

Teaching –learning module compiled by the PARSEL consortium
as part of an EC FP6 funded project (SAS6-CT-2006-042922-PARSEL) on
Popularity and Relevance of Science Education for scientific Literacy



How much can *you* drink and be able to legally drive?

A grade 10-12 mathematics module on
modelling alcohol degradation

Abstract:

A significant amount of traffic accidents are related to one or more of the people involved having consumed alcohol. This series of student centred activities engages groups of students to use and individualise a mathematical model of alcohol degradation. Students answer the question title by constructing a *rule of thumb* about how much alcohol they (as individuals) can drink before driving, and how long they must wait before driving. They can use this rule as a guide in situations in which they are in doubt whether they can legally drive. And maybe they can avoid being involved in accidents.

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

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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: linear growth functions

Kind of activity: thought and model eliciting activities

Anticipated time: 4-6 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.