



<https://doi.org/10.31261/IJREL.2020.6.2.12>

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A Report from the International Scientific Conference DLCC2019 in Poland, October 14th and 15th, 2019

The 11th edition of the International Scientific Conference “Theoretical and Practical Aspects of Distance learning” DLCC2019 (www.dlcc.us.edu.pl) was held under the theme “E-learning and STEM Education” from the IRNet project. The conference was held on the 14th and 15th of October in 2019 in Katowice and Sosnowiec. It was organised by the Faculty of Ethnology and Educational Sciences in Cieszyn, Faculty of Computer Science and Materials Sciences in Sosnowiec, University of Silesia in Katowice (Poland).

The Conference was organized under the auspices of the Minister of Science and Higher Education of the Republic of Poland dr Jarosław Gowin, Rector of the University of Silesia in Katowice professor Andrzej Kowalczyk, Dean of the Faculty of Ethnology and Sciences of Education professor Zenon Gajdzica, Director of the Institute of Sciences of Education professor Krzysztof Śleziński, Dean of the Faculty of Computer Science and Materials Science professor Danuta Stróż, Director of the Institute of Computer Science professor Zygmunt Wróbel.

The co-organisers were the University of Ostrava (Czech Republic), the Silesian University in Opava (Czech Republic), the Constantine the Philosopher University in Nitra (Slovakia), the Twente University (The Netherlands), the University of Extremadura (Spain), the Curtin University in Perth (Australia), the Borys Grinchenko Kiev University (Ukraine), the Herzen State Pedagogical University of Russia (Russia), the Dneprodzerzhinsk State Technical University (Ukraine), the Ministry of Science and Higher Education, Poland, the Polish Pedagogical Association, Branch in Cieszyn, Polish Scientific Association of Internet Education, IADIS – International Association for the Development of the Information Society, SEA – Polish Academic E-Learning Association.

The conference included the following range of the topics:

1. E-learning and STEM Education:
 - STEM education trends;
 - Robots and Coding in education;
 - Immersive learning environments. Blockchain;
 - Internet of things. 3D printing.
2. E-environment and Cyberspace:
 - E-environment of the University;
 - SMART Universities. SMART Technology in education;
 - E-learning in a sustainable society.
3. E-learning in the Development of Key and Soft Competences:
 - Effective development of teachers' skills in the area of ICT and e-learning;
 - Key competences in the knowledge society;
 - Use of e-learning in improving the level of students' digital competences;
 - Distance Learning and Lifelong Learning;
 - Self-learning based on Internet technology.
4. E-learning and Intercultural Competences Development 4 in Different Countries:
 - Legal, social, human, scientific, technical aspects of distance learning and e-learning in different countries;
 - Psychological and ethical aspects of distance learning and e-learning in different countries;
 - Collaborative learning in e-learning.
5. E-learning Methodology – Implementation and Evaluation:
 - European and national standards of e-learning quality evaluation;
 - Evaluation of synchronous and asynchronous teaching and learning, methodology and good examples;
 - MOOCs – methodology of design, conducting, implementation and evaluation;
 - Contemporary trends in world education – globalization, internationalization, mobility.
6. ICT Tools – Effective Use in Education:
 - Selected Web 2.0 and Web 3.0 technology;
 - LMS, CMS, VSCR, SSA, CSA;
 - Cloud computing environment, social media, multimedia resources video tutorial design.
7. Alternative Methods, Forms and Techniques 7 in Distance Learning:
 - Simulations, models in distance learning;
 - Networking, distance learning systems;
 - M-learning.

8. Theoretical, Methodological Aspects of Distance Learning:

- Successful examples of e-learning;
- Distance learning in humanities and science;
- Quality of teaching, training programs and assessment;
- E-learning for the disabled.

DLCC conferences are traditionally organized through international projects and this was a place for the presentation of research results, in particular “E-learning as a road to communicating in the multicultural environment,” supported by the International Visegrad Fund (IVF) from 2009. The conferences in 2014–2018 were the essential event to summarise the results of the 4-year long project entitled IRNet “International research network for study and development of new tools and methods for advanced pedagogical science in the field of ICT instruments, e-learning and intercultural competences” (www.irnet.us.edu.pl). The project has been conducted in the framework of 7th Framework Program and financed by the European Commission and the Polish Ministry of Science and Higher Education. Professor Eugenia Smyrnova-Trybulska (Faculty of Ethnology and Educational Science) is a coordinator of an international consortium that includes ten institutions from nine countries.

The start of the new international project “FITPED – Work-based Learning in Future IT Professionals Education” (www.fitped.eu), with participation of Constantine the Philosopher University in Nitra, Slovakia (coordinator), the University of Silesia in Katowice, Poland, the Pedagogical University of Cracow, Poland, Mendel University in Brno, Czech Republic, University of Las Palmas de Gran Canaria, Spain, Helix5, Netherland, Teacher.sk, Slovakia was determined by the digitization of the society and the automation of many processes which 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 theme of the conference was: “E-learning and STEM Education.”

Experts on STEM and robotics in education from ten countries, Austria, Bulgaria, Czech Republic, Morocco, the Netherlands, Poland, Slovakia, Ukraine, Russia, Turkey reflected on how STEM education is currently viewed and implemented in their respective countries, drawing on legislation and funding focus and using local data to predict how the future will unfold for STEM education. The speakers from the University of Innsbruck (Austria), University of Twente (the Netherlands), the Comenius University in Bratislava (Slovakia), Plovdiv University “Paisii Hilendarski” (Bulgaria), Borys Grinchenko Kyiv University (Ukraine), Gdańsk Technical University (Poland), Herzen State Pedagogical University of Russia, St. Petersburg (Russia), Jagiellonian University (Poland), Warsaw University (Poland),

Silesian University in Opava (Czech Republic), Jesuit University of Philosophy and Education “Ignatianum” Cracow, (Poland), University of Silesia in Katowice (Poland), University of Defence in Brno (Czech Republic), K. Ushynskyyi South Ukrainian National Pedagogical University (Ukraine), Maria Curie-Skłodowska University in Lublin (Poland), Lublin University of Technology (Poland), Mykhailo Drahomanov National Pedagogical University, Kyiv, (Ukraine), Kazimierz Wielki University in Bydgoszcz (Poland), Taras Shevchenko National University “Chernihiv Collegium” (Ukraine), Dniprovsk State Technical University (Ukraine), University of Ostrava (Czech Republic), Pedagogical University of Krakow (Poland), University of Social Sciences and Humanities in Warsaw (Poland), Makarenko Sumy State Pedagogical University (Ukraine), Poznań University of Medical Sciences (Poland), Ternopil Volodymyr Hnatiuk National Pedagogical University (Ukraine), Kherson State University (Ukraine), Warsaw University of Technology (Poland), University of Social Sciences and Humanities in Warsaw (Poland), Izmail State University of Humanities (Ukraine), Adam Mickiewicz University in Poznań, (Poland), and other educational institutions delivered lectures providing insights into interesting studies, presented their recent research results and discussed their further scientific work. The authors included experts, well-known scholars, young researchers, highly trained academic lecturers with long experience in the field of e-learning, PhD students, distance course developers, authors of multimedia teaching materials, designers of websites and educational sites. I am convinced that this monograph will be an interesting and valuable publication, describing the theoretical, methodological and practical issues in the field of e-learning in STEM education offering proposals of solutions to certain important problems and showing the road to further work in this field, allowing for the exchange of experiences of scholars from various universities from many European countries and other countries around the world. The guests and conference’s members were welcomed by the Vice-Dean of the Faculty of Social Science professor Patrycja Szostok-Nowacka on the first day of the conference. The first day of the conference included two sessions: the plenary and thematic ones and was held in the Hotel Novotel, Roździeńskiego Avenue 16, Katowice. Keynote speakers of the DLCC2020 conference are the best experts in the areas of e-learning, micro learning, robotics in education, big data, multimedia in education and teacher training in the area of digital competences.

Theo Hug, PhD, is professor of educational sciences at the Department of Media, Society and Communication at the University of Innsbruck and coordinator of the Innsbruck Media Studies research group. His areas of interest include media education and media literacy, e-education and microlearning, theory of knowledge, methodology and philosophy of science. He is particularly interested in the interfaces of medialization and knowledge dynamics as well as learning processes.

Some of his recent work focuses on instant knowledge, bricolage and didactics of microlearning (<http://www.hug-web.at/>). The title of his keynote lecture was “Robots as Friends, Co-Workers, Teachers, and Learning Machines – Metaphorical Analyses and Ethical Considerations.”

Piet Kommers, PhD, associate professor in the Faculty of Behavioral Sciences, Department of Media, University of Twente. Professor ICT in Education UNESCO. His actual interest is media, learning and visual communication. From 1990, he has been increasingly involved as partner and coordinator in European research projects based on continuous learning. His role in initiating higher education in Eastern Europe led to his UNESCO chair, followed by the award of honorary doctor by Capital Normal University in Beijing in 2000. Main recent functions: Committee Member for the Academy of Sciences; Communication and Organization, UT; Scientific Board Member for New Learning Projects. Ministry of Education, Singapore; Lector at Fontys University of Applied Sciences for the Integration of ICT in Education; Regular Visiting Professor for Human Factors in Multimodal Communication for the European PhD Academy IMPDET at Joensuu University, Finland; Visiting Professor at the Institute of Educational Multimedia and Telematics; University of Hokkaido, Sapporo, Japan; Member of the UNESCO Board Creative Media Interaction for a Better Future: Trends, Challenges and Priorities. Title of keynote lecture was “Meta-Cognitive Representations for Deep Learning.”

Nataliia Morze, dr hab., professor and Vice Rector on IT in 2009–2019 in Borys Grinchenko Kyiv University, Ukraine. State expert of National ICT Program in Education, Elaboration of the National System of In-Service Teacher Training and School Heads Training according to ICT, Elaboration of the Teachers Technological Standards on National Level, Senior Trainer of Word Intel program Teach to the future. Trainer of Microsoft program Cooperation Learning. Elaboration of distance learning courses for teachers and students. Elaboration of State programme of computer science for professionals, high schools and universities. Elaboration of conception of implementation of computer science in education of Ukraine. Teachers’ trainer of computer science. Author of more than 300 publications, articles and monographs (70 books on e-learning, critical thinks, interactive methods, IT-teaching). The title of her keynote lecture was “Big Data in Education.”

Antonio dos Reis, PhD, retired professor. The Graal Institute Director and scientific coordinator, teacher and consulting adviser in e-learning multimedia projects. Coordinator of the research project “Teacher’s skills for the school of the futures.” Consulting adviser of the University for the implementation of virtual classrooms. Consulting adviser of WeZupport, Sweden, for e-Campus global project. Move Nations Course, about 3D environments in education. Coordinator of the post-graduation course “Pedagogic and didactic skills in e-learning and multimedia” (2008/09), teacher at Azores University (2007/08). Teacher’s

trainer of teacher trainers in Portuguese education Ministry. Distance learning platform, Webmaster and multimedia coordinator in 2006 ISEG UTL (Technical University Lisbon). Scientific Coordinator of pilot project “The school of the future – Today. International conferences key speaker and conference chair at Azores – online learning conference and workshop, 2008/2009. Education website coordinator at www.thegraal.net. More than 500 videos of conferences and pedagogic contents, e-round tables and debates. YouTube contents channel: www.youtube.com/user/antonodreis. Moodle platform administrator: <http://thegraal.ccems.pt/>. The title of his keynote lecture was “500 years around the world in the road of digital society.”

During the first day of the Conference an e-round table debate was held on STEM and STEAM in contemporary education, conducted by Eugenia Smyrnova-Trybulska and Magdalena Roszak (Photo 1, 2). The topics of the E-round table debate conducted face2face and in remote mode via Adobe Connect were:

- A. Robotics and STEM in Education.
- B. Microlearning – Effective Methods of E-Learning.
- C. New Technologies in Personalisation of Education.

The conference event was held with the participation of the following leading experts:

- Theo Hug (Austria),
- Piet Kommers (The Netherlands),
- Antonio dos Reis (Portugal),
- Nataliia Morze (Ukraine),
- Krzysztof Gurba (Poland),
- Tatiana Noskova (Russia),
- Tomayass Issa (Australia),
- Miroslav Hrubý (Czech Republic),
- Todorka Glushkova (Bulgaria),
- Jan Guncaga (Slovakia),
- Xabier Basogain (Spain).

Among the speakers of the Conference Session 1 (Chair: Iwona Mokwa-Tarnowska) were Anna Sajdak-Burska, Marek Kościelniak (Poland), with a presentation “E-Forum Moderation as an Element of Blended Learning Courses for University Students. Conclusions from Action Research,” Todorka Glushkova, Stanimir Stoyanov, Irina Krasteva, Veneta Tabakova-Komsalova (Bulgaria), with a lecture “Intelligent School Educational Environment for Distance and Blended Learning,” R. Robert Gajewski (Poland) and his report “Computational Thinking: Motivation to Learn in Tertiary Education,” Tatiana Noskova, Tatiana Pavlova, Olga Yakovleva (Russia) with a report “Analysis of Students’ Reflection on Their Educational Behaviour Strategies Within an Electronic Course: Prospects for the XXI Century

Competences Development,” Barbara Kołodziejczak (Poland) presented “The Use of Portals and Learning Environments in Non-Academic Teaching.”

In the parallel conference session (Chair: Mariusz Marczak) were seven reports, presented by participants from five countries: Milena Janakova (Czech Republic) “E-learning in Sustainable Society,” Mariusz Marczak (Poland) “Successful E-learning: Intercultural Development in GPE’s Global Understanding Project,” Ján Gunčaga (Slovakia), Tomasz Kopczyński (Poland) “Supporting Mathematical and Digital Competences Useful for Stem Education,” Asya Stoyanova-Doycheva, Todorka Glushkova, Vanya Ivanova (Bulgaria) “Application of Subject Domain Ontologies in E-Learning,” Olena Kuzminska, Nataliia Morze (Ukraine), Eugenia Smyrnova-Trybulska (Poland) “In The Digital Space: Program Design,” Krzysztof Gurba (Poland) “Augmented Reality Learning Environment for Adults and Its Limitations,” Ani Epitropova, Alexander Petrov, Stanimir Stoyanov, Asya Stoyanova-Doycheva (Bulgaria) with the project “Inclusive Classroom-Play And Learn – Conception, Design And Software Architecture and Case Implementation,” Mateusz Zajac (Poland) with “The Modern Business Management Programme.”

The short discussion was held after each lecture and every speaker responded to one or two question from the auditorium. The moderators presented some conclusions at the end of sessions and encouraged to continue the discussion in an informal atmosphere and events such as the excursion, lunch, dinner, coffee-break. In the afternoon, an excursion to Nikiszowiec and Katowice was held and in the evening, the conference dinner in the Hotel Novotel Restaurant.

The second day of the conference, 15th October 2019 (Tuesday), was held in Sosnowiec (Ul. Będzińska 39) at the Faculty of Science and Technology. In the beginning of the conference session, the Vice Dean of the Faculty of Science and Technology, dr Katarzyna Trynda (Photo 3) and the Director of the Institute of Computer Science professor Piotr Porwik (Photo 4) gave a welcoming speech to the participants of the conference.

This day included several events and participants:

- Plenary and conference session according to the conference programme.
- Multiplier event in framework FITPED Project (Photo 7, 8).
- Participation lecturers and PhD students in framework CEEPUS programme from Comenius University in Bratislava, Slovakia and Ostrava University, Czechia. Professor Ján Gunčaga – Vice Dean of the Faculty of Education at the Comenius University in Bratislava. (Slovakia), CEEPUS Slovak team Coordinator. CEEPUS III Central European Exchange Programme for University Studies CEEPUS Network CIII-HU-0028-10-1617 – Active Methods in Teaching and Learning Mathematics and Informatics in the Academic Year 2019/2020. Researchers, academic teachers, PhD students, students, guests from Comenius University in Bratislava, Slovakia, professor Jan Guncaga, professor Lilla

Korenova, professor Veronika Horváthová, dr Peter Ostradický, dr Michaela Gulasova, Hilda Hanobikova, Angelika Sekanova.

- E-round table debate “STEM and STEAM in contemporary education” (Photo 1, 2) and E-round table debate on “The Digital Revolution” (moderated by Antonio dos Reis), which was held at 11.00 a.m. with experts from different countries attending in person and via remote (Photo 5).

The speakers in the second day of the conference in particular were: Nataliia Morze (Ukraine) “Big data in Education,” Anna Ślósarz (Poland) “Democratizing the Potential of Distance Learning,” Svitlana Skvortsova, Oksana Onopriienko, Tetiana Britskan (Ukraine) “Training in Mathematics of the Future Primary School Teachers by Using Service H5p,” Marcin Szwed, Jarosław Krajka (Poland) “Teaching Skills in the Area of Terminology and Terminographic Modelling via E-Learning as Part of Translator Training Programmes,” Nataliia Morze (Ukraine), Eugenia Smyrnova-Trybulska (Poland), Mariia Boiko (Ukraine) “The Impact of Educational Trends on the Digital Competence of Students in Ukraine and Poland,” Miroslav Hrubý (Czech Republic) “Mentoring as a Significant Tool in Education,” Anna Porczyńska-Ciszewska (Poland) “The Use of E-learning in Education for People with Mild Intellectual Disability in the Context of Their Mental Well-Being.”

In the E-round table debate 2 on “The Digital Revolution” (moderated by Antonio dos Reis), the experts from different countries who attended in person and via remote mode included: Theo Hug (Austria), Nataliia Morze (Ukraine), Xabier Basogain (Spain), Olga Yakovleva (Russia) (Photo 5).

The participant reports also presented were: Iwona Mokwa-Tarnowska, Viviana Tarnowska (Poland), “Web-Enhanced Secondary and Academic Education Structured around Expectations and Learning Preferences of Generation Z,” Maryna Haran, Svetlana Skvortsova, Olena Sagan (Ukraine), “Video of Mathematics in the Primary School as Means of Education for the Mathematical Education Methodology,” Anna Czaja (Poland), “Implementing Sp4ce Learning Rooms Concept of a New Generation of Engineers,” Katarína Žilková, Edit Partová, Ján Gunčaga, Jana Nemcová (Slovakia), Tomasz Kopczyński, Dominika Zegzuła (Poland), “Development of Geometrical Thinking via Educational Software by Pupils of Elementary School,” Jolanta Szulc (Poland), “Models of E-learning Systems Architecture Using AI Components,” Agnieszka Gadomska (Poland), “Applying CEFR Descriptors for Mediation for the Design of Moodle Based Materials for TEFL,” Veronika Horváthová (Ukraine), “Exploring Addition and Subtraction Strategies with Virtual Manipulatives on Tablet Devices in the Second Grade,” Eugenia Smyrnova-Trybulska, Dawid Staniek, Dominika Zegzuła (Poland), “Robotics in Education in Pupils’ Opinion. A Survey Report: a Case Study,” Svitlana Skvortsova, Yana Haievets, Oksana Onopriienko (Ukraine),

“Electronic Educational and Methodical Textbook. Methods of Teaching to Solve Mathematical Word Problems of Pupils in Grades 1–4,” Irena Pulak, Martyna Szczotka (Poland), “Introducing the Youngest to Stem Education Based on the Example of the ‘Kitchen Lab For Kids’ Project,” Nataliia Morze, Viktoriia Vember, Liliia Varchenko-Trotsenko (Ukraine), “How to Create Effective Flipped Learning Sequence in Higher Education,” Lyudmyla Khoruzha, Volodymyr Proshkin, Olga Kotenko (Ukraine), Eugenia Smyrnova-Trybulska (Poland), “Digital Competence: Abilities of a Lecturer and Expectations of Students (Ukrainian-Polish Context),” Anastasiia Ishchenko (Ukraine), “Stem Education: Practical Oriented Tools for Teachers of Mathematics,” Wojciech Baran (Poland), “Is It Possible to Implement the Law in an Engaging and Effective Manner? A Case Study Based on the Example of the General Data Protection Regulation at the University.”

At the end of the conference, Eugenia Smyrnova-Trybulska presented some conclusions and invited everyone to participate in the next edition of DLCC2020 conference.



Photo 1. Participants of the E-round table debate on STEM and STEAM in contemporary education, conducted by Eugenia Smyrnova-Trybulska (right) and Magdalena Roszak: Nataliia Morze (Ukraine), Piet Kommers (The Netherlands), Krzysztof Gurba (Poland), Todorka Glushkova (Bulgaria)

Author: Tomasz Kopczyński



Photo 2. Participants of the E-round table debate on STEM and STEAM in contemporary education, conducted by Eugenia Smyrnova-Trybulska and Magdalena Roszak (left): Antonio dos Reis (Portugal), Theo Hug (Austria), Jan Guncaga (Slovakia), Miroslav Hrubý (Czech Republic)

Author: Tomasz Kopczyński



Photo 3. Second day – 15th October 2019 (Tuesday) Sosnowiec (Ul. Będzińska 39) at the Faculty of Science and Technology. At the beginning of the conference session the Vice Dean of the Faculty of Science and Technology, dr Katarzyna Trynda gave a welcoming speech for participants of the conference.

Author: Katarzyna Wróbel



Photo 4. Second day – 15th October 2019 (Tuesday) Sosnowiec (Ul. Będzińska 39) at the Faculty of Science and Technology. At the beginning of the conference session, the Director of the Institute of Computer Science professor Piotr Porwik gave a welcoming speech for the participants of the conference.

Author: Katarzyna Wróbel



Photo 5. Participants of the E-round table debate on “The Digital Revolution” (moderated by Antonio dos Reis), which was held at 11.00 a.m. Experts from different countries: Theo Hug (Austria), Nataliia Morze (Ukraine), Xabier Basogain (Spain), Olga Yakovleva (Russia) participated in person and in remote mode.

Author: Eugenia Smyrnova-Trybulska



Photo 6. Participants of the DLCC2019 conference

Author: Natalia Ruman

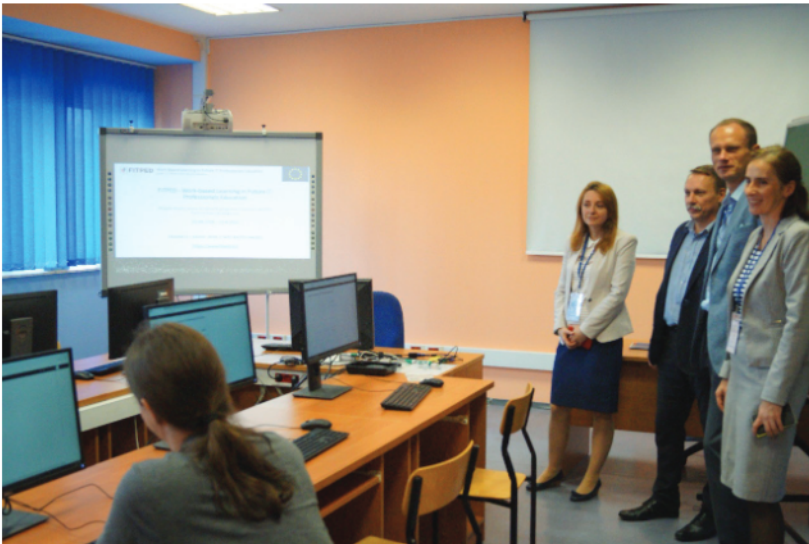


Photo 7. Workshop “Microcourses in programming learning and teaching” conducted by dr hab. Małgorzata Przybyła-Kasperek (C/C++), dr. hab. Beata Zielosko (SQL), MA Kornel Chromiński (Python), (Poland). Multiplier event in framework FITPED Project.

Author: Natalia Ruman



Photo 8. Workshop “Microcourses in programming learning and teaching” conducted by dr. Iwona Polak (HTML/CSS), dr hab. Małgorzata Przybyła-Kasperek (C/C++), dr hab. Beata Zielosko (SQL), MA Kornel Chromiński (Python), (Poland). Multiplier event in framework FITPED Project.


Author: Natalia Ruman



Photo 9. DLCC2019 conference poster



Work-Based Learning in Future IT Professionals Education



Features of the project:

- ✓ Interactive educational content
- ✓ Automated source code assessment
- ✓ Real world projects

Multiplier event FITPED

Framework Programme

15th October 2019 (Tuesday)
Sosnowiec, the Faculty of Computer Science and Science about Materials (Będzińska 39 str.)

| | |
|-------------|--|
| 08.45 | Registration and Coffee / Tea |
| 09.15 | Chair's Welcome and Opening Remarks (hall B-4) |
| 09.20–09.30 | Introducing FITPED project |
| 09.30–11.00 | Plenary session |
| 11.00–11.20 | Coffee / Tea break |
| 11.20–13.30 | Session „FITPED”: Work-based Learning in Future IT Professionals Education |
| 12:00–13:00 | WORKSHOP (hall 201, 203): MICROCOURSES IN PROGRAMMING LEARNING AND TEACHING conducted by dr hab. Małgorzata Przybyła-Kasperek (C/C++), dr hab. Beata Zielosko (SQL), mgr Kornel Chromiński (Python) (Poland) |
| 13.30–15.00 | Lunch |
| 15.00–16.15 | WORKSHOP (hall 201, 203): MICROCOURSES IN PROGRAMMING LEARNING AND TEACHING conducted by dr Iwona Polak (HTML/CSS), dr hab. Małgorzata Przybyła-Kasperek (C/C++), dr hab. Beata Zielosko (SQL), mgr Kornel Chromiński (Python) (Poland) |
| 16.15–16.30 | Coffee / Tea break |
| 16.30–17.30 | Recommendations and consultations for FITPED users (teachers/learners), Networking reception |
| 17.30–17.45 | Conclusions and close |

Photo 10, 11. FITPED Project poster and Programme of Multiplier event on 15th October 2019.

