UNIVERSITY	Vasyl Stefanyk Precarpathian National University
RATIONALE FOR ICR AT UNIVERSITY	
Aims and objectives	**The main aim is** creation of the MoPED educational ecosystem at the university for the modernization of the content of higher education in the context of improvement the process of training teachers for the New Ukrainian School with the use of innovative pedagogical technologies. **Objectives**: - dissemination of the best European practices in teaching STEAM subjects, the experience of using innovative tools and teaching methods in institutions of general secondary and higher education; - development of digital competence of high school teachers, students, general secondary education teachers; - ensuring interdisciplinary connections in education and teaching the worked out educational content; - creation of a modern innovation classroom as a center for high-level academic seminars (webinars), online meetings, Internet conferences, etc. with the help of modern equipment; - collaboration between the university and general secondary education institutions, improvement of teachers' skills, educational associations for the promotion of STEAM education and activation of innovative pedagogical activities in the region; - expansion of cooperation with partner-universities of the project on joint events, trainings, development of joint courses for the modernization of the content of higher pedagogical education of Ukraine by means of pedagogical innovations.
Impact *(increasing of the efficiency of innovative teaching methods at the university as a whole)*	Qualitative functioning of the University Innovation Classroom as a component of a holistic educational ecosystem MoPED will promote modernization of the content of pedagogical education by means of innovative teaching methods in higher education. Innovation classroom will become the basis for implementation of the developed educational resources, training

	courses for students (future teachers), provision of services for improvement of professional skills of teachers of different levels. With the help of modern equipment, innovative technologies and new teaching methods will enable acquaintance of future teachers, university lecturers, teachers of general secondary institutions, etc. with the latest e-learning tools at the New Ukrainian School when teaching STEAM-subjects, enhancing their digital competence and media, scientific literacy.		
		Performance Indicators *(provide your proposal)*	**Risks and Assumptions**
Target group during the project life	1. University students 2. University teachers 3. University administration 4. University technical staff 5. Teachers of general secondary education institutions	High motivation of the academic / teaching staff to create an innovation classroom (ICR). Increasing the level of digital and scientific literacy, media culture of representatives of a specific target group Advanced knowledge of English for the use of new equipment	Poor technical support of the equipment in the innovative classroom (*Medium*); Lack or absence of applications or some education resources which are too expensive for the university to buy them (*Medium*)
Target group after the project finished	1. University students	The same	Lack of proper collaboration

	2. University and college teachers 3. University administration 4. University technical staff 5. Teachers of general secondary education institutions of Ivano-Frankivsk Regoin and Ivano-Frankivsk city 6. School-leavers who would like to acquire new knowledge and form new competencies necessary for modern society 7. Employers, representatives of social institutions, associations, etc.		between all target groups to ensure sustainability of the project (*Low*). Teachers of schools will not be interested or motivated enough, or tuition fees may be too high for them (*Medium*).
SPACE DESIGN			
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*)	**ICR** – "**Center of Innovative Pedagogical Technologies - PNU Ecosystem**" will include the following 4 training spaces (zones): **STEAM-LAB** - contains multimedia equipment, transformer furniture, SMART electronic flipchart complete with mobile stand, 3D printer, sets of constructors LEGO Education WeDo 2.0. It will allow the use of innovative electronic resources for the development of constructive skills of students (school teachers), engineering creativity, stimulating motivation to study and popularize STEAM-education, partner interaction skills, teamwork, various forms of individual group activities, etc. Round portable tables will allow the use of interactive methods for working with students in the process of solving educational problems (Problem Based Learning). Considerable attention goes to the integrated study of STEAM	Availability of enough teaching area for different spaces of ICR and their polyfunctionality The Rector's order on the allocation of the university building fund to create a single educational space ICR. The Rector's order on the creation of an innovation class	Lack of teachers with a proper level of qualification for the organization of work with the offered educational resources in separate spaces (zones) (*Medium*). Inability of using different equipment simultaneously; one space will not

	subjects in the primary school. **IT SPACE** (IT Zone) - equipped with modern computers, laptops, SMART electronic flipchart complete with mobile stand, Interactive SMART Board + projector, 3D-printer Trident, multifunctional device A3 Xerox. This equipment will be used for online learning, use of electronic innovative teaching and learning methods, online research environments, inquiry learning spaces (ILS), scientific and media literacy development, analysis of the possibilities of application and creation of educational games and simulations, etc. **MOBILE LEARNING SPACE** involves the use of mobile devices, tablets for access to educational resources, study of electronic educational teaching tools (including English language ones like STEAM Decks, Inspiration 9, Kahoot and more), content creation in the classroom and beyond. In this space "Flipped Learning" and video Microlearning technologies will dominate. Mobile technologies can be used in the educational process either separately or jointly with other information and communication technologies. At the same time, portable devices can be used in different training spaces (zones), depending on the specifics and objectives of teaching and learning process. This space will also feature a TV-set 55 ", trolley-safe with trays for charging and synchronizing tablets “Power Trolley”. It will also enable to demonstrate individual fragments of the educational problem for its further solution using the method of Mobile Learning (work in pairs, groups and individually). **PRESENTATION SPACE** (Presentation Zone) is designed to organize various forms of group and individual educational activities: presentations, trainings, project work, brainstorming, teamwork,	“Center for innovative techniques of the PNU Ecosystem”, approved the main documents of the Center (concept, provisions on ICR “Center of innovative techniques of the PNU Ecosystem,” etc.).	properly work without the other (*Low*).

	presenting and discussions of the performed assignments, their evaluation, etc. Here we plan to use Display interactive 65" SMART Learning Suite + Computer Kapp IQ. All separate spaces are multifunctional. If necessary they can be transformed according to educational objectives of teaching and learning activities. Almost all spaces will be involved in teaching each developed course within the framework of the project. Two separate spaces – **PRESENTATION SPACE** (Presentation Zone) and **MOBILE LEARNING SPACE** (Mobile Learning Zone) are planned to be combined into a holistic **CONFERENCE SPACE** (Conference Zone) (if necessary) for the organization and conducting educational events (including online), meetings, seminars, etc. for university lecturers and students, guests from other institutions, including international ones. At the same time, the **CONFERENCE SPACE** will be used to provide students with modular, individual creative projects, thematic educational videos, as well as for students' scientific Internet conferences (webinars), etc. This space is also recommended for improving the microlearning technology in the educational process (lessons presentation in primary or secondary school using best European practices). Here will be allocated the Space for Reflection (REFLECTION SPACE) - provided for use in the process of individual and independent work of the participants in the educational process to generate new ideas, reflect on problem situations (here, if necessary, one can use mobile devices), develop critical thinking skills, etc. This space will be equipped with two soft sofas, if necessary, it can be		

	supplemented with mobile tables or transformer armchairs.		
Learning Spaces Exercises (*creation, research, development, presentation, etc.)* **Навчальні простори-вправи** (створення, дослідження, розробка, презентація тощо)	We plan to develop a complex of educational resources that enable teaching new courses for future teachers using a variety of available equipment in order to diversify the various forms of student learning activities (research, presentation, group interaction, pair-work, project creation, training, open online resources work, etc.). For example: 1. Teaching "Geocultural Scientific Literacy" (GCSL) - English language course for future teachers, will provide the following forms of student activity in different educational spaces: presentations creation and demonstration in individual form or through collaboration, research work, development of new study themes through schemes, creating new educational games by means of innovative English resources, making thematic videos, recording analyses of the results and discussing them in groups, writing tests, etc. The following new pedagogical approaches and instruments will be used: Inquiry Learning; Integrated learning; Differentiated learning; Experiential Learning Cooperative Learning; Peer Learning-Teaching; Case Study; Storytelling and more. 2. In the course of teaching "Methodology of E-learning in primary school", we plan to use such innovative methods: Distant learning, E-learning, Mobile-Learning (M-learning), Flipped Learning, Interactive Learning Training, Technology Learning, Blended Learning. The use of the space for STEAM-lab is aimed to acquaint students with LEGO education in the New Ukrainian elementary school and extra-curricular work (familiarization with mechanics, engineering design,	Increasing the level of students' academic achievement, their readiness to solve professional and pedagogical tasks. Higher proficiency in English and the subjects on the whole. Higher level of scientific and digital literacy among all ecosystem participants	Difficulties in managing the teaching, cognitive and research work of students in different spaces simultaneously with the use of various kinds of equipment (*Low*). Lack of basic knowledge of students and teachers to use all the possibilities of modern ICT, available educational resources, innovative teaching-learning methods (*Low*).

	etc.), studying elements of robotics at elementary school (course WeDo 2.0.) using electronic resources. The IT Space and the Mobile Learning Space will be used simultaneously to familiarize students with the STEAM research environment in elementary school (online labs, interactive learning environments, inquiry learning spaces (ILS), as well as on-line learning games for elementary school.		
PEDAGOGY DESIGN			
Emerging pedagogical approaches (*what and how you are going to teach? Explain the core of the pedagogical aspects of ICR*)	Created ICR as a component of the integrated ecosystem of the University will promote the provision of quality educational services for future teachers training for the New Ukrainian School, and the improvement of the qualification of pedagogical staff of different levels. Due to a separate server in ICR, there will be an independent powerful Wi-Fi that will allow the use of innovative educational online learning resources and widen opportunities for online learning. The focus on the use of the ICR equipment and pedagogical technologies will be on methods of effective collaboration with students in specific training spaces, in accordance with the learning goals and objectives, rational use of the latest digital tools and online educational resources for STEAM disciplines. In the context of the implementation of the objectives for the creation and operation of the ICR, the introduction of such methodological approaches in the course of teaching new courses is planned: - ***competent approach*** - orientation of the educational process to the achievement of the results that is, students' competencies (integral,	Concept of the MoPED training course (official website of the project)	Difficulties in practical implementation of the interdisciplinary methodological approach (*Medium*)

	general and professional); - ***personality oriented approach*** - involves respect for the person as the highest value of society, ensuring its growth, abilities development, creativity, ability to self-determination, self-development, etc.; - ***interdisciplinary approach*** - involves the integration of various branches of scientific knowledge in learning / teaching: pedagogy, methods of teaching in school, computer science, mathematics, biology, geography, art, etc.; - ***subject-activity approach*** - in our context, the focus will be on the practice-oriented methods of organizing the students' activities in the process of their development and training as subjects (maim participants) of this active interaction (this approach is opposed to the methods and forms of mechanical transmission of the ready information, the monotony of the teacher, the passivity of the student); - s***ynergistic approach*** characterizes personal development of the teacher and student not only as a gradual, linear, conflict-free process, but the process that involves overcoming the contradictions in gaining the values, phenomena around the world, analytical and synthetic activities.		
Pedagogical processes (*teaching-learning processes organization in concept of the*	Priority technologies in teaching-learning processes in the ICR will be Mobile Learning, Blended Learning, Inquiry Based Learning, Problem Based Learning, Microlearning, Flipped Learning, Project Based Learning, Online Learning, Learning through games, etc.	Updated educational programs for future teachers' professional	Not all ecosystem stakeholders will be interested in this

ICR as a main part of ecosystem[1])	Learning and teaching of newly developed courses on innovative methods will involve: integration of the content of educational context; formation of a system of problem professional-pedagogical tasks and their practical solution; use of open and developed educational online resources of various areas of STEAM-education to form students (teachers) practical skills of applying innovative learning tools; development of critical thinking, geocultural scientific and media literacy, media culture, digital competencies, etc. To fulfill these objectives we plan to use individual, pair, group forms of student activities, research work in global Internet and local computer networks, promoting them to experimental investigations, creating their own educational product, in particular educational games, online research environments, educational videos, films, online inquiry learning spaces (Go-Lab platform, https://www.golabz.eu/). Considerable attention will be paid to the technologies of formation of media literacy, development of critical thinking, culture behavior on the Internet, technology-oriented problem-oriented and practical-oriented learning. ICR equipment and powerful Internet access will allow the selection of various digital tools and resources, modifying and sharing them for educational	training (Bachelor / Master) approved at the university level. Programs and training plans posted on the project website.	process (*Low*). Limited possibilities for using these elements for learning and teaching (*Low*).

[1] ecosystem consists of actors (students, lecturers, principals, entrepreneurs, associations, institutions, stakeholders, parents, etc.) and abiotic elements (buildings, classrooms, external locations, tools, IT resources, learning and teaching resources, OER etc.) in use for education through teaching and learning

	purposes (tools for work on the Internet, for information search, for visualization, for joint writing, for cyber security, for communication and messaging) etc.		
Assessment Action *(how you will evaluate innovative teaching and learning processes and its results in your ICR/ecosystem)*	The results of teaching and learning in the ICR and functioning of the Ecosystem in general at the university level will be determined by the following criteria: - level of academic success of university students who will be involved in the study of new courses; - level of formation of students' (teachers') digital competence and pedagogical readiness for work in the New Ukrainian school; - level of university teachers' readiness for work in ICR (use of modern equipment, new educational resources, innovative methods of teaching and learning, development of own educational content, level of interest, pedagogical skills in organizing work in different educational spaces, etc.); - sufficient qualification in the field of information and communication technologies of all the participants of the ecosystem; - skilled management and ensuring the quality of software services in the ICR.	High level of students' (teachers') motivation for mastering and introducing innovative teaching tools. New educational resources developed by the Ecosystem participants to ensure the effectiveness of teaching (learning) processes. Progressive dynamics regarding the level of academic achievements of students, their readiness for work at the New Ukrainian School.	Low students' interest and motivation to study and self-develop (*Medium*). Technical problems of proper provision of innovative equipment in the innovation classroom (*Medium*).
TECHNOLOGY DESIGN			

Technology as a facilitator of new teaching and learning practices implementation (*explain here how you select the equipment for your ICR and how these tools will facilitate new teaching and learning exercises at your university)*	The suggested technological design will promote the university strategy of updated teaching and learning process and will be supported by: Server ibm/lenovo Express x3650 M4,2x Xeon E5-2609v2 2.5GHz 10M 4C 1333MHz (80W), 16GB (2x 8GB (1Rx4, 1.35V) 1600MHz LP RDIMM), 4x500 2.5" HS SAS, M5110e(512MB flash), No optical, 2x550W HS PSU. All ICR equipment will be located according to appropriate training spaces: **IT-SPACE**: Computer work stations (Intel i3-7100 3.9GHz \8Gb\1Tb\Monitor 22" Samsung TN, 1920 x 1080, 16:9,HDMI, VGA) (6 units), Laptop(15.6', Intel Core i3, 4 ГБ, 1 ТБ, NVIDIA GeForce 920M, 2 ГБ, Wi-Fi, Gigabit Ethernet, Windows 10) (5 units), Interactive SMART Board SBM680V + projector inFocus inv30 + wall mount kit (for ready-made and downloaded own interactive lessons in STEAM), 3D-printer Trident with PLA plastic (will be used for creating 3D models in the study of Biology and Valeology), multifunctional device A3 Xerox DC SC 2020 20ppm (mono&color)/DADF/Duplex/1 Tray/Net/USB. The equipment of this space will be used for online learning, the use of electronic innovative teaching methods, online research labs and environments (ILS), open source electronic resources, media literacy and cyber security development, analysis of the possibilities of using educational games and simulations, and their creation, etc. **STEAM-Lab:** Display interactive 65" SMART SB6065 П3 SMART Learning Suite + Computer Kapp IQ (BYOD), LEGO sets Education WeDo 2.0 (6	List of modern equipment for the university, approved by the Ministry of Education and Science of Ukraine and project coordinator from the European Union. Regulations on using ICR at the university	Insufficient level of digital competence of teachers who will read the developed courses, regarding the use of new educational trends (*Low*). Difficulties of effective usage of ICR equipment (all of its capabilities) by students and academic staff (*Medium*).

	units), LEGO “Simple mechanisms” (6 units), SMART electronic flipchart 42” complete with mobile stand. The equipment will allow the use of innovative technologies for the development of students’ (schools teachers) constructive skills, engineering creativity, stimulating motivation to study and popularize STEAM education, partner interaction skills, teamwork, various forms of individual group activities, etc. Multiusable portable tables in this space will allow the use of interactive methods for working with students in the process of educational problems solving (Problem Based Learning). **MOBILE LEARNING SPACE:** In this space we will work with TV-set 55” Samsung UE55M5500, Tablet Asus ZenPad 10.1”2/16Gb (25 units), trolley-safe with trays for charging and synchronizing tablets “Power Trolley”, SMART electronic flipchart complete with mobile stand (will be used for the Problem Based Learning method and transfer of information to tablets (smartphones) using QR-code). The use of mobile devices, tablets for access to educational online resources, study of electronic educational teaching and learning tools (including English-speaking, such as STEAM Decks, Inspiration 9, Kahoot, Pl@ntNet, GoLab etc.), content creation for classroom lessons and its boundaries. Flipped Learning and the use of short videos (Microlearning) as well as work in pairs, groups and individually are planned in this space as well. **PRESENTATION SPACE:** TV-set 55” Samsung UE55M5500, SMART electronic flipchart 42” complete with mobile stand, camera Canon EOS 1300D 18-55 IS Kit Black+trirod+memory card (for recording video lectures, trainings,		

	and interactive school lessons for their presentation at the ICR and student discussion). In this space we plan project-based learning presentations, trainings, brainstorming activities, student evaluation and more. Conference chair with a folding stand will make this space mobile and multiusable as it will allow students to join other groups or pairs for joint activity. **PRESENTATION SPACE + MOBILE LEARNING SPACE = CONFERENCE SPACE:** TV-set 55" Samsung UE55M5500 (2 units), SMART electronic flipchart 42" complete with mobile stand, camera Canon EOS 1300D 18-55 IS Kit +, Tablet Asus ZenPad 10.1"2/16Gb, trolley-safe with trays for charging and synchronizing tablets "Power Trolley". Conference space is intended for conducting educational events (including online), scientific internet conferences, webinars, video lectures for university lecturers and students, school teachers, guest guests, etc. Here we can also arrange info meeting to present the results of different projects Erasmus + for various target groups. The use of modern ICR equipment will make it possible to improve the quality of educational services, especially in the context of modernizing the content of higher pedagogical education. Teaching and learning new courses will be performed by using the following forms of educational organization: co-operative learning, mobile learning, flipped learning, learning with interactive technologies, technology training, blended learning, educational games, online labs, video lectures, virtual excursions, multimedia presentations of student creative work, computer monitoring of students' academic achievements and teaching quality, etc.		

SOCIAL DESIGN			
Information hub as a communicator with society (*explain how your ICR/ecosystem will promote the innovative pedagogy on Local, regional and national levels*)	**LOCAL**: the Innovative Classroom in the structure of the newly created ecosystem of the University will provide an increase in the level of social activity of future students for the use and implementation into practice of the institutions of secondary education of innovative teaching tools. It will make possible: 1) improving the quality of teaching and learning courses for future teachers using the best European practices, conducting training sessions (trainings, workshops) for students and academic staff to disseminate this experience; 2) creation of an open information resource at the university, which will form the basis for disseminating the experience of the project, which will be constantly replenished at the expense of existing project materials created by the teachers, new revenues (methodological work outs, etc.); 3) use of ICR equipment and combination of certain spaces (Conference Space) for webinars, online meetings, conferences on the exchange of teaching experience (training), etc. 4) use of technical equipment and experience in the international projects ERAZMUS + (GameHub and MoPED) for the preparation of interdisciplinary master's studies by the students of the above-mentioned units, coordination of their joint activities for the creation of innovative educational resources using the best European practices. **REGIONAL**: increasing of the quality of the development and implementation of short-term intensive courses for training teachers	Developed within the framework of the project training courses for university students. Developed courses for teachers to improve their qualifications. An open information resource was created on the university's electronic platform. Signed agreements on establishing cooperation with institutions of postgraduate pedagogical education, educational associations of the region, etc. Plan and educational program for conducting trainings for teachers of higher education	Absence of teachers' interest in the improvement of personal qualification under the proposed program (*Medium*).

	of secondary education institutions in the city of Ivano-Frankivsk and Ivano-Frankivsk region, training sessions (trainings, workshops), establishing cooperation with institutions of postgraduate pedagogical education, education associations of the region, etc. **NATIONAL**: 1) using the ICR equipment for development of professional-oriented contacts with universities and organizations on the training of future teachers (retraining of teachers) and improving the quality of educational services at the national and international levels; 2) dissemination of the experience of using innovative teaching tools (training) to modernize the content of pedagogical education among the pedagogical institutes (universities) through its presentation at conferences, seminars (webinars) of all-Ukrainian to international levels that will be conducted in the ICR Conference Space. 3) use of ICR opportunities for online webinars, workshops, video lectures for students and other interested parties, as well as presentations of the results of the MoPED project.	institutions in the western region of Ukraine. Prepared educational resource - computer educational games for schoolchildren - with the participation of students of the Faculty of Pedagogy, Faculty of Informatics and Mathematics and the Institute of the Arts of the PNU (project web site) The program of joint activities between partner-universities in STEAM-education project promotion and digital competence of ecosystem participants Programs of developed online courses for students of pedagogical specialties of institutions of higher	Difficulties of organizational character (*Medium*). Lack of experience and official documentation of the university that regulates the possibilities of interdisciplinary interaction of Ecosystem participants in the creation and evaluation of joint results of scientific and methodological work (*Medium*). Inability to work in a team (*Medium*)

		education of Ukraine (teachers of schools) for implementation at the national level (project web site)	
INFRASTRUCTURE DESIGN			
Human resources involved (*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*)	To ensure the quality of educational services, organization of the planned educational events in the ICR "**Center of Innovative Pedagogical Technologies - PNU Ecosystem**", and technical support we will involve employees of the Information and Computing Department of the University, event organizers and appointed members from the academic team of the MoPED project. The safety engineer (university technical staff) will be responsible for observance of fire safety rules in the ICR, its installation fire extinguishers, etc.	Plans of events and lists of the participants of educational events	Lack of motivation or low interest of academic staff in personal growth and development (*Medium*)
University Division / Department (*responsible for the running of the ICR*)	Department of Professional Education and Innovative Technologies of the Institute of Postgraduate Education and Pre-University Preparation together with other structural subdivisions (Pedagogical Faculty, Faculty of Natural Sciences, etc.) of Vasyl Stefanyk Precarpathian National University	Attracting highly qualified teaching staff to ICR. Ensuring links with employers and the worked out strategy of collaboration.	Low interest of highly qualified specialists in the educational process in the ICR (*Medium*).

Institutional regulations *(provide the main organizational regulations for computer- and classrooms at your university)*	Provision of the ICR "Center of Innovative Pedagogical Technologies - PNU Ecosystem" with furniture, repair of premises, installation of necessary electrical cables, etc. will be done at the expense of the PNU university. Basic organization rules for the equipment and operation of the ICR, in particular sanitary and hygiene requirements, placement and operation of computers, the mode of work of teachers and students on personal computers, lighting of premises and workplaces, organization of educational process will be carried out based on the internal normative base (official documents) of the university. This also applies to compliance with the rules of fire safety regarding the operation and exploitation of the ICR equipment, provision with fire extinguishers, smoking prohibition, etc. The university and local authorities will carry out support of effective use of the ICR at the university level, available technical equipment for the development of students' (teachers') digital competence after the completion of the project. Co-financing will be provided by attracting University funds to salaries for the academic staff who will teach the courses developed within the project after its completion; ongoing repair of the ICR premises, hardware and software updates, and more. The ICR alarm system, installation of chips on tablets, Internet and electricity payments, etc. will also be implemented at the expense of the PNU university.	Fire safety rules in the ICR. Rules of use of technical equipment Set up technical and software support of the ICR.	Failure to comply with ICR (*Low*). Insufficient ICR technical support (*Low*).