

FITPED - Work-based Learning in Future IT Professionals Education

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Consortium:

- **Constantine the Philosopher University in Nitra, Slovakia**
- **Uniwersytet Slaski, Poland**
- **Uniwersytet Pedagogiczny im Komisji Edukacji Narodowej w Krakowie, Poland**
- **Mendelova Univerzita v Brne, Czech Republic**
- **Universidad de Las Palmas de Gran Canaria, Spain**
- **Helix5, Netherland**
- **Teacher.sk, Slovakia**

Annotation

A digitization of the society and the automation of many processes bring new opportunities and types of jobs. The number of employees employed in the IT sector is continually growing. The employees in the European Union urge that there is an increasing lack of IT specialists, mainly in the field of software development, data analysis and data science.

The development and evaluation of the proposed educational model is the main objective of the project. The model will provide development of highly specialized skills and competencies of future IT specialists using the developed education model.

The model is focused on minimizing the number of students with problems in learning. Increasing a level of the knowledge obtained by the students in the introductory courses focused on development programming skills is necessary for increasing the level of knowledge of highly specialized IT skills, as well as for training students for life-long learning. The features of work-based learning, active learning, collaborative and problem-based learning approaches will be used during this process.

The students of accredited study programs create the primary target group. They will be involved directly in the activities, which implement the innovations in the education. Special attention will be given on involving doctoral students into the project's tasks to improve their teaching skills. During the two years of the active deployment and use of the educational platform, the students will enrol in several courses. Therefore, the total number of students will increase to 1800.

The project will focus on activities, which support innovative methods and pedagogical approaches, as well as develop digital educational resources and tools. Applied approaches can be considered innovative because they have not been researched yet in detail. An implemented educational model will utilize the positive features of microlearning, automated programming code assessment, interactivity and immediate feedback. Consequently, the innovative strategy based on the application of the WBL approach to the advanced educational topics will be applied.

Development of the educational platform will follow after the initial phase of the project. The development of interactive educational content for learning programming languages will be realised

in the first phase. An evaluation of the deliverables for the first phase will follow in the second phase of the project. At the same time, the development of e-learning courses focused on the development of highly specialized IT skills and knowledge using WBL approaches will be realized.

The implementation and evaluation of the two-staged model is the main contribution of the project:

- The first stage is based on obtaining the basic knowledge and skills by IT students by intensive using of interactive educational content and automated source code assessment created for a set of popular programming languages, all included in the proposed education platform.
- The second stage transfers the responsibility for further learning on students. Real world projects with increasing difficulty, which force them to obtain the knowledge and skills required for the life-long learning of IT specialists after their graduation, are used in this process.

Impact of the project

- A short term horizon: Developed educational platform will provide a set of innovative educational tools. As a result, the overall quality of training and education of IT students will increase. The portion of students at risk of learning failure will decrease. At the same time, involved students will reach better grading
- A long term horizon: A higher level of IT knowledge and skills obtained by target group will create their readiness for the job market. A level of readiness for life-long learning will also increase.
- Regional impact – The competitiveness of involved universities will increase in the region because they will provide an innovative approach to IT students' education based on the students' expectations and habits. Regional companies will have the opportunity to employ IT students with a higher initial knowledge.
- Educational impact – New methodologies and modernized didactical approaches for IT topics covered by the project will be proposed and evaluated. Improved evaluation methods based on the automation will be used across the whole educational model. The gamification elements, as well as models, which allow to record and analyse a student's progress and performance and identify situations, which can lead to his/her learning failure, will be evaluated.
- Technological impact – Proposed and implemented concept can be applicable to other related disciplines.
- Social impact – The number of students, who leave a study due to learning failure, will decrease. Graduates will obtain a higher level of specialized IT knowledge and skills.