



Lifelong Learning Programme

Comenius



Education and Culture DG



# Teamwork, Training and Technology for development of Key Competencies



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## EDUCATIONAL ROBOTICS AS INSTRUMENT TO DEVELOP KEY COMPETENCES

The introduction of educational robotics in our institution began last year, thanks to the collaboration with School of Robotics in Genoa, a training board of the Ministry of Education, a very active one in the dissemination of this methodology in many Italian schools. Some teachers were already trained in the last school year and they have already started working with robots, sensors and actuators.

The purchase of the robots was possible through funds of the European Project "KeyTTT: Teamwork, Training and Technology for Development of Key Competences" which our school takes part in, as member of the Europole network, which is involved in the project.

KeyTTT Project aims to identify useful practices at European level, for mathematics and science teaching. This is mainly to identify those practices that help you developing key skills in terms of lifelong learning, as identified by the European Parliament:

1. **communication in the mother tongue;**
2. **communication in foreign languages;**
3. **mathematical competence and basic competences in science and technology;**
4. **digital competence;**
5. **learning to learn;**
6. **social and civic competences;**
7. **spirit of initiative and entrepreneurship;**
8. **cultural awareness and expression.**

These skills are based on three fundamental aspects of the life of each person:

- **self fulfilment and personal development (cultural capital);**
- **active citizenship and integration (social capital);**
- **the employability (human capital).**

How can the educational robotics develop these skills?

The use of educational robotics as a teaching method encourages students in guided discovery and in problem solving; students get used to work in groups to solve problems, find solutions and verify the results.

Robot Kits Lego Mindstorms® and Lego WeDo® which our school bought are commonly associated with games. Robots indeed, go beyond the recreational aspect, and they can combine the reconstruction of the knowledge they got during the various school activities, with creation, invention and new keys in the revival of the concepts and techniques acquired. In this way you can achieve multiple types of intelligences that characterize our pupils: linguistic, logical-mathematical, interpersonal, just to name a few.

And moreover. The educational robotics at Fumane Secondary School is used to perform multi-disciplinary courses, what is technically called CLIL: robotics courses in English with students from other European schools.

Some classes of our students, infact, participated to interactive lessons in video/webconference with Bulgarian and Polish classes. Using a platform for video conferencing and a shared Interactive White Board (IWB) Italian and foreign students can work at a common lesson communicating in a foreign language (English, at the moment).

The experience made so far has found an enthusiastic participation of students (Italians and foreigners), and of some teachers. The subject was the discovery of the cause-effect relationships related to sensors set on the robot.

Robotics was also the subject of a common lesson for Italian and French students from Nantes, guests in Fumane during a school Exchange; in English again.

Robotics is therefore useful in order to build networks of relationships between students and teachers from different schools. The Comprehensive School "B. Lorenzi" hosted, at the end of September, a seminar on Educational Robotics, which involved teachers from different schools spread in the Veneto Area.

Today we speak about educational robotics as a teaching tool, maybe in a few years it will become a discipline to deal with since the first classes of primary school.

Meanwhile, some taste of robotics (in the form of play and creation) was also brought to the kindergarten Fumane, with the help of some older students of the secondary school. Robotics as a tool for continuity and a means to create links among different school levels.

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