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DOCUMENT FOR ESTABLISHING A TRANSNATIONAL STRATEGIC PARTNERSHIP FOR IMPROVING EDUCATIONAL PROCESSES IN THE REGIONS OF ASTURIA - SPAIN, KOCANI - NORTH MACEDONIA AND SLIVEN - BULGARIA

Intellectual product 2



Project title: Establishing of the innovative ICT-based educational
approach for tackling of students' academic
underachievement in STEM related school subjects in
primary schools

Abbreviation: STEM with Holograms
under the Erasmus+ Programme

AGREEMENT NUMBER: **2023-1-ES01-KA220-SCH-00153054**

EU FUNDING ACKNOWLEDGEMENT AND DISCLAIMER



The project “STEM with Holograms” is co-funded by the European Union under the Erasmus+ Programme, Grant Agreement No. 2023-1-ES01-KA220-SCH-00153054.

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Recommended attribution: Transnational Strategic Partnership document, “STEM with Holograms”, Erasmus+ project 2023-1-ES01-KA220-SCH-00153054.

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Introduction

Education process and fostering skills in science, technology, engineering, and mathematics (STEM) are important in a global economy increasingly focused on high-growth, technology-driven occupations. This challenge must be addressed in all level of education and especially in early educational processes. The process of establishing of the innovative ICT-based educational methods, by itself is offering is a synergy of expertise and human resources from different socio-economical organisations (educational authorities, civil organizations - NGOs, educational institutions and local self-governments /as highly important stakeholders/) in facing the challenge of local/regional business community interest – the shortage of STEM-skilled workforce.

This project is not just one activity, but a set of activities that are creating a systematical approach towards the issue with high level of importance for EU – the support digitalization in educational process in its formal and non-formal activities. The project is envisaging activities related with formal (daily STEM-related school classes) and non-formal education (students' transnational competitive events). In addition, project foreseen creation of the appropriate communicational/promotional activities with specific approach towards the main relevant stakeholders (local authorities, local/regional educational authorities, educational institutions, local/regional business communities, civil sector active in field of education, ICT sector, etc.) with aim to emphasis a necessity of urgent development and implementation of advanced ICT-based educational approaches.

Europe desperately needs STEM skills. International assessments show that one in four adults in Europe lack basic skills in STEM. By 2030, there will be 50 million open vacancies worldwide for positions requiring STEM skills. Project is addressing the issue from interest in any European countries (as well as many of the countries on the world level). It will show that potential of educational institutions must be used in tackling of issues from large community interest like ensuring of sufficient number of STEM educated employees.

Creation of the innovative ICT-based educational approach for tackling of students' academic underachievement in STEM related school subjects which will be suitable for implementation in educational system in three European countries (Spain, Bulgaria, The Republic of North Macedonia) will also have a large transfer-ability potential to be implemented in educational systems in other European countries. Once established transnational cooperation among teachers will allow exchanging of the best educational practices which cannot be done by project realization in a single country.

Once established transnational cooperation will ensure development of future projects (actions) for improvement of educational processes in regions of project partners which will have transnational character. These future activities will be based on newly created (in the project frame) Action plan for transnational cooperation in addressing of the issues from community interest in the educational processes in targeted regions. Teachers' Network, which will be established on the eTwinning platform will also ensure future cooperation and exchanging of good practices among teachers which will ensure new joint activities.

Main Project Objectives:

The project main objective is development and practical implementation of the innovative ICT-based educational method for tackling of students' academic underachievement in STEM related school subjects in three primary schools from the regions of Asturia -Spain, Sliven-Bulgaria, and Kochani-North Macedonia. The project offers an interdisciplinary educational approach suitable for any topics from community interest, with high transfer-ability potential suitable for implementation in any educational institution. Additionally, the project activities allow promotion of goals of the European Digital Agenda for the decade 2020-2030 and foreseen actions in the Digital Education Action Plan 2021-2027. Furthermore, project activities lead to increasing of the capacity for transnational cooperation of all involved partner organizations, as well as to become open to synergies with relevant stakeholders active in different fields and/or in other socio-economic sectors.

Specific project objectives are:

SPO 1 Development and implementation of the ICT-based (Holograms and VR) educational method for tackling of students' academic underachievement in STEM related school subjects in primary schools.

Note: Newly created education method will be a product of joint work of external experts and STEM teachers and will be described in details within a Handbook (small pedagogical material for internal use) for the primary school STEM teachers - as a guideline how to implement Holograms as well as VR technology in their regular school classes.

SPO 2 Increasing STEM teachers and students' digital skills and competences which include:

- Increasing of the primary schools' STEM teachers' skills and competences in using of the innovative ICT-based educational approaches for tackling of students' academic underachievement in STEM related school subjects, as well as strengthening STEM teachers' skills and improving their capacity for transnational cooperation with their colleagues from other European Countries by using of eTwinning networking platform
- Increasing primary schools students' skills and their preparedness for using of the innovative ICT-based educational approaches, as well as their skills for teamwork, research and presentation.

SPO 3 Promoting needs for increasing of the interest and excellence in STEM subjects

Note: The initial complexity and global picture of STEM subjects will be simplified with the use of the innovative ICT-based educational method, which will intrigue students to overpass the initial challenges of these subjects when they first time face them in their educational process. The project will establish an appropriate promotional/communicational approach towards different type of relevant local/regional stakeholders. Special focus will be given in increasing of interest of female students in STEM (and especially ICT) careers.

SPO 4 Establishing of long-term strategic partnership among organizations with different social-economical background for improving of educational processes in regions of Asturias - Spain
Kochani - N. Macedonia and Sliven Bulgaria

Chapter 1:

Overview of the current state of educational processes in the municipalities of the project partners

Nowadays, more and more pedagogical specialists have the desire to increase their qualifications regarding the use of digital resources in teaching and conducting STEM lessons. Encouraging the departure from the framework of conservative teaching aims at increasing the interest and motivation of students for learning, increasing the results of their learning and having a permanent retention in school

During the Covid-pandemic, the Ministry of Education and Science felt the need to implement digital resources in educational processes. As a result, the investment project "STEM centers and innovations in education" under the National Plan for Sustainability and Development was launched. It aims to have every school in the country build and equip its own STEM classroom

1.1. Analysis of educational process in Sliven, Bulgaria

The **education system in Bulgaria** is overseen by the Ministry of Education and Science and is structured into several levels. It has undergone reforms in recent years to align with European standards, particularly the Bologna Process and EU directives.



Structure of the Bulgarian Education System

1. Pre-primary Education (Kindergarten)

- **Ages:** 3–6 (optional), last year (age 5–6) is **compulsory**.
- Focuses on basic social, emotional, and cognitive development.
- Typically held in public or private kindergartens.

2. Primary Education

Grades: 1–4 (Ages 7–10)

- Starts at age 7 (or 6 in some cases).
- Students are taught by one main teacher and receive foundational skills in reading, writing, math, and Bulgarian language.

3. Lower Secondary Education

- **Grades:** 5–7 (Ages 11–13)
- Subject-based teaching begins with specialized teachers.
- Ends with a **national assessment** (NVO) in Bulgarian language and mathematics.

4. Upper Secondary Education

- **Grades:** 8–12 (Ages 14–18/19)
- **Two main types:**
 - **General Secondary Schools (общообразователни училища)**
 - **Vocational Schools (професионални гимназии)** – Combine general and vocational education.
- Ends with the **Matura Exams (Държавни зрелостни изпити)**, required for graduation and university admission.

5. Higher Education

- **Types of institutions:**
 - Universities
 - Specialized higher schools
 - Colleges (shorter programs)
- **Degrees offered:**
 - **Bachelor's Degree (4 years)**
 - **Master's Degree (1–2 years after Bachelor's)**
 - **Doctorate (PhD)**
- Admission is based on the Matura exams and/or university entrance exams.



Types of schools

- **State/Public Schools** – Majority, free of charge.
- **Private Schools** – Tuition-based, often offering international curricula.
- **Religious Schools** – Must be licensed by the state.
- **Special Needs Schools** – For students with disabilities.



Main characteristics:

- **Compulsory Education:** From age 5 (pre-school year) to age 16.
- **School Year:** September 15 – end of May/June (depending on grade).
- **Grading System:** 2 (poor) to 6 (excellent).

- **Language of Instruction:** Bulgarian, with options for minority languages and foreign language schools (e.g. English, German, French).

Recent Reforms and Trends

- Introduction of **competency-based curricula**.
- **Digitalization** and use of electronic diaries, platforms, and resources.
- Strengthening of **dual education** in vocational schools (school + company practice).
- Focus on **inclusive education** for students with special needs.

The mandatory requirements for the results in the system of preschool and school education, in Bulgaria as well as the conditions and processes for their achievement, are called the State Educational Standards.

Laws and bylaws in the education system of Bulgaria:

- LAW ON PRESCHOOL AND SCHOOL EDUCATION
- REGULATION No. 11 of 1.09.2016 on assessing the learning outcomes of students
- REGULATION No. 10 of 1.09.2016 on the organization of activities in school education
- REGULATION No. 5 of 03.06.2016 on preschool education
- REGULATION No. 13 of 21.09.2016 on civic, health, environmental and intercultural education
- REGULATION No. 15 of 22.07.2019 on the status and professional development of teachers, principals and other pedagogical specialists
- REGULATION on Inclusive Education ... and etc.

Preschool education

Preschool education in the Republic of Bulgaria is mandatory from the school year, which begins in the year the child turns 4 years old. It is organized in groups according to the age of children.

At the national level, kindergartens for children from 2-3 to 6 years old are managed and methodologically supported by the Ministry of Education and Science through the regional departments of education in the country, and independent nurseries for children from 10 months to 3 years old are managed by the Ministry of Health. At the municipal level, the municipal education and health departments of the municipalities are responsible for the management and supervision of kindergartens, kindergartens with nursery groups and independent nurseries.

In 2024/2025 school year in Sliven district, Bulgaria, there are 59 kindergartens. 4 of them also have nursery groups. The number of schools with groups for compulsory preschool education is 18. The number of preschool children is 6,360, and the number of pedagogical specialists is 500. There are 8 independent nurseries with 560 children.

Preschool education can be full-day, half-day, hourly or according to individual needs (independent organization). Children attending full-day and half-day classes are organized in separate groups in the kindergarten. All forms of organization include the provision of education, socialization, training and support for the upbringing of the child. They are provided in partnership with parents, and the achievements of children in kindergarten are monitored and reported at the beginning and the end of the respective age period using appropriate tools.

The state has removed obstacles to children's access to early education and parents do not pay fees for attending nurseries and kindergartens.

In kindergartens, directors and teaching staff have appropriate education and qualifications for the positions they have. There is a regulated system of continuing professional development for staff in the education system and working conditions are good. In nurseries, medical and pedagogical specialists are also appropriately qualified.

The provision of a program and methodology in kindergartens (for children aged between 2-3 and 7 years) is based on the state standards for preschool education, set out in Regulation No. 5 on preschool education. Various methodological tools exist on the basis of these standards. The curriculum (program system) for kindergartens is based on pedagogical goals, values and approaches that enable children to develop their full potential in accordance with their social, emotional, cognitive and physical development and with a view to their well-being. The importance of play as an important part of the educational process is taken into account.

The curriculum includes the competencies (or expected outcomes) that children should achieve through their education, upbringing and socialization. These competencies include Bulgarian language and literature, mathematics, the surrounding world, fine arts, music, construction and technology, and physical activity.

Kindergartens, including nursery groups, are obliged to follow the national principles for child protection and to be advocates for the rights of every child.

School education

School education in Bulgaria is compulsory until the age of 16 and begins in the school year that begins in the year the child turns 7. It includes two levels - the basic level and the secondary level of education.

The basic level includes the primary stage (from grades I to IV) and the lower secondary stage (from grades V to VII).

The secondary level of education is divided into two stages. In the first secondary stage, students from grades VIII to X are educated, and in the second secondary stage - from grades XI and XII.

In the compulsory school hours, training is provided for the acquisition of general educational preparation through the subjects provided for study in the respective grade, and in the vocational training classes - and general vocational training in accordance with the state educational standard for the acquisition of a qualification in a profession.

General educational preparation in school education is the same for all types of schools. The specific subjects and their distribution by grade and stage are determined by the framework curricula. The training for acquiring general education in each of the subjects is carried out according to curricula, which specify the students' competencies as expected learning outcomes for the class.

Profiled training is acquired in the second stage of secondary education by studying the profiling subjects included in the respective profile, and covers in-depth competencies for a specific profiling subject and complex competencies for a given profile. The teaching time for implementing profiled training in the second stage of secondary education is between 18 and 20

teaching hours per week, with each of the profiling subjects being studied for no less than 4 teaching hours per week throughout the entire stage of education. Each profiling subject consists of mandatory and elective modules.

In Sliven district, there are 6 primary schools, 37 basic schools, 11 secondary schools, 1 combined school, 8 vocational high schools, 3 specialized high schools, 1 sports school, 1 national school of folklore arts and 1 national art high school.

Higher education

Higher education at the educational and qualification degrees (ECD) "bachelor", "master" and "specialist" is acquired in higher education institutions.

The minimum period for full-time study according to the curriculum for the "bachelor" ECD is 4 years. The period of study for acquiring the educational and qualification degree "master" in full-time study vary depending on the field. The training for acquiring the educational and qualification degree "specialist" is organized in colleges. The duration of the training is with a minimum period of preparation of 3 years with a total number of hours not less than 1800 and not more than 2400.

In the district of Sliven, we have a branch of the Medical University - Varna and the Faculty of Engineering and Pedagogy (FEPP), which is a branch of the Technical University (TU) – Sofia.

Management of education on regional level

The territorial administration subordinated to the Ministry of Education and Science for management and control of the system of pre-school and school education in the region of Sliven is The Regional Department of Education - Sliven (RDE-Sliven). Regional Department of Education - Sliven is a legal entity and a secondary budget authorizing institution. The organization of the activities in the institution are carried out in accordance with the provisions of the Regulations on the Structure and Functions of the Regional Departments of Education and according to the Rules of Internal Order. It is managed and represented by a Head. The implementation of the activities are carried out by two departments:

- General Administration - Department of Administrative and legal, financial, business and information services;
- Specialized Administration - Department of organizational-methodological activities and control.

The Regional Department of Education - Sliven operates according to an annual plan approved by the Minister of Education and Science.

Mission: Regional Department of Education - Sliven creates conditions for the implementation of the state educational policy in the territory of the district of Sliven, managing and controlling the system of pre-school and school education on the territory of the district.

Vision: Regional Department of Education - Sliven is an active party in the implementation of state policy in secondary education and in the coordination of regional and municipal authorities, the school network, business and civil society for lifelong learning and the development of a knowledge-based economy.

Main priorities of education in the district of Sliven:

1. Effective organization, methodological support and management of the educational system in the district of Sliven for the implementation of the state education policy in accordance with the Law on Pre-school and School Education and the State Educational Standards.
2. Implementation activities of the Collaboration Mechanism of the Institutions for the Enrollment and Inclusion of Compulsory Preschool and School Age Children and Students in the Educational System; their keeping in educational institutions; to provoke students' interest in learning, to continuously improve their skills and to enhance their educational outcomes;
3. Methodological support and control over Bulgarian language learning activities for children whose mother tongue is not Bulgarian; as well as for literacy, mastering the norms of the literary Bulgarian language and increasing the level of functional literacy of the students;
4. Supporting the practical orientation of training, key competencies acquisition activities and result orientation; the use of innovation in the educational process and the active sharing of good practices;

5. Supporting the development of vocational education in line with the development of the economy in the region and the needs of the business;
6. Activities for the implementation of inclusive education policy and support for the personal development of each child and student;
7. Supporting the initiatives and activities of educational institutions related to active partnerships with parents to educate children and students in values and virtues, intolerant of aggression and intolerance, respect for rights and compliance with rules and obligations;
8. Active participation in national and international educational projects.

Most adequate educational approaches :

- Competency-based learning
- Inquiry-based learning
- Project-based learning
- Digital integration
- Inclusive education
- CLIL *Content and language integrated learning
- Cultural responsive teaching- respects students' backgrounds, values, and languages. It is especially important in multicultural classrooms or minority communities (e.g., Roma, Turkish in Bulgaria) that are very common for the region of Sliven

In conclusion we aim to have student-centered and inclusive education, that is practical and skill-oriented, digitally enhanced and adaptable to individual needs and social context

1.2. Analysis of educational process in Asturias, Spain

National level:

In general terms, our Spanish education system can be defined as a subsystem of the social system, formed by the dynamic interaction of institutions, groups, people or elements that enable the members of a society to be trained and socialized, and is therefore influenced and subjected to different cultural, social, economic and political factors that have shaped its current reality.

Different organic laws have been published from 1970 to the present day to shape the regulations that govern our education system today.

The main characteristics of today's education system can be summarized in the principles that underpin it and the goals it is intended to achieve:

- To provide quality education to all citizens of both sexes, at all levels of education.
- Collaborate all the components of the educational community to achieve this ambitious objective.
- Commitment to the educational objectives set by the European Union for the coming years.

More specifically in Asturias. **Autonomous level**

The Organic Law of Education (LOE) governs the education system in the Autonomous Community of the Principality of Asturias, as in the rest of Spain. This law establishes the general framework of the education system and is developed through specific regulations in each autonomous community.

In Asturias, the education system is structured in different stages:

1. **Infant Education:** This educational stage is not compulsory and ranges from 0 to 6 years old. It is divided into two cycles: from 0 to 3 years and from 3 to 6 years. The main objective is the integral development of children in their physical, affective, social and intellectual aspects.
2. **Primary Education:** It is compulsory and comprises six academic courses, from 6 to 12 years old. It is organized into three cycles of two years each. The objective is to provide students with a basic education in areas such as Language and Literature, Mathematics, Social Sciences, Natural Sciences and Foreign Language.

3. **Compulsory Secondary Education (ESO):** It is compulsory and covers four academic courses, from 12 to 16 years old. It is divided into two cycles of two years each. The objective is to consolidate the knowledge acquired in the previous stage and prepare students for further studies or for working life.
4. **Baccalaureate:** It is not compulsory and has a duration of two academic courses. It is offered in different modalities: Sciences, Humanities and Social Sciences, and Arts. The objective is to provide students with specialized training in the chosen modality and prepare them for higher education.
5. **Vocational Training:** It comprises different training cycles of basic, intermediate and higher level. The objective is to prepare students for the performance of a profession.
6. **Artistic Education:** It includes music, dance, drama, plastic arts and design. They are offered at different levels and aim to train professionals in these areas.
7. **Language Teaching:** They are offered at different levels and aim to facilitate the learning of foreign languages.
8. **Education of Adults:** It allows adults to complete their basic education and access different educational levels.

Competences:

Both the Ministry of Education and Vocational Training and the Ministry of Education of the Principality of Asturias manage the education system in Asturias. The Ministry establishes the minimum teachings and the general framework of the education system, while the Ministry develops the curriculum, organizes educational centres and manages human and material resources.

Resources:

The Principality of Asturias allocates a significant part of its budget to education. Public schools are free, and there are also subsidized and private schools. In addition, different scholarships and grants are offered to facilitate access to education.

Innovation:

The Ministry of Education of the Principality of Asturias promotes educational innovation through different programs and projects. The use of new technologies, teacher training and the participation of the educational community are encouraged.

Focusing our analysis of the education system on the **local level**, the municipal powers of the Oviedo City Council in education are varied and cover different areas. Although current legislation does not grant municipalities the status of educational administration, it does recognize and entrust them with educational tasks such as:

Maintenance and construction of educational centres:

- The Oviedo City Council is responsible for the maintenance and repair of the buildings of public Infant and Primary Education centres. This includes everything from minor repairs to major works.
- It also participates in the construction of new educational centres, although this competence is usually shared with the Ministry of Education of the Principality of Asturias.

Support for the educational community:

- The City Council collaborates with educational centres in carrying out complementary activities, such as excursions, workshops, or cultural events.
- It also supports parent-teacher associations, facilitating their participation in school life.

Municipal educational programmes:

- The City Council develops its own educational programs in areas such as environmental education, health promotion, or the prevention of school bullying.
- These programs are usually aimed at students of different ages and are carried out in collaboration with educational centres.

Municipal School Council:

- The City Council has a Municipal School Council, which is a body for consultation and participation in educational matters.

- Different sectors of the educational community are represented in this council, such as parents, teachers, students, and representatives of the City Council.

Other competences:

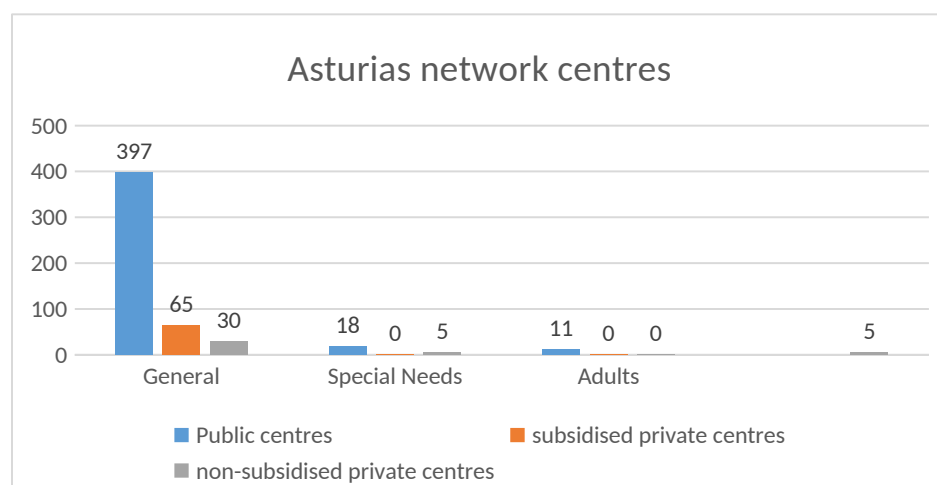
- The City Council may also have competences in the management of school canteens, school transport, or the education of adults, although these competences may vary depending on regional legislation.

It is important to bear in mind that municipal competences in education may vary depending on regional legislation and collaboration agreements between the City Council and the Ministry of Education.

NETWORK OF EDUCATIONAL CENTRES

In Asturias, there are 492 educational centres offering general education, of which 397 belong to the public network, 65 to the network of subsidised private centres, and 30 to the network of non-subsidised private centres. In addition, there are 23 special education centres (18 public and 5 private) and 11 adult education centres, all of which are public.

Graph 1: Distribution of the network of Asturian centres by ownership



Source: *Informe estado y situación del Sistema educativo asturiano 2021/2022*

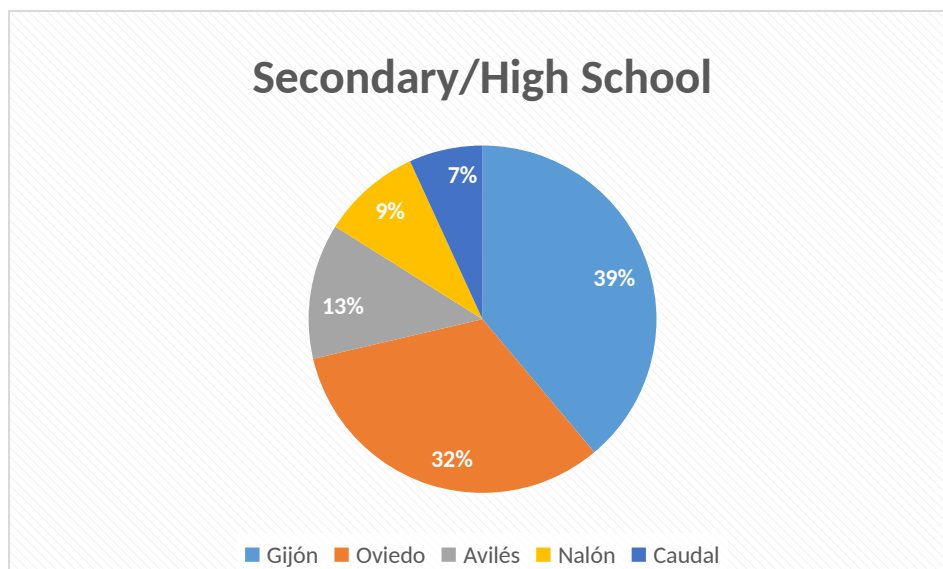
Table 1: REGISTRATION DATA IN ASTURIAS

Type of Teaching	Stage	Academic year 2024/2025	Academic year 2023/2024	Total difference	%
Public	Infant and primary	39 951	41 133	-1 182	-2.8
	Secondary and high school	33 363	33 322	41	0.1
Subsidised private/non-subsidised private	Infant and primary	1612	1671	-359	-2.1
	Secondary and high school	10 280	10 449	-169	-1.6
TOTAL		99 906	101 575	-1 669	-1.6

Source: Gobierno del Principado de Asturias

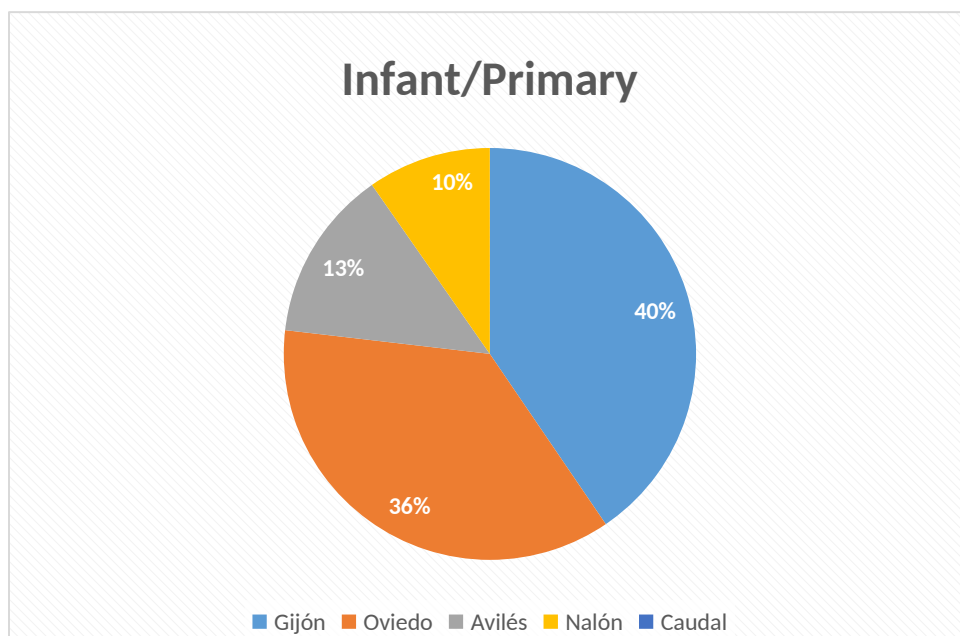
REGISTRATION DATA IN ASTURIAS BY AREA and STAGE

Graph 2: Registration Data in Asturias in Secondary and High School by area



Source: Gobierno del Principado de Asturias

Graph 3: Registration Data in Asturias in Infant and Primary School by area



Source: Gobierno del Principado de Asturias

1.3. Analysis of educational process in Kochani, The Republic of North Macedonia

Educational system on National level in North Macedonia

The educational system in the Republic of North Macedonia reflects the needs of the society for educational, scientific and permanent role of the education and science for the economic, social, technological and cultural development of the society as a whole. Consequently, the Ministry of Education and Science facilitates the continuous development of the system of education, moral education and science in the Republic of North Macedonia.

The education system of North Macedonia is regulated through a number of laws and bylaws covering different segments:

- **Pre-school education** (Child Protection Law);
- **Primary education** (Law on Primary Education, Law on the Bureau for Development of Education, Law on the Adult Education, Law on Education Inspection, Law on Primary and Secondary Education Textbooks, Law on Teachers and Associates in Primary and Secondary Schools, Law on Higher Education Institutions for Teaching Staff in the Pre-school education and Primary and Secondary Education etc.);
- **Secondary education** (Law on Secondary Education, Law on Vocational Education and Training, Law on the Adult Education, Law on Local Self-government, Law on the Bureau for Development of Education, Law on Pupils Standard, Law on Primary and Secondary Education Textbooks, Law on Teachers and Associates in Primary and Secondary Schools, Law on Higher Education Institutions for Teaching Staff in the Pre-school education and Primary and Secondary Education Law on the State Examination Centre, Law on Education Inspection etc.);
- **Higher education** (Law on Higher Education, Law on Science and Research, Law on Student Standard and Law on Education Inspection) and
- **Adult education** (Law on Adult Education and Law on Open Civic Universities for Life Long Learning).

A number of bylaws (rulebooks, regulations, standards, etc.), strategies and other program documents regulate the procedural, technological, organisational, financial and other aspects of the education process.

The [Education Strategy for 2018-2025 and Action Plan](#) is the latest document that presents the fundamental principles of national education system.

Pre-school education

The care for and the education of children at preschool age is a form of child protection, organised for the purpose of care, nutrition, educational, sports and recreational, cultural and entertainment activities. Pre-school education also includes measures and activities for improvement and preservation of the health. The nurturing and enhancing of the intellectual, emotional, physical, mental and social development of the child until the age of 6 is also another important aspect encompassed with the pre-school education.

Pre-school education is organised and offered by:

- Kindergartens;
- Early childhood development centres and
- Agencies which can be established, in line with the Law on Child Protection (Official Gazette of the Republic of Macedonia, No. 164/17), as public or private institutions.

In 2018, there were 37,615 children up to 6 years old enrolled in 68 public and 24 private pre-school institutions, 3 kindergartens within private schools in the capacity of legal entities, 2 early childhood development centres in the capacity of a public entity, 4 early child development centres in the capacity of private legal entities, 1 public kindergarten within a legal entity established for the needs of its employees, 1 private kindergarten within a legal entity established for the needs of its employees. The number of enrolled children in 2018 has increased by 6.6% compared to 2017.

Pre-school education has been developed on the basis of two documents:

- [Foundations of the Programme for Educational Work with Children of Preschool Age](#) and
- [Programme for Early Learning and Development](#).

The Programme for Early Learning and Development is based on the Standards for Early Learning and Development. The curricular foundations are developed by the Bureau for Development of Education. The Program was adopted through an act by the Minister of Labour and Social Policy in 2014 .

Pre-school education is not mandatory. It is carried out in Macedonian language, whilst for children of members of other communities, educational activities in public kindergartens are carried out in the language of the respective ethnic community.

North Macedonia has also adopted a [National Strategy \(2020-2022\) and Action Plan \(2020-2020\) for Prevention and Protection of Children from Violence](#) as well as the [Program for Development of Children Protection Activity for 2019](#).

Primary education

Primary education in North Macedonia has 9-year duration and is compulsory and accessible to all children regardless of gender, social and cultural background, religion, national affiliation and physical and psychological abilities. Each child aged 6 to 14 is provided with opportunity to regularly attend teaching in a compulsory nine-year primary school. Primary education within the framework of established curricula is free for all students and is funded from the State Budget.

The structure of primary education, established through the Concept for nine-year primary education, consists of three educational periods: grades 1-3, grades 4-6 and grades 7-9. Each period is relatively unified as a whole in regards to the developmental characteristics of students and of learning. Each period is also characterized with different approaches in the evaluation and assessment of student achievements, individualised teaching, knowledge, skills and student progression. According to the State Statistical Office, there were 988 primary schools in the country (including satellite schools) in the academic year 2018/19.

Primary education is delivered in primary schools, and for students with special educational needs in special primary schools or classes in mainstream primary schools. In communities with small number of students, satellite facilities operate within central primary schools. Only the central primary schools are public legal entities. The regular primary schools are under jurisdiction of the municipalities, whereas the special primary schools are under jurisdiction of the Ministry of Education and Science. Private primary schools exist outside of the formal education system and are established mainly for provision of educational services for children with foreign citizenship.

The issues of the primary education have been regulated with the [Law on Primary Education](#).

Secondary education

Upon completion of the primary education, students are provided with the opportunity to enrol under equal terms in a secondary school. The [Law on Secondary Education](#) defines secondary education as compulsory for each citizen and is free in public secondary schools.

Secondary education provides students with competences for work and further education, and is carried out in state, municipal (public) and private secondary schools. Teaching in public schools is carried out in Macedonian and using the Cyrillic alphabet; for the members of communities in the language and using the alphabet of the respective community (Albanian and Turkish). Depending on the type of secondary education, schooling is completed by passing the State Matura, the School Matura or Final Exam, in line with the Concept for Matura and Final Exam in Public Secondary Education.

The secondary education, which is also compulsory and free, is divided into four streams: general secondary education (gymnasium), secondary vocational education, art schools, and education for pupils with special educational needs. Secondary vocational education may be of 3-year or 4-year duration. At the end of a 3-year vocational education the students take a final exam, without a right for university entrance. Graduates of the 4-year secondary education are allowed to choose between the final exams and state or school Matura depending on whether they wish to continue education, while the gymnasium graduates have to take state or school Matura exams.

Among existing 124 secondary schools, 108 are public while the remaining 16 are private. As far as the profile of the schools is concerned, 23 are general education schools, 43 are vocational schools, 33 offer both general and vocational education, 4 schools are for pupils with special educational needs and 5 are art schools.

Higher education

The system of higher education comprises study programmes within three cycles: undergraduate, master and doctoral studies. There are 6 functional public universities (two of them in Albanian as a language of instruction), 1 private-public university and 9 private universities, and 2 high vocational schools.

In addition to teaching, higher education institutions engage in scientific research in diverse fields. The higher education in Macedonia offers a broad range of opportunities for acquiring academic degrees and professional qualifications.

Terms and criteria for selection and enrolment of new students are proposed by the higher education institutions and harmonised between the universities. Enrolment is open for graduates from general, vocational or art secondary schools. Due to the limited enrolment quotas, candidates are ranked according to their grades from secondary school, the results from the State Matura and, if necessary, results from a qualification exam. Students who meet the demands but are in excess of the number stipulated in the open call for enrolment enter the co-financing quota. Full-time and part-time students need to meet the same requirements.

Within the first cycle of studies, universities offer higher vocational studies, which have 3-year duration and are regarded as non-academic studies.

Curricula and syllabus for higher education are defined by the Teaching and Scientific Council at the respective faculty, upon which an opinion is provided by the university. Accreditation of universities and study programs is granted by the Higher Education Accreditation and Evaluation Board. As at December 31, 2019 the new Higher Education Quality Agency has not been established yet.

The issues of higher education have been regulated by the [Law on Higher Education](#).

Adult education

Adult education is an integral part of the education system, enabling learners to acquire the competences necessary for easier integration in society, easier employment and more flexible adaptation to and entry into the labour market. It compensates for gaps in the schooling of those learners who failed to complete primary education or of those who need to obtain vocational qualifications at secondary school level or higher. It delivers programmes for adults (employed or unemployed) for continuing development, new qualification for new employment. In addition, it contributes to meeting other educational and cultural needs of citizens.

Adult education in North Macedonia is carried out in primary or secondary schools, open citizens' universities, institutions for adult education, larger companies and their associations. Teaching is delivered in the form of regular or preparatory instruction, depending on the age, psycho-physical abilities and self-education capacities.

The Adult Education Centre (AEC) is the key institution for the development of adult education system at national level. AEC was established by the Government in November 2008 and became operational in June 2009. Its main tasks are to promote the Adult education and coordinate cooperation with international institutions and other adult education organisations, to ensure quality particularly through establishment of standards and criteria for formal and non-formal adult education.

The issues of adult education have been regulated by the [Law on Adult Education](#) and [Law on Open Civic Universities for Life Long Learning](#).

Type of educational institutions	ISCED levels provided	Main orientation of the programmes provided	Number of educational institutions			
			Total	Public	Government-dependent private	Private independent
Preschool * education (preduchilishno obrazovanie)	0	G	122*	81	(-)	41
Primary School** (Osnovno ucilishte)	1,2	G	363* *	363	(-)	3 with approval for experimentation
Upper Secondary School – Gymnasium (Sredno ucilishte – Gimnazija)	3	General	78	60	(-)	18
Secondary Vocational School (Sredno strucno ucilishte)	3	Vocational	77	75	(-)	2

*Source: Ministry of Labor and Social Affairs www.mtsp.gov.mk

**Source: Ministry of Education and Science www.mon.gov.mk

The number of schools in the table refer to legal entities. In the total number of schools 363 as legal entities there are 637 affiliates. The number of schools in the table refer to legal entities.

The number provided for Private Independent Primary School (Osnovno ucilishte) has an approval for experimentation.

For the secondary schools total number is 108 as legal entities (60 gymnasium and 75 vocational). In the number of gymnasiums as legal entity there is one school that has 10 affiliates. Secondary schools can offer either general (gymnasium) or vocational education, but very often they offer both.

Government dependent private educational institutions are not envisaged in the legal framework.

General Information on the Educational system in Kochani municipality:

In municipality of Kochani there are six primary schools, one of which is a musical school and there are two secondary schools.

The situation in the primary schools in the school year 2024/25 is as follows in the table below:

Primary school	Number of students	Number of classes	Average number of students per class
PS “Krste P. Misirkov”	197	19	10
PS “Ss. Cyril and Methodius”	954	48	20
PS “Rade Kratovche”	425	28	15
PS “Malina Popivanova”	482	29	17
PS “Nikola Karev”	500	37	13
Music school “Risto Jurukov” Kochani	164	20	8

TOTAL	2722	181	15
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As for the Secondary schools in Municipality of Kochani, the situation in the school year 2024/25 is as follows:

Secondary school	Number of students	Number of classes	Average number of students per class
SS “Ljupcho Santov”	503	31	16
SS “Gosho Vikentiev”	559	34	16
TOTAL	1062	65	16

From August 5th, 2019 (National gazette 161 of Republic of North Macedonia), there are changes in the national Law for education that emphasize the inclusion of the children with special needs and working systematically with the gifted and talented children.

Chapter 2:

Existing local strategies/policies and their compliance with the EU Digital Education Action Plan

BULGARIA

When preparing the Strategic Framework for the Development of Education, Training and Learning in the Republic of Bulgaria (2021-2030), the activities set out in the Digital Education Action Plan (2021-2027) of the EU were taken into account.

As a result of the SWOT analysis, 9 priority areas for improvement of education and training until 2030 have been determined in the development of education and training until 2030.

The priority areas cover all significant horizontal challenges in the education and training system following a comprehensive approach and in line with the defined policy areas.

The priority area "Educational innovation, digital transformation and sustainable development" is in line with Activity 1 "Encouraging the development of a high-performance ecosystem for digital education" and with Activity 2 "Improving the digital skills and competences needed for digital transformation" of the Digital Education Action Plan.

Innovations in education aim to change the culture of teaching and create a more attractive environment for learning, as well as increasing the efficiency of the educational process. They stimulate creative thinking and creativity in the learning process. Educational innovations will be developed in all stages and degrees of education and in all spheres of school life. Connecting kindergartens and schools as well as teachers in networks and communities for innovation and creativity will be important.

Digital skills and competencies are a priority for the entire educational spectrum. Access to ICT for children of the 21st century is an integral part of access to education. The introduction of ICT-based innovations into the education system will improve the learning process and increase its efficiency and effectiveness.

In the field of education, policies will be implemented aimed at building and upgrading an educational cloud environment and creating resources, as well as sharing and integrating already existing and proven nationally and internationally resources. The formation of skills in students to become digital creators, to model, program and develop digital creativity will also be encouraged. Efforts will be aimed at introducing specialized software solutions for analysis and evaluation of educational results.

Education for sustainable development is closely related to international discussions on sustainable development, with the UN program and the Sustainable Development Goals (SDGs) until 2030. In the context of this perspective, educational policies will be implemented to create a civic, financial, health, environmental and sports culture. Key competencies will be formed in children/students for sustainable development, intercultural dialogue, understanding and appreciation of cultural diversity, as well as competencies for democratic culture and digital citizenship. Knowledge of road safety will be expanded. An overall renewed look of educational institutions will be created, supported by investments in a modern, thought-provoking and creative educational environment and in modern equipment and furnishings.

The following goals are set in this priority area:

1. Encouraging and developing a culture of innovation.
2. Innovations in the educational process
3. Innovations in the educational environment
4. Development of education in a digital environment and through digital resources
5. Education for sustainable development
6. Modernization of the educational infrastructure towards sustainable development

NORTH MACEDONIA

Overall national education strategy and key objectives

In January 2018 the Government of the Republic of North Macedonia has adopted the new Strategy for Education for the period 2018-2025 and corresponding Action Plan. The process of adoption has been preceded by public debates and analysis of the content of the document by experts, national and international, stakeholders and working groups.

The new Strategy for Education and its Action Plan encompass all fields and levels of education. The vision of the Strategy itself is that the education is key for the strengthening of the national economy and the wellbeing of the Macedonian citizens and therefore it is essential to put efforts for development of inclusive and integrated education system which is “student-centered”, which implements modern programmes that will enable the future generations to acquire knowledge, skills and competencies compliant to the needs of the democratic multicultural society, labor market and for the new challenges of the global scientific and technological setting. The document covers six main pillars of education system – Pre-school Education; Primary Education; Secondary Education; Vocational Education and Training; Higher Education and Research; and Adult Learning and Education. These are followed by a seventh pillar, covering general issues in the education system.

Following the EU initiatives for revitalization of European Education Area and the new Action Plan for Digital Education (2021 - 2027), and the national Strategy for Education 2018-2025, the Ministry of Education and Science made national reforms in same directions.

The local policies and strategies in Municipality of Kochani are closely related to the national ones and always follow those principles and priorities.

SPAIN

National Administration

The Agreement of the Education Sector Conference of July 21, 2021, which approves the proposal for territorial distribution and the criteria for the distribution of credits managed by Autonomous Communities destined for the Program to improve educational digital competence #CompDigEdu, in the 2021 budget year, within the framework of component 19 "National Digital Capabilities Plan" of the Recovery and Resilience Mechanism, published by Resolution of September 10, 2021 and, updated by the Agreement of the Education Sector Conference of June 23, 2022, has the objective of improving the digital competence of students and the use of digital technologies in learning through the development of the digital competence of teachers and the transformation of centers into digitally competent educational organizations.

Lines of action

- Creation of a network of #CompDigEdu managers in the different educational Administrations
- Promotion of digital competence in educational centers: Digital Center Plan. Within this action, the following phases are contemplated:
 - Phase 1. TRAINING. Offer and development of training on educational digital competence aimed at key agents in educational centers.
 - Phase 2. DIAGNOSIS. Diagnosis of the situation of educational centers in terms of digital competence
 - Phase 3. DESIGN
 - Phase IV. IMPLEMENTATION AND EVALUATION

OBJETIVES:

The Improvement Plan for Educational Digital Competence #CompDigEdu is a measure referring to Investment 2 "Digital Transformation of Education", which is part of Component 19 of the Recovery and Resilience Mechanism, called the National Digital Skills Plan, one of whose general objectives is to guarantee the acquisition of digital skills of teachers and students at all levels of the educational system.

This program contributes to the fulfillment of milestones 289 (approval of the program aimed at equipping a minimum of 240,000 classrooms, training 700,000 teachers and preparing or reviewing the digital strategy for at least 22,000 public or publicly subsidized centers, and equipping public or publicly subsidized centers with 300,000 connected digital devices, laptops or tablets), in collaboration with the Communities. Autonomous and to milestone 290 (carrying out actions for the digital transformation of education through the certification of the digital skills of at least 80% of 700,000 teachers and the development and review of the Center Digital Plans of at least 22,000 centers).

Local/Autonomus Administration

The Principality of Asturias has implemented various local strategies and policies that align with the European Union's Digital Education Action Plan (2021–2027), particularly in areas such as technology provision, teacher training, and reducing the digital divide. Below are the main initiatives:

Technological Equipment and Classroom Digitalization

In September 2023, the Government of Asturias distributed 13,257 technological devices (tablets and laptops) among public and charter schools, with an investment of over 19 million euros from the EU's Recovery and Resilience Facility (RRF).

This action is part of the #EcoDigEdu program, which also includes the installation of interactive screens and desktop computers in classrooms, as well as teacher training on the pedagogical use of new technologies

Additionally, in November 2022, Asturias approved a €24.8 million investment for the digitalization of education and public administration.

Of that, more than €18 million was allocated to acquiring digital equipment for schools, including interactive panels and portable devices

Teacher Training and Accreditation of Digital Competencies

The Principality has launched a process to accredit teachers' digital competencies, aiming to train 80% of educators by 2025, in line with EU objectives.

Currently, around 8,000 teachers in Asturias are in the process of obtaining their digital competency certification ([source])

Digital Transformation Strategy of Asturias

The Department of Science, Innovation and University is developing the Asturias Digital Transformation Strategy 2030, which aims to reduce gender, socioeconomic, generational, and territorial digital divides, especially in rural areas.

This strategy includes actions to accelerate the digitalization of the productive model, enhance capacities in artificial intelligence, big data, and cybersecurity, and prepare the region for the rollout of 5G technology

Compliance with the EU Digital Education Action Plan

The policies and strategies implemented by the Principality of Asturias align with the goals of the EU's Digital Education Action Plan, which promotes:

- The development of a high-performing digital education ecosystem.
- The enhancement of digital skills and competencies for digital transformation.
- Inclusion and accessibility in education.

Asturias' initiatives contribute to these objectives through the provision of technological infrastructure, teacher training, and efforts to close the digital divide, particularly in rural areas and among vulnerable groups.

Chapter 3: Best Practices. Recommendations

Best practices from North Macedonia

Project title: Nutrition Education by using of the Virtual Reality-based educational approach

Project main objective is development and implementation of the innovative Virtual Reality - based educational approach for nutrition education in project partners regions. The project is offering an interdisciplinary educational approach suitable for any topics from community interest, with high transferability potential suitable for implementation in any educational institution.

Following project's outputs/results are expected:

- Created and successfully implemented an innovative Virtual Reality - based educational approach for nutrition education in STEM related school subjects
- Increased STEM teachers' skills and competences for using of advance ICT educational methods
- Min 128 secondary schools' students with increased digital skills, teamwork skills, implementation of critical thinking as well as a competence in online research and improved presentation skills

Project partners are from North Macedonia, France-Guadeloupe, Italy and Bulgaria.

Project duration is 24 months and it ends in October, 2025.

Project title: Virtual Reality based educational approach in tackling of Climate Change

The project's main objectives are focused on: developing Climate Change tackling strategies and educational methodologies based on VR orientated education curricula that better meet the needs of schools' teachers and students; improving quality and attractiveness of the education process in regions of Velenje (Slovenia), Syros (Greece), Ludbreg (Croatia) and Kocani (North Macedonia) by development and implementation of innovative VR based learning methodology; increasing of teachers' and students' competences and skills in using of online available VR educational contents in everyday classes and establishing of transnational strategic partnership among different types of organizations (Local public bodies, NGOs, SMEs, Education institutions) for increasing of quality level of education by development of innovative education methods.

Project results:

- Development and adoption of three Project Results;
- 16 school teachers with increased skills and competencies for using VR technology;
- Established transnational teachers network (min 56 teachers) by using of eTwinning networking module;
- min 400 children from four schools with increased competences and skills for using VR technology in the learning process as well as with increased acknowledgment for tackling of Climate Change phenomenon;
- created Project web site with best practices from project activities and with included (free for downloading) materials and created IOs that will be at disposal for teachers from other schools as well as for any other interested stakeholders on local, regional, national level.

Project partners are from Velenje (Slovenia), Syros (Greece), Ludbreg (Croatia) and Kocani (North Macedonia).

Project duration is 24 months and it ended in February, 2024.

Best practices from Spain

INTEF- Instituto Nacional de Tecnologías Educativas y Formación del Profesorado (National Institute of Educational Technology and Teacher Training) compiles good educational practices developed in Spain. Through this link <https://auladelfuturo.intef.es/recursos/> we can access all of them and apply them in the classroom. Of all of them we highlight one in particular that has been developed in our community.

Project title: A painter hidden in a museum (learning situation)
https://auladelfuturo.intef.es/sit_aprendizaje/un-pintor-escondido-en-un-museo/

Author: M^a Nieves García Morán. Consejería de Educación (Principado de Asturias)

The learning situation has been designed for **kindergarten** and **elementary** school children and developed through four well-defined activities. This playful activity, with elements of **gamification and augmented reality**, seeks to have students discover a famous painter by overcoming quizzes based on programming with **Scratch Jr.**, reading **QR codes** and programming a **Bee Bot robot**. The goal is to foster project-based learning, critical thinking, creativity and collaboration, culminating in the creation of a collaborative Kandinsky-style painting. The proposal is aligned with current pedagogical trends and current educational legislation.

The main **learning objectives** sought to be developed in students are:

- Redirect learning, incorporating competency activities where digital resources serve as resources for their achievement.
- To promote activities where creativity and research are possible, learning from results and mistakes.
- Link formal and informal learning.
- Discover and act with a programming language, Scratch Jr.
- Implement reading on new media (QR).

The competencies to be developed, can be categorized into “Learning Skills”, “Work Skills” and “Life Skills”.

- Learning Skills:
 - o Learning to learn.
 - o Lifelong learning.
 - o Critical thinking and problem solving.
 - o Computational thinking.
 - o Creativity and innovation.
- Work Skills:
 - o Communication.
 - o Collaboration.
 - o Initiative and entrepreneurship.
 - o Media literacy.
 - o Digital skills.

- Life skills:
 - o Citizenship.
 - o Life and career.
 - o Social and personal responsibility.
 - o Cultural awareness.
 - o Sustainable development.

In addition, the students' mission includes concrete actions that contribute to the development of these competencies, such as interpreting a situation to find a painter, completing challenges, programming with Scratch Jr., reading QR codes and programming a Bee Bot robot. The learning situation also aligns with **pedagogical trends** such as **Project Based Learning, Collaborative Learning, Inclusive Learning, Gamification, Programming and Robotics, and Augmented Reality/Virtual Reality**.

LINKED LEARNING ACTIVITIES	
Activity 1	<i>“We entered the museum. Let's program!”</i> <i>Presentation of the Escape narrative</i> <i>Realization of the first test</i> <i>Programming with Scratch Jr.</i> <i>Overcoming the challenge and moving on to the next one.</i>
Activity 2	<i>“A code to read”.</i> <i>Second challenge.</i> <i>Reading some QR codes containing the letters of the painter, placed in order (they must place them to get the name of Vasili Kandinsky) and they will have overcome the second challenge.</i>
Activity 3	<i>“Robot painter” In this activity they must prepare the Bee bot robot to paint a picture in the Kandinsky style. Each Bee bot will be given three thick markers taped together and each child will freely program a</i>

	<i>sequence of at least 5 or six commands.</i>
Activity 4	<i>“A museum painting”</i> <i>Completion of the collaborative painting, search for figures. Identification and colouring of figures, and completion of the final metacognition.</i> <i>Review of tools and applications.</i> <i>Acquired learning.</i>

Several **digital media** are used as technological tools and resources. These include:

Computer and tablets: used for various activities, such as programming and research.

Digital whiteboard or **interactive display.** This tool can facilitate the presentation of information, group interaction, and the development of joint activities.

Scratch Jr. Application. This application is specifically used to perform programming as part of one of the escape game tests.

QR code decoder. A QR code decoder is required to read QR codes that contain key information to uncover the painter. This reading allows students to obtain the letters of the painter's name.

Best practices from Bulgaria:

Project title: Learning together for full professional fulfillment and an equal place in life

Erasmus + Project, Key Action 1, School Education

Duration 18 months from 01-11-2021 to 01-05-2023

Partners: "Dobri Zhelyazkov" Vocational school for textile and apparel

Europass, Berlin, Germany

Europass, Helsinki, Finland

Project objectives:

- By improving and modernizing teaching methodologies, we prepare full-fledged individuals capable of realizing themselves in the dynamic conditions of the modern world.
- By finding new approaches to creating an effective and attractive learning environment, to:
 - reduce the incidence of student dropout
 - develop lessons and programs that meet the needs of students and teachers for integrated dual learning;
 - use ICT to increase students' motivation for learning and work;
- create contacts between the school and international educational institutions;
- share experiences and methods for addressing the challenges arising from the ethnic characteristics of high school graduates;
- training teachers in areas such as dual training, inclusive education and working with vulnerable groups;
- increasing the digital and entrepreneurial competencies of administrative management to accelerate the process of changes related to school modernization and the introduction of innovations.

Project title: Financial-Legal Literacy for Europe

KA2 - Cooperation for innovation and the exchange of good practices

KA204 - Strategic Partnerships for adult education

Project Start Date: 1st September 2020

Project End Date: 31st August 2022

PROJECT WEBSITE:

finleglit.eu

Coordinator:

EURL ARISTOTE SIRET,

Paris, France

aristculture.eu

PARTNERS:

VsI Finansu teises institutas Lithuania

Kaunas, Lithuania

finlaw.lt

- 2. Organisation for Empowerment and Non-formal education, (an association, Le Moule, Guadeloupe, France),
oenehive.com
- 3. European Multicultural Association, Bulgaria
ema20.com
- 4. Euroform RFS Italy
Rende, Italy
euroformrfs.it

Project objectives:

- Developing a Manual (“Financial-Legal Literacy Manual for Europe”) of financial-legal education for trainers and adult learners, based on the best European practices on the matter and reflecting the objectives of the EU related to green finance and Capital Market Union. The Manual and the Online E-learning Tool will particularly target low-income and/or lowskilled and/or low-qualified adults in countries and regions with different level of economic development. The Manual will be universally applicable throughout the EU and could be used by persons having different financial and legal literacy level;
- Launching and maintaining a financial-legal literacy Online E-learning Tool, which could be used anywhere and in any environment for financial-legal education courses or individual learning;
- Training of the financial-legal literacy trainers to provide financial-legal literacy education to adult learners using the Manual and the Online E-learning Tool;

- Providing financial-legal literacy training to the low-income and/or low-skilled and/or low-qualified adult learners.

Chapter 4: Action Plan including specific actions/measures for a 5-year period (2026-2030)

In the action plan, detailed examples, initiatives, and projects are implemented to raise awareness about implementing STEM in education. These activities, to be carried out by project partners with stakeholder involvement, are outlined for the next 5 to 10 years. Tasks are uniformly defined, specifying the responsible executor(s), completion timeframe, expected outcomes, additional participants, staffing needs, and required conditions for executing the planned activities.

Activity 1:

Activity description	Chemistry activities in municipal and state schools in the region of Sliven: 1. Super Soap – Making and Testing Homemade Soap Objective: Students learn about saponification and pH. Research Task: Compare Different Oils – How Do They Affect Foam and Texture? 2. Test Tube Volcano – Acid-Base Reaction Objective: Demonstrate a Gaseous Reaction and the Influence of Concentration/Temperature. Research Task: How Does Temperature Affect the Amount of Gas Emitted? 3. Kitchen Chemistry – pH of Foods Objective: Investigate Acidity Using a Natural Indicator. Research Task: Classify Foods from Most Acidic to Most Alkaline. Chemical experiments 1. "Chemical chameleon" 2. "Disappearing ink" (Iodine trick) 3. "Elephant paste" - with hydrogen peroxide and yeast
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Activity contractor	Regional Department of education
Expected results	Improvements: - students in the region will acquire knowledges and skills in the field of Chemistry. - Chemistry teachers will get experience in their field
Implementation period	2026-2030
Human Resources	- Regional - Civil sector - Local business sector
Financial resources	school budget, EU funds, local authorities

Activity 2:

Activity description	Exchange of good practices in Biology lessons among schools in the region of Sliven 1. Mini Ecosystem in a Jar Objective: Observe a Closed Biological Cycle. Research Task: How Do Location and Light Affect the Stability of an Ecosystem? 2. How Plants Breathe – Photosynthesis in Action Objective: Observe photosynthesis and oxygen production. Research Task: Compare under different light – where are there more bubbles? 3. Extracting DNA from a fruit Objective: Demonstrate DNA with household materials. Research Task: Compare the yield of DNA from different fruits – which one is most suitable? Biological experiments 1. "Breathing yeast" - live fermentation 2. "Bacteria under black light" (UV)
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Activity contractor	Regional Department of Education- Sliven
Expected results	Improvements: - In awareness on energy saving measures among citizens - Improved air quality due to decrease in CO2 emissions - Lower energy bills of households - Improved energy performance characteristics of local residential building stock
Implementation period	2027-2031
Human Resources	- Municipality - Civil sector - Local business sector
Budget	EUR 500,000
Financial resources	Local municipal budget, EU funds, and European Programmes, school budget

Activity 3:

Activity description	Climate changes Fabrication laboratory The objective of the project is to develop and implement an innovative "tailor-made" educational concept grounded in the Fabrication Laboratories approach, commonly known as the FabLab concept. This approach aims to introduce the critical topic of climate change mitigation into secondary school STEM-related subjects. By integrating climate change topics with practical activities into the STEM curriculum in primary schools, the project seeks to instill environmental awareness and a sense of responsibility among students.
Activity contractor	Primary schools, NGO
Expected results	· Climate FabLab establishes in primary schools and development of a comprehensive educational framework integrating the FabLab approach with climate change mitigation topics, tailored for secondary school STEM

	curricula. • Teacher Training Programs A structured training program for teachers, equipping them with the knowledge and skills to effectively deliver the integrated STEM and climate change curriculum using the FabLab methodology. • Prototype Development by Students Successful implementation of student-designed prototypes addressing climate change challenges, such as small-scale renewable energy models or innovative sustainability solutions. • Increased Environmental Awareness Among Students Evidence of improved understanding and engagement with climate change topics among participating students, measured through surveys or assessments. • Guidelines and Best Practices for Integration A set of published guidelines and best practices for other schools and educators to replicate and adapt the innovative educational concept.
Implementation period	2026-2031
Human Resources	Expert in Climate changes, RER, ecology; teachers, students
Budget	250.000 EURO
Financial resources	ERASMUS + programme

Activity 4:

Activity description	Scouts and inclusion Guided by the meaning of the symbol of the Scouts worldwide which represents not just adventure and
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	camaraderie, but also a deep commitment to service and compassion. It reflects the core value of helping those who are weaker or in need, emphasizing kindness, solidarity, and the importance of uplifting others. This idea is woven into the Scout ethos, teaching young people to be responsible, empathetic, and active members of their communities, always ready to offer a helping hand and make a positive difference in the world. The main goal of the project is to promote the inclusion of marginalized pupils in primary schools by integrating scouting activities into formal education, enhancing digital literacy, environmental awareness, and key competencies. This is achieved through a collaborative approach that empowers both teachers and pupils, providing teachers with the necessary training to foster inclusive, innovative, and engaging learning environments, while ensuring that all pupils, particularly marginalized groups, are actively engaged in the learning process.
Activity contractor	NGO, secondary schools, Municipality
Expected results	Integrated Scouting-Based Curriculum Development of a curriculum that combines scouting principles with formal education to enhance inclusion and key competencies. Teacher Training Program Implementation of a training program for teachers to foster inclusive and innovative learning environments using scouting activities. Increased Inclusion of Marginalized Pupils Improved engagement and participation of marginalized

	pupils in primary schools through collaborative and interactive activities. Enhanced Digital Literacy and Environmental Awareness Increased digital literacy and environmental awareness among pupils through scouting-inspired projects and hands-on learning. Handbook Toolkit for Schools Creation of a toolkit with guidelines, lesson plans, and activity ideas to replicate the approach in other schools. Positive Behavioral and Social Outcomes Evidence of improved empathy, teamwork, and responsibility among participating pupils, aligned with scouting values.
Implementation period	2026-2031
Human Resources	scouting professional, psychologist, teachers, students;
Budget	250.000
Financial resources	ERASMUS + program

Activity 5 :

Activity description	STEM Launch Week – Awareness Campaign in Schools. A week-long campaign including exhibitions, hands-on experiments, open classes, and STEM-related games to engage students and parents in schools.
Activity contractor	Local schools in collaboration with NGOs and local municipalities
Expected results	Raise awareness of STEM's relevance; engage families and communities

Implementation period	March 2026
Human resources	1 teacher coordinator per school, volunteers, municipal staff
Budget	500 € per school
Financial resources	regional government education department

Activity 6:

Activity description	Teacher Training Workshop on Integrating STEM in Curriculum: Practical workshops on integrating STEM in subjects using inquiry-based learning, coding, digital tools, and cross-curricular strategies
Activity contractor	Regional training centers (Centros de Profesorado y Recursos – CPR)
Expected results	100 trained teachers; improved integration of STEM methodologies
Implementation period	September–November 2026
Human Resources	2 trainers, 50 teachers per session
Budget	Budget:2,000 € per session
Financial resources	CPR budget, *Consejería de Educación*, EU educational funding

Activity 7:

Activity description	Creation of STEM Corners in Classrooms: Dedicated spaces with low-cost tools (microscopes, kits, tablets, Arduino) for student-led exploration in STEM topics.
Activity contractor	Schools (Primary and Secondary
Expected results	Permanent STEM zones for experimentation and hands-on learning
Implementation period	January–June 2027
Human Resources	Human Resources: Teachers, school maintenance staff
Budget	1,000 € per classroom
Financial resources	Educational projects (e.g., Erasmus+, PROA +, Calls for grants for educational innovation projects...)

Activity: 8

Activity description	Local STEM Fair (inter-school level): Students present small STEM projects to the public. Includes interactive booths, robotics demos, and community involvement
Activity contractor	Schools, Local authorities
Expected results	30+ student STEM projects, community outreach
Implementation period	May 2027
Human Resources	Teachers, municipal support staff, inspectors (jury)
Budget	3,000 €

Financial resources	Concejalías de Educación, Consejería de educación, Universidad de Oviedo sponsorships.

Activity 9

Activity description	STEM Ambassadors Program -student mentors- (ESO, Bachillerato, FP) mentor younger peers in STEM through clubs, coding sessions, and science demonstrations
Activity contractor	Secondary schools and FP centres
Expected results	Student-led sessions in Primary schools; increased student leadership
Implementation period	Ongoing all year
Human Resources	2 teachers per centre, selected students
Budget	500 € per school (travel, materials)
Financial resources	educational centres' innovation funds

Activity 10

Activity description	Community Workshops on STEM Careers: Sessions for families and students led by professionals (engineers, researchers) explaining real-world STEM jobs.
Activity contractor	Local institutions (universities, vocational centres)
Expected results	Public awareness of STEM career opportunities
Implementation period	October–December 2028

Human Resources	Guest professionals, guidance counselors
Budget	2,000 €
Financial resources	Local government, private sector support

Activity 11

Activity description	School–Industry Visits Organized tours to local companies (IT, renewable energy, manufacturing) showing practical STEM applications.
Activity contractor	Schools + local businesses
Expected results	500+ students exposed to real-world STEM applications
Implementation period	March–June 2029
Human Resources	Teachers, company liaisons
Budget	1000 € per school (transport, coordination)
Financial resources	Schools, visited companies

Activity 12

Activity description	Open Data + Robotics Hackathon: Students collaborate in teams to solve local problems using programming, data science, and basic robotics
Activity contractor	Secondary schools and FP centres
Expected results	At least 5 Innovation projects with open data, coding, and robotics.
Implementation period	November 2029
Human Resources	STEM teachers, IT staff, local programmers

Budget	3,000 €
Financial resources	EU programs, NGOs, tech sponsors

Activity 9

Activity description	Impact Evaluation Report: Data collected on the effectiveness of actions. Includes surveys, inspector analysis, and school feedback.
Activity contractor	Consejería de Educación, school inspectors
Expected results	Monitoring of STEM outcomes, policy recommendations
Implementation period	January–April 2030
Human Resources	Inspectors, data analysts
Budget	5,000 €
Financial resources	Autonomous government, national education grants

Activity 13

Activity description	STEM Legacy Forum: 5-Year Review + Planning Ahead: inspectors, and partners share results and co-design the next 5-year STEM roadmap
Activity contractor	Regional government ADIDE-AS
Expected results	Consolidation of practices, policy input, new roadmap
Implementation period	June 2030
Human Resources	Project leaders, stakeholders, student reps
Budget	7000€
Financial resources	Autonomous region, local authorities, Erasmus+

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Activity 14

Activity description	Collaborative Biology + Chemistry STEM Projects: Examples: 1. "Pollution and Life" – how chemistry affects organisms Objective: Simulate contamination (e.g. with vinegar or salt) in a container with plants or microorganisms. Research Aspect: How does the concentration of pollutants affect growth or survival? 2. "Create a Natural Antibiotic" – study the antimicrobial properties of plants Objective: Use extracts of garlic, onion, thyme, etc. to test against yogurt bacteria. Research aspect: Which extract has the strongest effect 3. "Study of the short-term effect of energy drinks on animal organs (as a model of impact on the human body)"
Activity contractor	Nikola Prokopiev primary school, Sborishte, Bulgaria
Expected results	At least 10 STEM projects to be created and represented by students
Implementation period	2027-2028
Human Resources	Project leaders, students, STEM teachers
Budget	
Financial resources	School budget, local authorities, Erasmus+

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