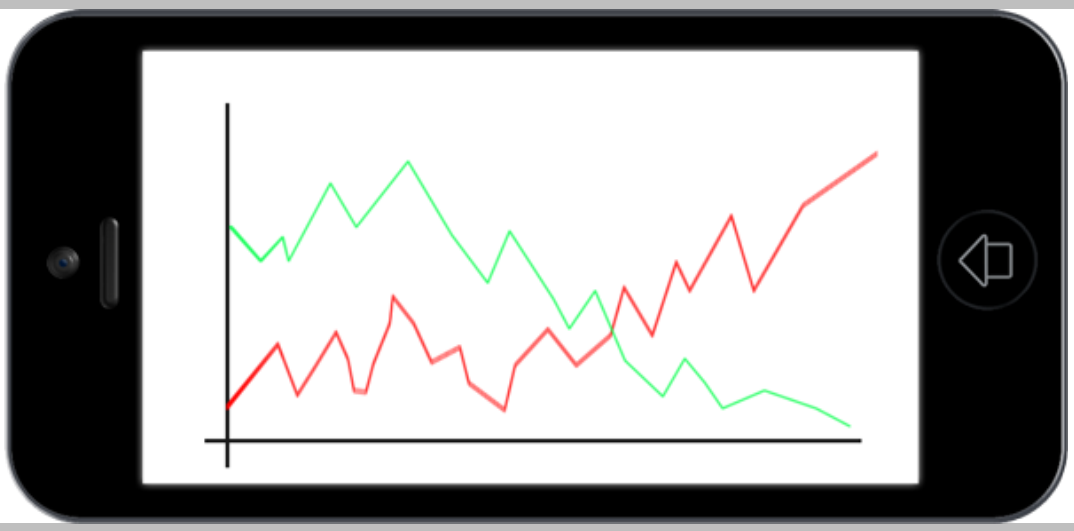
PROFILES

Professional Reflection-Oriented Focus on Inquiry-based Learning and Education through Science

How much are you costing me!



How to choose “the best” mobile phone offering
Mathematical modeling activity for grade 10 students

Developed by Teresa Carloni
Istituto di Istruzione Superiore "Corridoni Campana"
Osimo (AN), Italy

Abstract

Students are involved in a modeling activity that allows them to compare different offers regarding tariff plans for mobile phones, with the aim to understand how to choose the best option. After this activity, students should be able to understand how, with the use of mathematics, they can be more aware of problems regarding economic choices, in particular they should learn the methodology to compare various offers related to any service.

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Supporting and coordinating actions on innovative methods in science education: teacher training on inquiry based teaching methods on a large scale in Europe

Introduction

In the study of mathematics, drawings, formulas and diagrams are widely used, but we do not realize that in this way we model a real problem, highlighting the relationship between the addressed issues and the aim of reaching a solution.
Often by using symbols, formulas and rules we lose sight of the problem with which we are comparing. On the other hand, the continuous connection with a real situation that starts from student's experience allows to hold the interest and promotes the search for new possible type of modeling and analysis techniques.

Overall objectives/Competencies

The students are expected to:

- face reality by using mathematics
- select variables
- express formally relationships
- use appropriate representation of data in meaningful situations
- obtain information from graphical representations

Teaching objectives

- to compare and to select variables
- to develop mathematical models starting from real-life situations
- to draw graphs of elementary functions
- to analyze and to compare graphs
- to identify the relationships between variables
- to promote teamwork
- to use mathematics to argue

Educational level

Third year of high school

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Prior learning

- the Cartesian coordinate system
- the straight line in the Cartesian plane
- the concept of function

Methodological aspects

- Cooperative learning
- Problem solving

Kind of activity

- research work
- selection and comparison between variables
- to draw graphs

Anticipated time

- 8 hours at school
- afternoon research
- individual reflection with final debate

Further knowledge

- multivariable functions
- use of computer tools for the construction of two-dimensional or three-dimensional graphics

Sections included		
1.	Student activities (for 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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