

Toolboxes for SuperFastLearning digital contents in STEM

ERASMUS+ KA226, Partnerships for Digital Education Readiness. Project number: 2020-1-IT02-KA226-HE-095144

Public investment in R&D and better life standards

This exercise is part of a subject from the Master Degree in Informatics at the University of Zaragoza named "Innovation management in ICT". This subject put the focus on achieving the following objectives by the students:



- She/he will know and understand the process, agents and structure of the production of scientific and technical knowledge.
- She/he will learn about different systems of public funding of R&D&I (National, European Union...).
- She/he will know and understand the legal framework of industrial protection and intellectual property.
- She/he will be able to identify opportunities and draw up the corresponding business plans.
- She/he will be able to draw up a plan for the exploitation of results.
- She/he will be able to lead the development of competitive innovation and research proposals.
- She/he will may coordinate and execute R&D&I projects, including their technical and administrative justification.
- She/he will be able to efficiently carry out technology watch tasks.
- She/he will be in a position to make public presentations of proposals and the results of research and innovation activities.

This exercise tries to explain the relevance of public investment in R&D in order to provide better life standards to its citizens. In a general way, most of the general public (including ICT Bachelors) see R&D as a way to improve knowledge and technology. Nevertheless, several studies relate the national level of investment in R&D with its life standards because there are implications that go beyond the results of the R&D activity: for R&D you need more qualified people; more qualified people usually are more critic with governments and their politics; this criticisms have to be managed by most advanced social politics; and so on. This exercise tries to validate this hypothesis by analyzing the data related to R&D investment and life standards provided by Eurostat.

This learning activity planning can be divided into 3 parts:

- Previous to the lesson (course scripting):

The teacher has to prepare the material for the lesson. The description of the work to be done by students can be the same as previous years, but it is necessary to check the update of the reports from Eurostat. In this way, they have to access to the Eurostat website and check if new reports are available. In case they are, the teacher will download them and use the SFLM in order to check that they have enough data- resources to be used in the lesson.

- During the lesson (synchronous learning): The activity has the following script:
 1. Description of the work to be done. The teacher explains the hypothesis that investment in R&D improves life standards. She/he proposes students to



have the following scenario: the student is the Minister responsible for research in a national government and she/he is trying to convince the Minister responsible for managing the national budget, and the other Ministers from the Cabinet, about the national interest in using the money for investment in research and innovation. Thus, she/he has to develop a report that exposes the thesis and its validation by making a data analysis looking for relations between both concepts at EU level.

2. Description of the data sources. The teacher presents Eurostat and the reports used for this exercise. Several documents coming from Eurostat are used for the data analysis, so it is necessary to explain what Eurostat is in order to justify the relevance of its reports.
 3. Description of the results expected. Students have to develop a short report that validates (or not) the hypothesis. This report has to include data analysis from the documents provided. It can include data, tables and figures from them, but with the corresponding citation.
 4. Short explanation of the process suggested to develop the task within the time assigned for the activity (2 hours). This includes the use of the SFLM to extract elements for doing the analysis because they do not have too much time for reading all the reports.
- After the lesson (asynchronous and synchronous learning):

Students have the opportunity to improve their qualifications by making the same analysis in other geographic areas: comparing different regional areas (regional level, not countries) inside the EU, or comparing the EU data with other countries data. They will need to look for other data sources and to manage them with the SFLM. With this analysis, students will develop a report that they will send to the teacher.