Learning from the Extremes:

A Rural Schools Innovation Roadmap

Deliverable 6.2

Report on the Schools Development Plans

This project has received funding from the European Commission PPPA Programme under Grant Agreement No.LC-01760255/10105266 LfE

Co-funded by the European Union

Document Control Page

WP/Task	WP 6 / T 6.2
Title	Report on the Schools Development Plans
Due date	31/1/2024
Submission date	31/1/2024
Abstract	This deliverable provides information on the work carried out by the participating schools in relation to the School Development Plans that were elaborated by the time of their application.
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Reviewer(s)	Rosa Doran (NUCLIO), Maria Luísa Almeida (NUCLIO)
Dissemination level	☐ internal ☒ public (Creative Commons Attribution 4.0 International License) ☐ confidential

Document Control Page

Version	Date	Modified by	Comments
01	1/1/2024	Sofoklis Sotiriou	TOC
02	20/1/2024	Nikos Zygouritsas	First draft
03	29/1/2024	Maria Luísa Almeida	Peer Review
04	31/1/2024	Nikos Zygouritsas	Revised version
05	31/1/2024	Maria Nika	Quality review
06	31/1/2024	Nikos Zygouritsas	Final version

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Executive summary

This deliverable provides information on the work carried out by the participating schools in relation to the School Development Plans that were elaborated at the time of their application.

The introduction describes the process for creating a school development plan during the elaboration of the applications of each project submitted during the Learning from the Extremes call. This section also presents information on how the schools reported the work that was carried out during their participation in the LfE activities.

Chapter 2 presents a detailed list of the selected projects and the work that they have carried out. The applicant schools and the other participating schools are also listed. For each school, the number of teachers and students that participated in the LfE activities and a detailed description of their activities are also provided.

Chapter 3 concludes the deliverable showcasing that the work done by the school participating in the Learning from the Extremes activities based on their school development plan and as reported by the schools proved instrumental in addressing inequalities of access to digital education by enhancing inclusion and by reducing the digital gap suffered by school communities from remote areas with low connectivity, limited or no access to devices and digital educational tools and content.

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1 Introduction

The Learning from the Extremes project prepared and published a call for proposals to fund the deployment of pilots that would allow primary, secondary and vocational schools to benefit from the most suitable technical solutions to reduce the digital gap suffered by pupils from areas and communities with low connectivity, limited or no access to devices and digital educational tools and content. This call aimed at addressing inequalities of access to digital education by enhancing inclusion and by reducing the digital gap suffered by pupils from remote areas and communities with low connectivity, limited or no access to devices and digital educational tools and content.

The LfE Project has set-up a transparent mechanism in order to run the Open Call for proposals, carry out the evaluation of the submitted applications and select the most promising ones, proceed with their funding as well as their monitoring and ensuring the delivery of the final outcomes. *LfE* provided the framework for the recruitment campaign, starting with communication and following up with timely submission of the proposals and, of course, their selection.

The LfE Coordination Team, in close collaboration with all the partners of the Consortium, has successfully formulated the Application Form to be filled in by the third parties (schools) participating in the Open call.

The weighs of the sections were analytically discussed and agreed upon by the educational partners and special attention has been given to the needs of the schools and the challenges that this proposal would solve. More specifically, the sections of the form were:

- Description of the proposed project: What are the pedagogical and technical challenges/needs that are addressed?
- What are the pedagogically innovative aspects of the proposed project that will be supported by the technological solutions?
- How many teachers will participate in the proposed project? What is their relevant background knowledge? Please provide a short CV (5-10 lines highlighting the key skills and the potential role in the proposed project) in the form of a paragraph for each teacher.
- What are the intended outcomes of the proposed project?
- What are the risks and/or barriers to the proposed project? How do you plan to overcome them?
- How will the local community be involved in the proposed project? Please present your plans and approach.
- What will be the expected impact of the proposed project on teachers?
- What will be the expected impact of the proposed project on students? Please focus on the expected educational added value of the proposed project.
- Please describe your plans that will ensure the continuation of the project after the funding period. Could the proposed project act as a reference point for other schools? How could the project be transferred to other schools and scaled up?

The whole content of the Application form was, in principle, a School Development Plan elaborated from each school.

The 290 applications were clustered on a national level and assessed against the same criteria by the national review panels. Each national coordinator was responsible for this evaluation and selection phase, which resulted in the selection of 74 school development projects.

National coordinators were requested to propose a school project in the common reserve list. School projects from Bulgaria, Croatia, Finland, Greece, Portugal and Romania were put in this reserve list. National coordinators were asked to provide their scores on each application. Each national coordinator had to put a score to each application except the one that was submitted in their country.

The European Review Panel ran the assessment for those school development project proposals from the reserved applications' list, comprising six school project proposals. They decided to consider for funding two more School Development Project proposals from the Overall Reserved List, those from the reserved lists of Portugal (EB de Silvares) and Romania (Școala Gimnazială Sîntămăria Orlea - Sîntămăria Orlea Middle School).

On the basis of the review and evaluation process, the amount of funding of 1,185,679.83 € is to be allocated to 76 school development projects schools from 10 EU countries, namely school development projects from Greece (10), Portugal (9), Cyprus (5), Croatia (9), Finland (7), Ireland (15), Bulgaria (9), Romania (7), Italy (1) and from Spain (4).

The LfE framework included the evaluation criteria, as well as the monitoring and reporting procedure, which facilitated the harvesting of the necessary data to monitor the implementation of the remote school development process and to validate its successful implementation.

All participating schools had to provide an interim report by 31.5.2023 and a final report by 31.12.2023. The final report was a self-reflection exercise in evaluating the School Development Plan outlined in the application form. The school had to report how they implemented their project with the support of the technological solutions acquired for their school through the LfE funding, and what were the outcomes of their project. They also had to describe how they addressed the pedagogical and technical challenges/needs initially described in their application, highlighting the pedagogically innovative aspects and the role of the acquired technological solutions. Information harvested from these reports is presented in the following chapter.

This deliverable showcases the work done by the school participating in the Learning from the Extremes activities based on their school development plan. The activities as reported by the schools proved instrumental in addressing inequalities of access to digital education by enhancing inclusion and by reducing the digital gap suffered by school communities from remote areas with low connectivity, limited or no access to devices and digital educational tools and content.

2 Work carried out by the approved school projects

2.1 Bulgaria

School No1	Secondary School "St. St. Cyril and Methodius" - Varbina
How many students took part in the LfE activities?	51
How many teachers took part in the LfE activities?	13

Work carried out:

The outcomes of our project are:

The Innovation Skills Area, where students and teachers have 9 Chromebooks and access to the Intel Skills for Innovation (SFI) starter pack of ready-made lessons. The starter pack contains 70 lessons, 21 of which are specifically in Bulgarian language – 9 for high school, 6 for lower secondary and 6 for initial stage. This package gave teachers the opportunity to get acquainted with ready-made materials and to build an innovative learning environment in which to develop skills of the future in students. All teachers received training to implement and implement Intel's package of ready-made lessons.

A frontal talk and presentation area where students and teachers have an interactive display with a built-in OPS module and Mozabook software that expands the learning toolkit with a variety of illustrations, animations, over 1200 3D scenes, interactive worksheets, game activities and exercises, spectacular interactive content and built-in, skills-developing, illustrative virtual laboratory applications that help increase students' interest, enable consideration and research, acquisition of knowledge, skills and competences.

Project work area. Here, students have the opportunity to take drone shots with a 360-degree camera, use a 3D scanner and process the materials created on a suitable laptop. This area is used both in the regular hours until noon and in the afternoon in the classes of interest activities. The newly acquired technique is used by students to implement their learning projects placed in different school subjects.

An experiment and programming area, where in both regular classes until noon and afternoon classes, students acquire skills in managing programmable devices. The parents were very impressed and shared that they would be very happy to go back to school.

With such a tight school budget, we could only dream of having access to such technologies. The project ‘Learning from the extremes’ provided us with a financial opportunity to purchase the technological equipment we want, conduct training of teachers, and develop their pedagogical potential. After the trainings, they already teach better and more captivatingly, using new learning methods, the centre of which is the student and his active participation in the learning process. All this led to a transformation of the learning process. There is an increase in students' motivation for learning, opportunities for collaboration and teamwork are improved, experiments and research are made, projects are developed and what they have learned in practice.

We have made the training more accessible - equal access for students and teachers to the improved educational base and infrastructure is ensured. A schedule for the use of the equipment has been prepared. Also, the technological equipment is mobile, which allows its use anywhere in any classroom.
We made the training more flexible. Access to a rich base of electronic learning resources and virtual laboratories is provided. Teachers are no longer limited to textbooks, but have at their disposal a wide range of tools and technologies – a subscription to Mozabook has been made, which expands the learning toolkit with a variety of illustrations, animations, over 1200 3D scenes, interactive worksheets, game activities and exercises, spectacular interactive content and built-in virtual laboratory applications; A starter pack with Intel's "Skills for Innovation" learning resources was purchased (a package of 70 ready-made lessons that cover about 140 hours of content in various subjects).
Thanks to our work on the Project "Learning from the Extremes" the following things have changed:
Educational innovations were introduced in the organization, management, educational content, teaching methods and educational environment.
The available equipment is used by all teachers both until noon in compulsory classes and in the afternoon in self-study classes and in the formed clubs based on the interests of the students. A schedule for its use has been created, and if necessary, this schedule is changed. The equipment is mobile, which makes it possible to use it anywhere. In each classroom, teachers have a laptop, projector, and Internet access to use available resources and tools. In the afternoon activities, primary school students are provided with the necessary number of laptops to prepare for the next day, and lower and high school students have access to the terminal and computer room where their self-study classes are held; all students have access to the smart classroom, the STEM cabinet, the school video studio and the school library, where they realize their project assignments, conduct experiments and more.
The qualification of our teachers, their scientific, pedagogical and methodological training in the direction of modernization of education and development of their professional competences through acquaintance and adoption of innovations in teaching was improved.
The digital competences of teachers for the use of new technologies and the application of digital teaching methods have increased.
Improved teamwork and coordination between teachers, created a positive atmosphere of cooperation and mutual assistance in order to jointly develop integrated and interdisciplinary lessons and resources to improve the quality of learning, the progress of students and their key competencies. Teachers are divided into teams of key competences, with each team drawing up a plan for work throughout the year and planning the interdisciplinary lessons they will conduct. Some of the activities are carried out jointly between two or more teams.

School No 2	Vasil Levski Secondary School - Ardino
How many students took part in the LfE activities?	113

How many teachers took part in the LfE activities?	28

Work carried out:

Funds from the Learning from the Extremes project gave us the opportunity to purchase thirty-two learning devices (Chromebooks), two interactive displays and two flash memory cards. The devices are intended for the students from the nearby settlements who do not live in the town but are graduates of Vasil Levski Secondary School and are daily commuters. So that they can prepare their lessons from home by collaborating with their teams or any other classmates from a distance. The purchased screens are placed in two classrooms where teachers and students have the opportunity to share learning content with the whole class in the different learning subjects.

Through the implementation of the project financed by LfE, two classrooms have been equipped for the students studying in the 1:1 learning model and thirty-two devices have been provided to the commuter students from the surrounding villages. The purposes set in the project are implemented as:

- each student has a personal learning device and permanent access to the Internet;
- students learn, work and communicate in groups, both inside and outside the classroom;
- students create products that use their knowledge and skills from different subjects;
- students are in a secure environment, physically and online.

As a result of the implementation of the planned activities in the project, teachers have the opportunity to work with all students under equal conditions. Interactive displays support the educational process by enabling constant feedback, updating the learning process and increasing educational results. Students are in the centre of the process, placed in an active position and the teacher is only a facilitator who guides them on how to search, research, create and present learning content in a proper way.

As a result of the implementation of the project the teachers upgraded the built capacity for the effective use of digital technologies in teaching, learning and assessment practices.

We believe that the teachers working on the project, as a result of the good qualification, do the following activities:

- teach engaging lessons and set high performance goals;
- strive to increase the motivation of each student for meaningful use of digital resources in the learning process;
- apply a variety of activities and challenge students to step outside their comfort zone to be better and more successful;
- develop social-emotional skills in students through effective communication, building good relationships, working on projects that require cooperation and teamwork;
- share good practice with other teachers in the school as well as in other schools;
- organize open days to share learnings with parents and guests from the local community.

School No 3	Private profiled high school with foreign language education "CHELOPECH"
How many students took part in the LfE activities?	120
How many teachers took part in the LfE activities?	20
Work carried out: The outcomes of the project are: • Focused and captivated pupils in the learning process after the covid pandemic and online learning at home • Positive attitude to new technologies and eager to try something new • Increased positive teacher-student interactions in the classroom • Academic achievements in curricular and extracurricular education • Motivation for active and focused learning • Increased social skills usage by children • Increased technological and ICT skills • Increased social skills teaching abilities by teachers • Excellent hi-tech equipped school and well-prepared teachers to use it • Fostering inclusivity of the local community and parents • Encourage participation in international projects • Ability of pupils to express themselves in the learning process in connection of building 21st century skills • Families benefit from positive environment in school resulting at home Technology has transformed life as we know it, and the classroom makes no exception. The new equipment and devices encouraged teachers to incorporate different learning styles like Project Based Learning, Problem Based Learning, etc., giving students a more tailored experience that can benefit them in the future. This environment is especially suitable in the context of STEM and its conceptualization, which the focus of the project is. The project resulted in increased and improved collaboration between students, encouraged critical thinking skills and the ability to make decisions. Teachers have observed an increased frequency of students helping each other when they're using technology in the classroom. In general, the new equipment facilitated Project-Based Learning and provided a convenient frame for it. Last but not least the new technology provided a space for students to express themselves and met their individual needs for learning.	

School No 4	Otets Paisii Primary School - Sofronievo
How many students took part in the LfE activities?	53
How many teachers took part in the LfE activities?	10
Work carried out:	

The use of digital educational resources in the teaching of learning content has increased. The quality of students' projects has improved as they have free access to the resources they need, which in turn motivates them further.

Participation in the Learning from the Extremes project gave us the opportunity not only to acquire modern equipment that we need to provide our students with access to electronic resources commensurate with that of students in large schools, but also an opportunity to exchange experience with colleagues in our situation. Access to the LFE portal allows us to get acquainted with international trends.

With schools being on a delegated budget, the renovation of equipment in small schools is an impossible task. Prior to the school was included in the Learning from the Extremes project, teachers worked with a technique that did not allow full use of the digital resources provided by the publishers of textbooks and the Ministry of Education and Science, and the adaptation of learning material to the needs of students was unthinkable. There is a tendency to increase the number of children, who need additional support to master the learning material and those with SEN. According to the strategies for the development of education, e-learning and the use of digital educational resources will take an increasing place, both in school hours and in the preparation of students for school.

School No 5	General Skobelev Primary School – Skobelevo
How many students took part in the LfE activities?	74
How many teachers took part in the LfE activities?	46

Work carried out:

After the initial completion of self-reflection, there were many changes in the learning process, the study and the receipt of reflection when working with adolescents. The pedagogues at General Skobelev Primary School have experience and many good practices both in motivating learners and in the inclusion of potentially marginal groups, and the project activity allowed us to share our own abilities with colleagues and get good practices from their schools. Educators and partners share that they feel more security in the planning of activities and the effective involvement of the supporting network of students in the learning process. There is an improvement in communication both between pedagogical professionals and with the local community, and this, in addition to increasing the motivation for the learning process, gives us the opportunity to receive timely feedback (reflection) on the effectiveness of training and educational activities. Everyone involved in the implementation and promotion of the project gave us positive feedback, from which we come to the conclusion that thanks to the participation of the team and our partners in it, we improve the quality of the learning process and the socialization of students.

We trained, upgraded our knowledge and skills and transformed the routine into an intelligently developing system. The teachers gained confidence and desire for further development, using more and more electronic resources in their work, working in a team and sharing their creativity and experience in training.

Thanks to the delivered equipment under the project, teachers began to use and share many electronic resources in the training. Binary and interactive open lessons were held in the following subjects: Mathematics, Human and Nature, Bulgarian Language and Literature, Computer Modeling and English in different classes. Many interactive learning methods were used, which provoked and stimulated the creative thinking of the students. The teaching and learning methods and techniques used led to increased concentration and attention in the learning process. The level of training increased motivation to learn and outcomes increased.
The school creates opportunities to encourage and support school staff, engage with school networks to share expertise and learning resources, disseminate innovation and support school development. The majority of teachers implement inclusive activities that take into account: communication, awareness, equal opportunities, gender balance and avoid any stereotyped languages and behaviours and cooperate with schools at the local level in solving community problems. Teachers create new projects and coordinate the participation of several classes in them, including participation in inter-curricular activities.
The projects are interdisciplinary and open to members of the school and the local community. Teachers support the dissemination of their projects as part of the communication plan of the co-created school. All projects follow the school inclusion strategy and make good use of opportunities for technologically enhanced learning. Parents' engagement is included in all the activities of the school and they show initiative in this participation. Ongoing monitoring is established. The majority of teachers adapt learning processes in accordance with the established feedback mechanism involving all stakeholders. Students can work online and their progress can be monitored. Cooperation and communication with local institutions has improved. All teachers participate in professional development programs. The school invests in a series of teambuilding activities as part of its strategic plan. The activities are carried out in cooperation with the networks of other schools.
The teachers from General Skobelev Primary School improved the skills we had in terms of working with interactive displays and interactive whiteboards, improved and introduced new presentation techniques and technologies, including working with large databases, applications, 3D interface modules, holograms and virtual realities.

School No 6	Vasil Levski Secondary School - Tserovo
How many students took part in the LfE activities?	69
How many teachers took part in the LfE activities?	11

Work carried out:
We were looking for technologies that we could access daily and that would make the educational process inspiring for both students and teachers.

- Interactive interdisciplinary lessons are held every day, in every class.
- All teachers have increased their professional competencies by receiving training
- Students acquire the knowledge, skills and competencies required by the state education standards in new, exciting and interesting ways.

- Their motivation and interest in the subjects taught increased.
- Students increased their academic achievement and developed attitudes for growth and development.
- Have access to an interactive display in each classroom to conduct interactive lessons
- Access to a high-tech multimedia centre for digital, scientific and artistic creativity: the "inspiration hub"
- Access to VR goggles, CLASSVR PORTAL, NASA's Exoplanet Excursions, NASA VR/360 multimedia, Avantis World, EDUVERSE
- Import 3D objects from Minecraft
- Integration with CoSpaces platform
- Integration with the ThingLink platform
- Access to educational theme park for VR AVANTIS WORLD
- Improved communication and collaboration between the school and the local community

Regarding needs, the purchase of these technologies has contributed to creating a more attractive and engaging learning environment that has supported the diverse learning styles and preferences of students. Virtual and augmented reality allowed students to explore and experience new concepts and scenarios that would not have been possible in a traditional learning environment. The educational materials portal provided access to a wide selection of resources to support the learning process and inspire teachers for broader learning and students for a more expansive and exciting understanding of the learning topics.

Several projects and many lessons were conducted with the new technological tools:

- **A celebration was organized on the eve of the number Pi on the theme "A fairytale world with geometric shapes and solids".** Guests from the municipal administration, parents and representatives of the community center and kindergarten in Tserovo were invited. The children made fairy-tale castles in which they had to use pure geometric shapes. An interactive presentation on "Geometric figures and bodies in the architecture of Bulgarian architectural and historical monuments of culture" was also presented. There was also a mathematical competition with teams from both schools, which took place in an interactive environment.
- **Interactive lessons are held daily on the displays and weekly with the VR glasses**, and there have been quite a few STEM lessons implemented.
- **Some of the interactive lessons implemented with the VR goggles a**re: components of the computer system and inside a mobile phone; A brief history of technology; Technology zone; What is the internet?; Network at home; Technology zone; Geography lessons for Australia; Art - in a Van Gogh painting - the students viewed one of Vincent van Gogh's paintings up close and in full detail. Science lessons. It's a really impressive journey for even the youngest students; Lessons: Animals; Changing Seasons in the Magic Land - STEM children recreated the seasons using their chosen materials - plasticine; different materials - cotton; paper etc.
- **The project "Healthy, Strong and Happy"** was implemented by all students and teachers in the school and involved the whole community in the idea of a healthier, fuller and happier lifestyle.

All teachers are eager to use the technical equipment and software. All teachers have reported increased creativity, improved communication and collaboration between the school and the local community.
The project has had a positive impact on educators, fostering a more innovative and engaging learning environment. Increased creativity among teachers has led to more dynamic and interactive lessons, which ultimately benefits the learning experience of students.
Also observed:

- Increased collaboration and sharing of good practices among colleagues
- Improved efficiency in lesson planning and delivery
- Increased student engagement and motivation
- Development of new skills and competences among teachers
- Integration of technology across subject areas and teaching methodologies

School No 7	St. St. Cyril and Methodius Primary School - Kameno Pole
How many students took part in the LfE activities?	33
How many teachers took part in the LfE activities?	9

Work carried out:
The planned modernization of the learning environment has been implemented through:

- the installation and use of interactive displays in each classroom that give access to many more and more diverse learning materials, e-textbooks, multimedia and digital resources, online learning platforms. The necessary educational and technological infrastructure is provided, which facilitates the effective implementation of strategies for modernization of the educational process at school.
- The new server in the computer cabinet improved the training in Computer Modeling and Information Technologies.
- 5 pcs are provided. notebooks to enhance students' digital competences and use educational electronic resources

Through the installed technological equipment, we enable teachers to conduct digital and interactive learning with the possibility of a quality learning process in attendance.
They have access to educational software, educational sites, electronic textbooks, access is provided to all teachers and students to modern and up-to-date digital lessons through the introduction of the so-called. "Digital backpack"

School No 8	St. St. Cyril and Methodius Primary School - Staro Oryahovo
How many students took part in the LfE activities?	292

How many teachers took part in the LfE activities?	37

Work carried out:

After the realization of the project, the school received 65" interactive displays with webcams, OPS computer modules, notebooks (laptops) and educational software "Mozabook", as well as a 3D printer.

Four classrooms were equipped with them. With the help of Mozabook Classroom, the learning material is presented through 3D models of biological processes, anatomical structures, terms, phenomena and concepts, educational videos, images and digital resources. The so-called "live lists" – live worksheets, play activities and exercises increased the interest of students and helped to acquire knowledge, skills and competences. In order to use the provided equipment on a daily basis, a 3-day training course for interactive display, 3D printer and Mozabook Classroom software was held with trainer Alexander Chantov. The newly acquired technique was used not only in the regular, but also in the afternoon for Activities of interest. The students performed the tasks assigned to them in the different subjects.

This achieved the digitalization of the learning process on the model of frontal learning and helped to increase its effectiveness.

With the acquired technological equipment under the project, a transformation of the learning process was achieved. With the help of the so-called "Virtual classrooms" achieved simultaneous presentation of the learning material to all students, regardless of where they are. It provided an opportunity to use more digital resources that allow specific simulations as part of learning the new learning content, as well as visually presenting this content.

Students with different disabilities also took part in the lessons. For example, students who have difficulty gripping a pen used their fingers or palm to perform various tasks. The same applies to students who have difficulty reading and writing.

With the received funding we enriched the material - technical base at school. The lack of still equipped STEM centres in our school gave us the opportunity to place the technical equipment received under the project in 4 classrooms.

Access to digital content in the classroom is important as it enables teachers to apply different approaches to learning. A wide range of tools is available to the teachers, which diversifies the learning process with illustrations, animations, 3d scenes, game activities, exercises and "live sheets".

The classrooms where the new digital screens were installed acquired a modern look, the lessons became more attractive and understandable for students. They are an additional incentive to keep the interest and increase the activity of students during class. They allowed for more joint activities with other classes and schools in order to exchange experience and knowledge.

The available equipment is used by all teachers both until noon in compulsory classes and in the afternoon in self-study classes and in the "Interest Activities" groups. Innovative teaching methods were introduced in the educational environment. The qualification and digital competences of teachers were increased through trainings for working with technical equipment and educational software. Teamwork and coordination between teachers have been further strengthened. Together they developed integrated and interdisciplinary lessons, some of which have been realized and others to come.

School No 9	St. St. Cyril and Methodius Primary School - Ryahovo
How many students took part in the LfE activities?	23
How many teachers took part in the LfE activities?	3

Work carried out:

The aim of the project is to create conditions for the development of skills related to creativity in digital technologies, experimental work related to the development of competences in computer modeling, work on projects and assignments with practical orientation. The project activities are aimed at increasing the interest of a wide range of students in creative activity and creating works that are a combination of handmade and digital products.

As a result of the implementation of the project, the school now has a classroom of a new generation. The "Workshop" project includes transformation and equipment of a classroom with modern computer equipment - notebooks, interactive display, multifunctional device, construction of optical gigabit Wi-Fi connectivity and robotic devices.

The pedagogical challenges of the project were related to mastering skills for working with the interactive display, using interactive training platforms, as well as creating binary lessons. The planned trainings on the project helped us to cope with the challenges. Teachers and students have the opportunity to improve their skills to work with digital platforms and textbooks, to use electronic visual aids in classes and in project activities. From April 2023, the computer equipment in the HECC room functions and is used by students and teachers.

The professional growth of teachers is among the most important priorities for the field of education. Therefore, under the project, the school management organizes three trainings through which it provides the necessary support to pedagogical specialists for the transition to digitalization and for their personal improvement through platforms for educational materials and exchange of experience with colleagues.

The planned goals have been achieved for teachers to:

- work in practice with modern computer equipment and to enrich their practical digital skills;
- provide interactive and fun exercises to their students. To create an attractive environment and make the school a fun territory for children;
- undergo training to work with interactive training platforms;
- multiply their skills by involving students from other classes;
- acquire skills to work on project activities and increase their project management skills.
- share experience in electronic platforms.

Through the training in each of the school subjects, students acquire key competences. Key competences are interdependent and represent a body of knowledge, skills and relationships necessary for an individual's lifelong personal development.

2.2 Croatia

School No 1	Elementary School Rovišće
How many students took part in the LfE activities?	20
How many teachers took part in the LfE activities?	2

Work carried out:

The project achieved the set goals, recorded through key success indicators (KPI). The students successfully mastered robot programming, 3D model design, mobile application creation and creation of a chatbot powered by artificial intelligence. The e-maturity level of the school has increased, and the number of available robots has increased by more than four.

The challenges were successfully overcome, and the project provided answers to the pedagogical and technical needs identified in the application. The introduction of innovative technologies in rural schools has increased the knowledge level of students, providing them with the skills needed for the 21st century. The project successfully tackled and surmounted the challenges outlined in the initial proposal, providing concrete responses to pedagogical and technical needs.

The project encouraged active learning through robotics, transforming the traditional dynamics of the classroom into a space of collaboration and dynamism. Students became active participants in the process, engaging in the design, assembly, and programming of robots. This approach fostered critical thinking and problems solving. By bridging technology, engineering, and creativity, the project promoted a multidisciplinary approach to learning. Students explored intersections between different disciplines, enriching not only their understanding of individual subjects but also demonstrating the interconnectedness of knowledge.

The integration of technology enhanced students' digital literacy. They not only adopted programming languages but also gained skills in using 3D modelling software and developing mobile applications.

Introducing artificial intelligence and machine learning through the creation of a chatbot enriched students' cognitive skills. Understanding the design and programming of a chatbot required logical thinking and a deeper understanding of artificial intelligence principles.

The impact on students' learning manifested in improved critical thinking, motivation, and increased confidence through successfully overcoming challenges in programming and robotics.

In terms of sustainability, the school plans to integrate the acquired knowledge into the regular curriculum, expand the approach and methodology to other subjects, and strengthen connections with the local community. Continuous professional development of teachers is crucial for keeping pace with technological and pedagogical advancements.

The project achieved tangible accomplishments and transformed the approach to how technology and pedagogy interact, preparing students for contemporary challenges and promoting sustainability in education.

The project successfully supported pedagogical innovations. Through the "Learning with Robots" methodology and the STEMI platform, non-linear teaching is enabled,

encouraging student independence. The integration of the STEMI hexapod robot, the platform for building chatbots and Formative Analytics contributed to the development of programming, design and presentation skills through the Teachback method.
The project had a significant impact on the development of teachers' competencies and on changing the dynamics in the classroom. Funded equipment and services from the LfE program have become key resources in shaping advanced teaching methods. Teachers actively used these resources in shaping a modern and innovative approach to teaching. They used this equipment to provide guidance to students during project activities, allowing them to explore, experiment and develop their own creative ideas.
One of the key goals of the project is to change the approach to teaching, encouraging teachers to move from traditional face-to-face teaching to modern teaching methods such as mentoring or heuristic teaching. Teachers are motivated to develop new teaching strategies, where students are active subjects of the teaching process. This will enrich the learning experience in the long run, encouraging students' independence and critical thinking.

School No 2	Elementary School Peršaves
How many students took part in the LfE activities?	26
How many teachers took part in the LfE activities?	6

Work carried out:
In our equipped makerspace that we filled with laptops for our students, classroom management software, an interactive board with educational software, Ozobot coding robots, a 3D printer and materials like clay, cardboard, and wood, our students learn to create and innovate while working with others. In addition, our makerspace is where our teachers can teach our students essential skills such as problem-solving, creativity, critical thinking, collaboration, and multitasking. They are transforming learning by moving classrooms from static places where we passively receive information into dynamic communities that promote inquiry, collaboration, and creativity while enabling our students to be creators rather than just consumers of educational content.
With the help of this project, there is much better collaboration between our school and our local community, and many local people and organizations are participating in learning projects and activities in our makerspace. For example, one of the first projects in our makerspace was a 3D printing workshop where we printed bookmarks with our school logo that our students sold at a school fair, and all the collected money from the sale went to the local animal shelter.
Also, we invited one of our last existing pottery makers to our makerspace classroom to teach us how to make clay replicas of buildings in our local community. One of the first big projects in our makerspace was building a traditional mock-up model of buildings, structures, and traffic roads in our small village made of clay and cardboard and by 3D printing technology. In this mock-up, our students are coding routes to visit common buildings in our local community by programming the Ozobot robot to turn

left or right at an intersection, to turn around or go straight. This way, our students are working on their digital and traditional knowledge and skills.
Our teachers collaborate better with other teachers in our makerspace classroom and make better cross-curricular connections. In addition, our teachers enhanced their digital competencies and pedagogy through various professional development activities. Teachers bring Makerspaces to life. They shepherd students to new ways of thinking, acting as designers to create curricula that exercise essential competencies in their students. Innovation education in a makerspace presents an entirely different approach to what it means to be a teacher. Makerspaces are as much a learning opportunity for students as they are for teachers in developing competencies essential for the 21st century by using technology in the classroom.

School No 3	High School Ivan Meštrović, Drniš
How many students took part in the LfE activities?	15
How many teachers took part in the LfE activities?	1

Work carried out:
The project with the working name STEMI ROUTE within the Learning from Extremes project brought to our school something completely different and new for our students.
For the first time, our students had the opportunity to take in their hands the materials from which they assembled the hexapods. The project was implemented according to the stages of implementation, more precisely according to the implementation time plan from the very beginning to today.
First, we conducted a survey of students who wanted to join the project. After the collected data and interested students who signed up to the online application by filling out the survey, the first introduction begins for the Learning from the extremes project. The first meeting with the students was held in school during which the students were introduced to the way of working in the project, the activities expected of them, and during the first meeting it was agreed that a small part of the activity hours will be carried at school when they are free from classes and the other part online from home via the Teams platform. As the desired number of hexapods for students was ordered in the project application itself. We identified issues that we need to made in future and dead line by calendar of our outside leader from the Carnet, also we identified possible barriers like lack of internet when we were planning to learn online and have communication so we have some strategies to overcome that problems in the way that we always have earlier online meet in calendar (7 days before the dead line so everybody has enough time to finish job).
The project was integrated into the school's innovation plan by being integrated into the school curriculum where one part of the education and project activities of the project took place during regular classes and the other part online. With the condition that these are high school students who have learned hybrid classes, the implementation of the project did not have any major difficulties. As already defined in the project application itself, the goals of the project are the application of innovative technology related to robotics and artificial intelligence, the reduction of

inequality of access to digital devices, tools and content, the improvement of the economic and social status of students, the development of students' technological and presentation skills, and the strengthening of students' competitiveness on the labor market. The strategy for the development of student competencies of vocational schools, in this case the direction of economists and electrical technicians, was realized indirectly and in different subjects that they attend through regular classes.

The STEMI ROUTE project contains innovations that are key to the continuous improvement of education, that is, the development of skills based on competencies and learning outcomes. Innovations in vocational education and training are very important because this is the only way to increase the value of the educational process nowadays. The possibility of active implementation

and participation in this project through the application of innovations in this case of creating a hexapod result in:

- improvement of vocational education for our students
- improving resources regarding the acquisition of new equipment, in this case a hexapod for our school
- improvement of learning and teaching methods - active learning and teaching and project teaching
- professional training of teachers
- supporting equality and excellence in rural schools
- supporting our school as a community and educational space
- establishing partnerships with stakeholders in the community.

School No 4	High School Ilok
How many students took part in the LfE activities?	22
How many teachers took part in the LfE activities?	2

Insufficient development of rural areas is a main reason why our students are in less favourable position when it comes to their education and career which is the main mechanism for improving their economic and social status. Due to beforementioned we decided to offer them access to new and modern technologies and educational processes through this project. Our project outcomes, that we described through key performance indicators and success criteria, include the ability of our students to program and design their own robots and mobile applications, design and program chatbots, increase the number of available robots in our school and familiarize our students with AI.

All teachers and students that are involved in the project got access to acquired robots and platform. Teachers had 3 days of education in robotics in which they learned all about platform, how it works and how it was conceived for students to go through it and learn. Teachers also went through the process of hexapods assembly and got advice on how to mentor students and how to overcome eventual issues that may appear. Also, they learned about program in which students will create mobile app (MIT App Inventor), got instructions about how it works and went through how to program a mobile app (i.e., changing and adding text, images, adding buttons and

functions that are executed upon interaction with buttons) and use it to control their own hexapod. Upon completing their training, teachers mentored students towards robots' assembly and creation of mobile app for its control.
Students worked in pairs and assembled their own hexapod by following the instructions on platform. In that process, teachers directed and monitored students and helped them when needed. Except assembling hexapods, students also went through platform's features and learned about engineering, what it is, who engineers are and what it takes to become one. Students learned about skills that are important in engineering world such as public speaking and communication skills, collaboration, teamwork etc. They also had practice assignment in which in teams they had to research about the best drone on the market in their opinion and then they got real life assignment to find the best drone for particular purpose (photographing houses for real estate agency within the price of 1 000 euros). After research, they had to prepare the speech and present their findings and to convince others that their drone is the best.
After theoretical lessons and robot assembly, students began to program their mobile apps with which they could manage their robots. Each student also had an option to create his own special move for their robot which is the task that gave them freedom to be creative and develop their design thinking and engineer skills.
At the end of the school year, students disassembled their hexapods according to the instructions and on the beginning of the new school year they mentored new students. They helped them to assemble their hexapods and showed them how to program their mobile apps. Through that, students worked on their soft skills.

School No 5	High School Markantun de Dominis, Rab
How many students took part in the LfE activities?	50
How many teachers took part in the LfE activities?	4

Work carried out:
The aim of the project was to develop the passion and interest for learning within the STEM field through an interdisciplinary approach. These are long-term goals for which we needed technical support from the LfE project.

- Connecting theoretical concepts with practical activities through developing and
- strengthening STEM literacy. Skills in STEM literacy are advantageous for students and the application of these skills is also transferrable to the local job market, which reinforces the association between the School and the local community.
- Preparing students for the jobs of the future; strengthening the skills of critical thinking and efficient communication; developing entrepreneurship abilities.
- Creating a functional laboratory to apply digital and other tools to create innovative projects which are presented and used in the school (and beyond) to benefit the wider local (and regional) community.
- Acquiring tablets or laptop computers for all students and teachers in the project so that they could follow classes through digital books and other class

materials; use digital tools and educational platforms; have access to online literature and books (which has both ecological and financial benefits for parents, so students do not need to purchase physical books) – aimed at the realization of set tasks and goals in the project activities. The computers in the school's Informatics classroom are outdated and insufficient for the needs of the project. In these conditions, it is difficult to realize the intended outcomes of the project, as well as participate in online global digital activities.

- Connecting virtual classrooms with other schools in Croatia and the world – a virtual exchange of students, lessons, workshops (as part of the different projects the school has been conducting throughout the years).
- Activities aimed at transferring the virtual student exchange into physical exchange so that the School organizes seminars, workshops and summer schools on the island for students of all school levels (even pre-school student levels): student-educator, but also for teachers with the purpose of presenting the projects which promote the STEM field.
- Using 3D printers to create different models, appropriate materials, gifts, but also student education with the purpose of enabling access to new technologies.
- Education to work with 3D printers for teachers and students.
- Access and education using virtual laboratories with the purpose of introducing students (but also teachers) to new trends in the world.
- After the first year of education for teachers and students, the aim is to apply the gained knowledge in education and cooperation with local institutions and the community (but also with the wider education sector).

The challenge we face with fewer teachers is still the fear of using new technologies. Always the same teachers accept the challenge of using new equipment. Sometimes the solution is to start from students "digital natives" through which teachers will more easily accept the use of new technologies. Another way is to organize workshops in school (since we are an island school, we often do not have enough funds for additional education using new technologies). This project was initial springboard for organizing one such workshop in our school (for 3D printing).
The second challenge was how to start using the new technology obtained by the project. It was necessary to prepare tablets for students for work. This is where the supplier helped us with a short education and help with the preparation of tablets.

School No 6	Elementary School Blato
How many students took part in the LfE activities?	18
How many teachers took part in the LfE activities?	6
Work carried out: The results of our project are that we managed to introduce new technologies to the students, through which they had the opportunity to become familiar with something that was unavailable to them until then. We gave them the opportunity to continue their research, to dive deeper into the world of engineering fields, and to enrol in a profession in the STEAM field after completing elementary school.	

After purchasing the equipment in mid-March, we had training sessions for six teachers who are involved in the project. The trainings were interesting and challenging for most of the teachers who are also encountering this technology for the first time, but with the support of excellent educators they successfully mastered the program in order to be able to teach and mentor students.
Through the LfE project, the students were introduced to the engineering approach to work and thinking for completing the task.
The students went through the process of assembling and calibrating the robot, building an Android app to control the robot, developing basic 3D modelling skills and finally programming a microcontroller to make the robot move using code.
Students followed written instructions and links to a variety of online resources, from videos to 3D renderings of STEMI components. It was very important that they read the written instructions carefully and not skip the material. That way, if they ran into problems, they could more easily solve them in a methodical way, just like engineers do in the real world.
Through the project, students developed skills necessary for the 21st century, such as collaboration, creativity, information and digital literacy, critical thinking and problem solving. Happy and satisfied students were an indicator that they were doing something well.

School No 7	Elementary School Sveta Marija
How many students took part in the LfE activities?	126
How many teachers took part in the LfE activities?	5

Work carried out:
By participating in this project, we wanted to equip the school with state-of-the-art technology so that it would help students learn and master new teaching content. Also, we included all the students of our school in the project, thus opening up the students' view of the technological future and thereby bringing the world of technology closer to them. We decided to fully equip two classrooms and first divided the project into 3 phases in order to orientate ourselves on the acquisition of the necessary equipment as easily as possible. In the first phase, we focused on the procurement of interactive screens and VR glasses.
The project included a number of activities and was carried out through regular classes, primarily in the subjects of Computer Science, Croatian language, Biology, Nature, Chemistry, Physics and Geography, and in extracurricular activities using modern technology. However, in addition, teachers use the acquired equipment in other subjects as well, depending on the topic being covered. We equipped 2 classrooms with the acquired equipment, one of which was intended for subject classes and the other for classroom teaching. We have also equipped cabinets with quality equipment that can be used by all school employees who need it. The main goal of the project was to motivate students for STEM fields and bring them closer to regular and additional teaching content, and to make learning easier and more interesting, which we fully achieved. Also, with the help of the acquired devices, we connected STEM content with social and humanities areas.

When we summarize the whole project, we have equipped our school very well, and without this project we would not have been able to do it for the next few years. Thanks to the project, we acquired 2 interactive screens, 4 sets of VR glasses, 4 sets of MTiny robots, 4 Codey Rocky robots, 14 desktop computers that include a monitor, central unit, keyboard and mouse, then a Cameo hobby cutter, 2 A3 size printers, a Canon digital camera and plotter. As a result, we have fully equipped our IT classroom, and now every student has his own computer on which he can work carefree.
Teachers use the acquired equipment every day, especially in subjects from the STEM field. Interactive simulations are used every day on interactive screens and VR glasses, which present students with details, individual phenomena from nature, internal organs and the like. Also, Phet simulations are used in physics and chemistry classes, we virtually visit villages, cities, states, museums and cultural sights. Due to financial impossibility, the school cannot perform all the experiments provided for in the curriculum, so in that case the screens and glasses helped a lot. Interactive screens completely raised and therefore improved the quality of teaching, while students became active participants in the teaching process. The novelty is that VR glasses are used almost daily in classes as one of the main teaching aids. The teachers completely replaced the pictures from the textbooks and took the students to virtual reality using VR glasses.
By using the equipment, teachers and students developed their information and communication skills and adopted new habits. Due to the large selection, students and teachers now have the opportunity to choose different digital technology that they want to use in class, and thus get to know different ways and methods.
By introducing technology into the daily teaching process, students learn in a fun and interesting way and have replaced traditional teaching with research. Thus, the textbook ceased to be the main source of information, and was replaced, expanded and supplemented by technology. With modernization, students from rural areas have the same opportunities as students from urban areas. They are actively involved in the daily process, think critically and are actively involved in classes. They also easily access all information, have become independent and resourceful, and have developed creativity using multimedia content.
Using the acquired equipment, the teachers improved and enriched their teaching process. Nowadays, it is almost impossible to conduct quality teaching without digital technology. This is precisely why they are used in our classes every day. All teaching lessons can be visualized with the help of digital technology, and in this way, students absorb numerous facts and information in a better way. This way is very accessible and attractive for students, and they perceive things more easily. The students thus became more creative as a result, because instead of one photo in the textbook, they see several different examples of it.

School No 8	Elementary School Ivana Martinovića, Štitar
How many students took part in the LfE activities?	68
How many teachers took part in the LfE activities?	5
Work carried out:	

By implementing the project itself, the school acquired the necessary equipment: a cutting end engraving laser, a projector, a desk computer and a display, speakers and 9 laptops. After the arrival of the laser, in cooperation with Sinestek company from Slavonski Brod, 12-hour training sessions were held for teachers. As a part of the education, teachers have learned to manage Inkscape vector drawing program in which templates for laser cutting and engraving are created. Furthermore, the teachers got acquainted with all the control and management functions of the laser.

Then the teaching staff, with the help of the remaining purchased equipment, held training sessions in duration of 25 hours which included the participation of 68 students from all 5 sections of the Student Cooperative. The students mastered the basic program options which helped them in managing basic digital skills for editing graphic templates. Since independent vector drawing is extremely demanding and requires additional training, the students searched web sources that contain completed templates and downloaded and adapted them to our needs.

Specifically, we are talking about jewelry models with which the Student Cooperative presented itself at this year's county fair. After mastering the Inkscape, the students imported the edited templates into the RDWorks program which is used to transfer the file to the laser. The last step is to start the laser and cut the imported templates. The most skilled students handled the laser under the strict supervision of the teachers.

The cut models are decorated with acrylic spray paint and connected with links, hooks, laces which ultimately resulted in finished products i.e. earrings, bracelets and jewellery stands. The creation of all products contributed to the development of students' motor skills which increase their sense of competence needed for professional occupations.

Teachers at our school have been trained in the Inkscape program use and the use of laser cutters and engravers. At the end of the training, the teachers learned to make different products on different materials (wood, leather, plastic). They also created didactic tools for classes.

We also find innovation in the development of teachers' digital skills, i.e. the use of new programs for vector drawing that neither the students nor the teachers themselves had encountered in their previous work. In addition, the production of inventive products encouraged us to participate for the first time in the county fair of student cooperatives, which is of a competitive nature.

Furthermore, the acquisition of ICT equipment required the adaptation of work methods and teaching strategies, i.e. the transition to pedagogical-innovative aspects of teaching such as: learning through research, collaborative work in interdependent sections, development of IT literacy with the use of advanced technology that supports inventive forms of learning, successful use of what has been learned in the field of crafts and technical professions.

School No 9	Elementary School Vođinci
How many students took part in the LfE activities?	30

How many teachers took part in the LfE activities?	5

Work carried out:

Elementary School Vođinci implemented a project aimed at promoting the use of photography and film as powerful communication tools. Through a new extracurricular activity and regular classes students are engaged in fun tasks and games to recognize quality media content and enhance their creative imagination. The project equips a classroom with 10 laptops, 3 cameras, and 1 color printer, fostering the development of digital competencies. Five teachers from various areas have completed necessary training in photography and video processing, receiving certificates of education. The training addresses ethical considerations in media use. Teachers and interested students will be proficient in handling digital devices and licensed programs.

The project facilitates the creation of educational materials by students, aiding those facing difficulties and providing additional challenges for gifted students. The acquired technology enables the school to showcase activities online. The overall goal is to integrate linguistic, artistic, technical, and IT skills into students' learning experiences.

2.3 Cyprus

School No 1	Dimotiko Sxoleio Kampou-Tsakkistras – Kampos Tsakistras Primary School
How many students took part in the LfE activities?	4
How many teachers took part in the LfE activities?	1

Work carried out:

The equipment acquired by LfE funds supported the implementation of interdisciplinary projects conducted within the school, as well as the collaborative interdisciplinary projects carried out in cooperation with other schools in Cyprus, Greece, Portugal, Finland, Italy, and Bulgaria, but also in the daily school routine.

Specifically, the equipment has been integrated into the learning process to a large extent from the moment it was acquired. Specifically, the interactive touch screen is used daily in all lessons for presenting educational material and sharing learning projects produced by the students.

The involvement of students and school staff in the implementation of the program is significant, and the project has greatly affected the daily school routine. The acquired equipment is utilized daily in various subjects of the Analytical Program.

The biggest challenge faced by the school in the program's implementation was the fact that it is a single-teacher school. This meant that the responsible educator had to handle all the issues related to obtaining quotations for the equipment, communicating with specialists and companies for consultancy, communicating with the local School Board for equipment purchase approval, making the final decision on equipment purchase, traveling from the village to companies located in urban centers to collect the equipment and transport it to the school, installing the equipment in cases where it was not included in the purchase agreement to be done by the company, providing training for the use of devices and their integration into the learning process, as well as many other issues.

The school's participation in the pilot implementation of the Learning from the Extremes program had a tremendous impact on the school's overall performance. It was a powerful transformative experience that significantly helped the school to:

- Upgrade its digital infrastructure.
- Reshape teaching and learning routines through systematic and daily integration of digital technologies: The school's educator has significantly improved her digital skills through participation in training activities, support received from the national project management body, and interaction with colleagues from other participating schools. Additionally, her teaching effectiveness has improved as she sees that the integration of digital technologies acquired through the program enhances and facilitates student learning in ways that traditional teaching methods couldn't achieve. She now has the opportunity to visualize complex concepts for her students by utilizing a variety of sources and tools (internet, virtual and augmented reality devices, etc.), easily communicate/solve queries/share educational materials with the children during and outside school hours, create opportunities for real collaboration through shared student work files or folders for resource sharing

related to a specific topic, provide opportunities for interaction and peer assessment among students, and much more. She often feels that technology acts as a second teacher in the classroom, greatly facilitating her educational work, especially considering she has to simultaneously teach children of different ages and manage other aspects of the school's smooth operation.

- Transform its culture into that of an open-school institution. A culture of outwardness and collaboration, with its central philosophy being that we learn by participating in the real world and by creating networks of knowledge and collaboration. Specifically, the project has provided the educator and the students with the opportunity to communicate and collaborate with scientists and specialists from all over the world, as well as with other schools in Cyprus, Greece, Portugal, Finland, Italy and Bulgaria.

School No 2	Dimotiko Sxoleio Potamias – Potamia Primary School
How many students took part in the LfE activities?	53
How many teachers took part in the LfE activities?	9

Work carried out:

In summary, the equipment served as catalysts for transformative learning experiences. They empowered students to become digitally competent, active researchers, allowed for the creation of impactful digital presentations, facilitated responsible internet use, and seamlessly integrated technology into daily lessons. The combination of hardware, software, and a strategic approach contributed to a project that not only enhanced digital skills but also leveraged technology to address real-world issues within and beyond the students' community.

Students using the equipment provided by the program (tablets, computers and bee bots) also learned basic programming. They used game like software and enjoyed the process.

The students, by using the equipment, became more independent learners and learned to cooperate and help each other in their effort to acquire new knowledge. They used a range of software to practice what they learned. They used the internet to solve questions and find information.

The seamless integration of technology into the learning environment became a catalyst for transformative learning experiences, as evident in the multifaceted approach towards promoting independent learning, collaborative endeavors, and real-world applications. Through the availability of tablets and computers, students not only engaged with a diverse range of educational software, tailoring their learning experiences to individual preferences and pace, but also utilized the internet to embark on self-directed inquiries, fostering a sense of curiosity and ownership of their learning journeys. This culture of independent exploration naturally extended to collaborative efforts, as students, equipped with technology, cooperatively assisted each other in understanding complex concepts and jointly explored educational software. Moreover, the internet emerged as a valuable tool for both individual research and collaborative ventures, enabling students to solve questions, access

diverse information, and critically evaluate online content. The routine integration of technology into daily lessons further solidified its role as an integral part of the learning environment, reducing initial apprehensions and promoting a positive attitude towards digital tools. This integration, beyond traditional learning, facilitated real-world applications where students could apply knowledge gained through internet-based research and software exploration to practical scenarios, reinforcing the interconnectedness between classroom learning and real-world relevance. In summary, the comprehensive integration of technology not only enhanced independent learning skills but also fostered a culture of collaboration and peer support, underlining the dynamic platform that a diverse range of software and internet-based resources provided for exploration and inquiry.

At the beginning of the program teachers had many different digital competences level (for using technology and for incorporating technology in their teaching). All the teachers in the school took part in the program and cooperated in helping each other to overpass problems with the use of the equipment (hardware), exchange ideas on how to use them in their teaching (observing lessons, coteaching) and getting to know a variety of software. Teachers' meetings were often used for teacher training sessions and exchanging ideas on the better use of technology. Changes were made to the daily school schedule so that teachers would visit each other's class and observe or coteach lessons with the use of technology.
In essence, the program's success lay in its collaborative and intentional approach. Teachers evolved into a community of learners, collaboratively addressing challenges, actively engaging in professional development, and collectively contributing to the design of a dynamic and technology-enhanced learning environment.
The aim of the project was for the students to investigate the relationship among the people of the two communities living in their village (Greek Cypriots and Turkish Cypriots) using technology acquired from the LfE Project funding. The students used the technology purchased (personal devices and network equipment) to find information on the internet, to take pictures/evidence around the village and conduct interviews with people from their village. They were trying to find the reasons that helped people from the two communities to live in a peaceful way in their village, something unique in Cyprus. At the end the students prepared digital books and presentations of their findings. They presented their findings in front of a gathering at the village's main square. They were applauded by the people who participated in the event. Their work is also posted on the school's and community's home pages.

School No 3	Dimotiko Sxoleio Agias Varvaras – Agia Varvara Primary School
How many students took part in the LfE activities?	211
How many teachers took part in the LfE activities?	23
Work carried out:	

According to the initial plan that was devised, described in detail in our initial proposal, two major themes guided the whole process of the project; as a reminder, these were the following:

1. *"Geology and Seismology in our local area – Opening up our school and transforming it into a learning hub for life-long learning for our local community" and*
2. *"Programming and Robotics: Helping students become digitally competent citizens of the future".*

The two themes guided us in further developing several separate activities, all targeted towards achieving the aims set up for each theme but also guiding subsidiary processes like the development of a comprehensive professional development plan for the teachers at the school and the development of a more broad and specific strategy for actively engaging not only the parents/guardians of our students but also the local community. Technologies purchased through the LfE funding were integrated in practice for the needs of the devised activities, in a way that helped us achieve the aims of the project while helping, at the same time, our students become technologically more competent.

As far as the involvement of the local community or the involvement of the general public is concerned, members of the above groups were often invited to attend many of the events that were organized throughout the project. For example, a link to participate in the two online seminars that were organized about seismology and about the environmental impact of the local mines was sent via SMS messages to the members of our local community, in collaboration with the local community authorities. Also, students from nearby schools were also invited to take part in these seminars. Moreover, members of the local community, members of nearby communities and students from nearby schools were invited to the "*Geology and Seismology + Robotics Festival*" we organized in our school on November 19, 2023; notably, more than 350 people attended the event. Members of the above groups were also invited to attend a number of informative speeches that were organized at our school or at the University of Cyprus by CPI, which aimed in informing the attendees about the ongoing processes and the overall development of the project.

Our main effort was to open-up our school to collaborations with the broader community, breaking up thus what is often mentioned in the bibliography as the notion of encapsulated classroom and eventually transform our school as a learning hub for offering authentic learning experiences to our students and promoting life-long learning not only for them but also for members of our local community.

The challenge was to establish and sustain several and fruitful collaborations with stakeholders related to our two themes (Geology-Seismology and Programming-Robotics). Several organisations (e.g., universities, government bodies, societies, groups) or individuals responded to our quest for collaborations. Based on these partnerships, and in close collaboration with specific individuals from these organisations, a detail action plan and discrete activities for each theme of the project were devised. Hadn't been for these collaborations, we wouldn't have been able to achieve our goals for opening-up our school.

The technologies and services that we have purchased made an immense impact on the way the specific lessons and concepts are approached and taught. We have had the opportunity to use innovative and state-of-the-art technologies that would

otherwise be extremely difficult to acquire. Having for example a seismograph, 20 micro: bit, Lego Robotics Sets and digital microscopes, provided us the opportunity to design and implement lessons about geology, seismology and programming in ways that we were able to take full advantage of what technology has to offer for students. Our students realised this right from the beginning of the project, and we feel that they are grateful and extremely lucky to be given these opportunities. As teachers, we feel that we have indeed made a difference and motivated our students in ways not otherwise possible.

School No 4	Soleas's Lyceum
How many students took part in the LfE activities?	25
How many teachers took part in the LfE activities?	10

Work carried out:
Since Lyceum Solea joined the LfE Program, two working groups with different objectives were formed and operated. The first focused on determining the technological tools to be purchased, while the second addressed the pedagogical dimension of our initial proposal. Simultaneously, the second group designed how these tools should be utilized to add value to teaching practices, achieving the goal of improving learning outcomes and developing specific digital skills. Meanwhile, the entire project team developed a plan to open the school to the local community. For this reason, collaboration was sought with various entities in the Solea region.
Additionally, it is essential to note that the technological tools purchased through the LfE Program were integrated into daily teaching practices, facilitating educators' tasks (lesson planning, implementation, assessment of learning outcomes) and assisting them in achieving teaching objectives within the framework of Detailed Programs (e.g., using VR glasses, interactive touch screens, etc.).
Through our school's involvement in this project:
Two (2) interdisciplinary projects were developed by students, guided by educators, with durations of one and three months, respectively.
The equipment purchased with the financial resources of LfE was used in daily teaching practices, resulting in better learning outcomes and the development of learning motivation, as revealed by the evaluation.
The school's technological equipment and infrastructure were utilized for the training of residents in the Solia area.
The equipment was used for student assessment in the classroom, employing alternative forms of evaluation.
Educators themselves designed educational content, and a digital material bank was created.
It is understood that the utilization of technological equipment and its continuous enrichment will be an ongoing practice. The school unit will follow this practice in the coming years with the ultimate goal of improving learning outcomes and implementing the plans of the Ministry of Education, Culture, Sports, and Youth for digital transformation. This effort aims to create capable digital students, educators, and school units.

From the beginning, we had identified and focused on the pedagogical and technological challenges we would face. The most significant challenge for the project coordinator at the school team level was to engage the entire school staff in this process. Participation would ensure the acceptance of the plans, their active involvement, and ultimately the utilization of the Program's capabilities to transparently demonstrate its added value in teaching practice, through the improvement of learning outcomes, boosting student interest in achieving educational goals, etc. Therefore, educators needed to be convinced of the usefulness of the project.

Another pedagogical challenge was how to integrate digital skills into teaching practices, given that detailed subject curricula did not include such a dimension. Hence, educators had to be supported in this endeavor through appropriate training.

An innovation for our school unit could be considered the process followed for opening the school to the local community. Through collaboration with various entities, as previously mentioned, a series of free courses for residents over the age of 55 was scheduled and started on December 21. The goal was to acquire digital skills necessary for using mobile phones.

It is important to emphasize that this effort will continue in the coming years in other thematic areas of the digital world and beyond.

School No 5	Gymnasio Agias Varvaras - Ayia Varvara Regional High School
How many students took part in the LfE activities?	450
How many teachers took part in the LfE activities?	50

Work carried out:

Most of the work carried out was addressed according to the time each equipment was bought. So, the Wi-Fi installation which was done first was also the most widely used in the school by students and teachers alike. While other equipment that were bought later due to the time constraint were used less

We grouped students according to their village to do the projects we placed in the museum. For each project there was a student taking the video or photos, another one was writing the interview, another student typed it in Word, another person was translating in English and other one made the final video using a video editing software like Movavi or Movie Maker etc. They were also projects that involved teams of students, especially the interdisciplinary ones.

At the entrance of our digital Museum, there is a catalogue of the students that worked on each project. There are over one hundred projects from students, and they belong to many distinct categories and subjects. First, they were about the village. Then, depending on what category it was, it was displayed inside the corresponding group, i.e. if it was about the village's history it was displayed under history.

Our school is in a rural area. Therefore, Nature plays a very important part in our Digital Cultural Museum. There are beautiful locations and green forests, ancient mines etc. As a result, we invited a geologist to talk to our students about Almyras a

location at Agia Varvara, and we posted a project about Lymbia Dam and Strongylos mine at Mathiatis.

The digital competence of the school, including students and teachers, as well as the openness status was improved significantly. The Wi-Fi was used significantly throughout the teaching procedure. Laptops were used mostly in an interdisciplinary manner inside the classroom and also in areas where there was no availability of computers. A number of laptops were lent to students to do work and projects while working from home. The VR glasses and tablet were used in the Biology Lab classroom. The GoPro 360 cameras were used mainly in out-of-school activities and projects, which involved filming various areas of the communities involved. The interactive whiteboards were used mostly during the lessons of Math, Physics, History, and Information Technology (Computers). The 3D Printer was widely and extensively used during the Design and technology lessons. The Drone was one of the last equipment bought and due to the fact that we had to arrange for a flight license and insurance for the people that would operate the device (due to local law and regulations), it only saw limited use right at the end which included a small filming of our school which was included in the Digital Cultural Museum.

The main outcomes of the projects were the creation of the digital cultural museum which is publicly accessible to broader community but also the further improvement and development of 21st century skills to students, staff, and residents. School has opened to all residents of the villages, by becoming a learning hub for its rural broader communities.

The impact of technology on classrooms and teaching can be significant and transformative. The technology we purchased helped a lot in that:

Technology can make lessons more interactive and engaging for students. Interactive whiteboards, educational apps, and multimedia resources can capture students' attention and make learning more enjoyable.

Technology allows for personalized learning experiences. Educational software and platforms can adapt to individual learning styles and pace, catering to the unique needs of each student.

The internet and digital resources provide students and teachers with easy access to vast amounts of information. This facilitates research, exploration, and a deeper understanding of various subjects.

2.4 Finland

School No 1	Kristiinankaupungin kantakaupungin koulu
How many students took part in the LfE activities?	152
How many teachers took part in the LfE activities?	22
Work carried out: The project has provided digital equipment: chromebooks, iPads, 2 smartboards, 8 MakeyMakey for programming and a Ville learning system. The smartboards diversify learning. Children become more active, the OPS is better implemented. In particular, media content is now easier to produce because there are more devices. Media literacy can be mastered with the help of smartboards. Teacher-led exploration of the diverse expression of media literacy. Teachers' professional skills have improved. Teachers have received compulsory training on Ville, but they have also voluntarily trained to use Ville. Teachers have also been trained in scratch programming using MakeyMakey microcontrollers. We have introduced a tutoring scheme at our school. In this, 2-3 pupils from each of the 3rd-6th grades have been trained to support and help with the use of JCT equipment and Ville. The teacher can focus more on pedagogy. The project has been featured in the local newspaper and on the school's own social media. Teachers' digital pedagogical skills have improved. In the survey, teachers responded that they now use computers more in their teaching compared to last autumn. The number of computers increased as a result of the project. More machines are now available, so more frequent reservations can be made. The training of tutor pupils has also given teachers the confidence to use computers more. The students quickly solve the challenges presented by the computers and the teachers can concentrate on teaching. Smartboards are used in two different classes at the same time. It is easy to connect the smart board to the computer via an app, giving teachers a large touch screen to engage students.	

School No 2	Laihian kouluverkosto/ The school cluster/ network of Laihia
How many students took part in the LfE activities?	350
How many teachers took part in the LfE activities?	27
Work carried out: We applied the LfE project as a cluster of seven schools (Laihian yhtenaiskoulu, a single-structure basic education consisting of six primary schools and one lower secondary school). With the help of LfE funding, we bought 77 Chromebooks altogether. Chrome books were divided between the participating schools by the number of students	

We have bought and put the devices into use and organised education to both teachers and students. Education for teachers was carried out as "Pedagogical Cafes", short educations in between lessons in specific topics regarding the use of the newly purchased Chromebooks served with coffee and biscuits. We also created video instructions for teachers to watch if wanted and when needed and most suited. This way we were able to educate and involve teachers in this project without taking too much of their free time. As we have knowledge and know-how in our digitutor-team, we did not need outside educators. Some schools already had Chromebooks before and were familiar with them, therefore teachers were educated in organising online exams and efficiently benefiting different features of Chromebooks. For other schools these new Chromebooks were their first, so the education regarded the simple basics of using the new devices. Students were educated in using Chromebooks during lessons by teachers or other older students. With the provided education there has been no difficulties in using the new Chromebooks. The new devices bought during the project make it possible to efficiently and proficiently use information technology as part of teaching and learning.
This project has made it possible to acquire more devices to be used by teachers and students daily. As a result, the day-to-day working runs more smoothly with up-to-date and functioning teaching devices. The new devices also allow teachers to increase and broaden the use of digital teaching and learning material, digital learning platforms and online exams and quizzes. New devices also facilitate effective communication and collaboration between teachers, students, and parents as well as other operators. Teachers can more easily use email or other messaging apps and video conferencing tools such as Google Meet to communicate with colleagues, parents, and students. Teachers are also able to more efficiently utilise Google Classroom and portfolio learning, use online exams and create and share digital material. Being able to switch to digital platforms reduces the need for paper documents and thus paper waste.

School No 3	Matti Lohen koulu
How many students took part in the LfE activities?	260
How many teachers took part in the LfE activities?	6
Work carried out: The school created a technology club, 20 students from grades 1-4 participated in this at the beginning. We started the club by forming groups, we distributed iPads and Lego Spike prime building sets to the groups. The use of technology has had a big and noticeable impact on the daily life of the teachers working on our main project. The equipment purchased for use is modern and easy to use and very well suited for teaching. The devices inspire you to look at teaching from a new perspective and challenge you to try completely new things. The introduction of the devices has been a big process, but the positive effects on teaching and the enthusiasm and commitment of children and young people to work thanks to the devices cancel out the negative effects.	

The effect on our school's teachers has been positive, even though the devices do not serve the needs of the entire staff at once because, for example, iPads are not enough for a large group. Originally, this was not a plan, but the purpose was to strengthen the equipment focused on robotics and programming and through this, little by little, introduce programming to a wider part of our school's teaching. However, the devices purchased with the project money laid the foundation for the purchase of new devices, and with the other money we bought 20 new iPads in addition to the ones purchased with the project money. Other wider effects will also become visible later when we can bring the devices even more strongly to the students' awareness through small teaching sessions and presentations, and we also get teachers trained on the subject. The products made with the 3d printer have aroused great interest among the staff, and versatile projects for the needs of different subjects will certainly be made with the device. The equipment acquired through the project is available and accessible to everyone, the staff just don't necessarily have the time and resources to learn programming and robotics themselves, but training is needed for that. Our intention is to initially organize free and voluntary familiarization with the devices, and possibly also mandatory training for everyone.
The students have been able to work with the equipment in almost all grade levels. In terms of technical work, students have used devices in small classrooms in grades 3-9, in the technology club there have been students from grades 2-4, and in the afternoon club, a small part of 1-2 graders got to know robots and iPads. The students' experiences have been positive, and the equipment motivates them to get to know programming when they can build robots themselves and then generate programming code. The tool has also been used in coding lessons, but also as a differentiation tool. Technology devices can also be used as a break point for technical work or visual art classes, when you can sometimes do coding or construction while waiting for your own work to dry, for example.
You can clearly see motivation and enthusiasm in the students. Both elementary and middle school students have come to talk about 3d printing, laser cutting and other coding issues during school days and ask when they can do those jobs or if I can make my own models. We will certainly have good times ahead in technology education once we have the equipment up to date at once.

School No 4	Kirkonmäen koulu
How many students took part in the LfE activities?	168
How many teachers took part in the LfE activities?	6
Work carried out: For a long time, Finland ranked first in international literacy surveys. However, poor reading skills have become more common these days and the number of good readers has decreased. The aim of the Reading with the Grannies project was to promote and develop the 3rd and 4th grade students' reading skills on three areas: reading out loud, reading comprehension, and increasing students' vocabulary. The project was implemented remotely.	

In schools, there are few opportunities to organize a tranquil one-on-one reading space separate from the class for individual reading sessions. Our solution was to work remotely. Reading grannies read at the City Library, while students read in creative space arrangements at school. The Reading with a Granny is therefore also an effective way of organizing regular reading sessions with students in terms of time management. The sessions take only two lessons at time, and hence the teacher does not have to organize the whole school day around this project and take the reading grannies into account (coffees, socializing etc.) more than the agreed time.
There are quite a few these kinds of reading projects in Finland and elsewhere, too, but our idea, and hence the innovation, was to conduct the project remotely which suits this era quite well, too.
Students are interested and motivated to use the video conferencing tools and at the same time, in general, they were getting more familiar to using of the device, too, and reading becomes hence something “new and exciting”, as we learned throughout the project. It was a simple and easy to adopt digital idea to implement, and nevertheless the impact was reasonable.
In the project, the devices have been used as tools and not e.g. as ends themselves.
Instead of driving long distances to the project schools we have implemented the idea remotely. Reducing driving saves nature.
With this project we were able to offer reading opportunities for all 3rd and 4th grade students in our area.

School No 5	Toholammin yläkoulu
How many students took part in the LfE activities?	151
How many teachers took part in the LfE activities?	21

Work carried out:
The project consisted of purchasing Computers for one grade and enhancing our network capabilities. Chromebooks were purchased and distributed to ali our 7th grade students in the beginning of February 2023. The Computers have been since utilized to varying degrees in different subjects.
The project resulted in educational changes in lesson planning and execution. The use of new Computers has enabled more versatile teaching methods. Lessons have become more diverse, media literacy has begun to improve and personal Computers have also improved the technical skills of the students and teachers. Teachers can pian their lessons around the possibility of students using their Computers for many kinds of things. Cooperation between operators outside our school has increased. Pupils use different learning platforms, e.g. Classroom in most subjects. Group work has gained new dimensions with digitization; students know how to share their work for editing together and use images, videos, artificial intelligence, etc. in their presentations. Differentiation has been made easier within the class. Students who need more support can be assigned with a reduced amount of work or easier exercises while quicker students can continue to do more challenging work. There are also students who are unable to attend normal classes. They have had the opportunity to participate in teaching from another classroom or from home.

Cooperation between teachers has increased, especially among the teachers of mathematics, where there are several teachers. Lessons are planned together and even exams are made together.

School No 6	Joutsan lukio/ The high school of Joutsa
How many students took part in the LfE activities?	64
How many teachers took part in the LfE activities?	16
Work carried out: The outcomes of the project are: • purchasing and installing eight modern smart screens (instead of planned two, because we overestimated the cost originally) • organizing workshops, where we were able to train the teachers to use the smart screens in their teaching • organizing a few high school pilot courses where the GSuite Classroom environment was utilized in new ways thanks to the new screens • purchasing a 3D printer and training two teachers to be able to use the printer • 3D printer was used successfully in co-operation with the university when in total 7 students participated in the university course on 3D-printing (one week in April) • we have had a few smaller workshops on 3D-printing for our own students (3D mathematics) • the new smart screens have also already been used at ▪ parents' evening ▪ international co-operation Teachers have been able to implement the smart screens in their teaching without any major issues. It has already been estimated, that the smart screens make remote teaching easier. The technology has made a notable difference in the classroom.	

School No 7	Brahe
How many students took part in the LfE activities?	23
How many teachers took part in the LfE activities?	5
Work carried out: With the help of the project, we brought one class to an excellent level in terms of digital equipment, and it enabled hybrid teaching and distance learning for a wider audience. The quality of distance education is also improved with the help of the project. The smart board, laptops and audio equipment can be used by other actors such as The Natural Resources Institute Finland. They organized a robotics seminar in the space in June. About 30 people from several different countries participated in the seminar.	

Students' modern working life and interaction skills were/are strengthened, commitment to studying is improved when the work tools are appropriate and modern, which in turn increases motivation to study. With the help of the project, teachers' skills are developed, the quality and accessibility of digital tools are improved, and teaching is diversified. With these digital tools, common subjects such as languages (English and Swedish) and mathematics can be taught visually in the classroom. The smart board supports the teaching of mathematics, because it can be used to illustrate the progression of the calculation step by step for everyone at the same time. Audio equipment, on the other hand, enables the diversification of language teaching with the help of electronic materials. The smart board can also be used in the teaching of vocational subjects, and it makes it easy to involve students in doing things. Functional equipment also enables hybrid teaching even better. In this case, some of the students can be present in the teaching space and some of the students participate remotely. Proper digital tools guarantee a more equal teaching even for remote students, when it is possible to participate in the teaching via a smart board and the sound system also works.
The smart board and laptops are actively used in teaching. Both the teachers and the students are content with the functioning equipment. By using the smart board, it is possible to make teaching more versatile and interesting, e.g. by showing videos so that the students actually can see and hear the video.

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2.5 Greece

School No 1	Kindergarten of Malona, Rhodes Island
How many students took part in the LfE activities?	22
How many teachers took part in the LfE activities?	4

Work carried out:

Our school, Kindergarten of Malona in Rhodes, had the honour and pleasure to join the LfE project, and thanks to it, our small remote school was equipped with new, complete technological equipment such as an interactive whiteboard, two laptops, a printing machine with its consumables for 2 years, a 3D printer and a complete desktop with its peripherals (e.g. monitor, keyboard, mouse), for the needs of the administrative work of the kindergarten. Trying not to spend any money from the 1st installment in installation costs, helped us to purchase a tablet that was not included in the initial plan but it was necessary to the implementation of the project.

The young students through the project entitled "Wander around and explore castles of Rhodes", developed skills and acquired not only historical, but also digital knowledge by using the technological equipment installed in the kindergarten. Specifically, they:

- Learned how to organise, file and print information they gathered through internet research,
- Acquired basic knowledge of how to use the Internet in a right and safe way.
- Designed digital activities by using digital tools.
- Understood that ICT can be used both as a tool for learning as well as for entertainment.
- Learned the potentiality of AI.

Apart from the proposed action plan, however, our vision was the overall integration of ICT in the educational everyday practice. Aiming at supporting educational planning and promoting student-centered learning, making with the students' full use of the new digital tools, designing new cross-curricular and interdisciplinary activities, during both last and current school year. New educational materials such as digital games, interactive worksheets etc., were also designed, deploying the potentials given by the new technological equipment.

School No 2	Primary School of Giannitsochori, Zacharo
How many students took part in the LfE activities?	34
How many teachers took part in the LfE activities?	6

Work carried out:

One of the main reasons this program was proposed and implemented was because it could be approached interdisciplinary, as it was linked to the courses of language, mathematics, physics, history, geography, Art and Skill Labs. We have managed to be the link between all the sciences, their tools, their history and their philosophy and offered plenty of space for students' involvement in activities of different

interests and inclinations. Thus, engaging with astronomy at our school and its connection to both science and art resulted in increasing students' interest in them. In addition, science and technology coexist and benefit culture. Having performed the above actions under the astronomy program and utilizing the equipment on a daily basis and during the teaching process, pedagogically innovative aspects of the project were developed below:

- Opportunities to build scientific knowledge in the fields of not only of astronomy but also of STEAM in general: science, technology, engineering, arts and mathematics.
- Multiple opportunities to cultivate 21st century skills, such as problem solving, critical thinking, cooperation and creativity.
- Rich opportunities for social interactions and practical experience, the practical learning approach with activities guided by students' participation and interest and no previous background in astronomy or STEAM.
- Opportunity to develop students' emotional intelligence through the cultivation of empathy.

The technological equipment installed in our school has helped us to implement the following actions:

- Observing planets and their movement on an interactive whiteboard.
- Star observation through a robotic telescope, astrophotography and creation of work sheets with this material.
- Observation of stars through applications such as Skyview that has been installed on every tablet with the purpose of linking astronomy to mythology (constellation names, myths, etc.).
- Projection of space films, through a projector on a screen, in the courtyard of our school (Action Open to the local community).
- Implementation of a shadow theater performance entitled "The Karagiozis Astronaut" using the sounds equipment bought.
- Solar observation actions and related experiments.
- The phases of the Moon.
- Setting the IT laboratory for better teaching of the IT course.
- Daily use of the technological equipment available in each classroom during the courses by both teachers and students.
- Introducing students with virtual reality through virtual reality glasses (VR) and tour at a space station with zero gravity.
- Use of technological equipment and microphone installation to improve relationships between students and cultivate the sense of "belonging" through traditional dances during breaks.
- Getting to know the constellations that are always visible, connection to Greek mythology and their depiction. Construction of a self-made projector with simple materials (STEM activity).
- Connection of Astronomy with Art -Study of Vincent Van Gogh's "Starry Night" painting.

School No 3	Primary School of Ereikousa, Kerkyra island

Members of School Network (if applicable)	(Kindergarten of Ereikousa)
How many students took part in the LfE activities?	4
How many teachers took part in the LfE activities?	2

Work carried out:

According to our schools' action plan and with the funding received so far, our purchases included the necessary tools to start our action. In particular, we considered that tablets, computers and a printer are valuable tools for the implementation of our action plan, which is related to recycling and includes robotics activities. We initially used tablets and computers to research recycling initiatives and best practices. We researched what other schools or organizations have done to implement successful recycling programs and used this information to inform our own action plan.

We used tablets and computers in particular to collect data on the recycling program, such as how much waste is diverted from the landfill, how much recycling is collected, what materials are recycled, and marine pollution.

In this context, we managed through the laptops to contact the Environmental Protection Consultants from the organization ''METOPI'', to arrange a visit to our school and to send us their action about which the students were also informed. As a result of this communication, they came to the island and to our school. They spoke to the teachers and students about the pollution of the sea waters by oil inputs and even carried out a preparedness exercise at the port of Ereikousa, where together with the residents of the island (members of the local community and permanent residents) they placed floating barriers and sea cushions in the sea in order to contain the oil at the point of spillage.

We also managed to communicate with the Municipality of Central Corfu and the Diapontian Islands, specifically with those responsible for cleanliness and recycling issues, and we held an online meeting with students to inform them about recycling issues.

Finally, we created interactive presentations and games that helped students learn about the different types of materials that can be recycled and how to sort them correctly. In particular, with the valuable help of the tablets, we created a recycling simulation in a Scratch Junior environment. Scratch Junior is a programming language designed specifically for young children to learn programming concepts and create their own interactive stories and games. Creating a recycling simulation in Scratch Junior involves designing the user interface and programming the logic behind the simulation.

We did not encounter any particular difficulties in implementing our action plan, except perhaps the delay in receiving the products we had ordered, precisely because of the remote location of the island of Ereikousa. Again, however, this delay was not a significant factor, so that it led us to change our initial plan.

Initially, the teachers of the Ereikousa Primary School and Kindergarten, through the purchase of laptops and a printer for our schools, benefited to the fullest, as they used these devices to prepare lessons, create presentations and find online resources on

the internet to support their teaching. Computers have therefore enabled teachers to create visually appealing presentations, which in turn can keep students engaged and capture their imagination about the subject through lesson plans, teaching materials and instructional videos.
Teachers were also able to contact institutions related to the subject of the action plan implemented by our schools for the Learning from the extremes (recycling) project, so that they could travel to the island and come to our school to make presentations for students or organise online meetings.
All of the above were key factors in making teachers feel more effective and efficient in their work, saving time, improving their teaching materials and providing new opportunities for communication and collaboration.

School No 4	Primary school of Anopolis, Sfakia, Crete Island
How many students took part in the LfE activities?	14
How many teachers took part in the LfE activities?	7

Work carried out:
Through the LfE Programme we have achieved the following in our remote and small school: we have been equipped with interactive whiteboards through which the daily teaching practice became more interesting, direct and full of new knowledge. We were the first in primary education school in Sfakia to have acquired a 3D printer. The computers are now assigned one to each student, during the time of teaching Computer Science. The teachers' office has acquired a reliable desktop PC, with UPS and a large multifunctional printer, both for the work of the teachers and for the administrative work of the school, but also in the service of the community, which is often the case. The other desktop PC was placed in our large classroom in order to connect wirelessly to the Teachers' Office's multifunctional printer, so that the teachers can be work - saving time to complete tasks, considering the small space of our office. Also, robotic kits were purchased for all grades.
Existing PCs' software were upgraded to make them more efficient. In addition, 4 UPSs were placed.
The aim of our project was an open school not only for the local community but to the world in general, due to the school's distance from any cultural and heritage event or attendance at theatre performances, which would require hundreds of euros, which is not always possible. Because of our school particularity, each teacher (two in total) has three grades to teach at the same class, there is not enough time in order to achieve the additional required practice of our students in the subjects taught. With new technologies and the availability of all these educational games give the opportunity to both sides to achieve the didactic and socio-emotional goals of learning.
Also, we were able to connect existing tablets to the school network -giving the opportunity- for our students to search for information related to the taught topic, with guiding at first and then by themselves, feeling the joy of discovery and success, identifying the dangers of the internet, but also enjoying the diversity of knowledge and resources.

Pedagogically, we combined the student autonomy with the required responsibility for the proper management of technologies, always trying to have time as our ally, with the introduction of our students to a deeper knowledge of technologies, since without digital education, the citizen of the globalized village we live in, is without formal and essential qualifications for the labor market.
We opened our school to neighboring schools. The students and teachers familiarized with the equipment, we had classes together interactively, seeking for new knowledge, and students composing it according to their needs, with very positive outcomes. Coexisting educationally in a school for all, with tolerance and endurance and composition of the opinions and teaching styles during the events organized were both challenging and fruitful!
As noted as a multigrade primary school that we are, teaching is based on teaching subjects in half-hours, therefore, the existence of laptops, interactive whiteboards is very helpful and a good assistant during lessons in the introduction and critical thinking about the new knowledge acquired. Through educational games, the acquisition of knowledge and its mental extensions now become paths of joy and quest, with the smile of success and discovery.
Technology has given us a breath of renewal and the belief that we are not ''forgotten'' by the Greek State. The school community desperately wanted to learn, embrace and accept the challenge for the new and innovative, participating and not left behind.

School No 5	Junior high school of Feres, Evros
How many students took part in the LfE activities?	16
How many teachers took part in the LfE activities?	6

Work carried out:
This project was aimed to bring school students closer to the analysis of the local environmental and cultural issues such as religion information, by introducing them to the use of Geographic Information Systems (GIS) and geospatial data handling. In that way, students improved their computer skills but also their awareness of their natural and anthropogenic environment. More specifically, we have adopted the use of open and free GIS software **QGIS**, as well as data handling software LibreOffice. Also we used a webGIS apps (such as the climate engine and dynamic world apps) to handle, view and analyze satellite environmental open data (temperature, rainfall, vegetation, drought index and fires) around the area of the school.
Regarding the pedagogical aspects of the project, we applied innovative teaching approaches incorporating the development of geographical skills, spatial thinking, data analysis, environmental awareness and technological innovations. Moreover, students were able to develop soft skills like co-development projects, group thinking, knowledge sharing etc. We used the computers bought from the project as well as the manual of the QGIS and the relative teacher's presentations.
The project combines hand-on training on digital applications and practice for data collection, analysis and presentation. Such combination is unique, since it offers young students a better understanding of their environment and, at the same time,

they understand how technological solutions may contribute to the improvement of everyday life. Thus, students become aware of various environmental problems in their area and globally, and they get involved in environmental monitoring practices. Our students improved their ability to search for scientific information and datasets, they got involved in data analysis and they performed their own scientific project. All of these skills, along with the ones described above, are of great importance for students in remote areas, as they rarely have the chance to participate in a program of non-formal teaching and improve basic skills for their future careers.
The technological equipment purchased, as well as the broadband internet connection throughout the school unit, were very useful to complete the project. They will be necessary for the continuation of the project in the coming years with new students, as well as starting new projects by having students working in the new dedicated Project classroom.

School No 6	Primary School of Chalandritsa
Members of School Network (if applicable)	(Primary School of Leontio, Primary School of Farres)
How many students took part in the LfE activities?	85
How many teachers took part in the LfE activities?	7

Work carried out:
We are a network of 3 Primary Schools in the Municipality of Erymanthos, in Greece. The main objective of the project was to get to know local places of cultural interest and to promote them through technology. The following places were selected: Chalandritsa Mycenaean Settlement, local Byzantine Temples, Dam of Peiros-Parapeiros near Farres, Step of Saint Andrews in Leontio, etc.
Implementing the project contributed significantly to our main goal, which was transforming our schools to “modern schools open to the community”. Our students felt more the sense of belonging to a community greater than their small village.
The technological equipment of our 3 schools, which was outdated, was significantly upgraded. Especially in the case of Primary School of Leontio, the internet wiring installed, together with the computers and the interactive board, created a modern, fully functional teaching environment, available to the everyday work of students and teachers.
Students got to know better the local places of interest, which were not adequately promoted and exploited. Additionally, they got to know their fellow students from the other schools of the network and they participated in joint activities with them. They exchanged visits with them and became ambassadors of their own area, using the digital games they created themselves earlier in the project!
Students were familiarized with innovative educational techniques (3D printing, robotics, digital story telling) and improved their technological literacy, thus bridging the digital divide with larger urban schools.
Finally, a culture of collaboration was established among the teachers of our schools, not only with regard to teaching issues, but also in terms of the extroversion of our schools.

The project included lots of innovative aspects:

- The learning by doing technique, which means learning through experience. The students designed and implemented digital creations. They brought their ideas to life by using the 3D printer and the robotics kits. Finally, they acted out as guides to the visiting students from the cooperative schools.
- The collaborative learning. The students worked in teams not only to find information but also to build the digital activities. Some teams took on the e-books, others the crosswords and the word searches. A lot of the activities were carried out online, making good use of the equipment obtained as well as collaborative tools (eg collaborative Google Docs, collaborative book creation with Storyjumper etc).
- STEAM activities (Science, Technology, Engineering, Art, Mathematics) with the use of the obtained equipment: 3D designing and printing, guide map of the local monuments creation etc.

School No 7	Junior High School of Goumenissa, Kilkis
How many students took part in the LfE activities?	120
How many teachers took part in the LfE activities?	6

Work carried out:

The action plan concerned the organization and presentation of a theatrical performance by the school's theater group. At the beginning of the previous school year, the theater club was created and together with the teacher in charge, the play was chosen and the rehearsals began. Gradually, the construction of the scenery began. The purpose was to emphasize the students' initiative and the teamwork spirit. Team members searched for ideas online using the new computers the computer lab was equipped with, and then they created the designs for the sets on them. According to the narrative of the theatrical play, they designed the king's castle, the valley of blue roses, the tree and the dragon, they printed them using the color printer obtained through the program, and they placed them on the stage of the event hall. There they completed it with the help of the art teacher. Then, again using the computers and color printer, they designed the show's poster, program and invitation. In addition, they used the 3D printer to print three crowns for their performance, for the roles of the two kings and the queen. From all of the above, it becomes clear that the students cultivated skills such as their critical ability, collaborative learning and digital literacy.

When the rehearsals were completed, two theater performances were given, one in the morning in the school hall for the students of our high school and the primary schools of the area, and one in the afternoon for the parents and the wider local community. For the best acoustic performance, the microphone installation and the microphones we were equipped with in the school's event hall were used. During the intermission of the performances, the new portable projector showed moments from the backstage and the preparation of the play.

The new technological equipment was widely accepted by the teachers of the school and was used from the first moment. Computers are used by all teachers who often

choose the computer lab to do group projects with their classes. Also, the computers are used by the teachers both for the creation of digital material that they use in their lessons and for their administrative tasks (informing parents, school unit evaluation procedures) as well as for posting material related to the activities of the High School on the school website. The interactive whiteboard and the portable projector are used almost every day in the lessons to enrich them and make them more up-to-date, interesting and enjoyable. In addition, in the technologically upgraded event hall, many intra-school informative and educational activities have been implemented for the teaching staff, with the use of the interactive whiteboard and the new microphone installation. Finally, those teachers who are not particularly familiar with the new technologies, gained motivation to train in this field in order to be able to integrate the new equipment into their teaching.

School No 8	High School of Samothraki
How many students took part in the LfE activities?	48
How many teachers took part in the LfE activities?	4

Work carried out:
The project yielded notable outcomes as teachers and students gained proficiency in integrating technological equipment into lesson delivery. This enhanced familiarity, led to increased student engagement, creating a more interactive and participatory learning atmosphere. The astronomy event served as a highlight, leaving a lasting impression on students, fostering curiosity, and promoting a deeper appreciation for science. Overall, the project not only equipped the educational community with modern tools but also catalyzed a positive shift in the teaching and learning experience, fostering a more dynamic and engaging educational environment.
Our vision is to expand our partnerships with other schools at home and abroad, to empower our students with knowledge and experience and to contribute to the local community with various creative groups for the youth of the island.
With the use of new equipment such as computers, interactive boards, telescope, seismograph, activities were organised and will continue to be organized with students and with other schools at home and abroad using these tools.
Our school, starting from its participation in the LfE programme, is starting to make leaps and bounds in terms of collaborations. For two years we have been participating in various projects such as eTwinning with the participation of other countries, we participate in the European Parliament Ambassadors' Schools Programme (EPAS), The Tipping Point which has to do with the professional orientation of our students. Also, we are active in Erasmus + programmes. We are also a member of the Evros Schools Network and since last year and this year we have been working on a project about refugees who came to our country after the Asia Minor disaster of 1923. Title "100 Years of Memory".
The project embraced pedagogical innovation by integrating cutting-edge technologies. The telescope enhanced experiential learning, allowing students to explore astronomy, the sky, planets and stars firsthand. The printer we were provided with contributed to a more dynamic and responsive teaching environment, fostering

a seamless flow of educational resources within the classroom. The ICT classroom, equipped with computers, enabled digital literacy and interactive lessons, enhancing overall engagement and knowledge retention. These technological solutions collectively transformed traditional teaching methods, providing a multifaceted approach to education.

School No 9	1st Vocational High School of Ithaki
How many students took part in the LfE activities?	33
How many teachers took part in the LfE activities?	7

Work carried out:
After receiving the EU funding, we managed to equip our school with innovative technological equipment far beyond the standards of schools on the island and beyond. Also, we increased the interest and participation of the children in the learning process. In addition, both their performance and satisfaction with the interactivity of the new equipment increased.
In our effort to connect the local community with the technological and pedagogical innovations of the school, in order to bring them closer to it, various actions were carried out. For the organization of these events, the school premises (rooms, laboratories, outdoor spaces) and the modern newly acquired technological equipment were used. In our vision of the Open School in society we implemented:
1) A day to inform parents and local bodies about the new educational possibilities of the school, in a meeting that ended with enthusiasm and wide acceptance of our ongoing actions with a presentation of our material.
2) An event was organized in which general education teachers and students presented the development of tasks using augmented reality technology to their parents / guardians, based on their curriculum, which the children carry out in the classrooms at school. It was carried out in the school's effort to deepen its relations with parents, through informing them about the step-by-step progress of educational possibilities in an area with limited possibilities for contact with modern technological means.
3) Finally, one last event was held, the purpose of which was to present to the local people, which is famous as the birthplace of many captains, the modern way of training the students of the Merchant Marine Division at public Vocational School of Ithaca, using a ship simulator. In this contact they had the opportunity to navigate a virtual boat by themselves with the support of the educational staff and our students.
After the addition of the new equipment, the school has acquired modern capabilities for the implementation of innovative educational programs with greater and more active involvement of our students. This is possible through the creation of works using e.g. augmented reality, which will connect the illustration of the book with the 3D visualization. Also, the construction of three-dimensional parts or sub-scale composite constructions adds momentum to learning and familiarization with objects that students may not have previous experience with. Their exploitation now lies in the creativity and familiarity of teachers and students with it.

Targeting the natural curiosity and creativity of young people, but also the will to keep up with the stormy technological development of the time through the safe environment of the school, the experience and initial learning outcomes were absolutely encouraging. Some of these were the increase of participation, understanding and consolidation of difficult units while simultaneously cultivating their self-esteem.
The results regarding young people's skills and attitudes confirmed our initial expectations of their usefulness in achieving high levels of learning. In addition, the relationships between teachers and students were strengthened through the satisfaction they received from acquiring knowledge in a more pleasant and entertaining way.

School No 10	Kindergarten of Kountoura
How many students took part in the LfE activities?	30
How many teachers took part in the LfE activities?	5

Work carried out:
For the first time in our school, all the thematic areas of our curriculum were linked around one educational activity. Until now we have not been able to implement an ICT activity. It was very important for our school, because the teaching procedure was based on experimental learning and ICT were connected to our natural environment. Two different environments that can coexist harmoniously!
As our project was about creating a school garden, we started at the end of February to build our garden and plant some seeds, so that with the return from the Easter holiday, we started with the children to use ICT.
We used the interactive whiteboard to make conceptual maps, design digital activities. We browsed the internet to find information on the species we have planted. We recorded the evolution of the project taking photos of our garden, monitoring the plants' growth. We created e-books using Storyjumper, painted on the interactive whiteboard, did many digital activities and printed our works. Finally, we presented our work to parents.
The project helped teachers and preschoolers to include ICT smoothly and congenially on their timetable.
The difference in classroom and teaching is huge. Every day, teachers use the visual aids we have purchased through the project, as they recognize the positive results in the educational process.
Everyday work gradually led teachers to design creative activities, with confidence, providing pupils with appropriate instructions on how to use software and tools. We believe that the cooperation between teachers is also very important, and the school principal supporting the teachers variously. Also, teachers gradually started organizing activities together.
It needs to be highlighted that in just few months our school openness was increased not only towards the local community, but also as a participant in a network of cooperative schools in Chania. We already planned to re-organize the school's blog and utilize programs such as "students' radio" where broadcasts will be made

(technology provided by LFE) on issues of school interest. Through LfE we can finally have the opportunity and the tools to collaborate with other schools through e-twinning projects.
In addition, we can attend online educational programs and interact with other schools and institutions through technology, defying the distance that stands in our way.

2.6 Ireland

School No 1	Kinaffe NS Swinford. County Mayo. Margaret Reilly
How many students took part in the LfE activities?	36
How many teachers took part in the LfE activities?	7

Work carried out:
We purchased 25 iPads,
We purchased Apps including Say Hi Google translate, Jolly Phonics, Edmark Reading Programme, Reading Eggs
We purchased Nat Box and upgraded our school internet connection.
Children from Jun Infants to 6th Class have their own iPad/chrome book and are becoming computer literate. For English as an Additional Language (EAL) learners the curriculum has become accessible with Google translate, google lens, Say Hi App.
Children can use qwerty and Ukrainian keyboard on iPad. Children can use apps to communicate with teachers and between themselves. This means they are happier at school and less stressed.
The teachers have used Literacy and Numeracy Apps to support learning in the curriculum and technology has reinforced textbook learning and reinforced concrete learning and attainment. Children are uploading homework on Seesaw.
Children learned word processing skills and also have access to 'Get EPIC' online comprehension program.
Children are developing competency in project work using iBook and iMovie and making movie reel celebrating work completed and sharing their creations national and internationally
The LfE project facilitated the teachers and children in their Erasmus Mobility project. This school twinned with Lloseta Primary School Mallorca and the Kinaffe children devised trails on iPad in multiple languages and facilitated project learning on water habitats with teachers and children from Spain in April 2023.
Teachers are very positive using ICT equipment and feel supported in the roll out of this Project
Teachers are proud to help children display their learning on a national stage. Children and teachers have become more confident and have become more competent. Children have become more able and confident learners.
Attainments in English and, Math and Science have improved. Innovation and inclusion in education have improved. Teachers are now creators and designers of digital and blended learning lessons with the students at the centre of the lessons.
It has transformed education in our school. Children can freely access information in their own language and create and learn about new cultures and places. It has encouraged design thinking, improved collaborative learning and group work and this improved inclusion applies to all children enrolled in the school.

School No 2	St Michael's NS Rackwallace. County Monaghan

How many students took part in the LfE activities?	46
How many teachers took part in the LfE activities?	3

Work carried out:

As part of our Learning from the Extremes project, we initially had four main aims. These included:

Aim 1: Enhancing the learning experience of the children:

We got involved in this project in order to both better ourselves as educators and the school as a vessel of learning, through the use of ICT. We aimed to buy a set of iPads for the school. As a school, we decided that the best use of the funding would be to buy 16 iPads and a charging trolley. We also bought three tripods to assist us when we got to the final stages of our project. All children were filly equipped with using iPads. A number of lessons were conducted to teach the students how to carry out the basic functions of an iPad. The children became equipped with various apps on the iPads including kahoot, safari, math splash etc. As time progressed and prior to beginning our project, the children were taught how to use 'Stop Motion Studio'.

Aim 2: progress the digital literacy of the teachers

We felt it is important to educate the teachers on how to effectively use the devices and apps at our disposal. The staff have remarked that they have become aware of a greater number of educational apps e.g. Minecraft, Stop Motion Studio through the CPD we arranged ourselves and which was provided through DWEC.

Aim 3: enhance/upgrade the infrastructure within our school.

Wi-Fi was significantly boosted.

Aim 4: conduct a whole school project on our community.

This involved the participation of local people. We placed the sole focus of this project on the history of the local community. We decided on a theme and split all students into groups. Each group knew what they had to research and were supplied with the necessary research tools e.g. iPads, chrome books, videos, books. Once this was finished, we began shooting videos, creating and editing small animations. Our LfE infrastructure HECC journey greatly assisted us.

All teachers involved initially commented on their own fear and apprehension in implementing a greater range of ICT in the classroom. With schools being such a busy environment, it can be hard to find the time to carry out CPD training in ICT (with teachers having to travel to education centres for training). Thankfully, as a result of participating in this LfE project, we were given the opportunity to engage with online CPD through the company 'Wriggle' Learning. This has made a big impact on the teachers' perceptions towards using technology in the classroom as they can train in the comfort of their own homes and at a time that suits them.

All teachers are now using the iPads in lessons across the curriculum.

The teachers are learning to work collaboratively using ICT, with team teaching lessons now set up for the senior end of the school.

School No 3	Newtown Upper NS. Faugheen, Carrick on Suir, Co Tipperary

How many students took part in the LfE activities?	55
How many teachers took part in the LfE activities?	5
Work carried out: The pupils enjoyed their learning and are motivated to learn and achieve as learners. The pupils use appropriate digital technologies to foster active engagement in their learning. Teachers have engaged in CPD in using digital technologies to create content with a CPD provider. The school has been included in Sustained Support with PDST in using I.T. to support teaching and learning. Teachers are sharing their experiences using Digital Technologies in their classrooms with each other and engage in peer support when appropriate. The school has invested in "Aladdin" software which has streamlined office duties and teacher reports etc. Active Learning features strongly in the new Primary Maths Curriculum. We use the OIDE i.e. "Micro Maths" resources as a basis for the classroom discussion. Children are presented with a Maths problem on digital devices, and they work together to solve the problem in a variety of ways. Stop Motion Animation: The children used iPads to create their own short animation clips. Mike Byrne was our facilitator through Tipperary County Council Artist in Schools Scheme. Special Education Touch Typing: On the advice of the Occupational Therapist some of our pupils are following the typing.com programme which involves 15 min daily practice in typing skills. Special Education Assessment: One of our assessments is Maths Tracker (an Irish levelled Maths Assessment). The pupils enjoy this digital assessment and the multi choice element.	

School No 4	Scoil Mhuire Lourdes. Loughglynn, Castlerea, County Roscommon.
How many students took part in the LfE activities?	44
How many teachers took part in the LfE activities?	2
Work carried out: In undertaking this project, we hoped to enable the staff to acquire skills to better equip them to harness the opportunities of digital technologies to build digital competence and an effective digital education through LfE. We focused on strategies to improve digital infrastructure and resources whilst strengthening communication with the wider community through the establishment of a school app and website. The teachers in the school attended CPD activities to build on their digital literacy and understanding of devices. Coding and robotics CPD is scheduled for this school year to further enhance 21 century STEAM teaching and learning Having been provided with free access to an online learning platform, Wriggle Learn, a large range of relevant CPD and can be accessed by each teacher in the school. All teachers are now more familiar with and confident in using chromebooks/iPads in their classrooms and guiding children in their use. Children in 3rd, 4th, 5th and 6th have access to GSuite and all its features and are becoming increasingly familiar and confident in its use.	

Children have used the iPads and Chromebooks to create digital content on class themed projects sharing their knowledge and digital and technological skills with the school and wider community on our school website.
The purchase of 12 Chromebooks has increased access to digital devices for hands on use in the classroom. The class teachers report a noticeable increase in their own planning for use of digital tools for learning. They also report that the children themselves have more access to online and digital tools leading to more active learning, an increase in online digital portfolio use as well as a reignited enthusiasm for digital based project work.
An improvement in access to broadband has seen an increase in the use of devices in the classrooms throughout the school (however, the unreliability of the broadband is still proving a hindrance). Staff are becoming more experimental and confident in their use of ICT in the classroom. Our school wide project based on designing and populating an online compendium has seen a very positive reaction from the staff who are actively and engaging with the project, having the children use digital tools to create information that is shared on our new website and school app. Devices are being used more frequently in a variety of different ways throughout the school in the development of the school project.
Staff hope to have a deeper and wider understanding of and application of coding and robotics in the classroom in this school year looking at upskilling their CPD in this area next.
Staff confidence with using technology at all levels of the school has increased. Staff are sharing ideas, digital tools, advice and suggestions.

School No 5	Scoil Naomh Taobhóige. An Clochán, Leifear, Lifford, County Donegal.
How many students took part in the LfE activities?	52
How many teachers took part in the LfE activities?	3

Work carried out:
Purchasing of equipment began with the chromebooks and the panel. The chromebooks have replaced outdated laptops, which were in use in the senior room. The seniors have been busy getting to grips with google classroom and working on documents together on Google Docs. They use Kahoot quizzes a lot. The chromebooks are used for children who have difficulty in writing in class.
The panel in the infant room has been a fantastic addition. The infant room did not have any type of touchscreen panel previously, only a ceiling mounted projector was available.
The difference in the teaching opportunities is immense. The teacher is now able to demonstrate handwriting on a large 75” screen, with the children then being able to use the panel at their own height, with no safety concerns of standing on steps to reach.
Because the background of the writing app can be altered, it is very useful for Maths as squared paper can be used, instead of lined paper.

School No 6 How many students took part in the LfE activities?	Gaelscoil an Inbhir Mhóir. Emoclew Road Arklow. County Wicklow. 309
How many teachers took part in the LfE activities?	12

Work carried out:
The school moved closer to a 1:1 ratio of students to devices (iPads at junior level and Chromebooks at senior level). A class set of devices is timetabled for regular and frequent use in each classroom weekly.
The teachers in the school attended CPD activities to build on their digital literacy and understanding of devices, coding and robotics to further enhance 21 century STEAM teaching and learning. This was facilitated through the medium of Irish by Clár TechSpace, a branch of the Kinia organisation.
Having been provided with free access to an online learning platform, Wriggle Learn, a large range of relevant CPD and can be accessed by each teacher in the school. All teachers are now more familiar with and confident in using chromebooks/iPads in their classrooms and guiding children in their use.
All children have access to more devices and robots for coding. Some children have access to microcontrollers also.
Children in 4th, 5th and 6th have access to GSuite and all its features and are becoming increasingly familiar and confident in its use.
Children have used the iPads and Chromebooks to create digital content about native animals in Ireland (as each classroom is associated with one such animal). The children's work was used to populate a website that can be accessed by QR codes found around the school grounds, sharing their knowledge and digital and technological skills with the school and wider community.
The purchase of 32 Chromebooks has increased access to digital devices for hands on use in the classroom. The class teachers report a noticeable increase in their own planning for use of digital tools for learning. They also report that the children themselves have more access to online and digital tools leading to more active learning, an increase in online digital portfolio use as well as a reignited enthusiasm for digital based project work.
An improvement in access to broadband has seen an increase in the use of devices in the classrooms throughout the school (however, the unreliability of the broadband is still proving a hindrance).
Staff are becoming more experimental and confident in their use of ICT in the classroom.
Our school wide project based on designing and populating an online compendium has seen a very positive reaction from the staff who are actively and engaging with the project, having the children use digital tools to create information about a specific native animal. Devices are being used more frequently in a variety of different ways throughout the school in the development of the school project.
Staff have a deeper and wider understanding of and application of coding and robotics in the classroom.
Staff confidence with using technology at all levels of the school has increased.

Staff are sharing ideas, digital tools, advice and suggestions.

School No 7	Lanesborough Primary School. Lanesborough County Westmeath.
How many students took part in the LfE activities?	82
How many teachers took part in the LfE activities?	10
Work carried out: We purchased Blu Bots, Micro bits and Samsung Tablets through our funding. With regards to the Blu Bots and Microbits, we are hoping to integrate these robotics and microcomputers within our school, to be used within station teaching. The Samsung Tablets will be required for our BLAST artist initiative with a view to filming behind the scenes footage of the pupils as they create a film to enter the national Film making contest for primary school children which is entitled Fís. Our artist was recently on the county radio station stating that without our funding from Learning from the Extreme, the pupils' film project could not run as planned. The Samsung tablets are an invaluable tool for our school and we have a good working relationship with Transact Technological Solutions, the company who supplies our Samsung products. Lanesborough Primary School has shown exceptional commitment to the embedding of digital technologies in our school. This speaks to the commitment shown by School leadership and by the school community. As educators we are committed to providing our students with the best start in life and we recognize that all aspects of life are now intrinsically linked to creativity and technology. Senior leaders in our schools recognize the importance of transition between schools and engage in other programs to meet this challenge. With new entrants from war-torn countries this challenge is now even greater! In conjunction with our school leaders, time is set aside on our timetables to ensure that there is adequate time to engage fully with new technology purchased using Learning from the Extreme Funding. Discrete STEAM sessions will be allocated to the timetable and Digital Technology will also be utilized during the subjects already on the timetable. E.g. Creating a scratch program to teach the pupils how to be more sustainable, creating QR codes to identify different herbs and plants in our school gardens and green spaces.	

School No 8	Athlone Community College. Athlone County Westmeath.
How many students took part in the LfE activities?	320
How many teachers took part in the LfE activities?	10
Work carried out: Outcomes of our project:	

1. Enhanced learning through opening up multi-sensory opportunities in classrooms
2. Enhanced inclusive education through multiple means of representation, expression and engagement for students (UDL approach)
Despite having a ten year old building with many resources, we lacked some basic technological infrastructure, which placed barriers on more inclusive teaching and learning. LfE funding allowed us as a school to remove some of these barriers and open the door to multi-sensory opportunities in classrooms.
The interactive screens allow for multiple means of representation, expression and engagement (UDL). Learning in classrooms can be engaged with through text, audio, visual imagery, animation/motion etc. Students can showcase their learning in multiple ways that do not overly rely on traditional means of text or writing.
Impact on teachers
1. Enhanced teaching and learning in the classroom – UDL approach
2. Enhanced learner outcomes and experiences for students
3. Enhanced teacher collaboration between teachers – sharing approaches, upskilling together, collegial inhouse CPD, motivating other teachers
Impact on students
1. Students are more engaged in learning – more motivated and actively focused
2. Students feel more valued as learners – acknowledging multiples means of engagement
3. Barriers have been removed for students

School No 9	Kilmurry NS. Sixmilebridge. County Clare Kevin Clohessy
How many students took part in the LfE activities? How many students took part in the LfE activities?	86
How many teachers took part in the LfE activities?	3

Work carried out:
We have created a Nature Trail on our school grounds. The trail includes QR codes which directs users to our school website where they can view information on the trees included in our nature trail.
We used the iPads we acquired thanks to the LfE funding, to research the different trees we have on our school grounds.
Having completed the research, we then used the new laptops we got, also thanks to the LfE project, to type up our research and prepare them to be added to our school website.
With the help of a past pupil on work experience in our school, we found an app that we could use to create QR codes. We downloaded the app onto our iPads and used it to create the QR codes.
Our project resulted in a big increase in the 21st Century digital multi literacies skills of both pupils and teachers. Pupils used the technology we received to research the project, presented it on our website and learnt about QR codes. This also resulted in

much more peer-to-peer learning and empowered the pupils to lead their own their own learning with the teacher acting as a facilitator. None of these developments would have been possible without the technology we received as a result of our participation in the LfE project.
The biggest impact on teachers is that they can now have access to iPads and laptops that they didn't have before the LfE project. This has allowed teachers to use the equipment to create more enjoyable and interactive learning experiences for their pupils.
Teachers have upskilled and improved their own digital literacy and their confidence in using the equipment effectively.
How the equipment is used varies from class to class. At the junior end of the school, teachers are mainly using the iPads. They have found phonic related apps particularly beneficial.
The senior end of the school also find the iPads are a great teaching resource, but they also use the laptops a lot more than the junior end.

School No 10	Scoil Padre Pio. Churchfield Terrace, Churchfield. Cork. Ireland.
How many students took part in the LfE activities?	120
How many teachers took part in the LfE activities?	15

Work carried out:
We have used the Chromebooks we acquired to allow our students and teachers to learn the fundamentals of using Web based apps. Each child has an email address and their own google education account. This has allowed them to use Gmail, Google Drive and the associated suite of Google apps. They have learned file management and have been collaborating with their teachers and one another through the sharing of their creations (documents, spreadsheets, slideshows). Some classes have been experimenting with 3D design using Tinkercad and have 3D printed their results. The extra equipment that the funding allowed us to purchase also gave us the ability to spread our pre-existing devices even further throughout the school.
The most innovative aspect for us as a school was a total culture change in how children from 4th-6th class conducted their learning. They went from a predominantly paper based pedagogical system to incorporating digital technologies in their everyday school life. We now see children creating documents/projects online, collaborating with other children remotely, sharing their work with their teacher for correction. Learning file management has allowed them to create digital portfolios of their schoolwork, which has improved overall assessment (including self-assessment). We have been amazed by how quickly all children have picked up the skills needed. The technology has also had the effect of increasing accessibility for the many children with special and educational needs in our school. We have noticed that when digital devices are used in class, every child is engaged. This was not the case in the past.
The teachers who have been directly involved in the project have been overwhelmingly positive about the experience. The classroom teachers who have embedded the technology in their classrooms have been amazed at how readily the

children have picked up the digital skills that they needed to access the technology appropriately. Teachers have been most positive about the collaborative nature of the work they are doing. They have said that the organisational management aspect of the technology makes their lives easier as they can directly track, monitor and assess children's work without the usual time that's wasted searching for books, copies etc. They are impressed by the simple and collaborative nature of the technology and are using it to communicate with children, parents and colleagues alike. They have reported that they are eager to progress both their own and the children's skills even further.

School No 11 How many students took part in the LfE activities?	KIlcooley National School. Loughrea County Galway. 103
How many teachers took part in the LfE activities?	6

Work carried out:
We purchased the teacher and student laptops and had them configured. We also purchased the NAT router; had it installed and had our system reconfigured to utilize it properly.
The purchase of the NAT router has eliminated issues we have had with available IP addresses. This had meant that not all devices would have online access at the one time. After the installation all devices can now access the internet successfully. This has led to a major increase in the use of devices for projects, research and presentations within the school. The lack of internet access meant that teachers were reluctant to use devices even when the internet was not needed as the perception was that they did not work properly. Both teachers and students are now more confident that the devices will work as needed and lessons are not interrupted by connection issues.
The availability of updated laptops for students and teachers has created opportunities for those devices to be used in teaching and learning. As they are operational consistently teachers can rely on being able to use them as part of their lesson plans. It has also led to wonderful opportunities for peer-to-peer teaching across classes and age groups as students use their new found skills and experience to support younger classes in using technology. This has led to enhanced teacher cooperation as colleagues need to coordinate and plan together to ensure that appropriate learning opportunities are in place for all the students involved.
New technology in our school such as the blue bots have provided learning opportunities across all class levels with increasing complexity as ability and experience increases. Not only are students engaged in learning about the possibilities, and limitations, of technology but have used blue bots to demonstrate their understanding in, for example, mathematics e.g. rotations through 90°/180°, clockwise/anticlockwise. Through using mats designed for bluebots they can also explore subject specific language, 2D/3D shapes, geography etc.
Teachers are more confident that the new devices we have and our improved internet access mean that they can plan lessons that integrate technology without worrying

about connection issues. This has meant an increase in the research and presentation methods that can be used both by teachers and students.
Teachers are also able to access a wider range of educational materials whether relevant websites, activities or quizzes. Kahoot has made a reappearance in our school as a means of assessment. Previously inconsistent internet access made it virtually impossible to use.
Teachers also have access to Continuing Professional Development training through Wriggle. This has given teachers an opportunity to access online training at a time convenient for them.
Resources and documents are now more easily shared between teachers using Sharepoint which means that there is no need to duplicate copies of them on every teacher's device.

School No 12 How many students took part in the LfE activities?	Lisvernane NS. Glen of Aherlow. County Tipperary 130
How many teachers took part in the LfE activities?	7

Work carried out:
With the purchase of 30 chrome books, BEE BOTS and Lego technology, all children now interact with digital technology every week. It is essential for us teachers to use the latest tools available in their work to engage students. To engage students in learning, our teachers are being innovative with new ideas which are being introduced so that students get excited about what they are learning. The use of educational technology has become essential for teachers because of its importance in today's education industry. We have great IT support from several Parents in the school community helping with website design and class support, etc. Over the coming weeks we have timetabled for the first time, a whole school approach to end of year classroom assessments through online programs.
The various benefits that come with using digital technology are numerous.
It offers a wider choice of materials that can be accessed easily
The vast array of technology that is available today offers students a wide range of options from which they can choose the best ones for their learning needs. This helps them develop the right kind of skills and knowledge so that they can become good professionals in their chosen field.
It helps improve learners' communication skills and performance in school and workplace settings. Children who can communicate better through technological means will also perform better academically.
It provides a fun and engaging learning experience for students.
Children are not only required to learn but they also need to have fun while doing so. Digital technology offers children the opportunity to have fun while learning, which will also help them stay motivated and excited about their learning.
It allows learners to access the internet from anywhere when they are required to do so.

The internet has become such an integral part of our lives that we hardly find people who do not use it every day. In today's busy world, it is essential for students to be able to access the internet from anywhere at any time so that they can do their learning and research without having to travel all over the place. Using digital technology helps children in this regard because it allows them to connect with the internet even when they are in a classroom, school, or at home. Learning new skills and acquiring new knowledge are two very important aspects of life that learners should be able to enjoy.
The benefits of using digital technology also include the improvement of learners' mental and physical well-being. By using these tools, students are able to enhance their learning and their cognitive skill, which in turn helps them improve their academic performance as well as their physical well-being.
Children who can stay up to date with the latest technological advancements will be able to improve their knowledge of different fields and develop new skills that they can use in the future.
We have continued to use our new equipment cross-curricular for PowerPoint presentations, school newspapers, project research, world geography, world news, etc.

School No 13 How many students took part in the LfE activities?	Clonea Power NS. Carrick on Suir County Waterford 50
How many teachers took part in the LfE activities?	4

Work carried out:
Our vision for digital learning project in Clonea Power National School, centred on a balanced approach – ensuring that digital technologies are integrated into lessons, when appropriate, and used to enhance the pupil's learning experience. The outline of the project was to ensure that each child in our school is provided with an enhanced experience of digital technologies and through this experience increase their level of e-maturity.
We also wanted to empower each teacher in their use of digital technologies and to have access to interactive panels which makes the digital environment in the classroom endless in its possibilities.
Through the LfE funding, we installed 3 wall mounted interactive panels for each classroom teacher and one interactive panel on a movable trolley. The school currently has 12 iPads and the implementation of these interactive panels has provided opportunities for seamless digital interactions between teachers and pupils. Project work has been completed on iPads and then these projects have been shared on the interactive panels. Furthermore, skills such as creating PowerPoint presentations, further enhance lifelong skills that the children begin at primary level. These interactive panels have also allowed the children to showcase their innovative and creative skills through various apps. Curricular activities have been completed by numerous children concurrently on the panel, as it allows up to 8 children at a time to participate.

Innovative pedagogical methodologies are key to ensuring that children are enthusiastic about their learning and that they feel inspired to learn. Teachers are using the interactive panels for presentation of work, allowing the children to share their work to others and providing opportunities for interactive learning. There has been a significant emphasis placed on project work and providing the children with opportunities to share their digital projects on the interactive panels. Creative drama activities, innovative group experiments, storytelling, music performances have been recorded and seamlessly shared on the interactive panels. Interestingly, the children have taken the lead and have been teaching the teachers. One teacher has described it as a game changer.
The project has enabled teachers to use the digital resources provided to support learning which was never possible before. The interactive panels allow teachers to save their own and their children's work digitally and enables them to return to it at any stage.
As a small rural school with very limited technology available in the school prior to the attainment, the impact of the project through LfE funding has been immense. Teachers with limited digital skills have fully embraced the project to enhance the use of digital technologies in our school. Interestingly, the children have taken the lead and have been teaching the teachers. One teacher has described it as a game changer.

School No 14	Malahide Portmarnock Educate Together National School Kinsealy. County Dublin Lorcan Smith
How many students took part in the LfE activities?	400
How many teachers took part in the LfE activities?	15

Work carried out:
We implemented our project by introducing specific technological practices and tools. Staff received comprehensive training in engineering, robotics, and coding, and these subjects have since been integrated into the curriculum for senior classes (3rd to 6th). Additionally, the use of Virtual Learning Environments (VLEs) has been adopted by teachers, becoming a routine part of our technology use in classrooms. These VLEs have facilitated a more interactive and collaborative learning environment.
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To address our pedagogical and technical needs, we provided targeted training to staff in new technologies, such as engineering, robotics, coding, and the use of VLEs. These training sessions were designed to be practical and directly relevant to classroom applications, ensuring that teachers could seamlessly integrate these technologies into their teaching.

The project's pedagogically innovative aspects include the integration of engineering, robotics, and coding into the curriculum, fostering a hands-on, experiential learning environment. The use of AI in testing descriptive writing skills is another innovative approach, allowing students to interact with cutting-edge technology in a creative and educational manner.
The project has had a profound impact on our teachers, notably enhancing their ability to offer learning guidance and mentoring. With the reliable WIFI network and interactive whiteboards, teachers have been able to coordinate more effectively with colleagues, both within and outside the school. This has led to improved management effectiveness and enriched learning objectives.
The integration of the digital curriculum, supported by the new technology, has facilitated the development of key competencies among students. Teachers are using the new equipment and services in innovative ways. For instance, Book Creator is being used as a digital copybook, allowing students to express themselves through various media. The LEGO robotics and coding initiatives have enabled teachers to explore STEM concepts more dynamically. Furthermore, the adoption of digital literacy tools like animation and podcasting software has expanded the range of teaching methods available to our educators.
Difference Made by Technology in Classrooms and Teaching: The technology purchased with the LfE funding has revolutionised both the classroom environment and teaching methods. The interactive whiteboards have made lessons more engaging and interactive, allowing teachers to use a wider range of teaching aids and resources. The reliable WIFI has ensured that online resources are always accessible, supporting a more diverse and flexible teaching approach. This has particularly benefited the implementation of the digital curriculum in the senior classes, where students are engaging more actively with digital technologies.

School No 15	Butlersbridge N.S. Butlersbridge Co Cavan Niall Clerkin
How many students took part in the LfE activities?	260
How many teachers took part in the LfE activities?	16

Work carried out:
In transitioning from an emerging HEC school to an advanced HEC school we are now at a pupil device ratio of 1:5 after the purchase of 16 iPads. A timetable is now setup to ensure equality of access for all pupils.
The teachers in the school attended CPD activities to build on their digital literacy and understanding of devices, coding and robotics to further enhance 21 century STEAM teaching and learning having been provided with free access to an online learning platform, Wriggle Learn, a large range of relevant CPD and can be accessed by each teacher in the school. All teachers are now more familiar with and confident in using iPads in their classrooms and guiding children in their use. All classrooms now have interactive whiteboards.
Children in 4th, 5th and 6th have access to GSuite and all its features and are becoming increasingly familiar and confident in its use. Children have used the iPads

to create digital content about plants in our school garden. The children's work was used to populate a website that can be accessed by QR codes found around the school garden, sharing their knowledge about the particular plant and digital and technological skills with the school and wider community.
Teachers are engaging with technology much more often across the school and a demand for devices has rapidly increased. Without the extra 16 iPads we have purchased, and the significantly enhanced connectivity, the new high level of digital classroom activities would not have been possible. The improved connectivity speeds has also led to STEAM activities increasing throughout the school. We have been able to test some online learning programs throughout the school as a result of our pupil device ratio improving. Staff are becoming more experimental and confident in their use of ICT in the classroom as a result.
Our school wide project based on the new school garden has seen a very positive reaction from the staff who are actively and engaging with the project, having the children use digital tools to create information about a specific plants and animals. Devices are being used more frequently in a variety of different ways throughout the school in the development of the school project. Staff are also sharing ideas, digital tools, advice and suggestions with each other.
Having more regular and whole class access to devices has led to an increase in accessing the internet for a wider range of digital tools for use in teaching. The teachers and children are now regularly working collectively to create 'Slides', 'Kahoot', 'BookCreator', 'JamBoard', 'Padlets', 'FlipAClips' quizzes etc. TTRS is also being used regularly along with new subscriptions to reading eggs and Maths seeds.

2.7 Italy

Applicant School	G. Rodari
How many students took part in the LfE activities?	150
How many teachers took part in the LfE activities?	10

Work carried out:

The school technology project aimed to revitalize rural schools, turning them into educational hubs that benefit the entire community. Through strategic technological interventions, these schools have been transformed into centres of learning, fostering both academic and community development. The implementation of modern technologies has enhanced educational resources, enabling students to access a broader curriculum. Additionally, the schools now serve as community hubs, offering adult education programs and vocational training, thereby contributing to the overall skill development of the local population. The project has successfully bridged the digital divide in these rural areas, creating a sustainable model for educational empowerment and community growth.

In addressing the pedagogical and technical challenges outlined in the funding proposal for devices in primary schools, we took a comprehensive approach. Pedagogically, we carefully selected age-appropriate digital resources, ensuring alignment with the curriculum to enhance the learning experience. Technically, we established a secure and manageable network infrastructure, providing reliable internet access and implementing a standardized approach for device compatibility.

Additionally, we prioritized teacher training to empower educators in effectively integrating these technologies into the primary school classroom, creating a holistic solution for enhanced learning.

The project of providing devices to students and families, particularly those living farther from the school premises, has incorporated pedagogically innovative aspects. The distribution of devices has enabled access to digital educational resources, fostering personalized and flexible learning.

The acquired technological solutions have supported students in overcoming geographical barriers, allowing them to actively participate in school activities even remotely. The devices have facilitated communication among teachers, students, and families, creating a more inclusive educational environment.

Our project actively engaged diverse members of local communities, including municipalities, mayors and councillors, local authorities, mountain communities, families in the municipality of San Gillio, and neighbouring municipalities. They benefited from the workshops initiated to extend school hours, fostering collaborative and inclusive involvement. Parents, local authorities, associations, NGOs, and cultural and scientific organizations participated in various capacities. Local authorities made resources and spaces available, supporting the logistical aspects of the project implementation. NGOs contributed with additional funding, enriching the available resources.

Parents and associations participated through prescribed roles, providing valuable feedback and support during activities. Cultural and scientific organizations pursued their own research and innovation agendas, integrating their expertise to enrich the

project's scope. Moreover, the collaboration addressed specific community issues, expanding the positive impact of the project on the entire local context and fostering an educating and collaborative community.

2.8 Portugal

School No 1	EB/JI de Junceira (Agrupamento de Escolas dos Templários)
Members of School Network (if applicable)	EB/JI de Curvaceiras EB/JI de Serra EB/JI de Olalhas JI de Fetal
How many students took part in the LfE activities?	43
How many teachers took part in the LfE activities?	3
Work carried out: As a result of the project, 4 primary schools and 5 kindergarten classrooms are better equipped to develop differentiated pedagogies with the support of the new technologies acquired by the project. One of the aims of this project was to create the conditions for the installation of a HECC Initial Scenario (highly equipped and connected classroom) for the participating schools and kindergartens. To this end, some technological equipment and licences to access educational software content, digital textbooks and games were purchased. The use of this equipment has had an impact on the quality of students' learning, giving them the chance to develop their learning and skills in a more active way. However, with the setback of the slow acquisition of material, it was not possible to exploit the material as desired. However, it is safe to say that this material has aroused interest and improved everyone's access to technological equipment and facilitated the development of digital skills in the students, making them more active and autonomous. With the equipment acquired, it was possible to develop digital materials such as books, digital resources and reports using video and text, all of which were documented on the TomarOnExtremes project's content-sharing page. It was possible to organise direct meetings between schools using the Teams platform, in which community institutions were involved. However, despite all the limitations, there have already been some changes in the practices of teachers who are making greater use of digital educational tools and resources in their teaching practices. The habits of sharing and collaborative/cooperative work have also been very positive aspects. The students themselves collaborated actively and with interest in the construction of digital resources, in the preparation of directives and in the preparation of materials for sharing. This interest and commitment on the part of the teachers and its reflection in the interest and motivation of the students is the result of having managed to implement differentiated pedagogies in a short space of time, using the tools and equipment acquired during the project.	

School No 2	EB Barroca Grande (Agrupamento de Escolas Frei Heitor Pinto)

Members of School Network (if applicable)	EB Cortes do Meio EB da Coutada EB Dominguiso EB de São Jorge da Beira Escola Básica de Unhais da Serra EB de Vales do Rio EB1 de Paul EB1 do Peso EB23 do Paúl
How many students took part in the LfE activities?	93
How many teachers took part in the LfE activities?	20

Work carried out:

The results achieved through the implementation of the project exceeded expectations. It was observed that the acquired technologies effectively propelled the use of active methodologies, and with the application of appropriate strategies to the groups/classes, allowed students to approach the curriculum in a more motivating, systematic, and consolidated manner. Classes became more interactive and engaging, capturing the students' attention and enabling the adaptation of materials and teaching methods to the individual pace and needs of the learners. In addition, contributing to the digital empowerment of students, teachers, and guardians, the use of technologies promoted inclusion in the classroom for students with different nationalities or genders, with Learning and Inclusion Needs (NAI), and with distinct learning rhythms. Simultaneously, it facilitated and stimulated collaboration and sharing among everyone, even at a distance. Therefore, it is clear that the use of new technologies has already become an integral part of the teaching and learning process in the majority of classes involved in the project.

The LfE project of the Frei Heitor Pinto School Cluster (AEFHP) aimed to promote gender equality while simultaneously enhancing the digital literacy of teachers, students, and families.

The promotion of gender equality was achieved through activities and strategies planned to enhance cognitive stimulation equally, avoiding disparities in the acquisition of skills such as self-confidence, resilience, and problem-solving ability. Activities conducted in the classroom or in the maker space expanded opportunities for everyone, allowing equitable access to technologies and digital resources, regardless of gender, abilities, limitations, socioeconomic status, or the geographical location of the school.

The impact is quite positive. Teachers have already incorporated the equipment into their teaching practices to create more active and motivating lessons, and students use them in their learning processes.

The use of equipment to support classroom dynamics has had a very positive impact. Students want to move away from more conventional patterns and request more activities from teachers that allow them to think creatively and innovatively. Teachers

continue to learn from colleagues in the field of computer science/robotics and later implement these learnings in the classroom.
In the primary cycle, mobile equipment is used in curriculum development. Computer science teachers who teach the complementary offering "Introduction to Programming and Robotics" in primary cycle classes use hybrid computers in their classes, allowing their use by students whose respective technological kits are faulty or who simply forget to bring them. Video projectors have also been very helpful for teachers. Due to their size, they are easily transportable and circulate among schools that do not have this equipment, and can be used in places without easy access to an electrical outlet, such as outside schools, as they have a battery. The portable screen is being used in one of the schools that has a good fixed video projector but was not suitable due to having a blackboard. The screen solves this gap.

School No 3	EB1 de Barbacena (Agrupamento de Escolas nº3 de Elvas)
Members of School Network (if applicable)	EB1 de Terrugem EB1 de Sta. Eulália EB1 de S. Vicente
How many students took part in the LfE activities?	15
How many teachers took part in the LfE activities?	2

Work carried out:
The project has brought benefits at various levels. We would highlight the following:

- the equipping of each of the rural schools with quality equipment (which would have been difficult to acquire), which is very useful, not only for the development and continuity of the project, but also for carrying out countless day-to-day tasks;
- the level of collaboration between the teachers and students of the four schools involved, around a high-value, aggregating and inclusive pedagogical project, with the students as the central element;
- in terms of student involvement and motivation;
- the creation and promotion of a Robotics and Programming Club, relocated from the main school, which links activities to the curriculum, essential learning and the profile of students leaving compulsory education;
- in terms of the professional development and growth of the teachers involved, through mechanisms of intervention and reflective practices, materialized in various moments of individual, pair and team work;
- the relationship with the school management, which supported and monitored the project and the development of all the activities, providing guidance to ensure convergence with the goals of the school's educational project.

Since the project was developed as a team, everyone involved was well aware of the needs felt in each of the schools and the difficulties they would encounter. Based on the SWOT analysis we carried out, we focused on finding ways to overcome the weaknesses detected.

With regard to the initial project, the creation of an online digital newspaper, there was a consensus from the outset about its interest and pedagogical potential. It was considered to be an excellent tool for connecting students from the project's four schools, which are far from each other and all far from the main school. In addition to this internal communication, the newspaper would also serve to build bridges with families and the community and make known aspects of the work carried out in each of the schools as well as the specific reality of each location. All of these objectives involved developing skills in different curricular areas (Portuguese, Environmental Studies, English, Artistic Expressions) and many transversal skills (Citizenship and Development, Media Literacy, Digital Literacy), allowing the subjects to be taught in a dynamic, creative way and with greater student involvement. The most innovative aspect of the project, although it had already been explored on an ad hoc basis, was the continuous and systematic development of collaborative work between teachers and students from different rural schools, based on the students' experiences and knowledge. Knowledge and skills were acquired by sharing and highlighting the social, heritage and cultural aspects of the environment in which each school is located and which are familiar and close to the students. The technological solutions responded mainly to the challenge posed by distance, enabling fast and effective communication between all those involved. The Robotics and Programming Club has enriched teaching activities by introducing computational thinking, programming using the Scratch language and logical reasoning, among other skills. The existence of robots and other equipment, acquired with the LfE program, has allowed students in rural schools to have the same educational opportunities as their peers in larger schools and for all students, without exception, to be supported in the development of robotics and programming activities, proven to be beneficial for learning in various curricular areas, and to take part in competitions at national and European level.

School No 4	EB1 de Entradas (Agrupamento de Escolas de Castro Verde)
Members of School Network (if applicable)	EB1 Sta Bárbara EB Dr. Francisco Alegre EB1 de Castro Verde EB2/3 Dr. António Francisco Colaço Escola Secundária de Castro Verde
How many students took part in the LfE activities?	320
How many teachers took part in the LfE activities?	16
Work carried out: In the dynamics of our educational grouping, the practice is to mobilize teachers from specific technical areas to travel to different schools/rooms and engage in diverse activities related to specific skills according to the projects integrated into the Educational Project, as well as local and national curriculum activities. The "Mobile Co Lab" Project was designed to create a kit of resources that can be taken to classrooms	

according to the needs and characteristics of the students. After acquiring the resources, teachers most directly involved in the project received training in programming and robotics, 3D design and printing. They had the opportunity to learn how to work with programmable objects, 3D printers, and pen readers to understand the potential uses of technology in the curriculum. To promote the newly created maker space and the programming and robotics club, 4th-grade classes visited the room with their teachers, getting to know the resources and their potential for formal and informal use. Robotics workshops were conducted with 9th-grade students, institutionalized as proposals for diversifying mathematical knowledge and understanding the potential of technologies. Virtual and augmented reality workshops were also held for 9th-grade students, integrating the training into the students' curriculum. In a first phase, the resources have enabled students to acquire learning skills through exploration and guided discovery by teachers. For example, within the curriculum, in learning geometric shapes, students learn to use software that allows them to work with basic shapes, transform them into 3D, and then build and print objects on printers. Similarly, learning coordinates involves the use of robots and learning scenarios. With the integration of ICT, one can transition from programming nontangible objects to programming tangible objects such as boards, sensors, and robots. Classes become more practical and experimental, with activities being more participatory and developed by students. The focus is on individual practices and at the pace of each student, rather than activities solely developed and demonstrated by teachers. This is only possible due to the availability of a sufficient number of resources for classroom work. The acquired resources have enabled and will continue to enable the implementation of various curricular projects across different educational cycles in the short and medium term. Technology, particularly robots, has facilitated the introduction of more practical content and the learning of STEM subjects in a format that encourages continuous questioning, reducing the compartmentalization of subject knowledge. The development of robotics-related projects allows students to learn and develop skills at their own pace, freeing the teacher to more effectively support students with greater difficulties without leaving them behind or making them feel excluded.

School No 5	EB n2 da Pampilhosa (Agrupamento de Escolas da Mealhada)
Members of School Network (if applicable)	EB n1 da Pampilhosa; EB do Luso EB de Casal Comba EB de Barcouço
How many students took part in the LfE activities?	79
How many teachers took part in the LfE activities?	9
Work carried out: Spaces equipped with technology were created, one in each school belonging to the project. At Escola Básica nº 2 de Pampilhosa, in a space next to the library, a space was	

created where laptops, a 3D printer, microscopes and magnifying glasses with computer connection, e-readers and e-books, Arduino kits and robots are available for access by any member of the school community. Interactive displays have been installed in two classrooms.
In the remaining primary schools, spaces have been set up, one per school, in most cases in the library. These are equipped with laptops, magnifying glasses with computer connection, e-readers and e-books, Arduino kits and robots.
Four eighth-grade classes, in the Physical Chemistry subject of Sound, built musical instruments in order to take part in an online science, literature and art competition. The students recorded all the steps of the process on video and photography, then put together a film where you can see the construction of the instrument and the final sound it produces. The aim is to put the video online so that the whole school community can see it and vote.
In some classes, a lesson on spatial orientation was implemented using the hybrid model of rotation by stations. Different processes were used to refer to the cardinal points (position of the Sun, compass, polar star) in orientation, localisation and movement on the Earth's surface.
Stellarium web was used to locate the polar star and videos were viewed as instructions for activities. A poem about the star that guides us was also analysed from an interdisciplinary perspective. Computers purchased for the project were used for this purpose.
In the classrooms where the interactive displays are installed, they are used daily and in almost all subjects. They are installed in a second cycle science classroom and in another third cycle physics and chemistry classroom. The projection system we had installed before was 14 years old. The quality was so poor that most of the time, in order to use it, the room had to be completely dark. The installation of the displays was met with great enthusiasm.
The students mention advantages such as the fact that it has its own light, which makes it much easier to see even small details when they are sitting far away, and that it allows them to write and make diagrams on the images, among others. The low-vision student also mentions this and the ease with which these devices magnify images. They also mention the issue of sustainability, since when used as a whiteboard, they can write without using markers or chalk. It allows you to write several pages without having to erase and the fact that you can review everything you've done and save it.
Students are always willing to use technology to carry out assignments and assessments, and they immediately take up the challenges. They no longer limit themselves to the most common applications and platforms. When they have a project in hand, they look for the best application for it and, even if they aren't familiar with it, they explore it, as is the case with Genially and Canva, for example.
Many started working online, stopped transferring their work to their computer and shared it by emailing it to their colleagues. They realised the advantages of working on a platform with shared documents, in collaborative work environments and using the cloud.
They showed great enthusiasm for using the technologies made available by this project, even verbalising that the workload of the subjects they took part in was insufficient.

School No 6	EB de Vale Calvo (Agrupamento de Escolas Nuno Santa Maria)
Members of School Network (if applicable)	EB da Pedreira EB de Carregueiros EB de Marmeleiro EB de Cem Soldos
How many students took part in the LfE activities?	15
How many teachers took part in the LfE activities?	1
Work carried out: This project aimed to create a space in each school with an innovative educational environment by purchasing the equipment described in its own field (HECC). Along with this phase, training actions were implemented that enabled teachers to take advantage of the new equipment and material acquired, training that was the responsibility of the companies that provided it and also specific training provided by the Teacher Training Center that works with the Grouping. A network was implemented between the 5 schools and the group that worked on a common project presented at the end of the school year. In the traditional classroom, pedagogy is guided by the exposure of content and questioning as a way of evaluating whether knowledge is being acquired. In the current project it is understood that students must learn by experimenting and for this reason it is necessary to provide them with facilitators. The equipment and material acquired were the facilitators that the students explored in groups, analyzing, and discussing the results to reach conclusions, which facilitated their learning. In this innovative environment, teachers gave continuous feedback to the conclusions drawn by students, creating a place conducive to discussing results, first within individual groups and then between the groups that make up the class. One of the main results of the project was to increase the level of student learning motivation during its development. A motivated student will be a student who learns more and better. A school at the entry level of a HECC is a school better prepared to teach today's children who have nothing to do with the children of 20 years ago. In addition to the motivation already mentioned above, we believe that with the new equipment and the new pedagogies applied to teaching, our students learn much more easily, improving their academic results, and in addition, they will be more satisfied children in the classroom and with greater availability for learning.	

School No 7	Escola Básica e Secundária de S. Sebastião (Agrupamento de Escolas de Mértola)
Members of School Network (if applicable)	
How many students took part in the LfE activities?	354

How many teachers took part in the LfE activities?	17

Work carried out:
After the purchase of technological equipment under the LfE Project and the purchase of furniture by the municipality, as part of the process of decentralization of competences in the area of education, it was possible to complete the space for teaching and non-teaching activities.
Once the technological equipment had been purchased, it was necessary to buy a charging station for the tablets, since the room didn't have enough sockets, and covers with integrated keyboards to attach to the tablets to enable them to be safely left for activities outside the space.
After this first phase, it was publicized and a document was drawn up to reserve the space and a form to monitor the activities carried out, so that we could assess the impact of the project on the teachers' teaching practice and the students' learning.
The space was used for the first time on May 5, 2023, in an activity involving coordination and collaboration between 4th and 12th grade teachers and students in the subjects of Environmental Studies and Physics. In this activity, the interactive whiteboard and tablets were used simultaneously, in addition to the laboratory equipment needed to carry out the activity, which was carried out at four workstations, implementing a hybrid learning strategy based on the methodology of rotation by stations. For example, at one station, a Kahoot was projected on the interactive whiteboard and, using a code entered into the app, the Kahoot was displayed on the tablet.
At another station, students used the scientific method in which they made predictions, verified them in practice and, using a simulator on the tablet, experimented with other virtual materials.
In addition, the space has been used, albeit intermittently, for interactive activities provided by the educational platforms, namely videos and games, in which the interactive whiteboard and tablets are used simultaneously.
Since the space was first used, reservations have been made for collaborative work between classes, between teachers, between cycles and by external entities such as the local authority.
The activities carried out so far correspond to what was outlined in the project presented.
Three stages were defined for the full implementation of this project: the first related to the acquisition of computer equipment and furniture and the start of operations; the second related to the total refurbishment of the physical space under the responsibility of the local authority; and the third associated with teacher training and the formal inauguration of the TEIA Space. Stages 1 and 3 were completed.
The use of available technologies has allowed for the diversification of pedagogical strategies used in the classroom and has made it possible to carry out coordination activities between teachers of the same subject and of different subjects and between classes of the same year and of different years.
Given the teachers' digital skills, complemented by the training received as part of the project, there were no problems in using the available technologies.

School No 9	Escola Básica e Secundária de Gavião

	(Agrupamento Vertical Gavião)
Members of School Network (if applicable)	Escola Básica da Comenda
How many students took part in the LfE activities?	280
How many teachers took part in the LfE activities?	30

Work carried out:

This project appears to be the potentiating opportunity par excellence, taking advantage of the potential of digital technologies to improve and innovate the education at the Agrupamento de Escolas de Gaviao (AEG), with the main objective of promoting an effective digital education ecosystem, as advocated in the school's Educational Project.

Therefore, in order to achieve set goal, the project "With All and For All - Digital Village" focuses on two strategies:

- Reinforce/expand digital skills and abilities for digital transformation by investing in the professional development of teachers, non-teaching staff and parents;
- Enhance the culture of collaborative work in the face of current digital challenges and potentiate cooperative forms of work and curricular articulation practices that promote pedagogical and organizational development, fostering quality and innovation in pedagogical and curricular activities.

Thus, throughout the development of the project in the AEG, a HECC room (maker space) was created and is fully equipped with the digital and technological resources obtained through the funding of this project, ready to be requested by teachers; training sessions were made available to the project's team, who is in charge of passing its knowledge to the rest of the school community; and a volunteer digital mentoring program composed of students, teachers, non-teaching staff and parents was created with the goal of increasing digital literacy in the school and in the community.

Teachers are using the equipment to teach their classes and to develop projects using the technological equipment that we have acquired, using OER, and working methodologies based on various innovative and differentiating methodologies that allow for the full inclusion of all students. This impact covers all educational levels, from pre-school education to secondary professional education.

The equipment is also put to good use through the Robotics, Live Science and Educational and Social Entrepreneurship Clubs, fostering non-formal learning that contributes to the acquisition of the competences set out in the profile of students leaving compulsory education.

We have created and promoted the Digital Teacher Mentoring Program with the aim of enhancing internal training moments (online and/or face-to-face) to increase the impact of digital learning on teachers and students. These mentors replicate training moments and help colleagues implement digital tools and equipment, namely through the Pedagogical Supervision/Intervision Plan.

The equipment and services acquired with the funding of the LfE were used by the students during the classes for the tasks proposed by the teachers, for carrying out

research work, for group work, for the creation of presentations using various tools and digital applications.
This equipment was also used by students in non-formal education contexts, namely in the Robotics Club, the Science Club and the Educational and Social Entrepreneurship Club. These clubs promoted actions for the rest of the community, making known the various learning possibilities given and articulating them with the curriculum.

School No 9	Escola Básica de Silvares (Agrupamento de Escolas da Gardunha e Xisto)
Members of School Network (if applicable)	Escola Básica da Soalheira Escola Básica do Souto da Casa Escola Básica do Telhado Escola Básica de Alpedrinha Escola Básica de Janeiro de Cima Escola Básica das Atalaias
How many students took part in the LfE activities?	59
How many teachers took part in the LfE activities?	5

Work carried out:

In our classroom, teachers and students now have more resources in the teaching/learning pathway.The use of the acquired equipment allowed, among others:

- group work training; encouragement and development of group tasks, with the aim of improvingthe capacity for collaboration, sharing, articulation, contributing to an inclusive school culture, involving students with different abilities and different limitations;
- the search for data and information that allowed greater learning autonomy, along with greatermotivation, with the use of interactive whiteboards;
- the exchange of information with other schools in the project and with the community itself (interactive sessions), using videoconferencing equipment, discussing projects and learning activitiesand sharing results with other schools and community partners.
- An example of this is the “Aldeias Educadoras” project, which covered these same schools; It consistedof involving the older community in schools, transmitting their knowledge, traditions and manual skills and debating current issues.
- Dissemination of knowledge and work by the community and the schools of the project, as well asschools in other countries.
- Elaboration of digital educational resources, in various media and using appropriate digital tools. Asresult, presentations and questionnaires were prepared in digital formats; these were then shared.
- complementation of the work developed in the Programming having the municipality as a partner, using robotics equipment.

The classroom, with these new digital resources, now has a greater diversity of work options, which increased motivation and information and accomplishment skills.
Students showed greater interest in learning, in the sense that they even started to feel responsible for showing work and knowledge to colleagues from other schools.

The biggest challenge was to organize the spaces and the use of the equipment, in order to allow adequate monitoring actions. With the use of robotics equipment, it was possible to learn about technology and with technology, allowing students to do this in small groups, with each other. The teachers played a mentoring and guiding role in these learning processes.
With the interactive panels, it was possible for the teachers to prepare specific tasks for small level groups which, in addition to internet research, without the need to use computers, fill in padlets or word walls, facilitated learning with students and teachers from other schools that were in the project and that were part of our school grouping

2.9 Romania

School No 1	Hartop Secondary School and Colți Secondary School
How many students took part in the LfE activities?	100
How many teachers took part in the LfE activities?	6

Work carried out:
Hartop Secondary School
As the Romanian school system is still well anchored in the past and is widely recognized as a traditional educational system, it is left up to the individual schools and local communities to find necessary resources for development, research, extra-curricular activities, etc. These circumstances have driven our school to take part in this project as we seek new ways of self-development.
Hartop School is located 5km away from nearest town. We have a total of 312 students enrolled and 23 teachers serving in our school. Being a public entity governed and controlled by a variety of rules and regulations imposed by different governmental bodies, to the extent possible and allowed, we are trying to take initiative and to modernize ourselves, trying to bring more to the table by increasing the quality as well as the quantity of educational services offered to our students. School's management is dedicated to further stimulate student's interest, to enhance the skills and abilities of teachers as well as to further engage parents and local community members in school activities as well as in extra-curricular activities.
We recognize that formal / traditional education system does not cope well with the rapid changes we are presently witnessing in our society. We need to adapt as an educational institution in order to ensure that our students, when graduating our school, are individuals aware of their potential, capable of integrating in society with ease and capable to follow and eventually achieve their own aspirations in life.
Hence, we need to help them to discover themselves and to support them to the best of our abilities.
We use STEAM as an alternative educational method in our on-going internal project we call ''STEM HUB''. STEM HUB is running for the entire school year and has a minimum of 1 activity per week (outside school hours). There are minimum 10-15 students taking part regularly in this project whom have been selected basis a school wide questionnaire. There are also numerous indirect beneficiaries as our active members share their STEM HUB activities with colleagues and families. During our weekly STEM HUB sessions, students work individually and also in a collaborative manner (in teams) as we aim to educate them both in self-development and teamwork.
LfE funding proved to be extremely lucrative as through the acquisitions made we are now better equipped to tackle various STEAM activities and to involve more teachers and this has brought more credibility to our STEM HUB internal project. Furthermore, the LfE acquired educational materials are already being used by some of the professors as teaching aids during formal educational hours, hence the equipment reach is not only restricted to STEM HUB itself.
Following introduction of LfE acquired equipment, it has been observed that students recognized that school can be fun as well and that their theoretical knowledge thought

in formal school can actually be applied with visible results and furthermore this can actually be achieved in their own countryside school. It has also been observed that once the STEAM HUB geared-up with LfE acquired technological solutions, more and more students have expressed their willingness to take part in STEAM HUB project activities and to spend some of their free time in a constructive manner ''learning by doing''.

Colți Secondary School
With the help of LfE funding, we successfully managed to improve the didactic-material base of our school by purchasing new, modern devices (7 laptops, 2 interactive whiteboards, a seismometer). This led to the creation of a modern science laboratory within the school. Three teachers participated in the Learning from the Extremes Summer School.
Following these purchases, all school students were involved in STEAM-type activities, this made possible the transition from discipline-centered learning to interdisciplinary learning. Partnerships with other schools and the local community, higher education institutions, research institutions were established. Thus, school students and teachers had access to online workshops and meetings in cooperation with important partners, we mention only a few examples:

- activity with representatives of the National Institute for Earth Physics (INCDFP). Students and teachers participated in workshops to better understand the importance of knowing natural hazards, their types and their impact on our daily lives.
- A series of online meetings with well-known Romanian researchers (meeting at national level) from well-known institutions: Museum of the Romanian Peasant, University of Bucharest, Digi Word

The representatives of the Unesco International Geopark Buzău Land together with the school students held a STEAM demonstration lesson attended by teachers from 25 schools
In order to use technology, the school's teachers were motivated to follow professional training courses, following these courses they were able to introduce technology into the lessons. Thus, there was a change in the professional and personal development of teachers. Teachers participated in online discussion groups and virtual communities to share ideas, strategies, and resources with other teachers and mentors.

School No 2	Secondary school Tătărani (Școala Gimnazială Tătărani)
How many students took part in the LfE activities?	160
How many teachers took part in the LfE activities?	22
Work carried out: Outcomes of the project: - 22 teachers in the school currently benefit from an optimal environment for lessons. Some of them frequently use this classroom on a rotating basis	

- Training sessions were organized on the use of IT equipment for the optimal development of classes for all teachers willing. We also organized two demonstration lessons at primary school
Even now we are still organizing open lessons at the gymnasium cycle - ICT, English and Romanian with the participation of other teachers
- The fully equipped and connected classroom is used in teaching by over 50% of teachers. Most use it for at least 30% of the hours allocated to that discipline
- The quality of education has increased concomitantly with the degree of satisfaction of beneficiaries. The students' satisfaction level for the classes held here is visibly increased
- School absenteeism has decreased, especially in school subjects that use equipment during classes
- Access to information and technology increased for students from disadvantaged families

Using the purchased equipment, we started to have activities in this classroom.
- We teach computer science classes here
- The properly equipped room connected to the Internet is used as a virtual laboratory for several disciplines. Currently, TIC classes, partly mathematics and Romanian language classes and occasionally English, geography, physics, chemistry classes take place in the equipped classroom.
Digital textbooks are used in classes
- We are also using the equipment for preparing for different competition.
- Since we have these devices, we have activated the Classroom licenses and we have created the website of the school (scoalatatarani.ro)
- We also managed to create the first two edition of the school magazine that was published on the school website and also appeared in print. (http://scoalatatarani.ro/pdf/REVISTA%20SCOLII.pdf). Now, we also have a national magazine for teachers in Romania.
- With teams of children we run different campaigns and use the laptops to create materials, leaflets, posters, video clips, even an electronic comic magazine. (http://scoalatatarani.ro/eroiiinternetului.html)
- In almost every class there is at least one student with CES (for them, materials can be adapted much easier and in a more attractive way through modern devices)
-We organized a program in which students use the classroom to do homework, projects under the supervision of the computer science teacher;
Through the use of modern equipment, the quality of the educational act is increased. The teachers work in a more flexible, adaptable and efficient manner, generating performance in the activity at the department. It is easier for teachers to offer work assignments differentiated according to the level of knowledge of each student.
Teachers benefit from an electronic space, which was supplemented by two external hard drives, where they store and edit various didactic materials, homework for students, online tests, grade catalog, but also students' works and their electronic portfolios.

School No 3	Secondary School Panaci

How many students took part in the LfE activities?	75
How many teachers took part in the LfE activities?	16
Work carried out: First of all, we were able to easily increase the subjects for national exams, wee made color sheets for current teaching activities, we made the activity of children with special educational requirements more efficient. Also, teachers' work has become easier and more attractive through the use of interactive whiteboards. We developed thematic educational projects, where the children organized workshops, made video materials, worked in teams, launched short films, leaflets, the school magazine. We completed a service learning project, Living Springs, where we gathered information about mineral water springs in our region, mapped them, created a logo, identified their chemical properties, and - we promoted in local tourism. circuit. With the help of computer equipment, we carried out didactic projects in interdisciplinary teams of teachers and students, we all had access to various information. We also purchased a platform with an electronic catalog, through which we keep in touch with parents much more easily, using IT means. Now we can organize meetings with parents at school, we present video materials with parenting education. Some parents come to school to learn to use the computer because they do not have IT communication devices at home. With the help of information technology, we can more easily promote the image of the school in the local and international community. We have already created an Erasmus + partnership with schools in Poland and Italy. We accessed environmental protection and waste recycling projects. We carry out scientific research educational projects, with the help of IT tools. We haven't had any difficulty, all the activities have been going very well up to this point. The impact for teachers is positive, their work has become easier and with a greater impact on students. IT tools help teachers to carry out creative activities, to carry out complex, interdisciplinary and transdisciplinary educational projects. They use laptops and multifunction devices to create teaching materials, worksheets, digital portfolios, PPT presentations. Teachers can research together with students (STEM education) scientific aspects of the local area (vegetation, fauna, soil, rocks, mineral waters, peat/ands), using technology to inform themselves, create logos, local maps, tourist routes and to promote these values by creating a web page and school website. Also, teachers can access thematic information about the subjects they teach, they can use interactive whiteboards in the didactic activity. Thus, through the use of new computer equipment, the educational standards of our school have increased.	

School No 4	Scoala Gimnaziala nr 1 Curcani
How many students took part in the LfE activities?	50
How many teachers took part in the LfE activities?	6
Work carried out: The implementation of the project began by selecting the target group from among students passionate about science (Physics, Chemistry, Biology, Geography). An initial	

call was made to which 70 students responded, to wham some questionnaires were applied. Following the centralization of the answers, there were selected 50 students from grades V-VIII.
Benefiting from the technological solutions purchased through LfE funding, we thought of a series of activities through which we want to familiarize the students with scientific concepts, basic notions from the disciplines mentioned above, organized on transdisciplinary modules.
The purchased laptops helped to document some topics that students did through a research assisted by the teachers involved in the project.
The presentation of those topics was made with the help of the smart board, a device highly appreciated by the students.
The 3D printer, another new device that aroused the students' curiosity, attracted special attention. They started the study of some design and modeling programs, the level being initiation in the construction of small modules necessary for the construction of some models used in the study of Geography.
Science kits were used to teach some concepts from physics, chemistry, biology.
The positive impact on teachers was materialized by increasing the number of transdisciplinary activities. This aspect increased the cooperation of science teachers, which is reflected in the good communication that now exists between them. Each teachers assists the students in their search to be able to complete the assignments given on certain transdisciplinary aspects. Each science teacher puts on the final product results in scientifically sound material and encourages students to develop critical thinking, necessary for their development.

School No 5	,,Simion Mehedinți" High School, Vidra, Vrancea
How many students took part in the LfE activities?	40
How many teachers took part in the LfE activities?	17

Work carried out:
We have tried to use the electronic equipment purchased through this project with all the available human resources (teachers and students) aiming to achieve all the objectives that we set at the beginning of the project.
The purchase of the equipment went without problems so that the proposed activities had no delays.
The teachers openly received the invitation to participate in an internal training regarding the use of new equipment and all the facilities offered by the use of online resources and teamwork. Transdisciplinary and multidisciplinary materials were created that included various subjects: English, Geography, Physics, Biology, Religion, which were presented to the students.
The seismometer was installed and activities were carried out in partnership with the National Research and Development Institute for Earth Physics.
Materials were created by the students to promote the educational offer of our school, a learning environment was created for the Olympic students and for

participation in competitions and exams. Members of the Robotics Club built a seismometer and continue to research the seismic activity in the area.

School No 6	Negulești Primary School
How many students took part in the LfE activities?	43
How many teachers took part in the LfE activities?	4
Work carried out: We have increased the digitalization level of the school, the equipment has aready been bought, teachers are trained and for both students and teachers, digital skills have improved compared to the period before the project's implementation. Before implementing the project, the pedagogical and technical needs were at a high level, but after equipping the school with digital technology equipment and giving access to digital content, we have improved the quality of education, the traditional teaching methods are now adapted to the requirements and attract students. Teachers have improved their own digital skills and they are now offering attractive lessons so as to improve the school's performance. Students are now working harder , encouraged to proactively join and interact with their peers and the teachers during the lessons. The main diffrence is the use of virtual reality technology which helps the students travel around the world in seconds, to experiment technology and the lesson is turned into a sensory and knowledge explosion that amazed our students. We can now experiment different types of lessons, teaching and learning methods in a professional way, with amazing results.Teachers now access information easier with the help of digital equipment purchased in the project. Our students are currently more interested in attending classes and engaged during teaching hours, they do their homework, compared to the period before the project when they showed low interest towards school, they skipped classes and seemed difficult to motivate. Students are now willing to attend school and their grades are higher.	

School No 7	Școala Gimnazială Sîntămăria Orlea (Sîntămăria Orlea Middle School)
How many students took part in the LfE activities?	15
How many teachers took part in the LfE activities?	5
Work carried out: Over the course of the project, our school has purchased digital tools, such as an interactive display, 16 laptops, a 3D printer and filaments, experiment kits, as well as a Raspberry Shake seismometer. In terms of students, our school managed to create a STEM club, made out of 16 secondary school students aged 12-15. As for the teaching staff, the funding received from the LfE project allowed 5 teachers to receive training in the summer school in Marathon, Greece. The project had a positive impact over	

students and teachers alike, manifesting in several areas. In the case of the students, they became more digitally literate and more confident in using technology. The students also found the lessons more interactive and more engaging due to a hands-on experience, caused by the use of the science kits and the digital tools. As for the teachers, the training allowed them to improve their digital and pedagogical skills, the equipment helped the STEM teachers, and not only, to search for more engaging, customized lesson content, and to make their courses more interactive. During their training, the teachers met participants from other LfE schools, with whom they were able to exchange ideas and form new connections. Overall, the project had a positive impact over students and teachers alike, raising the levels of digital literacy for both groups, as well as increasing collaboration between the two.

The first step in addressing the needs and challenges in our school was to have a general understanding of the digital level in our school, for teachers as well as students. This was done through online forms, or through filling in the Self-Reflection tool. The results of the forms allowed us to select the students who later became part of the STEM club. Following the creation of the STEM club, the students were engaged in a series of informative and preparatory activities, related to the topic of seismology. In September, a group of 16 students and 2 teachers have visited the Deva Seismological Observatory, where a representative of the National Institute of Research and Development for Earth Physics has presented to the students the way earthquakes are measured, recorded and interpreted. Over the course of the school year, the students, as well as the teachers, had the opportunity to participate in a series of webinars organized by experts and enrich their knowledge on topics such as geology, geography and seismology. When enough knowledge was acquired, it was time for the students and teachers to put it into practice.

The interest for technology extended not just to the target group (students of the STEM club) but to other students as well. The purchased equipment was able to reach a larger audience through extracurricular activities. As the Romanian teaching system has one week dedicated to alternative teaching and learning, our school used the opportunity to create activities centred around STEM, such as “Experiment Day”.

The equipment we purchased made a difference in the way teachers plan their lessons. Firstly, the technology available allowed the teachers to look for custom digital resources, as well as open educational resources. In terms of offering guidance and mentoring, the teachers who received training during the summer school shared their knowledge with their other colleagues, offering access to resources and technical support whenever it was possible. Secondly, the technology and training brought an improvement in the manner students perceive learning. Pieces of equipment such as the interactive board made the lessons more dynamic, allowing the students to move around freely, or items such as the science kits allowed the teachers and students to have a more direct approach in their courses. Last but not least, the training provided allowed several teachers to diversify their activities during lessons.

2.10 Spain

School No 1	Training and Resource Centre of Vigo
How many teachers took part in the LfE activities?	5
Work carried out: The main objective of our project was to provide continuous support to those centres in our area of influence that, due to their geographic location or limited schools in our area of influence that, due to their geographic location or limited technological or budgetary or limited technological or budgetary resources, could benefit from specific actions focused on the ad hoc design of training activities and the ad hoc design of training activities and the increase of loaned resources for the development of STEAM projects. As stated in the interim report, another of our project's main objectives was to ensure that the resources available for the of our project contemplated that technological resources would also be used for the full inclusion of students with specific support needs in the classroom. So far, this project to improve the digitalization and full inclusion processes in schools at risk of exclusion has involved schools twelve rural schools in our environment, which have taken advantage of the technological solutions acquired with the project funds for the development and implementation of their own STEAM projects to improve the digital literacy of students. Coinciding with the implementation by the regional government of the digital innovation program Creative Poles (MakerSpaces), CFR Vigo designed a wide network of training activities in our area of influence with which we tried to enhance the methodological transformation of the centres through the development of multidisciplinary projects focused on the development of critical thinking, cooperative work, improving creativity and autonomous learning. The main criterion for the organization of the training sessions was the geographical relocation throughout our area of influence in order to improve the attendance to the activities and avoid the displacements of teachers assigned to isolated centres. To this end, we multiplied the number of sessions and selected centres that welcomed participating teachers from neighbouring areas. The teachers of the schools that have benefited from this project report, in general, high levels of job satisfaction and professional teaching competence. The loan of technological resources and the design of training activities that contemplate their specific needs through the internal training plan of each centre has provided job development opportunities and increased the involvement of both teachers and students involved in the projects.	

School No 2	CEIP da Cruz
How many students took part in the LfE activities?	90
How many teachers took part in the LfE activities?	12
Work carried out:	

The results of the project have been very satisfactory for the whole educational community. For the students, increasing their motivation for scientific and technological learning while developing self-knowledge, skills to interact with the physical, natural and social world, making possible the understanding of events, the prediction of consequences and the activity aimed at improving and preserving the conditions of life. This project also contributed to the students' knowledge and understanding of the world in which they live and, above all, through their interaction they contribute to its conservation, transformation and improvement.
The pedagogical challenges and needs were addressed through an adequate organization of the environment, including spaces, resources and time distribution. Thus, activities were carried out both indoors and outdoors, with an adequate distribution of space for teamwork through a welcoming, comfortable and safe environment.
The resources with which we approached these challenges are varied and appropriate to their needs and interests, taking into account the students with specific educational support needs, for whom these challenges were very interesting and accessible. Thus, teachers were involved in the development and design of different types of materials, adapted to different levels and different learning styles and rhythms, in order to meet the diversity in the classroom and customize the processes of learning construction, enhancing the integration of information and communication technologies in the teaching-learning process and allowing access to virtual resources.
Thanks to the project we have a classroom equipped with technological and scientific material that allows us to change the teacher's methodology and the way of facing the students' learning. Thus, the pedagogical proposals start from the students' centres of interest and allow them to construct knowledge autonomously by solving real-life problems in a creative way, reinforcing reflection and responsibility.
With the acquired material we were able to carry out complex tasks whose resolution entailed the construction of new learning and the acquisition of competencies and skills that prepare students for their personal and professional future.

School No 3	CEIP MESÓN DO VENTO
How many students took part in the LfE activities?	80
How many teachers took part in the LfE activities?	4
Work carried out: In our school we did an important transformation regarding the program LfE. It implies the reorganization of three different rooms: IT room, Teachers lounge and Guidance Department offices. First of all we already moved the previous IT space to a new one located in a different building on the second floor. The new space is bigger than the previous one and it helps us with the amount of students per class and also with the methodology. In the former IT space now we have the teachers lounge and it's also a better space for staff meetings, a relaxed space for meeting each other and a perfect place for working. We	

take some of our training courses in this place and we decided that this space fits perfectly with our necessities, so this will be our main space for this kind of activities. The new IT space was the previous Guidance Department office. We had to empty the whole room to reorganize the ideas about this classroom. Also, the new Guidance Department office was the old teachers' lounge. It is located now in a different building. Nowadays, with space reorganization, we have a cozy space to work with students and families which invites dialogue and cooperation, allowing the educational community to have better access to headteacher offices and other personal resources.

Regarding the new IT space, once the classroom was free of furniture, we decided to create different dispositions of tables with chairs, to move the laptops from the previous IT classroom, so the students will have enough space to work with. In the front wall of the classroom, we installed an 86¨ interactive screen, which is a great success for us because we can use this new space also as a conference room for the school. This new space allows us to implement interactive activities between the students and the person who is involved with them, improving their learning experience.

We use this space as a conference room for teachers (training courses) and parents too, due to the high performer characteristics of the equipment and the polyvalence of the classroom.

We decided to locate in the IT room all the technological devices from the school, so it could be more accessible for teachers and students to use them. We also have planned an allocated space for new items so we can conform to a highly equipped IT classroom.

All these improvements lead us to offer our students the option to come to ICT room during the breaktime so they can use the different devices we have acquired, with the guidance of the teacher and mini teachers (students that have been trained in the use of these devices). They work in different challenges every month.

We are putting into practice training courses for teachers to improve knowledge skills regarding IT as well as for families. Regarding the families, once we have researched their interests and requirements, the training was based on:

- Basic digital knowledge.
- Robotic for families.

School No 4	CEIP SERRA VINCIOS
How many students took part in the LfE activities?	169
How many teachers took part in the LfE activities?	19

Work carried out:

Thanks to the implementation of this project, we have achieved significant improvements in our school, both at an infrastructure level and at a teaching level:

- There is a new equipped and open space which facilitates the development of different activities, particularly those involving STEAM competences.

- There has been an upgrade regarding the pedagogical methodology and activities carried out.
- The project has allowed a more individualised attention to students, hence we managed a more inclusive approach within the proposed tasks.
- The school has acquired a wide variety of resources to develop the chosen methodology.

We refurbished the old ICT classroom which was outdated and not functional for our current needs. We created an open space which is not only bigger and more spacious but also accommodates to our time and teaching-learning practice, providing an enclosed radio studio and different areas to carry out STEAM projects.

We equipped this new space with the needed technological resources and STEAM materials and improved the electrical installation with new sockets and lights, new audio wiring and the change of the internet switch to avoid technical problems that would regularly emerge prior to the refurbishment. Moreover, the mobile furniture allows us to adapt to the different groups and proposed activities.

The ICT team organised monthly meetings to develop the project and created a specific working group within the school's training plan for the teachers to get the required and much needed training regarding the use of the acquired technological resources and their exploitation in the different learning situations and teaching practice.

With the implementation of multilevel workshops, we were able to reduce the number of students per teacher for each given activity and to provide a more adequate response increasing the teacher-student interaction. With the use of the travelling bags the digital divide among the students was reduced.

3. Conclusion

The Learning from the Extremes project has set-up a fast-track mechanism to coordinate and implement a cycle of open calls for proposals, their evaluation, the selection of the most promising ones, their funding, their monitoring and their finalization. An effective recruitment campaign, targeting the right stakeholders (including local and national authorities, schools and school networks), disseminating the open call far and wide and managing the submission of the proposals and the selection process of the applicants has been designed. A systematic evaluation process (including online presentation of the proposed projects) was developed.

Each applicant school had to present in detail the needs of the school and its community as well as the pedagogically innovative aspects of the proposed project that would be supported by the technological solutions. The whole content of the Application form was, in principle, a School Development Plan elaborated from each school.

The Learning from the Extremes project's mentoring and support scheme was implemented with rural schools in Greece, Portugal, Cyprus, Croatia, Finland, Ireland, Bulgaria, Romania, Italy and Spain deploying at the same time the opportunities offered by major ongoing initiatives and reforms in these countries. The project was implemented with a bottom-up approach in 123 Primary, Secondary and Vocational schools in rural areas. The Learning from the Extremes project has run deployment pilots to allow the selected schools to benefit from the most suitable technical solutions to reduce the digital gap, limited or no access to devices and digital educational tools and content. To support these pilots the project has designed and run training programs to enhance teachers' digital competences regarding the use of the newly implemented digital devices and digital educational tools and content as well as regarding the development of innovative pedagogies.

The project team has also set-up a monitoring and reporting approach to collect from the projects the necessary data to inform the Learning from the Extremes Roadmap and the final recommendations for future actions. All participating schools had to provide an interim report and a final report. The final report was a self-reflection exercise in evaluating the School Development Plan outlined in the application form. The school had to report how they implemented their project with the support of the technological solutions acquired for their school through the LfE funding, and what were the outcomes of their project. They also had to describe how they addressed the pedagogical and technical challenges/needs initially described in their application, highlighting the pedagogically innovative aspects and the role of the acquired technological solutions. Information harvested from these reports is presented in the following chapter.

This deliverable showcases the work done by the school participating in the Learning from the Extremes activities based on their school development plan. The activities as reported by the schools proved instrumental in addressing inequalities of access to digital education by enhancing inclusion and by reducing the digital gap suffered by school communities from remote areas with low connectivity, limited or no access to devices and digital educational tools and content. All schools were able to share teaching excellence with professional support in the classroom, the school and the region. Students had modern, connected and constructive learning spaces equipped to support engaged, personalised learning. Teachers had the development, support and resources they need to integrate digital tools within the learning environment. While school communities now have access to digital tools and connectivity for effective communication and collaboration.