Teaching –learning module compiled by the PARSEL consortium
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Popularity and Relevance of Science Education for scientific Literacy

What is a *fair* insurance premium?

A grade 10-12 mathematics module on
Mathematical modelling

Abstract:

Up until now most insurance companies have had only national statistics at their disposal when determining the yearly insurance premium (the amount the consumer has to pay, in order for his or her car to be insured). But is this a fair way to determine the yearly premium? What about those young people who actually are good drivers? GPS technology now makes it possible for insurance companies to follow the individual driving habits of a driver. How can this technology be harnessed to calculate a fair insurance premium?

Sections included		
1.	Student activities (for the students)	Describes the scenario in more detail and the tasks the students should perform
2.	Teaching guide	Suggests a teaching approach
3.	Assessment	Gives suggested formative assessment strategies

Developer: **Claus Michelsen & Jan Alexis Nielsen**
Institution: University of Southern Denmark
Country: Denmark

Overall Objectives/Competencies: The students are expected to:

- understand the difference between types of models (i.e. verbal, numerical, graphical and algebraic/symbolic)
- understand and communicate about general aspects of mathematical modeling
- be reflective about mathematical models
- be able to argue from mathematics
- graphing data
- evaluate and construct graphs and functions
- identify dependence relation between phenomena and translate those into dependence relations between weighed variables

Curriculum content: Types of functions

Kind of activity: thought and model eliciting activities

Anticipated time: 4-12 lessons

Prior Learning: Concept of function

This unique teaching-learning material is intended to guide the teacher towards promoting students' scientific literacy and quantitative literacy by recognizing learning in 4 domains – intellectual development, the process and nature of science and mathematics, personal development and social development.

Its uniqueness extends to an approach to science and mathematics lessons which is designed to be popular and relevant. For this the approach is intentionally from society to science and attempts to specifically meet student learning needs.

This uniqueness is specifically exhibited by:

1. a society related and issue-based title (supported in the student guide by a scenario);
2. student-centred emphasis on scientific and mathematical problem solving, encompassing the learning of a range of educational and scientific goals;
3. including socio-scientific decision making to relate the science and mathematics acquired to societal needs for responsible citizenship.

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