

In the current crisis caused by COVID-19, the need to teach in primary schools using digital technologies and online platforms such as e-learning has become more prominent than ever. The situation, on the other hand, places great demands on parents who are to ensure "distance learning" without being methodically prepared for the situation.

The ALIVE project provides a solution that can help eliminate the situation in the future, as it combines the benefits of online (or, better said distance) education with traditional face to face classroom teaching. Through virtual reality and the 3D world, it will enable the teacher to conduct distance learning - in virtual reality - but at the same time to be in direct contact with their pupils as if they were in their own classroom.

A significant advantage is the potential of digital technologies for an interesting form of knowledge presentation. The main aim of the proposed project is twofold:

1. To assist pupils in better studying and learning biology with the utilization of new educational technologies. Specifically, a 3D virtual reality educational environment will be developed possessing innovative educational infrastructure, and offering immersive and efficient learning opportunities, engaging students in various educational activities, learning scenarios and offering students an attractive, entertaining and efficient way to learn various topics of the challenging domain of biology/natural sciences. The pupils will have the ability to virtually visit living labs, immerse into the cell or travel through photosynthesis cycle, perform experiments, explore procedures and phenomena, examine the ways that are conducted and also be guided towards analysing and explaining them through the scientific method.
2. To help the teachers to educate pupils in both situations - in an attractive way during their face-to-face lessons as well in the situation when they cannot participate personally in the classroom. The virtual educational environment and the living labs will be designed in a way that supports pupils to form appropriate mental models of involved concepts, by visualizing them and allowing interactions with the real-life phenomena and processes. When pupils learn new abstract concepts, it is quite hard without appropriate connection to concrete examples. The 3D virtual reality educational environment and the visualization of procedures aim to help pupils connect abstract concepts and procedures to concrete experiences and examples. Indeed, one of the most vital and promising affordances of the 3D virtual environment is to provide spatial instruction. Also, by teaching the students to study in 3D virtual reality and by using visualization techniques their spatial cognition can be enhanced.

In line with above mentioned, the target groups of ALIVE project can be defined as follows:

- TG1: Teachers at the primary and secondary school level (ISCED 2-4).
- TG2: students/pupils aged 10 - 15 who study at most at lower secondary school.
- TG3: Entities which are interested in offering courses in biology/natural sciences.

The project will produce outputs that are completely new and innovative in terms of learning methods in biology education, content of courses and school education approaches in virtual reality environments. Through synergic effect of international cooperation, transfer of innovation and development of innovations and additional values, the 6 partners from 5 countries set up main intellectual outcomes of the project:

- O1: Design of Curriculum and Innovative Learning Material for Biology
- O2: Game-based 3D Virtual World Educational Platform
- O3: User Guide for teachers

The coordinator of the project is Ustav ekologie lesa Slovenskej akademie vied from Slovakia.
The other organisations participating in the project are:

University of Cyprus (Cyprus)

Zakladna skola Benkova 34 (Slovakia)

České centrum odborného vzdělávání, z.ú. (Czech Republic)

INSTITOUTO TECHNOLOGIAS YPOLOGISTONKAI EKDOSEON DIOFANTOS (Greece)

CONSIGLIO NAZIONALE DELLE RICERCHE (Italy)

UCY participates in the project via the SEIT and Bioinformatics Research Laboratories. The main contributions of UCY are in the design of curriculum and innovative learning material for Biology and in the design and development of the 3D Virtual World Educational Platform.

