERMS ON PAPER

"The class diagram is an ideal tool to structure vocabulary and visualize hierarchies!"

A class diagram is a useful model to represent the characteristics of one or more objects. This model demonstrates the attributes and operations of single classes and possible interrelationships between the objects. With the class diagram, a representation of "inheritance" or "generalization" is feasible. In other words, the transfer of attributes and behavior from superclasses to subclasses can be shown. As in the example below, every driver is also a person and has therefore all the attributes of the class person. Relationships, that express a "consist of"-connection, are also known as "aggregations".



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*After a short introduction to modeling and diagrams, the students of **Physics class** discovered the potentials in creating **Class and Object diagrams** for visualizing connections between base and derived quantities and their units and symbols.*

During the activity, the students received a text listing the base quantities and derived quantities and their units and symbols. After that, they worked on an empty class diagram with some examples without connection lines.

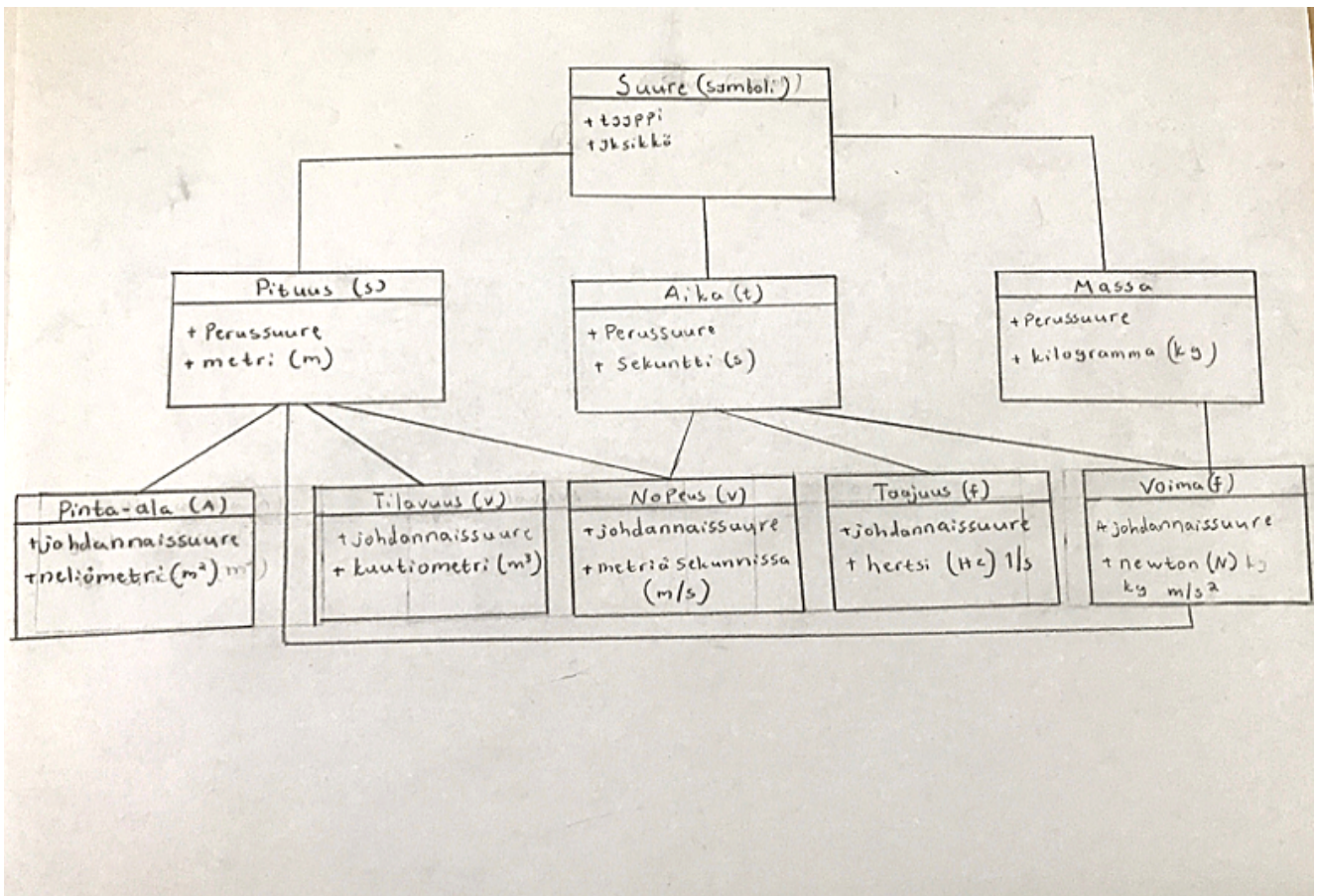
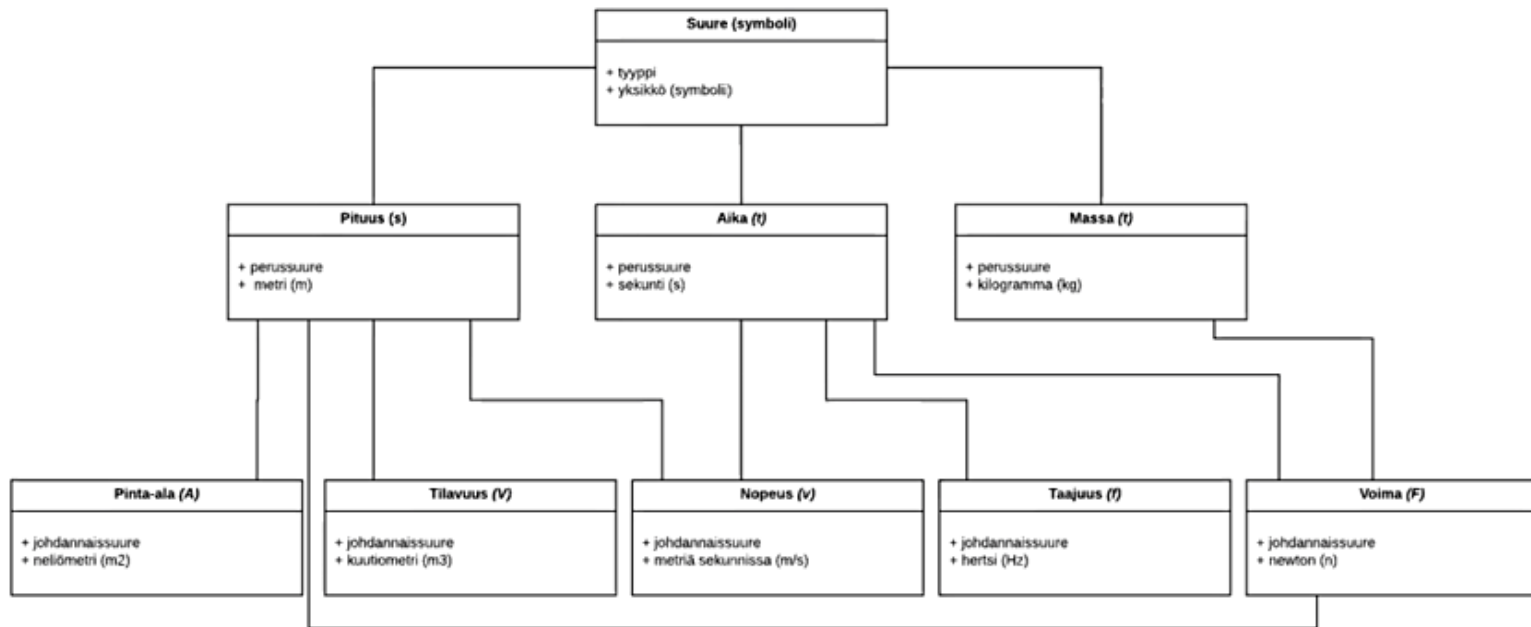
Students reproduced the model in their notebook, added the missing details and the connection lines. When finished with the activity, students took a picture or a screenshot of their diagram and shared the image with their teacher.

When the participating students were asked if they found text or diagram more comfortable to understand, many students voted for the diagram format.

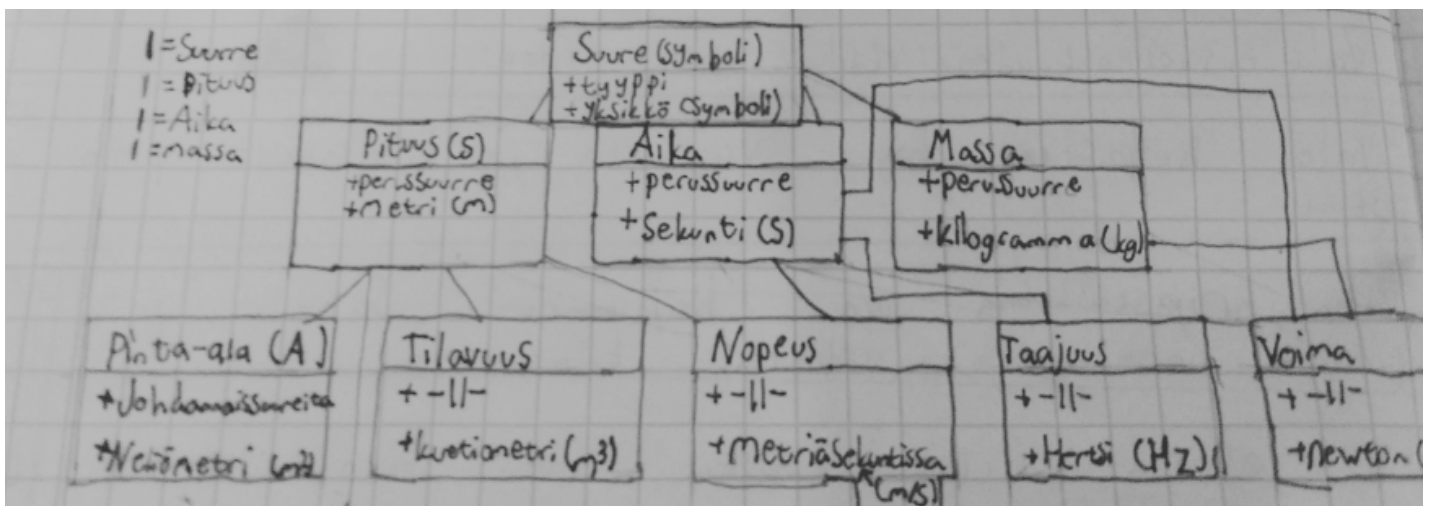
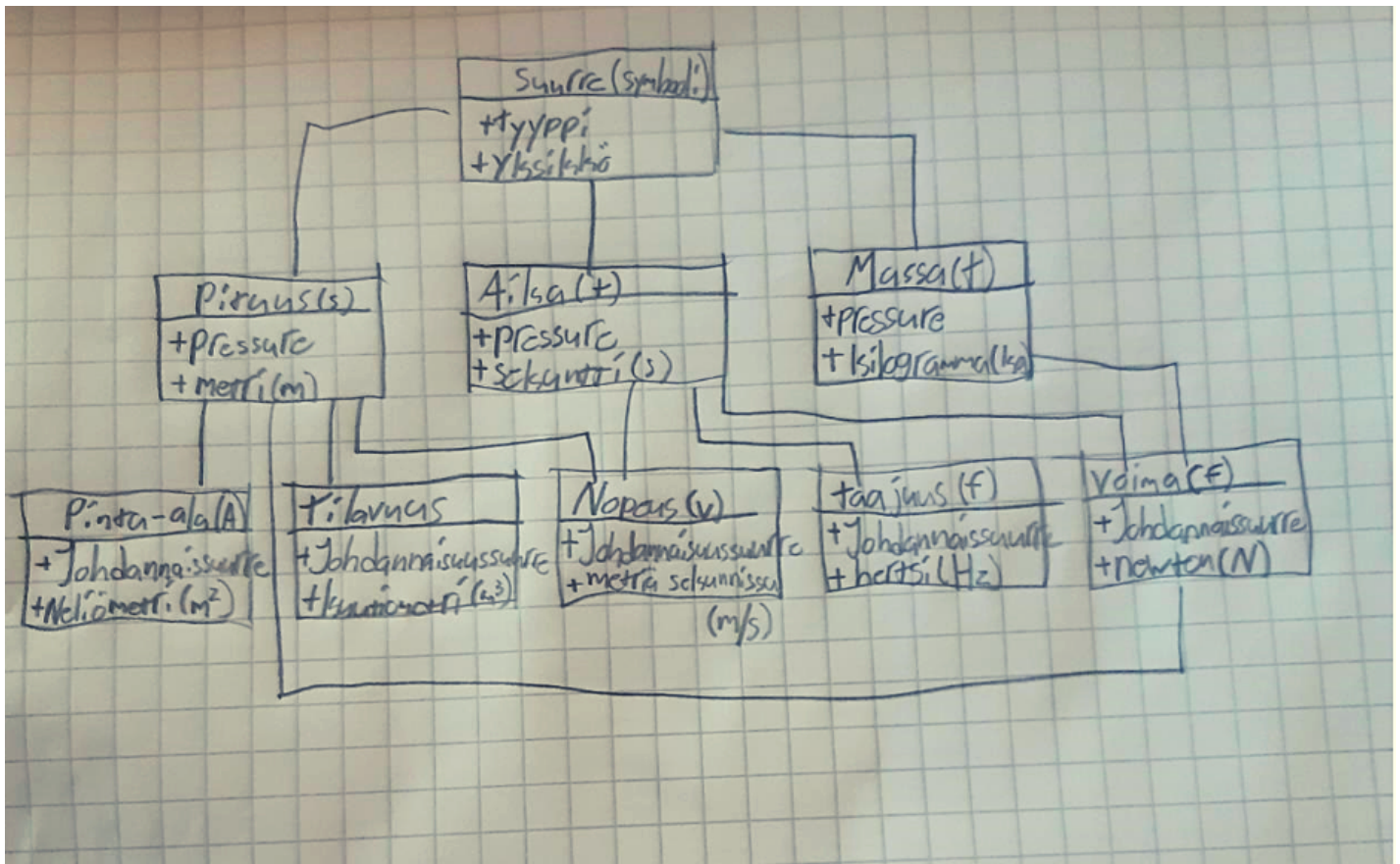
The activity took place during an online class in the COVID-19 lockdown period.

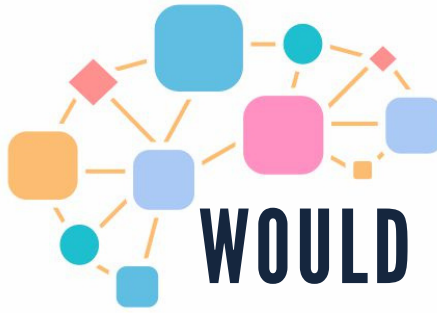


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