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Modernization of Pedagogical Higher Education  
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<b>University</b>	BGKU
<b>Rationale for ICR at university</b>	
<b>Aims and objectives</b>	<ol style="list-style-type: none"><li>1. Create the 21st century learning space built on the basis of the best European practices.</li><li>2. Ensure the introduction of innovative pedagogical technologies using classroom rotational areas: problem-based learning, project learning, learning based on research, group learning IBL, STEAM education, media literacy formation, gaming, computational thinking, mastering, storytelling, virtual reality, flipped classroom, integrated training and formative assessment.</li><li>3. To ensure the formation of digital, entrepreneurial competence, literacy competence, life skills, personal, social and learning competence in the participants in the educational process.</li></ol> <p>For implementing this:</p> <ul style="list-style-type: none"><li>• Develop a package of documents for the creation and operation of the class. Purchase and install equipment.</li><li>• Formulate and approve the concept of the ICR class.</li><li>• Teach lecturers and teachers on innovative approaches to work organization in rotation zones.</li><li>• Present the ICR class as a model of the New Ukrainian School.</li><li>• Teach students using modern teaching methods.</li><li>• lead master classes, workshops in the ICR class for public needs.</li><li>• Analyze the effectiveness of using the ICR class.</li><li>• Settle cooperation with the departments and structural subdivisions of the Pedagogical Institute and the University, other institutions and organizations of Kyiv and Ukraine, in particular the institutions of the National</li></ul>



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	<p>Academy of Sciences of Ukraine, higher education institutions, institutions of general secondary education and elementary education.</p> <ul style="list-style-type: none"><li>• Create a database of software and methodological support in primary education, higher education pedagogy, and pedagogy of secondary education.</li><li>• Provide practical support for the future primary school teachers on the viability and effectiveness of applying modern educational technologies in educational processes.</li><li>• Facilitate the participation of future educators in scientific methodological and experimental work on determining the effectiveness of applying modern educational technologies in educational processes.</li><li>• Create new products in modern educational technologies with the students (designer classes using rotational zones, computer games, integrated projects, etc.).</li><li>• Provide organizational, methodological, and informational and technical support to students, lecturers and teachers regarding the use of modern educational technologies..</li></ul>
<p><b>Impact</b> (<i>increasing of the efficiency of innovative teaching methods at the university as a whole</i>)</p>	<p>Right preparation and use of the ICR class will help to the updating of the content, methods, techniques and forms of educational activity for the training of future teachers and for the improvement of the qualifications of the teaching staff of the University. The introduction of the ICR class allows:</p> <ul style="list-style-type: none"><li>• Do develop and implement new training courses for future bachelors and masters.</li><li>• To increase the level of digital competence of students and university teachers.</li><li>• To invite school teachers to participate in pedagogical forums, trainings with the use of equipment and developed methodological materials for the implementation of STEM-education.</li><li>• To implement IBL, PBL, PrBL, forming assessment, group collaboration, STEM-education and other educational technologies in the university's educational process.</li><li>• To prepare a competitive worker whose competence will meet the requirements of the modern labor market.</li></ul>



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	<ul style="list-style-type: none"> <li>To increase the level of practical component of the educational process.</li> </ul>		
<b>Target audience</b>	<b>Performance Indicators</b> <i>(provide your proposal)</i>	<b>Risks and Assumptions</b>	
Target group during the project life	<ul style="list-style-type: none"> <li>Students of the specialty "Primary education", "Preschool education", "Informatics", "Management of electronic learning"</li> <li>Teachers of the University</li> <li>Teachers of the city of Kyiv</li> <li>Postgraduate students</li> </ul>	<p>Amount of the students</p> <p>Amount of the teachers</p> <p>Amount of the lecturer</p>	<p>A lack of students and postgraduates, a change of group of researchers, a change of curriculum</p>



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Target group after the project finished	<ul style="list-style-type: none"><li>• Students of the specialty "Primary Education", "Preschool Education", "Electronic Learning Management", "Informatics"</li><li>• Students of courses for teachers of Kyiv</li><li>• Participants of the social project "With Kyiv and for Kyiv"</li><li>• Teachers of the University.</li></ul>	Amount of the students  Amount of the advanced training students  Amount of the participants in the social project	Small number of students, overload on the audience, tools and equipment, out-dated equipment and software, unreadiness of the scientist and teacher, the lack of leadership support.
<b>Space Design</b>			



**Learning Spaces (Zones) as a “Learning Agents”** (*mixing different zones meaningfully designed as a function of the activities hosted and the specific learning processes involved in ICR at your university*)

*The ICR class should become the basis for research and development of critical thinking, the center of the innovative Learning Space in preparing teachers for the introduction of innovative pedagogical technologies, since for the introduction of flipped classroom technology, mixed and integrated learning, in order to implement STEM education, students need to be taught to work in small groups, makers, collaborations, etc.*

We see the need for one room where the zones will be separated by sliding partitions.

It is planned to organize in the ICR-class three zones:

- STEM-Lab - workstation area designed for: research, implementation of a training project, processing of experimental results, model creation, robot control and programming, 3d printer usage, work in ILS, etc.
- IT-Lab - an area of work with information technology designed to perform the following activities for students: the search for information materials for planning a training project, creating a project plan, sharing responsibilities and duty, creating presentation materials on the progress of the project, research results, work with electronic resources, services and technologies of the Moodle system
- VR-zone - a virtual and supplemented reality area: getting virtual and complementary research with tutorials and textbooks with built-in fragments

Availability of equipment according to the description and criteria

Out-dated equipment and software, the lack of rotation in the zones, the teacher's lack of training in the rotation of the group; too many students in the classroom.



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	<p>Work in all areas of ICR will allow the teacher to implement the project method - PBL. Each student in the group performs a complete list of tasks on a rotational model - moving zones in accordance with the rules of the class. The ICR will allow the teacher to organize student group work in the same room by area and the execution of the respective tasks. The work of students in groups will allow forming such competencies as time management, communication, joint responsibility for decision making, etc.</p>		
<p><b>Learning Spaces Exercises</b> (<i>creation, research, development, presentation, etc.</i>)</p>	<p>To teach in the ICR class, teachers create training materials for organizing educational activities at stations based on the implementation of the innovative pedagogical technologies and STEAM-education. Teachers can create an <b>Exercises</b> base for classroom work in accordance with the main stages of the study.</p> <p>Materials for e-learning courses on the introduction of STEAM-education are being developed.</p> <p>The methodological guidelines for teaching students to lead research, 3D printing, computational thinking, IBL, etc. are developed.</p>	<p>Base of NMZ</p>	<p>Students' unpreparedness to group activities with equipment, research activities</p>



<b>Pedagogy Design</b>			
<p><b>Emerging pedagogical approaches</b> <i>(what and how you are going to teach? Explain the core of the pedagogical aspects of ICR)</i></p>	<p>The use of the ICR-class will allow you to apply in the educational process:</p> <ul style="list-style-type: none"> <li>• innovative teaching methods: IBL, PBL, PrBL</li> <li>• Integrated learning and competency-based approach to implementing STEAM-education</li> <li>• Digital tools to support various student activities</li> <li>• Forms of work in small groups, dual work</li> <li>• Model 5E research training</li> <li>• Educational research projects with the main stages of the study</li> <li>• Forming assessment technologies</li> <li>• the basis of the technology of attitude of questions</li> <li>• inverted and mixed learning technologies</li> <li>• Virtual and supplemented reality software</li> <li>• methods and techniques for the formation of critical thinking, L</li> <li>• LMS Moodle</li> <li>• Different digital tools for the formation of vital and digital competencies, basics of entrepreneurial activity</li> <li>• teaching materials and equipment for the study of the basics of robotics, media literacy, 3D printing, programming basics.</li> </ul>	<p>Work programs of disciplines, including mastering of these methods</p>	<p>The need to change curricula, teachers' preparation for implementation</p>



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<p><b>Pedagogical processes</b> <i>(teaching-learning processes organization in concept of the ICR as a main part of ecosystem[1])</i></p>	<p>The ICR-class will create the Center for the Competence of Modern Educational Technologies in accordance with the University's new educational strategy.</p> <p>The ICR class will be used:</p> <ol style="list-style-type: none"> <li>1. To train the students of the Pedagogical Institute in the framework of the preparation of future teachers of elementary school.</li> <li>2. To study the masters of specialties "Primary Education", "Pedagogy of High School" specialization "E-Learning Management".</li> <li>3. For preparation of masters of the specialty "Management" specialization "Management of e-learning in the intercultural space"</li> <li>4. During organization of the trainings for the university's staff within the framework of the module "ICT in education".</li> <li>5. As part of teacher training</li> <li>6. Within the framework of realization of the social project "" With Kyiv and for Kyiv "</li> </ol> <p>Entrepreneurs will be involved in competitive and examination sessions. After completing the training in class, students will be sent to the internship.</p> <p><b>Courses for students:</b></p> <ul style="list-style-type: none"> <li>• Innovative methods, technology and quality monitoring of e-learning</li> <li>• ICT in education: Actual research problems</li> <li>• ICT in education: Methodological aspects of the use of information and communication technologies</li> </ul>	<p>Students' success.</p> <p>Approved Programs, Certified Courses.</p> <p>Normative base.</p> <p>Participation in competitions.</p> <p>Targeted referrals for graduates.</p>	<p>Lack of administration support. Engaging of the business.</p>
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- ICT in education: The scientific basis for the use of information and communication technologies in education
- ICT in Education: Technologies for the Development of an Information-Oriented Educational Environment
- Innovative methods, technology and quality monitoring of e-learning
- Management of e-learning in educational institutions
- Management of e-learning in enterprises, in the corporate sector
- Theoretical and methodological principles, technology, evaluation and application
- Examination of the modern information communication environment
- Innovative methods of e-learning
- Methodological and practical principles of using computer networks
- Modeling a high-tech educational environment
- Evaluations in e-learning
- Pedagogical and psychological principles of interpersonal interaction in a virtual educational environment
- Social media in e-learning
- Telecommunication pedagogical techniques
- Intercultural environment
- Electronic and postgraduate learning in an intercultural environment



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	<ul style="list-style-type: none"><li>• Design and expertise of a high-tech information educational environment</li><li>• Theoretical-methodological and applied aspects of e-learning</li><li>• The theory and practice of the effective use of ICT tools in e-learning</li><li>• Managing the IT infrastructure of an educational institution</li></ul>		
<b>Assessment Action</b> <i>(how you will evaluate innovative teaching and learning processes and its results in your ICR/ecosystem)</i>	The survey was done in this three groups: <ol style="list-style-type: none"><li>1. Students<ol style="list-style-type: none"><li>a. Questionnaires for students.</li><li>b. The result of training students in the developed courses.</li><li>c. The dynamics of student success.</li></ol></li></ol>	Survey Results quality of students' projects, quality of studying in disciplines	Imperfection of the survey, low interest of students in the projects' creation.



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	<ul style="list-style-type: none"><li>d Evaluation of student projects.<ul style="list-style-type: none"><li>2. Teachers<ul style="list-style-type: none"><li>a. Professors for teachers</li><li>b. The level of digital competence</li></ul></li><li>3. Teachers<ul style="list-style-type: none"><li>a. Questionnaires for teachers</li><li>b. Using online materials</li><li>c. Consultancy</li></ul></li></ul></li></ul>		
<b>TECHNOLOGY DESIGN</b>			



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<p><b>Technology as a facilitator</b> of new teaching and learning practices implementation <i>(explain here how you select the equipment for your ICR and how these tools will facilitate new teaching and learning exercises at your university)</i></p>	<p>When choosing equipment in the class take into account the need for team work, research, project activity, the dynamics of personal development during the educational process.</p> <p>The equipment in the classroom allows you to study rotational zones.</p> <p><b>IT-Lab – zone of work with information technologies</b></p> <p>The area where a teacher organizes an independent work of students at computerized workplaces. Students use access to the cloud-based learning environment, study the theoretical material independently, search information for current tasks or preparation for project implementation.</p> <p>Zero Client class</p> <p>3D printer with PLA plastic</p> <p>MFP for color printing of A3 documents</p> <p>Interactive SMART complex with InV30 short-range projector and SMART Learning Suite</p> <p>Laptop 15 / i3-6006U / 4 / 1TB / Intel HD / DRW / W10</p> <p><b>VR-zone – zone of virtual and complementary reality</b></p> <p>The working area of the zone is focused on implementing BYOD technology, updating knowledge, planning a lesson, developing rules of conduct and moving zones, illustrating tasks for work in pairs, groups, predicting expected results, answering questions. The teacher records</p>	<p>List of EOR</p>	<p>Commercialization of open online tools</p>
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SMART Kapp information, students in real time receive it on their gadget, can record, supplement, etc.

Glasses of Virtual Reality Virtual Reality

Computer for virtual reality

Display Interactive 65 "SMART SB6065 with SMART Learning Suite software

Computer Kapp IQ (BYOD)

The stand is mobile for display

Laptop 15 / i3-6006U / 4 / 1TB / Intel HD / DRW / W10

Tablet PC 10.1 ", 1920x1200, IPS, 1.3GHz, 2/16 GB, Wi-Fi, a / b / g / n 2.4GHz and 5GHz Dual Band, BT 4.0, GPS, A-GPS, 7000 mAh, Android 6.0

### **STEM-Lab – area to work with robots**

Working space of the zone is designed for training in groups during research, project implementation. Students together independently create content in digital space, conduct STEM-research.

SMART electronic flip chart

Makeblock Laboratory (Robotics) STEM Classroom Kit mBot

Metal cart for the storage of didactic material (for 24 F1 chests)



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	<p>Chest with small lid (F1)</p> <p>Interactive SMART complex with InV30 short-range projector and SMART Learning Suite</p> <p>Laptop 15 / i3-6006U / 4 / 1TB / Intel HD / DRW / W10</p>		
<b>Social Design</b>			



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<p>Information hub as a communicator with society <i>(explain how your ICR/ecosystem will promote the innovative pedagogy on Local, regional and national levels)</i></p>	<p>LOCAL: Implementation of new disciplines. First who are invited - students who study relevant disciplines. Permanent workshops are organized for teachers who teach or will teach the same or related disciplines.</p> <p>REGIONAL: Master classes for the teachers of the city, ICT competence enhancement areas, ICR, ecosystems: innovative pedagogical technologies, advanced technological solutions, and infrastructure. In the social plan, it is possible to introduce introductory instructions for representatives of the parent organization committee of first-graders. Demonstration of Kyiv Innovative Space Teachers. Training of participants of the social project "With Kyiv and for Kyiv".</p> <p>NATIONAL: Demonstration of the class as the implementation of the concept of New Ukrainian school, ecosystems as an open school, conducting nationwide master classes, seminars and conferences for scientists, heads of educational institutions of general secondary and higher pedagogical education, holding scientific and practical conferences.</p>	<p>Disciplines, courses for them</p> <p>Number of master classes</p>	<p>Lack of support by the administration.</p> <p>Weak feedback from local authorities and teachers.</p> <p>Overfull classes.</p>
<p><b>infrastructure design</b></p>			



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<p><b>Human resources involved</b> <i>(The personal membership and responsibilities of those responsible for the material and technical preservation, maintenance; technical and informational support of educational activities in the ICR during classroom and non-classroom activities)</i></p>	<p>Responsibility:</p> <ul style="list-style-type: none"> <li>- material and technical - Pedagogical Institute</li> <li>- technical support – Science Laboratory of informatization of the education</li> <li>- information support - project participants, Science Laboratory of informatization of the education, department of elementary education, center of modern educational technologies, department of information technologies and mathematical disciplines</li> </ul>	<p>Instructions, orders, job descriptions, approved project structure</p>	<p>Neglect of the duties, change of staff</p>
<p><b>University Division / Department</b> <i>(responsible for the running of the ICR)</i></p>	<ul style="list-style-type: none"> <li>• Pedagogical Institute</li> <li>• Department of elementary education</li> <li>• Science Laboratory of informatization of the education</li> </ul>	<p>Arrangement of creation of the cabinet, the purchase of equipment, the appointment of the responsible for the cabinet, technical service support</p>	<p>Control of the proper use of the cabinet.</p>





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<p><b>Institutional regulations</b> <i>(provide the main organizational regulations for computer- and classrooms at your university)</i></p>	<p>At the university, the use of ICT in the classroom is managed by the Regulations on the use of computer technology.</p> <p>In structural subdivisions formally will be appointed the responsible for the office/auditorium/laboratory.</p> <p>The concept of using the <i>ICR</i>-class will be considered at the Academic Council of the Pedagogical Institute, the rectorate and approved by the Rector's order.</p>	<p>Regulation Approved list of responsible for the audience</p>	<p>Neglect of the duties of the responsible people.</p>
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