ELEARNINGNEWS ARTICLE

Year 7 - number 252 Wednesday 21 June 2023

The project that brings eLearning into Italian schools

An important project in Italy is helping to bring eLearning to schools across the peninsula, changing dramatically the learning paradigm. Let's see how it works

In Italy there is a project under the Ministry of Education and Merit that is bringing eLearning to many schools across the peninsula. This project is called **PP&S**, the acronym for **Problem Posing & Solving**. As the **website** states, PP&S aims to "activate a process of educational innovation based on the growth of a Problem Posing & Solving culture that transversally invests the disciplinary structure with a more mature use of information technology."

The Ministry of Education and Merit (MIUR) website explains in more general terms that the purpose of the project is to **support innovation in secondary education**.

The rationale behind the project and the problems in Italian school system

To better understand what PP&S is, let's try to understand why it came into being. In 2012, the Ministry of Education launched a **well-structured strategy to improve the quality of the educational process** by acting on teacher training to overcome several critical situations undermining the entire Italian educational system. **Among the tools to implement this strategy is PP&S**.

The project brings together **the Italian Association for Computer Science and Automatic Computing (AICA)**, the **National Research Center (CNR)**, the **National Industrial Unions**, the **University of Turin** and the **Polytechnic University of Turin** among its main sponsors.

As the name implies, the project focuses on problem solving and aims to harness the invaluable potential of computer science as a driver of innovation through the development of connections between mathematics and computer science.

As mentioned on the MIUR website, **the problems that led to the creation of the PP&S project are**:

- **Weakness in preparation to deal with problems in quantitative terms**. From an analysis of the results of the national INVALSI surveys and the international OECD PISA surveys**, there is a strong need to strengthen mathematics education in Italy**. This is not a new finding since in 2006 the European Parliament suggested a set of key competencies for learning that were to be achieved at the European level. Already at that time, in order to comply with these recommendations, the Italian school system should have taken action in increasing skills in mathematics, science and the level of digital competence.
- The almost exclusively **disciplinary nature** of the educational framework.
- The wide prevalence of a **teaching approach that tends to separate theory from practice** and gives little space to the latter.
- **The lagging impact of technology on training**, in terms of content and in the organization of training activities.
- The average age of Italian teachers at the time the project began was 51. By 2022 it had dropped to 50, but it is still high. **The generation gap between teachers and digital native students is large and can be a source of problems**.
- Another problem of Italian education is the inefficiency in creating a link between school and the world of work. The problem is that Italian schooling completely fills the educational space to develop students' knowledge as much as possible and leaves little room to include a component aimed at the world of work. In addition, the world of work requires skills that school usually does not provide.

How does PP&S solve these problems?

To explain how the PP&S project intends to solve these problems, it is necessary to go by points. As we said, **PP&S focuses on problem solving methodology and intends to exploit the potential of computer science** as a **key to innovating the Italian school system** through the development of connections between mathematics and computer science.

Focusing on weaknesses: science subjects

There are **two reasons** why the PP&S project focuses only on science subjects. The first is that **math, science and digital skills are subjects on which the Italian school system has more difficulties than other European countries**.

The second reason has to do with the **development of technologies on the market**. To date, technologies for education are highly developed in science subjects because computers are great at doing calculations and, in general, handling quantitative data such as numbers. In humanities subjects, where elements such as creativity, inventiveness and critical thinking need to be valued, technology still has several limitations.

A new model of student-teacher relationship

Problem-posing education is a term popularized by Paulo Freire in 1970 in his book *Pedagogy of the Oppressed*. Problem-posing is a teaching method that emphasizes the importance of **critical thinking to redeem oneself**. Freire used this method as an alternative to the traditional educational model called banking education, according to which the learner is a container to be filled with information. Although Freire was the first to incorporate and explore the concept in modern pedagogy, **this method has its roots in the Socratic method, in which the teacher accompanies the student to reach his or her own truth, rather than imposing his or her own**.

This approach is an excellent starting point for addressing "structural" changes in the Italian education system. Some of the **main problems identified by MIUR are in fact related to the relationship between teacher and student**.

The Italian system is set on a rather outdated model in which the student is regarded as a container to be filled with knowledge.

Does this approach make sense in a world where every piece of information we need is accessible in seconds? In which we are bombarded with information from all the electronic devices around us? In other words, in a world where the problem is not accessing information, but knowing what to do with all the information we are bombarded with?

The philosophy of education according to the problem-posing methodology makes the relationship between student and teacher more relaxed, recognizing that knowledge is not deposited by one (teacher) in the other (student) but is instead formulated through a dialogue between the two. This model includes a focus on how to handle the information we find around to create critical thinking rather than on storing as much information as possible.

So, **it seems that the cultural change that the problem-posing method will bring may be helpful in updating the model** of the teacher-student relationship which, compared with that of other European countries, appears rather outdated.

Other goals of PP&S

In addition to changes at the structural level, the PP&S project aims to solve the problems in education identified by the Ministry through four general objectives:

- Developing an **integrated education space** that brings together logic, math and computer science.
- To **build a "Problem Posing & Solving" culture by investing in logical-mathematical-computer tools capable of creating, quantifying, creating simulations and analyzing problems** of complexity appropriate to real-world situations.
- In parallel, **undertake a significant number of online activities** with educational delivery actions, tutoring and self-assessment.
- Ensure a growth of **computer culture** among teachers that can accompany the transformation that the education sector is undergoing.

To achieve these goals, the project has initiated the following activities:

- **Improving professional skills** and supporting innovation in the teacher education system through innovative solutions and practices based on new information and multimedia technologies
- **Provide tools and methodologies** that can facilitate:

  - ♦ The acquisition of **STEM** (Science, Technology, Engineering, Mathematics) skills, mathematical skills and basic science and technology skills.
  - ♦ The **comparison and sharing with European partners** and the introduction of advanced technological tools in mathematics and science teaching to support learning
  - ♦ **Integrating the action of classroom teaching with e-learning activities** by creating cooperative learning communities for both students and teachers
- **Developing practical and useful skills to contribute to a better society** to increase opportunities for learning mobility and strengthen cooperation between the world of education and the world of work.

The positive outcome of the project

To understand the results brought by this project, let us consider the report published in 2023 "PPS one year later: the evolution of the eLearning platform of teacher education on problem posing and solving."

In 2023, 1,961 teachers with 2,083 classes are part of the project, and one of the strengths of the project is indicated as the creation of communities of teachers and students on eLearning platforms.

Teacher communities

Specifically, members of the teacher communities constantly and independently improve their skills, realizing an excellent example of collaborative learning. This is because they have access to constant mentoring that helps them overcome initial difficulties with new methodologies and technologies. Not only that, the project provides a helpdesk service that provides immediate technical support at any time and expert consultants. Materials, both for learning and assessment, are available on the platform and are ready to be used in the classroom. Teachers can share files, questions and assignments for self-assessment with colleagues. They can also visit other courses and analyze how resources and activities are proposed.

Student communities

In addition to communities of teachers, the platform also hosts communities of students from classes enrolled in the project. Students have access to resources such as files, videos, audio, presentations, provided by the teacher. They can complete, assignments and tests for assessment and self-assessment, solve problems with classmates, and discuss through forums. In addition, many classes join the project with teachers of different science subjects, and this promotes learning and building cross-curricular skills.