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4. INDUSTRY

TEACH4EDU4 
Accelerating the transition
towards Edu 4.0 in HEIs
teach4edu4-project.eu



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TEACH4EDU4 BASIC FACTS



GENERAL PROJECT OBJECTIVE

to respond to the need of Industry 4.0 with the strategic partnership that will develop and nurture the vision and solutions of how to accelerate the corresponding transition within HEIs - in the field of Computer Science and related disciplines - towards Education 4.0, where humans and technologies are aligned with the aim to enable achievement of skills, competences and knowledge necessary in the 21st century.

PROJECT PERIOD 02.11.2020.-01.05.2023

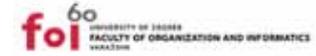
PROJECT BUDGET EUR 296.845,00

PROJECT NUMBER 2020-1-HR01-KA203-07777



PROJECT TEAM

PROJECT COORDINATOR



Faculty of organization and informatics, University of Zagreb

PROJECT PARTNERS



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Università Degli Studi Dell'Aquila, Italy
Prof. Henry Muccini, PhD.



Tallinn University, Estonia
Sirje Virkus, PhD.



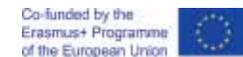
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Prof. Aleksandar Markovi, PhD.



Universitat Politècnica De Catalunya, Spain
Ariadna Llorens, PhD., Industrial Engineer





SPECIFIC PROJECT OBJECTIVES

- to enable continuous improvement of skills of teaching staff to be able to respond to the requirements of Education 4.0
- to design and develop transferable learning design models that guide implementation of innovative teaching, student performance tracking and learning methods to enable the necessary shifts
- to promote innovated, effective, internationalized digital age in teaching and learning environments



INTELLECTUAL OUTPUT (IO) 1

CATALOGUE OF NEW FORMS OF TEACHING, LEARNING AND ASSESSMENT IN CS IN EDU 4.0 AND RELATED TEACHERS SKILLS AND COMPETENCES

leader: The Open University UK

co-leader: UNIVERSITAT POLITECNICA DE CATALUNYA, Spain

Two main aims of this output were to collect and synthesize, in a form of catalogue: Education 4.0 compatible forms of teaching, learning and assessment, teachers' skills and competences related to in Education 4.0, and Education 4.0 compatible forms of teaching, learning and assessment. One part of this IO focuses to identify, collect and organize innovative teaching and learning methods descriptions with special emphasis on trends identified within Education 4.0: accelerate remote learning, personalized learning, different types of assessment independent learners, project-based learning, hands-on learning and related.



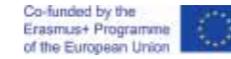
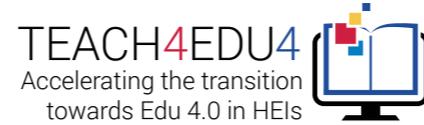
INTELLECTUAL OUTPUT (IO) 2

LEARNING DESIGN MODELS

leader: UNIZG FOI, Croatia

Learning design (LD) is a methodology for enabling teachers/designers to make more informed decisions on how they approach to designing learning activities and interventions, which is pedagogically informed and makes effective use of appropriate resources and technologies. LD influences and it is influenced by new technologies and innovative pedagogical practices. By integrating IO1 results with existing LD models and focusing on how to identify and validate expected student workload and desirable effects of specific LD decisions, new and improved LD models have been implemented and validated in the scope of the IO4 and IO5.

In order to support this process, a new tool for LD design was used to help educators in implementing and later validating their Learning Designs: learning-design.eu



INTELLECTUAL OUTPUT (IO) 3

COLLABORATIVE TEACHING METHODS FOR JOINT CREATIVE CLASSROOMS

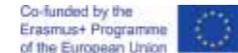
leader: UNIVERSITA DEGLI STUDI DELL'AQUILA, Italy
co-leader: UNIVERZITET U BEOGRADU, Serbia

One of the features of Industry 4.0 are virtual classrooms in which the lecturers and students are participating from different places at the same time, and the lecturers can store lecture material to be watched or aired in the future. This is even more important in computer science where workers very often work in virtual teams and students should be equipped with such skills during their education (IO1). With that sense in IO3 Joint Creative Classrooms (JCC) were defined, which are computer science courses developed in collaboration of two or more partner universities by using LD models (IO2) with a total workload of 2-3 ECTS.



JCCs support innovative joint teaching and creative learning practices: personalised and active learning, learning by osmosis, collaborative learning and existing cases from real life educational settings, thus making learning more interesting and effective.

JCCs served as showcases of courses within Computer Science fields (e.g. Software architecture, Web development, Human computer interaction, Modelling and computer simulation, Internet/IoT security, Machine learning, Data analytics/data mining), supporting the development of teachers' skills and competences related to Edu 4.0.





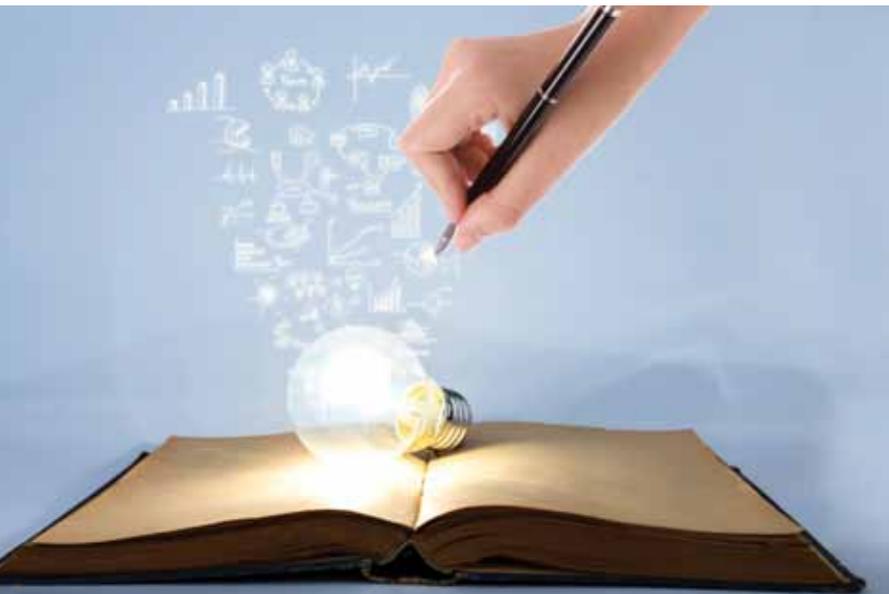
INTELLECTUAL OUTPUT (IO) 4

GUIDEBOOK ON THE USE OF LEARNING DATA TO CREATE EVIDENCE-BASED LEARNING DESIGN DECISIONS

leader: Tallinn University, Estonia

The benefits of Learning Analytics for the institutions, staff and students are multiple, such as improving student retention, supporting informed decision making, increasing cost-effectiveness, understanding students' learning behaviors and providing personalized assistance for students and timely feedback.

In order to connect learning design (LD) and learning analytics, a Guidebook on the use of learning analytics data to create evidence-based learning design decisions was developed. The aim of this guidebook is to support teachers and educators in making evidence based LD decisions and to support them in evaluating the effects of these decisions.



INTELLECTUAL OUTPUT (IO) 5

PARTNERSHIP MANIFESTO

leader: Zilinska Univerzita v Žiline, Slovakia

In the frame of this IO, basic conditions, rules for further cooperation and institutional processes are included. It was built on the experience, conclusions and reflections of this partnership and involved teachers and students within development and piloting phases about the vision and purpose of Education 4.0 and their role in it.

The document is recommended to be used further by similar organizations as well as transferred to different educational levels - the idea is to enable other similar HE organizations to accept and sign this Manifesto and to join TEACH4EDU4 community of researchers and teachers within computer science and related disciplines.

It indicates the changes that are necessary for education to contribute to the Industry 4.0.



PARTNER QUOTES on WHAT IS THE MOST EXCITING ASPECT OF TAKING PART IN TEACH4EDU4?

Except the benefits of coordinating and working with a group of highly motivated experts from partner institutions and shaping the direction of projects tasks and outcomes, the real challenge for FOI team is twofold: first is to develop and implement learning design tailored for computer science courses that will be used for the design of courses in the project; and the second is to pilot blended joint creative classrooms with teachers from partner institutions and international students.

Assoc. professor Igor Balaban, PhD, UNIZG FOI

We are excited to work with teachers from leading institutions that offer computer science programmes to students. As a leading institution in Serbia in the field of Information and Communication Technologies, we are expecting to share our achievements and to gain more experience in the field through collaboration in JCCs. We are very proud with connection to the economy and a large number of IT companies. In very close collaboration with them, we are creating very realistic environment for the development of student's ideas and projects. This project will increase those connections and make results more effective.

Dr. Aleksandar Markovi, PhD, UOB FOS

It is great to work with so many exciting and innovative computer science teachers across Europe, and learn from their diverse and interesting perspectives. As technology and computer science is constantly evolving, there is a continuous buzz about how to design the next new skill, programme, or competence. In particular it is great that TEACH4EDU4 has a strong link to practice and employers who recruit our graduates. Listening to their perspectives and insights during our focus groups was really enlightening, and we look forward to work together with teachers and students on the JCCs.

Professor Bart Rienties, PhD, OU IET



Designing Collaborative Teaching Methods for Joint Creative Classrooms is extremely exciting. While there are multiple theoretical ways of combining (individual) courses to create JCCs, it will be extremely intriguing to understand the concrete ways of creating JCCs. In fact, a number of constraints (such as, language of teaching, period of teaching, effort required to create JCCs, pre-conditions to attend courses) applies. In order to better understand the state-of-the-art, we will also run a systematic study to analyse the existing methods to create global/cooperative courses.

Professor Henry Muccini, UNIVAQ

Our project team members are mostly graduates of our Faculty. They are passionate about their work - the education of new ICT experts. They are experts in their own special education and research areas. To be honest, we all are too busy to study new trends in education. I am very happy that thanks to the Teach4Edu4 project we can be involved in uncovering, learning, and developing new experience and skills in the field of Education

Assoc. Prof. Ing. Peter Márton, PhD., FRI UNIZA

The School of Digital Technologies of Tallinn University has a long experience in the field of educational innovation and digital competences, and we have been and are currently working on several projects on these topics. We are very excited to be able to combine the experience gained in a number of projects and to develop new approaches and perspectives for innovative teaching and learning scenarios. Another exciting aspect is the networking of new partner universities involved in the project, with which there was no previous cooperation experience.

Professor Sirje Virkus, PhD, TU

For my point of view, the most exiting aspect of taking part in TEACH4EDU4 is the international commitment and the relationship with other professors who work in the same fields. Because, over all, this is a way to grow as teaching professionals in tech universities and to improve our research goals.

prof. Ariadna Llorens, PhD, UPC ICE

KICK OFF MEETING (ONLINE)

DECEMBER 2020

On December 8, 2020 online kick off meeting of TEACH4EDU4 project was held, with 42 participants. Although the first meeting had to be held online, the partners managed to achieve the goal of introduction and getting to know the partners teams involved and to make the initial coordination of the activities, expected results and project management that will enable them to explore, teach and implement the changes described as project objectives.



MEET4EDU4 IN CROATIA

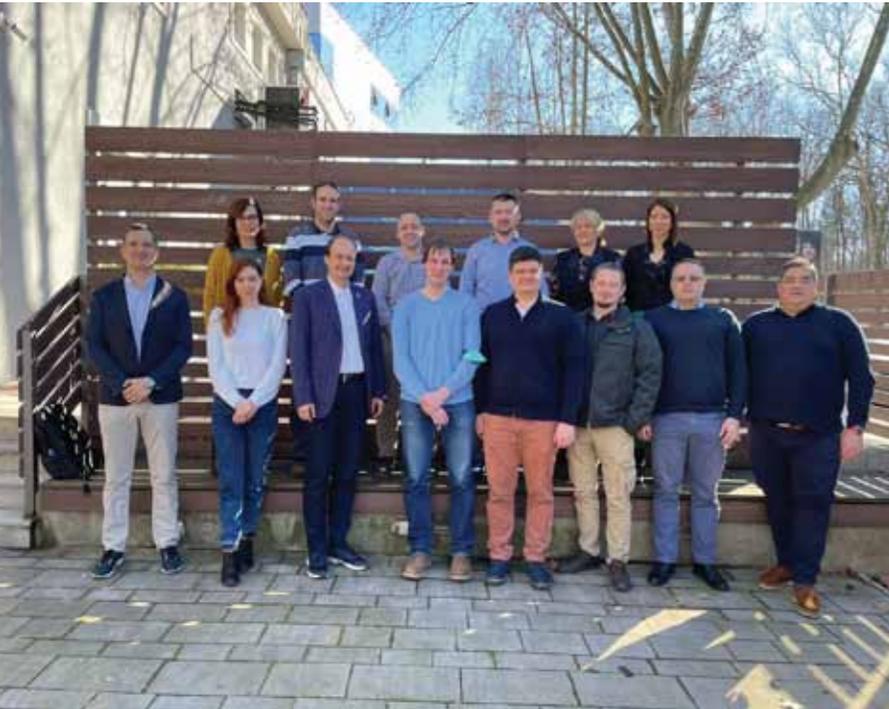
SEPTEMBER 2021, VARAŽDIN

On September 23 - 24, 2021, hybrid 2nd transnational meeting was held at the Faculty of Organization and Informatics in Varaždin and on Zoom platform, with 26 participants on both days. The aim of the meeting was to enable partners to meet in person and online to discuss ongoing and upcoming project activities and results, as well as to work in groups on the development of project intellectual outputs. The meeting was hosted by the project coordinator - University of Zagreb, Faculty of Organization and Informatics (FOI) and included Teach4Edu4 LD TOOL presentation for 19 included teachers from partners institutions and group work, also associated partner presentation - TICM.



MEET4EDU4 IN SERBIA

FEBRUARY 2022, BELGRADE

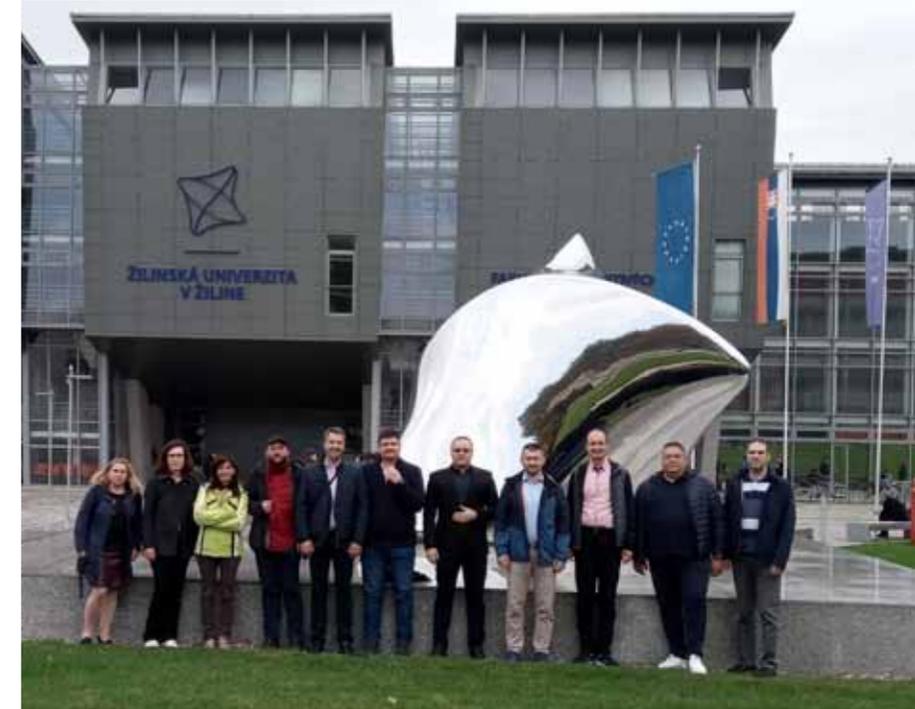


On February 9-10 2022, hybrid 3rd transnational meeting was held at the University of Beograd, Faculty of organisational sciences, with 33 participants, including teachers from partners institutions.

Besides topics about the project activities, results and project management, teachers workshop was held with goal to present 3 design templates and JCC models, and for teachers to present their example case studies and broad their learning design experience..

MEET4EDU4 IN SLOVAKIA

OCTOBER 2022, ŽILINA



The hybrid 4th transnational project meeting of TEACH4EDU4 consortium with teachers was held at the University of Žilina, Faculty of Management Science and Informatics, on October 11th and 12th 2022, with 25 participants.

This meeting also included a workshop with teachers related to pitching experiences with their JCCs, exchange of good practice & lessons learned, with conclusion what can be improved for future JCCs. The status of ongoing IOs has been discussed, with brainstorming on how to wrap up results in the best way.

TEACH4EDU4 BENEFITS AND IMPACT

The project is designed in a way to enable broader impact across education system, since the learning design models and joint virtual classrooms are developed as transferable solutions ready to be adapted in other areas and levels.

During the project's lifecycle, 8 JCCs have been designed and piloted:

- ADVANCED DATABASE SYSTEM   
- INFORMATION RETRIEVAL AND DATA MINING  
- INTERNET OF THINGS EMBEDDED SOFTWARE DEVELOPMENT  
- INTERNET SECURITY AND TRUSTWORTHINESS   
- MACHINE LEARNING SCHOOL   
- MODELLING AND COMPUTER SIMULATION   
- SOFTWARE ARCHITECTURES ANALYSIS AND DESIGN  
- ROBOTICS: EMBEDDED SOFTWARE DEVELOPMENT  



The project is expected to have impact at different levels:

Individual level (teachers)

At individual level it is expected that teachers will:

- ✔ meet their expectations regarding innovative pedagogies enabling them to rethink education by exploitation of the potential of new forms of teaching, learning and assessment in CS in Edu 4.0
- ✔ raise awareness on importance of international experience
- ✔ be motivated for further implementation of innovative pedagogies in their courses
- ✔ recognize improvements in courses developed according to LD models in comparison to traditional courses

Individual level (students)

At individual level it is expected that students will:

- ✔ be satisfied with their new learning experience gain through participation in the joint creative classrooms efficiently achieve learning outcomes through new learning methods, international virtual teams,
- ✔ be motivated for further participation in similar courses to acquire skills necessary for industry 4.0 experience "mobility from home"
- ✔ increase active engagement in course

Institutional level

At institutional level it is expected that institutions involved will obtain:

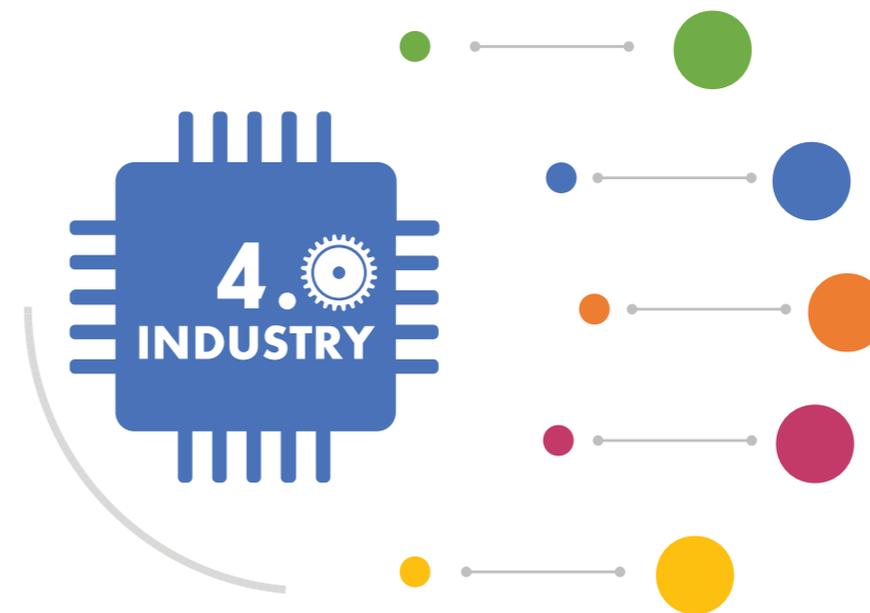
- ✔ raise common staff awareness on innovative pedagogies and the new competencies and skills
- ✔ improve approach to the standardisation of courses and teaching practices

- ✔ contribute to the identification of possible bottlenecks in educational value chain contribution to the process of quality assurance within HE

Industry level

At industry level it is expected that following indicators will be achieved:

- ✔ raised awareness of the needs of educational system and ways of participation
- ✔ raised knowledge how to translate language of industry to language of education (within problem-based education examples)
- ✔ strengthend collaboration between industry and academia
- ✔ participation of IT companies in preparation of JCCs and on multiplier events



"Every project is an opportunity to learn, to figure out problems and challenges, to invent and reinvent."

David Rockwell

TEACH4EDU4 MAIN ASSOCIATED PARTNERS

