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Erasmus+ Programme
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OUTPUT

DEVELOPED LIFELONG LEARNING PROGRAMS AND APPROBATED IN THE IN SERVICE TRAINING COURSES FOR TECHNOLOGY INTEGRATIONISTS

**Erasmus + project (No. 2020-1-LV01-KA201-077496) “Network of technology
INTEGRATIONISTS in pupils' informal education”**

INTRODUCTION

The project partners Rēzeknes novada pašvaldība (LV), Hādemeste Keskkool (EE), Kupiskis Povlas Matulionis progymnasium (LT), VšĮ Vaiku ir jaunimo visapusiško lavinimo in Jonava (LT), Academia Druzba za Storitve Doo designed and adapted the program course to the needs of the participants, as their level of knowledge and skills varies from organization to organization. Rēzekne district municipality (LV) prepared and adapted the program not only for Rēzekne district educators, but also for other project partners from LV: NGO Society "Angels with us" (LV) and Rēzekne city municipality institution "Centre of Eastern Latvia creative services" (LV), because these organizations do not have the capacity and personnel to prepare such a program and organize in-service training courses. All programs have been developed in close cooperation with external experts who conducted the courses. The target group of the courses are teachers who want to improve the quality of non-formal education through technology integration measures or those who want to offer new workshops (eg English through robotics, biology through technology, music and technology, etc.).

The leading developer of the program is the Rēzekne District Municipality (LV) worked in close cooperation with the Rēzekne Academy of Technologies (RTA), which is not a project partner, but offers work opportunities for technology integration specialists trained at the Center for Lifelong Education.

The developed programs were tested, approved, revised in continuing education courses led by external experts and published online, allowing other organizations

to reuse the developed lifelong learning programs, even after the end of the project, thus increasing the number of supporters of technology integration in their countries and in Europe.

AIM AND OBJECTIVES OF THE PROGRAM

The new life-long learning programs tested and revised in integrated technology courses strengthen the professional development of educators in non-formal education; participants can learn not only basic or advanced programming, but also methodologies for teaching collaborative or creative skills, how to integrate technology, for example, in English, art or music, or working with students with disabilities. Programs and courses include methods of using educational technology that are rich in opportunities to integrate not only STEM, but also many other disciplines, including literacy, music, and the arts, thereby empowering students to find ways to work together, foster collaboration, and problem-solving. skills, as well as thinking critically and innovatively using a STEAM approach. Educators receive theoretical and practical information on how to create an innovative and engaging learning environment for students so that they can be competitive in the digital age.

PROGRAMS

Rēzekne District Municipality (LV) Rēzekne Academy of Technologies (RTA)

PROFESSIONAL COMPETENCE DEVELOPMENT FOR TEACHERS PROGRAM (non-formal education)

Program title and designation	Professional competence development for teachers- the implementers of technology in non-formal education				
Program target audience	Teachers who are willing to improve the quality of non-formal education through the means of technology integration, or ones who want to offer new workshops after the program: for example, English, biology, music or other subjects by using tech features.				
Program applicant <small>(full name of the institution, registration certificate number, postal address, telephone, fax, E-mail, webpage)</small>	Rezekne Academy of Technologies, Centre of Lifelong Learning Reg. No. LV90000011588; Atbrīvošanas alejā 115, room 115, Rezekne, LV-4601 Phone: +371 29336118 E-mail: muzizglitiba@rta.lv www.rta.lv				
Contact person <small>(name, surname, E-mail)</small>	Karīne Laganovska Phone: +371 26411587 E-mail: muzizglitiba@rta.lv				
Financing sources	Municipalities State budget Course participants Others (partnership projects, etc.)	Program costs	Co-funded by the European Union		
Realization time	After group clustering	Realization place <small>(city, district)</small>	Face-to-face lectures at the organizing institution or online delivery		
Program volume <small>(hours)</small>	40	Number of participants <small>(people)</small>	20 - 25	Learning language	Latvian

Program
annotation
*(max.250 characters
without repeating the
forementioned)*

In robotics workshops educators mainly teach hardware and software, without paying attention to pedagogical and content goals. Currently robotics teachers can only work with mathematically proficient students. The students who are fluent in English, arts or ones with special needs are unable to participate in such workshops. Moreover, art, language and music teachers often avoid using technology in their work, even in special education. However, today's children differ from previous generations. The new generation requires considerably more interest, emotion and the implementation of technologies in the learning process. If the content of the workshop is dated and pedagogically weak, the number of students interested in technology plummets. As a result, the lack of equal access to technological skills and knowledge puts regions and schools at a disadvantage, particularly if they are scarcely populated or located in geographically remote areas.

Program
manager

Karīne Laganovska, Dr.philol.

Program title: **Professional competence development for teachers-the implementers of technology in non-formal education**

Program **goal**: to improve the professional competence of teachers in the field non-formal education through meaningfully introducing technologies within their subject (for example, English, biology, music etc.).

Program **objectives**:

- to acquire the possibilities of using technologies, in order to organize a modern and interesting lesson in any subject, carrying it out in non-formal education;
- teachers getting acquainted with different technologies and trying them in practice;
- teachers improving the content of their subject by introducing technologies.

Expected **outcomes**:

- improvement of the teacher's professional competence by updating their practical knowledge regarding possibilities offered by IT tools within a modern lesson;
- participants demonstrating the ability to apply the acquired knowledge for the improvement of their subject content.

Type and form of the program realization: 40 academic contact hours (30 academic contact hours on-site training, 10 independent practical work with access to e-consultations).

Methodology: The innovative 'Professional competence development for teachers' program will promote teacher's professionalism in non-formal education. The program participants will be able to acquire or improve technological knowledge, as well as to develop teaching methodologies like learning to implement technologies in their subjects (for example English, art or music, or when teaching disabled pupils) This methodology will also develop creativity and ability to collaborate. Programs and courses will entail methods dedicated to making meaningful use of diverse educational technologies, which may potentially be integrated in many disciplines including STEAM. Professional competence development course for teachers is focused on finding ways to cooperate with students, promoting collaboration and problem-solving skills, as well as using critical and innovative thinking through STEAM approach. Teachers will receive theoretical and practical information on how to create an innovative and engaging learning environment for students, in order to promote their competitiveness in the digital age. As the program is intended for both technologically advanced teachers and beginners, in order to achieve a balanced understanding of technology within the respective subject, a chance to consult the facilitator regarding practical questions will be granted (for example, technology installation, use etc.) During the program formation the training course will be conducted according to the following principles: linking technological training with special knowledge; privileged links between thematic and pedagogical concepts; use of technological training to improve professional competence and technological skills.

Evaluation of **program acquisition**: the content of the respective subject in non-formal education has been improved by introducing technologies (study project development integrated into technology).

PROGRAM CONTENT

No.	Theme with a short annotation	Hours	Realization form	Host of the lesson	
				Name, surname	Workplace, position, scientific degree
0	1	2	3	4	5
1.	Marshmallow challenge K'Nex bridges BauBau wooden constructors 3D pens	8 hours	Lecture, practicum	Kaspars Antonevičs, Ivars Bahmanis, Mārtiņš Eizengrauds	Teacher of Jelgava Secondary School of Technology
2.	Pneumatics - rockets Programming basics - Kodu Game lab 3D design - TinkerCAD GIF animation	8 hours	Lecture, practicum	Kaspars Antonevičs, Ivars Bahmanis, Mārtiņš Eizengrauds	Teacher of Jelgava Secondary School of Technology
3.	Robotics - WeDo 2.0 (non-standard tasks) Paper bridges Electronics, programming - MicroBit, Scratch	8 hours	Lecture, practicum	Kaspars Antonevičs, Ivars Bahmanis, Mārtiņš Eizengrauds	Teacher of Jelgava Secondary School of Technology
4.	Green-screen video filming and editing Programming - Scottie Go Drag race - Lego Tehnic Vector graphics - CNC laser cutting	8 hours	Lecture, practicum	Kaspars Antonevičs, Ivars Bahmanis, Mārtiņš Eizengrauds	Teacher of Jelgava Secondary School of Technology
5.	3D design - SketchUP MakeyMakey projects Robotics - Ozobot Airplanes (thin foam / rubber retractable) "QR game", feedback	8 hours	Lecture, practicum	Kaspars Antonevičs, Ivars Bahmanis, Mārtiņš Eizengrauds	Teacher of Jelgava Secondary School of Technology
	Additional topics: Butterfly effect Robotics -"Bee-Bot", "Pro-Bot"	-		Kaspars Antonevičs, Ivars Bahmanis, Mārtiņš Eizengrauds	Teacher of Jelgava Secondary School of Technology

<p>Metal constructors LEGO EV3 possibilities (Cubic Rubic, CNC) 3D scanning Themed board games - Real Life, Start a business Drone Programming, robotics - Arduino Robot arms Dobot Electronics set "Zinītis" Robotics - Edison Robotics - MakeBlock Practical works - cars, planes, home experiments Soldering basics - figure, DIY constructor 3D design - Fusion 360 Cardboard - buildings, tangrams Word cloud poll</p>					
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Kupiskis Povlas Matulionis progymnasium (LT)

PROFESSIONAL COMPETENCE DEVELOPMENT FOR TEACHERS PROGRAM (non-formal education)

Program title and designation	Integration of STEAM methods into the content of general education and non-formal education programs		
Program target audience	The qualification improvement program is intended for teachers of Kupiškis Povilas Matulionis pro-gymnasium participating in the international Erasmus + "Founding the network of technology INTEGRATIONISTS in pupils' informal education" (abbreviated INTEGRA) project.		
Program applicant <small>(full name of the institution, registration certificate number, postal address, telephone, fax, E-mail, webpage)</small>	Kupiškio r. švietimo pagalbos tarnyba Reg. No. 300055868 Vilniaus g. 8, LT- 40114, Kupiškis Phone: +370 45935144 E-mail: kupiskio.pmmmc@gmail.com https://kupiskio.pmmmc.lt/		
Contact person <small>(name, surname, E-mail)</small>	Laima Kilkuvienė Phone: +37061620088 E-mail: kupiskio.pmmmc@gmail.com		
Financing sources	Municipalities State budget Course participants Others (partnership projects, etc.)	Program costs	Co-funded by the European Union
Realization time	After group clustering	Realization place <small>(city, district)</small>	Face-to-face lectures at the organizing institution or online delivery
Program volume <small>(hours)</small>	18	Number of participants <small>(people)</small>	10 - 15
		Learning language	Lithuanian
Program annotation <small>(max.250 characters without repeating the forementioned)</small>	The content of the program is focused on improving the subject competencies of pedagogues by providing theoretical knowledge and practically testing the capabilities of SPIKE robots, enabling the application of modern educational methods by integrating STEAM activities into general education subjects and non-formal education programs for students. In robotics workshops educators mainly teach hardware and software, without paying attention to pedagogical and content goals.		

Program
manager
*(name, surname,
scientific degree,
position)*

Laima Kilkuvienė, Director of the Kupiškis district education support service

Program title: **Integration of STEAM methods into the content of general education and non-formal education programs**

Program **goal**: improve the competences of educators to integrate STEM methods into non-formal education and general education programs using the capabilities of Spike robots and to develop students' ability to creatively solve the challenges of everyday life.

Program **objectives**:

- To introduce the concept of Industry 4.0 and the challenges of digital leadership in modern society.
- To present the goals and desired results of the "INTEGRA" project, the opportunities provided for the innovative learning process in primary, basic and non-formal education.
- Learn how to use a virtual lessons planning program.
- To familiarize with the construction and functional possibilities of "SPIKE", "WeDo 2.0" robots.
- To introduce the "Story Visualizer" program and for the preparation of integrated lessons.
- Prepare integrated lesson plans.

Expected **outcomes**:

- improvement of the teacher's professional competence by updating their practical knowledge regarding possibilities offered by "Spike" robots within a modern lesson;
- participants demonstrating the ability to apply the acquired knowledge for the improvement of their subject content.

Type and form of the program realization: 18 academic contact hours

Methodology: The innovative program "Integration of STEAM methods into the content of general education and non-formal education programs" will promote teacher's professionalism in non-formal education. The program participants will be able to acquire or improve technological knowledge, as well as to develop teaching methodologies like learning to implement technologies in their subjects (for example English, art or music, or when teaching disabled pupils) This methodology will also develop creativity and ability to collaborate. Programs and courses will entail methods dedicated to making meaningful use of diverse educational technologies, which may potentially be integrated in many disciplines including STEAM. Professional competence development course for teachers is focused on finding ways to cooperate with students, promoting collaboration and problem-solving skills, as well as using critical and innovative thinking through STEAM approach. Teachers will receive theoretical and practical information on how to create an innovative and engaging learning environment for students, in order to promote their competitiveness in the digital age. As the program is intended for both technologically advanced teachers and beginners, in order to achieve a balanced understanding of technology within the respective subject, a chance to consult the facilitator regarding practical questions will be granted (for example, technology installation, use etc.) During the program formation the training course will be conducted according to the following principles: linking technological training with special knowledge; privileged links between thematic and pedagogical concepts; use of technological training to improve professional competence and technological skills.

Evaluation of **program acquisition**: the content of the respective subject in non-formal education has been improved by introducing technologies (study project development integrated into technology).

PROGRAM CONTENT

No.	Theme with a short annotation	Hours	Realization form	Host of the lesson
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				Name, surname	Workplace, position, scientific degree
0	1	2	3	4	5
1.	Digitization processes in the context of Industry 4.0. The digital leader.	3 hours	Lecture, Practicum, individual work	Solveiga Puišienė	Kupiskis Povilas Matulionis progymnasium, speech therapist and special educator, non-formal education teacher. Bachelor of Education
2.	Presentation of the Integra project. What is the mission of the project, what we have achieved and goals of the project.	0,5 hours	Lecture	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education teacher. Bachelor of Education Master of Education Management
3.	Presentation and installation of the "Spike" program on smart devices. Introduction to the educational kit.	2 hours	Lecture, practicum	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education teacher. Bachelor of Education Master of Education Management
4.	Construction of SPIKE robots. Connection, disconnection, control with a tablet.	2 hours	Lecture, practicum	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education teacher. Bachelor of Education Master of Education Management
5.	Familiarity with blocks, basics of programming. Forward, backward, lifting, lowering, rotation.	1 hour	Practicum	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education teacher. Bachelor of Education Master of Education Management
6.	Acquaintance with sensors: colors, force, distance. Installation of sensors. Practical work. Creating and programming robot missions.	1 hour	Practicum	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education teacher. Bachelor of Education Master of Education Management
7.	Introduction to "WeDo 2.0" educational kits. Construction and programming.	1 hour	Practicum	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education teacher. Bachelor of Education Master of Education Management
8.	Working with WeDo 2.0 educational kits and integration into other subjects. Introduction to the possibilities	1 hour	Practicum	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education

	of using the program "Story Visualizer" in lessons				teacher. Bachelor of Education Master of Education Management
9.	Use of online resources for optimization of preparation.	1 hour	Lecture	Solveiga Puišienė	Kupiskis Povilas Matulionis progymnasium, speech therapist and special educator, non-formal education teacher. Bachelor of Education
10.	"Spike" robot capabilities of the integration into lessons of various subjects.	2 hours	Lecture, practicum	Solveiga Puišienė	Kupiskis Povilas Matulionis progymnasium, speech therapist and special educator, non-formal education teacher. Bachelor of Education
11.	Preparing a lesson plan. Integrative aspects of technology application in the classroom. What does the teacher need to know in order for the lesson to be successful?	2 hours	Practicum, Individual work	Solveiga Puišienė	Kupiskis Povilas Matulionis progymnasium, speech therapist and special educator, non-formal education teacher. Bachelor of Education
12.	Online programs for creating lesson content	1 hour	Practicum, Individual work	Solveiga Puišienė	Kupiskis Povilas Matulionis progymnasium, speech therapist and special educator, non-formal education teacher. Bachelor of Education
13.	Teacher's survey and reflection	0,5 hours	Practicum	Diana Marmokienė	Kupiskis Povilas Matulionis progymnasium, non-formal education teacher. Bachelor of Education Master of Education Management

VšĮ Vaiku ir jaunimo visapusiško lavinimo in Jonava (LT)

PROFESSIONAL COMPETENCE DEVELOPMENT FOR TEACHERS PROGRAM

(non-formal education)

Program title and designation	STEAM pritaikymas ugdymo procese panaudojant konstravimo ir programavimo įgūdžius. Application of STEAM in the educational process using construction and programming skills.			
Program target audience	Programos dalyvių tikslinė grupė – pradinių klasių, įvairių dalykų mokytojai. The target group of the program participants is teachers of primary classes and various subjects.			
Program applicant	VšĮ Vaiku ir jaunimo visapusiško lavinimo in Jonava (LT)			
Contact person (name, surname, E-mail)	Eugenijus Leonavičius, mokytojas, leo.eug@gmail.com , +37061452279			
Financing sources	Municipalities State budget Course participants Others (partnership projects, etc.)	Program costs	Co-funded by the European Union	
Realization time	After group clustering	Realization place (city, district)	Face-to-face lectures at the organizing institution or online delivery	
Program volume (hours)	30	Number of participants (people)	10 - 15	Learning language Lithuanian
Program annotation (max.250 characters without repeating the forementioned)	The content of the program is aimed at improving the competences of pedagogues' subjects, providing theoretical and practical knowledge, giving the opportunity to apply modern educational methods, integrating STEAM activities in general education subjects and non-formal education programs for students.			
Program manager (name, surname, scientific degree, position)	Eugenijus Leonavičius, mokytojas, leo.eug@gmail.com , +37061452279			

Programos tikslas-Purpose of the program

Supažindinti su robotika, robotų konstravimo ir programavimo ypatumais
To acquaint with robotics, peculiarities of robot construction and programming

Programos uždaviniai- Program objectives

Formuoti robotų konstravimo ir programavimo įgūdžius, skatinti STEAM naudojimą ugdymo procese.

To develop robot construction and programming skills, to promote the use of STEAM in the educational process

Programos turinys (įgyvendinimo nuoseklumas: temos, užsiėmimų pobūdis (teorija/praktika/savarankiškas darbas) ir trukmė akademinėmis valandomis)

Program content (consistency of implementation: topics, nature of classes (theory / practice / independent work) and duration in academic hours)

Eil. Nr.	Tema	Teorija Theory (akad. val.)	Praktika Practice (akad. val.)
1.	Apie BBC Micro:bit'us About BBC Micro: bits	0,5	2
2.	Supažindinimas su „MakeCode“ grafinio programavimo aplinka ir principais Introduction to MakeCode graphical programming environment and principles	0,5	2
3.	Garso valdymas Sound control	1	2
4.	Spalvų valdymas Color management	1	2
5.	Servo variklio valdymas Servo motor control	1	2
6.	Automobilio konstravimas ir programavimas Car construction and programming	1	2
7.	Žingsniuojančio voro konstravimas ir programavimas Construction and programming of a stepping spider	1	2
8.	Karuselės konstravimas ir programavimas Carousel construction and programming	1	2
9.	Laisvo stiliaus judesių konstravimas ir programavimas Construction and programming of free style movements	1	2
10.	Susipažinimas su Superbit MicroPython programavimo aplinka ir principais Introduction to Superbit MicroPython programming environment and principles	1	3

8. Kompetencija(-os), kurią(-ias) tobulins/ugdys Programos dalyvis.

Competence (s) to be developed / developed by the Program Participant.

Gebės konstruoti įvairius įrenginius panaudodami LEGO detales ir programuoti BBC Micro: bit V1.5 / V2 plokštę su išplėtimo plokšte MakeCode aplinkoje, žinos pagrindinius Python programavimo principus.

Will be able to construct various devices using LEGO components and program BBC Micro: bit V1.5 / V2 board with expansion board in MakeCode environment, will know the basic principles of Python programming.

Häädemeeste Secondary School (EE)

PROFESSIONAL COMPETENCE DEVELOPMENT FOR TEACHERS PROGRAM (non-formal education)

Program title and designation	Improving the professional skills of teachers - technology implementers in non-formal education		
Program target audience	Teachers who are willing to improve the quality of non-formal education through the means of technology integration, or ones who want to offer new workshops after the program: for example, English, biology, music or other subjects by using tech features.		
Program applicant <i>(full name of the institution, registration certificate number, postal address, telephone, fax, E-mail, webpage)</i>	Häädemeeste Secondary School Reg. Nr. 75000851; Kooli 10 Häädemeeste Häädemeeste vald Pärnumaa 86001 Tel. +372 4465641 Email: kool@haademeeste.edu.ee www.haademeeste.edu.ee		
Contact person <i>(name, surname, E-mail)</i>	Rene Kurm Tel +372 56569192 Email: rene.kurm@haademeeste.edu.ee Astrid Rosenberg Tel +372 5504073 Email: astrid.rosenberg@haademeeste.edu.ee		
Financing sources	Erasmus+ project funding Co-financing from Academia	Program costs	Co-funded by the European Union
Realization time	After group formation	Realization place <i>(city, district)</i>	Face-to-face lectures at the organizing institution or online delivery
Program volume <i>(hours)</i>	18	Number of participants	10 - 15
		Learning language	Estonian

Program
annotation
(max.250
characters
without
repeating the
forementioned)

The programme is aimed to train educators on how to integrate technologies and robotics as soft skills during delivering lessons to their learners. The program is not subject-specific, it covers methodologies and approaches to new technologies with emphasis on robotics and STEAM to boost student inquiry, dialogue, and critical thinking.

The course presents the benefits of the usage of non-formal education and sets examples of lesson design that will empower the future trainers to introduce them into their own practice.

Program
manager
(name,
surname,
scientific
degree,
position)

Astrid Rosenberg, IT coordinator at Häädemeeste Secondary School

Program: Improving the professional skills of teachers - technology implementers in non-formal education

The purpose of the program:

to improve the professional competence of teachers in the field of non-formal education by introducing technologies in the subjects (for example, English, biology, music, etc.).

Tasks of the program:

- acquire the possibilities of using and implementing technologies in order to plan and implement a modern and interesting lesson of any subject, applying it in non-formal education;
- teachers get to know different technologies, try them in practice;
- teachers improve the content of their subject by introducing technologies.

Expected results:

- to improve the teacher's professional competence by updating practical knowledge about the possibilities of using IT tools in the modern class;
- participants show the ability to apply the acquired knowledge to improve the content of their subject.

Type and form of program implementation:

18 academic contact hours

Description of the program methodology:

The innovative program for improving the professional competence of teachers promotes the professionalism of teachers in non-formal education. In addition to acquiring basic knowledge or improving existing knowledge in the field of technology, participants can develop a teaching methodology (for example, how to teach collaborative or creative skills, how to integrate technology, for example, in English, art or music, or work with students with disabilities). Programs and courses include methods for meaningful use of a variety of educational technologies that can be integrated not only into STEM, but also into many other disciplines. The professional development course for educators is focused on the opportunity to work with students to find ways to collaborate, foster collaboration and problem-solving skills, and think critically and innovatively using a STEAM approach. Educators will gain theoretical and practical information on how to create innovative and engaging learning environments for students to make them competitive in the digital age. Since the program is designed for both technology novices and technologically experienced teachers, novices have the opportunity to consult with an advisor

regarding the practical application of technology in order to achieve a balanced understanding of the place and role of technology in a particular subject.

Evaluation of programme:

the content of the relevant subject of non-formal education has been improved through the introduction of technologies (development of a technology-integrated learning project).

CONTENT

No.	Training	Hours	Realization form	Host of the lesson	
				Name of the lecturer	Institution
0	1	2	3	4	5
1.	Lego Spike Prime and Ozobot.	2 hours	Lecture, practicum	Rauno Unt	ROBOMIKU
2.	Interactive whiteboard in teaching	2 hours	Lecture, practicum	Astrid Rosenberg	Jets OÜ
3.	Eduten Playground in teaching.	2 hours	Lecture, practicum	Tellitud	Eduten
4.	Navicup training.	2 hours	Lecture, practicum	Tellitud koolitus	Navicup OÜ
5.	Creating interactive presentations, poster making options and learning games online.	2 hours	Lecture, practicum	Astrid Rosenberg	Jets OÜ
6.	Interactive teaching tips and audio processing (Time planning, screen recording, QR code, link shortening, etc.)	2 hours	Lecture, practicum	Astrid Rosenberg	Jets OÜ
7.	Interactive whiteboard continuing education	2 hours	Lecture, practicum	Astrid Rosenberg	Jets OÜ
8.	Cyber security	2 hours	Lecture, practicum	Hanno Saks	MTÜ Via Terra Mariana
9.	Navicup training	2 hours	Lecture, practicum	Tellitud koolitus	Navicup OÜ
		18 hours			

Academia Druzba za Storitve Doo (SI)

PROFESSIONAL COMPETENCE DEVELOPMENT FOR TEACHERS PROGRAM

(non-formal education)

Name and designation of the program	Development of professional competencies for educators - Technology integration as non-formal education during lessons			
Target audience of the program	Educators who want to improve the quality of non-formal education through technology integration activities, or who want to offer new workshops after the program: for example, English, biology, music, or another subject using technology.			
Program applicant <small>(full name of the institution, registration number, registration certificate number of the educational institution, postal address, telephone, fax, e-mail, WWW page)</small>	Academia d.o.o., Reg. Nr.1195280000; VAT: SI52188353; address: GLAVNI TRG 17B, MARIBOR, Slovenia. Email: info@academia.eu , www.academia.si ,			
Contact person <small>(name, surname, phone, E-mail)</small>	Daniel Perdiguero Rodriguez Tel +386 30363705 Email: daniel.perdiguero@academia.eu			
Sources of financing	Erasmus+ project funding Co-financing from Academia	Program costs	Co-funded by the European Union	
Implementation date <small>(dd.mm.yyyy)</small>	After group formation	Implementation localization <small>(city, district)</small>	Face-to-face lectures at the organizing institution or online delivery	
Program amount (lective hours)	60	Number of participants	21	Training language English
Programs short annotation <small>(up to 250 characters without repeating the above mentioned)</small>	<p>These upskilling programs are aimed to train educators on how to integrate technologies and robotics as soft skills during delivering lessons to their learners. The program won't be subject-specific, rather it will cover methodologies and approaches to new technologies with emphasis on robotics and STEAM to boost student inquiry, dialogue, and critical thinking.</p> <p>The course will present the benefits of the usage of non-formal education and set examples of lesson design that will empower the future trainers to introduce them into their own practice.</p>			
Program host <small>(name and surname, science. degree, position)</small>	TBD			

No.	Training	Hours	Realization form
0	1	2	3
1.	Lesson 1: Introduction <ul style="list-style-type: none"> ○ Welcome to the course ○ Introduction 	4 6	Lecture, practicum

	<ul style="list-style-type: none"> ○ Traditional teaching methods ○ Formal, Non-formal, informal education ○ Terms and concepts 		
2.	Lesson 2: STEM <ul style="list-style-type: none"> ○ Definition: what is STE(A)M ○ Evolution of STE(A)M ○ STEM as a cross-curricular subject ○ Examples of STEM used in different subjects ○ How would you incorporate STE(A)M into your subjects? 	4 6	Lecture, practicum
3.	Lesson 3: Robotics <ul style="list-style-type: none"> ○ Learning about devices ○ Reflexion on the benefits ○ Ludification in the class ○ Integration of robots into different subjects 	4 6	Lecture, practicum
4.	Lesson 4: ICT <ul style="list-style-type: none"> ○ ICT tools available for blended learning ○ Design of online lessons ○ Interactivity during online delivery ○ Assessment online ○ Project-based learning 	4 6	Lecture, practicum
5.	Lesson 5: Webquests <ul style="list-style-type: none"> ○ Webquest definition ○ Benefits of the WebQuest proposal ○ Design of a WebQuest ○ Integration of soft skills using WebQuests 	4 6	Lecture, practicum
6.	Lesson 6: Wrapping up <ul style="list-style-type: none"> ○ The final creation of an innovative STE(A)M class in the educator's subject ○ Learning recognition ○ Evaluation of the course 	4 6	Lecture, practicum

List of sources

K'Nex bridges: <https://www.basicfun.com/knex/index.html>
BauBau wooden constructors: <https://baubautoys.com/>
3D pens: <https://www.tomega.lv/produkti/3d-pen/>
Programming basics - Kodu Game lab: <https://www.kodugamelab.com/>
3D design – TinkerCAD: <https://www.tinkercad.com/>
GIF animation: <https://play.google.com/store/apps/details?id=com.gif.gifmaker&hl=en&gl=US>
Robotics - WeDo 2.0: <https://education.lego.com/en-us/downloads/retiredproducts/wedo-2/software>
Paper bridges (ideas): write down in Google search “paper bridges ideas” (and chose “Images” for examples)
Electronics, programming - MicroBit, Scratch: <https://scratch.mit.edu/> and <https://scratch.mit.edu/microbit>
Green-screen video filming and editing: (we are using HitFilm Express for editing but there are several more free video editing softwares, like DaVinci Resolve and others)
<https://fxhome.com/product/hitfilm>
Programming - Scottie Go: https://www.tomega.lv/wp-content/uploads/2018/05/ENG_SG_edu.pdf
Drag race - Lego Technic: we use models, which has spring motor, like <https://www.lego.com/en-lv/product/ford-mustang-shelby-gt500-42138>
Vector graphics - CNC laser cutting: we are using free vector graphic program <https://inkscape.org/>
3D design – SketchUP: there is also free downloadable older version, but the current is only online <https://www.sketchup.com/>
MakeyMakey projects: few ideas <https://stemeducationguide.com/makey-makey-games/> and <https://makeymakey.com/pages/how-to>
Robotics – Ozobot: <https://ozobot.com/educate/lessons-and-activities/>
Airplanes (thin foam / rubber retractable): https://www.youtube.com/watch?v=b54h2-_OHJc
<https://canva.com>
<https://www.flcasts.com/>
„Spike“ programa
<https://www.eduxe.cz/files/download/storyvisualizer-manual.pdf>
https://linpra.lt/wp-content/uploads/2018/05/Andrej-Jarmolajev_IN-RE_Industry40-Academy40.pdf
<https://education.lego.com/en-us/>
<https://eur-lex.europa.eu/legal-content/LT/TXT/PDF/?uri=CELEX:52020DC0624&from=EN>

PROGRAMS IN NATIONAL LANGUAGES

Rēzekne District Municipality (LV) Rēzekne Academy of Technologies (RTA)

PEDAGOGU PROFESIONĀLĀS KOMPETENCES PILNVEIDES PROGRAMMAS PIETEIKUMS

Programmas nosaukums un apzīmējums (A,B), tālākizglītības satura modulis	Profesionālās kompetences pilnveide pedagogiem - tehnoloģiju ieviesējiem neformālajā izglītībā			
Programmas mērķauditorija	Pedagogi, kuri vēlas uzlabot neformālās izglītības kvalitāti, izmantojot tehnoloģiju integrācijas pasākumus, vai tie, kas pēc programmas apguves vēlas piedāvāt jaunas darbnīcas: piemēram angļu valodu, bioloģiju, mūziku vai citu mācību priekšmetu, izmantojot tehnoloģiju iespējas.			
Programmas pieteicējs <i>(iestādes pilns nosaukums, reģ.Nr., izglītības iestādes reģ.apliecības Nr., pasta adrese, tālr., fakss, E-pasts, WWW lapa)</i>	Rēzeknes Tehnoloģiju akadēmija, Mūžizglītības centrs Reģ. Nr. LV90000011588; Atbrīvošanas alejā 115, 115. telpa, Rēzeknē, LV-4601 Tālr. +371 29336118 E pasts muzizglitiba@rta.lv www.rta.lv			
Kontaktpersona <i>(vārds, uzvārds, tālr., E-pasts)</i>	Karīne Laganovska Tel +371 26411587 E pasts: muzizglitiba@rta.lv			
Finansēšanas avoti	Pašvaldības Valsts budžeta Kursu klausītāji Citi (sadarbības projekti, u.c.)	Programmas izmaksas (eiro)	saskaņā ar līgumu, ja nav cits finansējuma avots	
Īstenošanas laiks <i>(dd.mm.gggg)</i>	Pēc grupu veidošanās	Īstenošanas vieta <i>(pilsēta, rajons)</i>	Grupveidošanās vietās klātienē vai tiešsaistē	
Programmas apjoms <i>(stundas)</i>	40	Dalībnieku skaits <i>(cilv.)</i>	20 - 25	Mācību valoda latviešu
Programmas īsa anotācija <i>(līdz 250 simboliem, neatkārtojot iepriekš minēto)</i>	Robotikas darbnīcās pedagogi galvenokārt māca aparāturu un programmatūru, nepievēršot uzmanību pedagoģiskiem un satura mērķiem. Pašlaik robotikas skolotāji var strādāt tikai ar matemātiski prasmīgiem skolēniem. Tie skolēni, kas labi pārvalda angļu valodu, mākslu vai kuriem ir īpašas vajadzības, nevar piedalīties šādās darbnīcās. Daudzos gadījumos mākslas, valodu, mūzikas skolotāji, arī speciālajā izglītībā, absolūti izvairās izmantot tehnoloģijas savā darbā. Tomēr mūsdienu bērni atšķiras no iepriekšējām paaudzēm. Jaunā paaudze prasa daudz lielāku interesi, emocijas un tehnoloģiju ieviešanu mācību procesā. Ja darbnīcas saturs ir vecmodīgs un pedagoģiski vājš, tehnoloģiski ieinteresēto skolēnu skaits dramatiski samazinās. Rezultātā vienlīdzīgas piekļuves trūkums tehnoloģiskajām prasmēm un zināšanām reģionus un skolas nostāda neizdevīgā stāvoklī, īpaši mazapdzīvotos vai ģeogrāfiski nomaļos rajonos.			
Programmas vadītājs <i>(vārds, uzvārds, zinātn. grāds, amats)</i>	Karīne Laganovska, Dr.philol.			

<p>Programmas nosaukums: Profesionālās kompetences pilnveide pedagogiem - tehnoloģiju ieviešējiem neformālajā izglītībā</p>					
<p>Programmas mērķis: pilnveidot pedagogu profesionālo kompetenci neformālās izglītības jomā, jēgpilni ieviešot tehnoloģijas savā mācību priekšmetā (piemēram angļu valodu, bioloģiju, mūziku un citā).</p> <p>Programmas uzdevumi:</p> <ul style="list-style-type: none"> - apgūt tehnoloģiju izmantošanas un ieviešanas iespējas, lai plānotu un īstenotu mūsdienīgu un interesantu mācību nodarbību jebkurā mācību priekšmetā, īstenojot to neformālajā izglītībā; - pedagogi iepazīst dažādas tehnoloģijas, izmēģina tās praktiskā darbībā; - pedagogi pilnveido sava mācību priekšmeta saturu, ieviešot tehnoloģijas. 					
<p>Plānotie rezultāti:</p> <ul style="list-style-type: none"> - pilnveidot pedagoga profesionālo kompetenci, aktualizējot praktiskās zināšanas par IT rīku izmantošanas iespējām mūsdienīgā mācību stundā; - dalībnieki demonstrē prasmi iegūtās zināšanas pielietot sava mācību priekšmeta satura pilnveidošanai. 					
<p>Programmas īstenošanas veids un forma: 40 akadēmiskās kontaktstundas (30 akadēmiskās kontaktstundas klātienē nodarbībās, 10 patstāvīgais praktiskais darbs ar konsultāciju e-vidē).</p>					
<p>Programmas metodikas apraksts: Inovatīvā pedagogu profesionālās kompetences pilnveides programma, veicinās pedagogu profesionalitāti neformālajā izglītībā. Programmas dalībnieki varēs apgūt ne tikai pamata zināšanas vai uzlabot esošās zināšanas tehnoloģiju jomā, bet arī attīstīt mācīšanas metodiku (piemēram, kā iemācīt sadarbības vai radošuma prasmes, kā integrēt tehnoloģijas, piemēram, angļu valodā, mākslā vai mūzikā vai darbā ar skolēniem invalīdiem). Programmas un kursi ietvers metodes, kā jēgpilni izmantot daudzveidīgās izglītības tehnoloģijas, ko ir iespējams integrēt ne tikai STEM, bet arī daudzās citās disciplīnās. Profesionālās pilnveides kurss pedagogiem ir orientēts uz iespēju darbā ar skolēniem atrast veidus, kā sadarboties, veicināt sadarbības un problēmu risināšanas prasmes, kā arī kritiski un novatoriski domāt, izmantojot STEAM pieeju. Pedagogi saņems teorētisko un praktisko informāciju par to, kā veidot novatorisku un saistošu skolēnu mācību vidi, lai padarītu viņus konkurētspējīgus digitālajā laikmetā. Tā kā programma ir paredzēta gan iesācējiem tehnoloģijās, gan arī tehnoloģiski pieredzējušiem skolotājiem, mācību laika sadalē iesācējiem būs ieplānota iespēja papildus konsultēties ar nodarbību vadītāju par tehnoloģiju praktisku pielietojumu, lai sasniegtu līdzsvarotu priekšstatu par tehnoloģiju vietu un lomu konkrētajā mācību priekšmetā. Veidojot programmu, apmācības kurss notiks saskaņā ar šādiem pamatprincipiem: tehnoloģiskās mācības sasaistīšana ar speciālām zināšanām; privilēģētas tematiskās un pedagoģiskās koncepcijas saiknes; tehnoloģisko mācību izmantošana, lai pilnveidotu profesionālo kompetenci un tehnoloģiskās prasmes.</p>					
<p>Programmas apguves izvērtēšana: pilnveidots attiecīgā mācību priekšmeta saturs neformālajā izglītībā, ieviešot tehnoloģijas (tehnoloģijā integrēta mācību projekta izstrāde).</p>					
<p>PROGRAMMAS SATURS</p>					
Nr.p.k	Tematika ar īsu satura anotāciju	Stundu skaits	Īstenošanas forma	Nodarbības vadītājs	
				Vārds, uzvārds	Darba vieta, amats, zinātniskais grāds
0	1	2	3	4	5
1.	Marshmellow izaicinājums K'Nex tilti	8 stundas	Lekcija, praktikums	Kaspars Antonevičs	Jelgavas Tehnoloģiju vidusskolas pedagogs

	BauBau koka konstruktori 3D pildspalvas				
2.	Pneimatika - raķetes Programmēšanas pamati - Kodu G 3D projektēšana - TinkerCAD GIF animācijas	8 stundas	Lekcija, praktikums	Kaspars Antonevičs	Jelgavas Tehnoloģiju vidusskolas pedagogs
3.	Robotika - WeDo 2.0 (nestandarta) Papīra tilti Elektronika, programmēšana - M	8 stundas	Lekcija, praktikums	Kaspars Antonevičs	Jelgavas Tehnoloģiju vidusskolas pedagogs
4.	Green-screen video filmēšana, m Programmēšana - Scottie Go Dragreiss - Lego Tehnic Vektorgrafika - CNC lāzergriešan	8 stundas	Lekcija, praktikums	Kaspars Antonevičs	Jelgavas Tehnoloģiju vidusskolas pedagogs
5.	3D projektēšana - SketchUP MakeyMakey projekti Robotika - Ozobot Lidmašīnas (plānais putuplasts/ar atvelkamā) "QR spēle", atgriezeniskā saite	8 stundas	Lekcija, praktikums	Kaspars Antonevičs	Jelgavas Tehnoloģiju vidusskolas pedagogs
	<i>Tēmas, kas nodarbībās tiks iekļautas papildus</i> Tauriņa efekts Robotika - "Bee-Bot", "Pro-Bot" Metāla konstruktori LEGO EV3 iespējas (Cubic Rubi 3D skenēšana Tematiskas galda spēles - Real Li Drons Programmēšana, robotika - Ardui Robotu rokas Dobot Elektronikas komplekts "Zinītis" Robotika - Edison Robotika - MakeBlock Praktiskie darbi - auto, lidmašīnas eksperimenti Lodēšanas pamati- figūra, DIY k 3D projektēšana - Fusion 360 Kartons - mājas, tangrams Word cloud poll	-		Kaspars Antonevičs	Jelgavas Tehnoloģiju vidusskolas pedagogs

Kupiskis Povilas Matulionis progymnasium (LT)

KVALIFIKACIJOS TOBULINIMO PROGRAMA

1. Programos teikėjas

1.1. Programos teikėjo rekvizitai (pavadinimas, juridinio asmens kodas, adresas, pašto indeksas, telefonas, faksas, el. paštas)	Kupiškio r. švietimo pagalbos tarnyba, kodas 300055868, Vilniaus g. 8, LT-40114 Kupiškis, tel. 8 459 5144 LT15718290000113098 7
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2. Programos pavadinimas

„STEAM“ metodų integravimas į bendrojo ugdymo, bei neformalaus švietimo programų turinį“

3. Programos rengėjas(-ai)

Ligita Stapulionienė. Kupiškio r. švietimo pagalbos tarnybos metodininkė

4. Programos anotacija (aktualumas, reikalingumas)

Kupiškio Povilo Matulionio progimnazija įgyvendina tarptautinį Erasmus plus projektą „Founding the network of technology **INTEGR**ationists in pupils' informal education“ (sutrumpintai INTEGRA). Projekto metu įgyti „Spike“ robotų rinkiniai.

Kvalifikacijos tobulinimo programa skirta Kupiškio Povilo Matulionio progimnazijos pedagogams.

Programos tikslas – įgalinti ir motyvuoti mokytojus integruoti STEM metodus į neformalųjį ugdymą, bei bendrojo ugdymo programas ir išnaudojant „Spike“ robotukų galimybes ugdyti mokinių gebėjimus taikyti sprendžiant kasdienio gyvenimo ir juos supančios aplinkos iššūkius.

Programos turinys orientuotas į teorinių žinių plėtimą ir praktinių gebėjimų ugdymą, tobulinant mokytojų kompetencijas diegti modernius ugdymo metodus.

Programos apimtis 18 ak.val.

5. Programos tikslas

Programos tikslas — tobulinti pedagogų kompetencijas integruoti STEM metodus į neformalųjį ugdymą, bei bendrojo ugdymo programas išnaudojant „Spike“ robotukų galimybes ir ugdyti mokinių gebėjimą kūrybiškai spręsti kasdienio gyvenimo iššūkius.

6. Programos uždaviniai

Supažindinti su Pramonė 4.0 iššūkiais visuomenėje.
 Supažindinti su skaitmeninės lyderystės iššūkiais
 Supažindinti su „INTEGRA“ projekto tikslais ir siekiamais rezultatais.
 Supažindinti su „SPIKE“ robotukų konstravimu, bei funkcinėmis galimybėmis.
 Parengti integruotų pamokų planus.

7. Programos turinys (įgyvendinimo nuoseklumas: temos, užsiėmimų pobūdis (teorija / praktika / savarankiškas darbas) ir trukmė)

Eil. Nr.	Tema	Teorija (akad. val.)	Praktika (akad. val.)	Savarankiškas darbas (akad. val.)
1.	Skaitmenizacijos procesai Pramonė 4.0 kontekste	3 val.		2 val.
2.	Skaitmeninis lyderis	2 val.		2 val.
3.	Projekto „Integra“ pristatymas. Kokia projekto misija, ką pasiekėme ir kur einame.	0.5 val		
4.	Robotukų „SPIKE“ konstravimas. Prijungimas, išjungimas, valdymas planšetės pagalba	1 val.	0.5 val.	
	Važiavimas pirmyn, atgal, kėlimas nuleidimas, sukimasis		0.5 val.	
5.	Pažintis su blokeliais, programavimo pagrindai.		1 val.	
6.	Jutiklių montavimas.		1 val.	
7.	Praktinis darbas. Robotukų misijų kūrimas ir programavimas		1 val.	
8.	Integraciniai technologijų taikymo pamokoje aspektai. Ką turi žinoti mokytojas, kad pamoka būtų sėkminga.	1 val.		
9.	Internetinių išteklių panaudojimas pasiruošimo optimalizavimui	1 val.		
10.	Teksto rašymas robotuko ekrane		2 val.	
11.	Pamokos plano rengimas		2 val.	3 val.
12.	Internetinės programos pamokos turinio pristatymui		1 val.	2 val.
13.	Mokytojų apklausa ir refleksija		0.5 val.	

8. Programai vykdyti naudojama mokomoji medžiaga ir techninės priemonės:

8.1. Mokomoji medžiaga

Eil. Nr.	Temos	Mokomosios medžiagos pavadinimas	Mokomosios medžiagos apimtis
1.	Robotukų konstravimas	„Spike“ rinkiniai	6 vnt
2.	Mobilių programėlių panaudojimas apklausų rengimui	Plickers kodų kortelės	10 lapų
3.	RQ kodo generatorius	Registracijos kodas į ClassDojo.	1 lapas

8.2. Techninės priemonės

Nešiojami kompiuteriai, planšetės, mobilieji telefonai, projektorius.

9. Programai rengti naudotos literatūros ir kitų informacinių šaltinių sąrašas

<https://canva.com>
<https://www.fllicasts.com/>
<https://www.eduxe.cz/files/download/storyvisualizer-manual.pdf>
<https://linpra.lt/konferencijos-medziaga/>

10. Lektorių darbo patirtis ir kompetencijos (pridedamos lektorių darbo patirtį ir kompetenciją patvirtinančių dokumentų kopijos)

	(pažymėti X)
Programos teikėjo atstovas(-ai)	
Mokytojai	X
Mokslo ir studijų institucijų dėstytojai, mokslininkai ir kiti tyrėjai	
Užsienio valstybių dėstytojai, mokslininkai, kiti tyrėjai ir mokytojai	
Viešojo administravimo institucijų vadovai, jų pavaduotojai, padalinių vadovai ir specialistai	
Jungtinė lektorių grupė	
Kiti (nurodyti)	

11. Kvalifikaciniai reikalavimai lektoriams (jeigu nustatyti)

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12. Dalyviai:

12.1. Pasirengimas Programai (praktinės veiklos patirtis ir kompetencija(-os), kurią(-ias) turi turėti Programos dalyvis)

Kompetencija(-os)	Kompiuterinio raštingumo pradmenys
Praktinės veiklos patirtis	Nebūtina

(Pažymėti X)

12.2. Programos dalyvių tikslinės grupės

Mokytojai dirbantys pagal bendrojo ugdymo programas (nurodyti dalyką)	
Mokytojai dirbantys pagal ikimokyklinio, priešmokyklinio ir pradinio ugdymo programas	X
Pagalbos mokiniui specialistai	
Mokytojai dirbantys pagal profesinio mokymo programas	
Mokyklų vadovai, jų pavaduotojai ugdymui, ugdymą organizuojančių skyrių vedėjai	

Programos teikėjas

Direktorė

(Pareigos)

(Parašas)

Laima Kilkuvienė

(Vardas ir pavardė)

Programos registracijos numeris ir data

213003018

Programos akreditacijos terminas (nurodyti datą, iki kada)

2024 m. gruodžio 20 d.

Šl Vaiku ir jaunimo visapusiško lavinimo in Jonava (LT)

KVALIFIKACIJOS TOBULINIMO PROGRAMA

1. Programos rengėjas(-ai) – vardas, pavardė, pareigos, kontaktiniai duomenys.

Eugenijus Leonavičius, mokytojas, leo.eug@gmail.com, +37061452279

2. Programos teikėjas(-ai) – vardas, pavardė, pareigos, kontaktiniai duomenys.

Eugenijus Leonavičius, mokytojas, leo.eug@gmail.com, +37061452279

3. Programos pavadinimas – Program name

STEAM pritaikymas ugdymo procese panaudojant konstravimo ir programavimo įgūdžius.
Application of STEAM in the educational process using construction and programming skills.

4. Programos trukmė (akad.val.), programos dalyvių tikslinė (-s) grupė (-ės).

Programos trukmė – 30 val., programos dalyvių tikslinė grupė – pradinė klasių, įvairių dalykų mokytojai.

The duration of the program is 30 hours, the target group of the program participants is teachers of primary classes and various subjects.

5. Programos tikslas-Purpose of the program

Supažindinti su robotika, robotų konstravimo ir programavimo ypatumais

To acquaint with robotics, peculiarities of robot construction and programming

6. Programos uždaviniai- Program objectives

Formuoti robotų konstravimo ir programavimo įgūdžius, skatinti STEAM naudojimą ugdymo procese.

To develop robot construction and programming skills, to promote the use of STEAM in the educational process

7. Programos turinys (įgyvendinimo nuoseklumas: temos, užsiėmimų pobūdis (teorija/praktika/savarankiškas darbas) ir trukmė akademinėmis valandomis)

Program content (consistency of implementation: topics, nature of classes (theory / practice / independent work) and duration in academic hours)

Eil. Nr.	Tema	Teorija Theory (akad. val.)	Praktika Practice (akad. val.)
1.	Apie BBC Micro:bit'us About BBC Micro: bits	0,5	2
2.	Supažindinimas su „MakeCode“ grafinio programavimo aplinka ir principais Introduction to MakeCode graphical programming environment and principles	0,5	2
3.	Garso valdymas Sound control	1	2
4.	Spalvų valdymas Color management	1	2
5.	Servo variklio valdymas Servo motor control	1	2

6.	Automobilio konstravimas ir programavimas Car construction and programming	1	2
7.	Žingsniuojančio voro konstravimas ir programavimas Construction and programming of a stepping spider	1	2
8.	Karuselės konstravimas ir programavimas Carousel construction and programming	1	2
9.	Laisvo stiliaus judesių konstravimas ir programavimas Construction and programming of free style movements	1	2
10.	Susipažinimas su Superbit MicroPython programavimo aplinka ir principais Introduction to Superbit MicroPython programming environment and principles	1	3

8. Kompetencija(-os), kurią(-ias) tobulins/ugdys Programos dalyvis.
Competence (s) to be developed / developed by the Program Participant.

Gebės konstruoti įvairius įrenginius panaudodami LEGO detales ir programuoti BBC Micro: bit V1.5 / V2 plokštę su išplėtimo plokšte MakeCode aplinkoje, žinos pagrindinius Python programavimo principus.

Will be able to construct various devices using LEGO components and program BBC Micro: bit V1.5 / V2 board with expansion board in MakeCode environment, will know the basic principles of Python programming.

Programos vykdymui pritarta.

Programą įvertinęs asmuo (pareigos, vardas, pavardė, parašas, data).

Academia Druzba za Storitve Doo (SI)

Tečaj “Razvoj poklicnih kompetenc za izobraževalce – Tehnološka integracija kot neformalno izobraževanje med poukom” je bil izveden v okviru Erasmus+ so- financiran projekt “INTEGRA”.

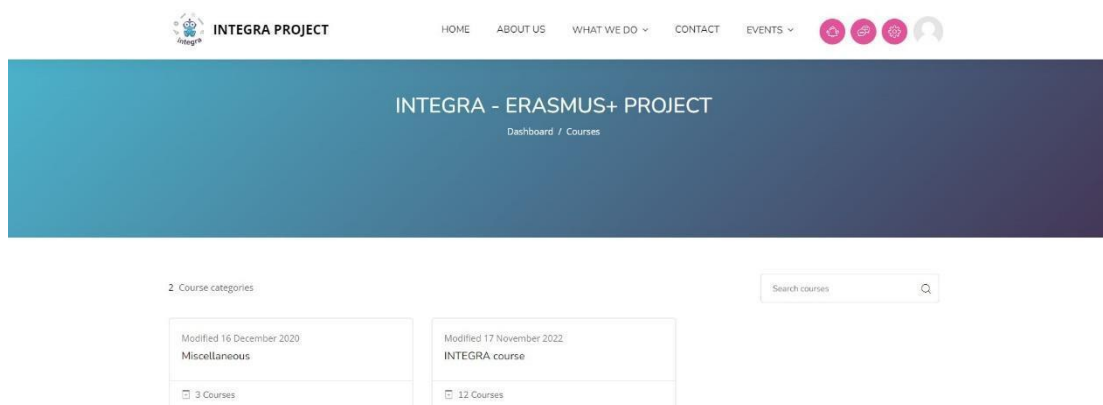
Občinstvo programa je bilo predvideno skupaj 21 izobraževalcev, ki se bodo udeležili tečaja in skupno 60 ur, načrtovanih na asinhroni način.

Tekom programa je bil poudarek na podiranju obstoječih ovir, ki jih imajo učitelji pri sprejemanju novih tehnologij in inovativnih metod izobraževanja. Nova orodja in viri od učiteljev zahtevajo, da vložijo čas in trud v razvoj nove veje znanja zase, pot pa morda ni dobro opredeljena.

Učenje inovativnih tehnik ali različnih tehnologij je izziv, ki zahteva podporo za povečanje uspešnosti. V večini primerov samo pridobivanje inovativnega gradiva ne pomeni, da bo to vključeno v pouk ali v pedagoško delovanje predavateljev.

Ker je Academia med projektom pridobila sredstva za zunanje strokovnjake, smo sodelovali s šolo *Osnovna šola Kungota*, ki je posredovala svoje učence na izmenjavo učencev (kot aktivnosti LTT v projektu Erasmus+) in izobraževala njihove sodelavce.

Usposabljanje, ki ga je pripravil zunanji strokovnjak Academie, je sledilo cilju ponovljivosti in prilagajanja zasedenosti predavateljev zunaj konzorcija. Odločili smo se, da strukturo tečaja oblikujemo v platformi LMS, za katero smo izbrali najbolj razširjeno v izobraževanju Moodle. In Moodle je vanj vključil skupaj 12 tečajev (enega na lekcijo).



Slika 1 – Posnetek zaslona kategorije tečaja

Struktura tečaja je bila naslednja:

- **1. lekcija: Uvod**
 - Dobrodošli v tečaju
 - Uvod
 - Tradicionalne metode poučevanja
 - Formalno, neformalno, priložnostno izobraževanje
 - Izrazi in koncepti
- **2. lekcija: STEM**
 - Definicija: kaj je STE(A)M
 - Razvoj STE(A)M
 - Primeri STEM, ki se uporabljajo pri različnih predmetih.
 - Kako bi vključili STE(A)M v svoje predmete?
- **Lekcija 3: Robotika**
 - Učenje o robotiki


- Razmislek o prednostih/uporabi robotov
- Roboti in delovna mesta
- Integracija robotov v različne predmete
- Razlika med umetno inteligenco in robotiko
- **Lekcija 4: IKT**
- Orodja IKT na voljo za mešano učenje
- Oblikovanje spletnih lekcij
- Interaktivnost med spletno dostavo
- Ocenjevanje spletno
- projektno učenje
- **Lekcija 5: Webquest**
- Definicija spletnega iskanja
- Prednosti predloga WebQuest
- Oblikovanje WebQuest
- Integracija mehkih veščin z uporabo WebQuest
- **Lekcija 6: Kako ustvariti učno enoto**
- Načrtovanje lekcije
- Upravljanje
- razreda
- **Lekcija 7: Ozobot Bip**
- Ozobots Bit and Evo: Pametni roboti, ki poučujejo kodiranje in ustvarjalnost
- Razlike med Ozobot Bit in Ozobot Evo
- Prednosti in slabosti OZOBOT BIT
- **Lekcija 8: Elegoo robotski avtomobil**
- Predstavitev: Elegoo Smart Robot Car
- Komponente ESRC
- **Lekcija 9: Podporna tehnologija**
- Podporne tehnologije
- Podporna tehnologija za študente z učnimi težavami
- Podporna tehnologija v učilnici,
- **lekcija 10: Prilagodljivo učenje**
- Kaj je prilagodljivo učenje?
- Prilagodljivo poučevanje
- **Lekcija 11: Napake pri poučevanju s tehnologijo**
- Pogoste napake, ki jih učitelji delajo pri poučevanju s tehnologijo
- **Lekcija 12: Zaključek**
- Končna izdelava inovativnega razreda STE(A)M pri predmetu učitelja
- Priznavanje učenja
- Evalvacija tečaja

Moodle LMS, ki je na voljo udeleženci lahko kadar koli dostopajo do izobraževalnega gradiva. To smo dosegli z vpisom uporabnikov v različne tečaje. Poskrbljeno je bilo tudi za ponovljivost programa, saj je možno samostojno krmariti po njem in samostojno iti skozi odseke.

LESSON 1: INTRODUCTION

Dashboard / Courses / INTEGRA Cour / 1: Introduction

Turn editing on

Your progress 

Announcements

Welcome to the course

The course "Development of professional competencies for educators - Technology integration as non-formal education during lessons" was implemented as a part of the Erasmus+ co-funded project "INTEGRA".

The focus of this course is set on breaking the existing barriers that teachers have when it comes to adopting new technologies and innovative methods of education.

During this course, you will explore different methodologies and approaches to the incorporation of technology in education and in the usage of robotics with pupils.

Structure of the course

The course will be organized in 12 sessions of 3 hours.

Slika 2 – Posnetek zaslona iz 1. učne enote

Poleg učenja o različnih tehnologijah in tehnikah za vključevanje inovativnih praks v njihovo izobraževanje, so se učenci seznanili tudi z različnimi roboti, ki so bili uporabljeni v projektu, zlasti z Ozobot bip in robotskim avtomobilom Elegoo.

Pomembna stvar vključitve teh dveh tehnologij niso samo vaje ali uvajanje v tehnologijo, temveč povečano znanje učiteljev po usposabljanju, da ju implementirajo v svojo izobraževalno prakso.

Po zaključku tečajev so udeleženci lahko izvedli lastno integracijo tehnologije v pouk. To smo dosegli z dodajanjem dveh pomembnih enot v tečaj: »Spletne naloge« in »Kako ustvariti učno enoto«. Ti dve učni uri sta zajemali ustvarjanje učnih enot v zabavnih dejavnostih, imenovanih »webquests«, ki so pristopile k delu s skupino učencev skozi različne naloge in dejavnosti, z uporabo različnih metodologij in vključevanjem virov v njihov razvoj.

Vsaka lekcija je vključevala zbirko videoposnetkov in izvornih datotek, ki bi udeležencem omogočile samostojno krmarjenje skozi tečaj, poleg foruma, ki lahko služi kot repozitorij vprašanj in odgovorov.

Häädemeeste Secondary School (EE)

ÕPETAJATE KUTSEALANE KOMPETENTSI ARENDAMISE PROGRAMM

Programmi nimi
ja tähis

Õpetajate ametialase pädevuse parandamine - tehnoloogia rakendamine
mitteformaalses hariduses

Programmi
sihtgrupp

Koolitajad, kes soovivad tehnoloogiaintegratsiooni tegevuste kaudu parandada
mitteformaalse hariduse kvaliteeti või kes soovivad pärast programmi lõpetamist pakkuda
uusi töötubasid: näiteks inglise keelt, bioloogiat, muusikat või mõnda muud tehnoloogiat
kasutavat õppeainet.

Programmi
taotleja
(asutuse täielik
nimi
registreerimisnum
ber,
haridusasutuse
registreerimis-
tunnistuse
number,
postiaadress,
telefon, faks, e-
post, WWW-leht)

Häädemeeste Keskkool
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Tel. +372 4465641
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Finantseerimine
allikatest

Kaasrahastus Euroopa Liidu programm "Erasmus+" Kohalik omavalitsus	Programmi kulud (eurodes)	Kaasfinantseeritud Euroopa Liidu programm "Erasmus+" poolt
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Rakendamine
aeg

Pärast grupi moodustamist	Rakendamise koht (linn, maakond)	Häädemeeste, Pärnumaa
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Programmi
kestvus

18	Osalejate arv (<i>cilv.</i>)	20 - 25	Koolitus e keel	eesti
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Programmi sisu

Programm on suunatud õpetajatele eesmärgiga integreerida tehnoloogia ja robotika õppetöösse. Programm kasutab STEAM õppemeetodeid suunates õpilasi koostööle ja kriitiliselt mõtlema.
Kursus keskendub mitteformaalsele õppele.

Programmi läbiviija (nimi ja perekonnanimi, teadus. kraad, ametikoht)

Astrid Rosenberg

Õpetajate kutsealase pädevuse arendamise programmi taotluse lisa

Programmi nimetus:

Õpetajate - tehnoloogia juurutajate kutseoskuste parandamine mitteformaalses hariduses

Programmi eesmärk: parandada õpetajate ametialast pädevust mitteformaalse hariduse valdkonnas, tutvustades oma aines tehnoloogiaid mõttekalt (näiteks inglise keel, bioloogia, muusika jms).

Programmi ülesanded:

- omandada erinevad digivõimalused mitteformaalses õppes.
- õpetajad tutvuvad erinevate veebikeskkondadega, proovivad neid praktikas;
- õpetajad täiendavad oma aine sisu, tutvustades õpilastele erinevaid digivõimalusi.

Oodatud tulemused:

- parandada õpetaja digipädevusi, tutvudes erinevate digivõimalustega.
- osalejad osalevad aktiivselt aruteludes ning praktikates.

Kestvus: 40 tundi (30 akadeemilist ja 10 iseseisvat praktilist tundi).

Programmi metoodika kirjeldus:

Programm edendab õpetajate professionaalsust mitteformaalses hariduses. Lisaks baasteadmistele saavad osalejad täiendada oma õpetamismetoodikat, arendada koostöö- või loovoskusi, ntegreerida tehnoloogiat ainetundidesse ja töösse kaasta erivajadustega õpilastega. Koolitajad saavad teoreetilist ja praktilist teavet selle kohta, kuidas luua õpilastele innovaatiline ja kõitev õpikeskkond, et nad oleksid konkurentsivõimelised. Programm on mõeldud nii algajatele kui ka tehnoloogiliselt kogunud õpetajatele.

Programmi omandamise hindamine: õpetajad kasutavad saadud teadmisi õppetöös

PROGRAMMI SISU

Nr.p.k.	Teemad	Tundide arv	Õppevorm	Tunni läbiviija	
				Ees- ja perekonna nimi	Töökoht, ametikoht, teaduslik kraad
0	1	2	3	4	5
1. 08.01.2021	Lego Spike Prime ja Ozobot. Koolitusel saadakse nõuandeid, kuidas antud roboteid õppetöös kasutada.	2 tundi	loeng, praktikum	Rauno Unt	Robomiku
2. 24.01.2022	Interaktiivne tahvel õppetöös	2 tundi	loeng, praktikum	Astrid Rosenberg	Jets OÜ
3. 08.02.2022	Eduten Playground õppetöös	2 tundi	loeng, praktikum	Tellitud	Eduten
4. 18.03.2022	Navicup koolitus	2 tundi	loeng, praktikum	Tellitud koolitus	Navicup OÜ
5.-6. 05.05.2021	Interaktiivsete esitluste loomine, p tegemise võimalused ja õppemäng	2tundi	loeng, praktikum	Astrid Rosenberg	Jets OÜ

7. 24.03.2021	Interaktiivsed nipid õppetöösse ja audiotöötlus (Ajaplaneerimine, ekraanisalvestus, QR-kood, linkide lühendamine jne)	2 tundi	loeng, praktilikum	Astrid Rosenberg	Jets OÜ
8. 02.03.2022	Interaktiivsetahvli jätkukoolitus	2 tundi	loeng, praktilikum	Astrid Rosenberg	Jets OÜ
9. 26.08.2022	Küberturvalisus	2 tundi	loeng, praktilikum	Hanno Saks	MTÜ Via Terra Mariana

