



WORKSHOP REPORT (WP2/A1)

Country-based data about inclusion



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EDiGIT Project

Progresses in the fields of ITC have made significant changes in the way we live, making it easier, safer, and more comfortable. Nevertheless, despite its advantages, this technological evolution has parallelly generated a Digital Divide, exposing that progress is not being as inclusive as it should. This occurs due to a generalized lack of knowledge on disadvantaged people's needs and abilities and a failure in the inclusion of disabled people in the complete process of design development and testing of innovative technological solutions.

EDiGIT is a project that, in line with the priorities of Social Inclusion and Diversity and Digitalisation of the Erasmus+ programme, aims to reduce the Digital Divide in favour of the inclusion of disabled people, most specifically with people with cerebral palsy. This project builds up on the "Talentos Inclusivos" (Inclusive Talents) project, an initiative designed to awaken STEM vocations among young pre-university students and, at the same time, raise awareness of cerebral palsy reality and promote an inclusive approach and inclusion-focused practices in the STEM education at schools.

EDiGIT aims at transferring the knowledge and experiences from "Talentos Inclusivos" through the development of a structured methodology allowing secondary school teachers, but also youth workers, university professors, and others, to carry out similar inclusion focused initiatives in their own teaching contexts in other EU member countries in order to contribute to the widespread of inclusion and social responsibility in STEM teaching and promotion and ensuring that the European digitalisation is fair and inclusive. The main result will be a set of thematic training modules hosted in a web-based training platform to support teachers on the implementation of inclusion-focused approaches and initiatives in STEM teaching and promotion.

As transversal outcome, all project activities development and implementation are committed to fostering collaboration between the disability care, technology and education sectors & promote inclusion values and raising awareness on the reality of people with disabilities towards a disability-sensitive society.

STEM

Subjects at Each Educational Stage

Czech Republic

STEM subjects—Science, Technology, Engineering, and Mathematics—play an essential role in the Czech education system, as they support innovation, economic growth, and technological progress. In the Czech Republic, there is a growing demand for STEM professionals, offering strong job prospects. However, STEM education in Czech schools often faces challenges such as a shortage of qualified teachers and a lack of modern equipment. The Czech education system emphasizes theoretical knowledge, often relying on memorization rather than practical application. This is slowly starting to change and it also depends on the approaches of the schools themselves. Encouraging students to pursue STEM, improving teaching methods, and integrating more hands-on learning can help better prepare them for the rapidly evolving job market.



Encouraging students to pursue STEM, improving teaching methods, and integrating more hands-on learning can help better prepare them for the rapidly evolving job market.

Preschool (3-6 y.o.)

In kindergartens in the Czech Republic, the children do not officially have any STEM subjects. Instead, they focus on the development of pre-mathematical ideas and connections between natural laws.

Primary School 9 years of education (6-14 y.o.)

During primary school, Czech students are exposed to the basics of mathematics, physics, chemistry, biology and informatics. The students also have an opportunity to attend extra-curricular clubs focused on (not only) these STEM subjects. There are for example little scientist, lego robotics, math preparation for entrance examination clubs and many more. Schools can offer a different selection of these clubs.

Grammar, Secondary and Vocational Schools 3-4 years of education (15-18 y.o.)

General Grammar Schools offer a broad choice of STEM subjects which include mathematics, physics, chemistry, biology and informatics. There are also Grammar schools with extended teaching of math and other subjects. Additionally, there is a possibility for the students to choose from elective seminars on different topics, the variety of subjects varies from school to school.

There is a big difference in the offer of the STEM subjects within secondary schools and vocational schools. Some IT technical schools or vocational schools for electricians focus on mathematics, physics, informatics and other STEM subjects, while art and business schools offer minimum amount of these subjects. Particular teachers are also an important factor – when they are driven and motivated to teach STEM subjects, this is quickly evident in the students themselves, who are then more engaged in STEM activities like math contests or others.

Higher vocational education and university education

3-5 years of education (18-26 y.o.)

Similarly to secondary and vocational schools, universities and colleges widely differ. Some universities and colleges specialise in fields such as mathematics, chemistry, mechanical engineering, while there are also types of these institutions of tertiary education where the students do not encounter any STEM subjects. These universities are for example art or philosophy related. To sum up, the possibilities differ on the particular higher vocational school or university. They choose how much effort and attention they want to put into developing STEM skills.

Hungary

Despite the challenges, there is a central ambition to enhance the quality of STEM education across all school levels, including making STEM subjects more engaging, integrating technology into the classroom, and increasing the number of students pursuing STEM fields at universities.

STEM subjects in Hungary are a core of the education system and are present from 1st grade in primary school, which children start at 6 years old. The foundation of STEM education starts with Mathematics and Natural Sciences, and as students progress, Digital Culture is introduced in 3rd grade to develop digital literacy, followed by Physics, Chemistry, Biology, Geography in upper-elementary grades. Hungary follows a national curriculum for each subject, with teaching based on a limited selection of textbooks. While there is an ongoing shortage of teachers, the education system and assessments still primarily emphasize theoretical knowledge. The lack of public funding presents challenges for teachers in accessing modern equipment and resources, and they would require more quality learning opportunities to develop in their careers. Despite the challenges, there is a central ambition to enhance the quality of STEM education across all school levels, including making STEM subjects more engaging, integrating technology into the classroom, and increasing the number of students pursuing STEM fields at universities.

In Hungary, compulsory education is until 16 years of age.

Kindergarden (3-6 y.o.)

3 years long, obligatory from 3 years old. The 'National basic programme for pre-school education' has a dedicated section about mathematics & STEM called 'Active learning about the outside world.'



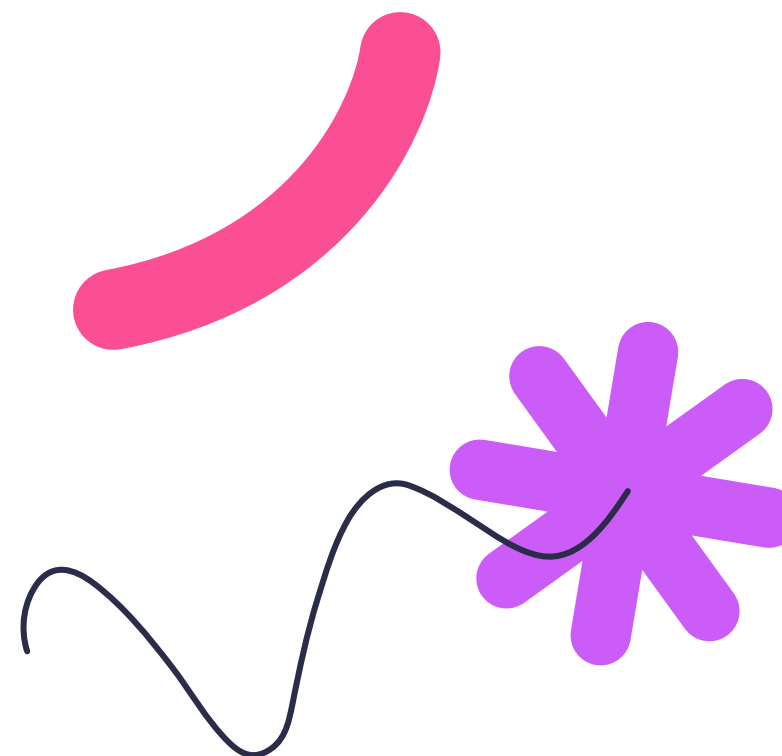
Primary/ elementary school (6-14 y.o.)

8 years of duration, between 6-14 years. It is divided into 2 stages: lower (Grade 1-4) and upper (Grade 5-8) elementary. In Grade 1-4 STEM subjects are not taught as standalone subjects, but subjects contribute to the development of STEM-related skills. In grade 1-8, students have *Mathematics*, a key pillar of education in Hungary in all stages. The subject *Natural sciences* combines STEM subjects for grades 3-6 to stimulate curiosity, encouraging them to understand everyday phenomena through scientific concepts. It focuses on biology, plant and animal life, human body, ecological systems. Basic concepts from chemistry and physics are introduced, such as the properties of materials, basic principles of forces and motion. In grade 7-8, STEM subjects are divided, *Biology*, *Chemistry*, *Geography* and *Physics* are separate subjects. Additionally, students have compulsory Digital culture between Grades 3-8, where they are introduced to the use of IT tools, programming and develop digital literacy.

Secondary education

From 2 to 4 years of duration. There are 3 types: vocational school, vocational high school and gymnasium.

- **Vocational school** students focus on learning a profession with a few additional general subjects such as *Mathematics* and *Digital culture* for 2 years, *Natural sciences* for 1 year.
- Students at the **vocational high school** have more general subjects beside the vocation specialization subjects. 4 years of *Mathematics* and 3 years of *Digital culture* are compulsory. *Complex natural sciences* can optionally be taught depending on the choice of the school.
- In **high school/gymnasium** students focus on passing the graduation exam at the end of 4 years and optionally advance to university. *Mathematics* is compulsory for 4 years and is part of the graduation exam. *Chemistry*, *Physics*, *Biology* and *Geography* are compulsory for 2 years, and depending on the specialization, students can study it longer for graduation (eg: those who wish to attend medical university). *Digital culture* is compulsory for 3 years.



Italy

Italy is increasingly prioritizing STEM education, recognizing its crucial role in national economic and social development. This commitment is evident in initiatives spanning from early childhood exploration to advanced specialized programs at the university level, all geared towards fostering STEM interest and skills. The goal is to develop students' critical thinking, problem-solving abilities, and technical expertise, preparing them for future success.

In Italy, attention to STEM subjects is constantly growing, with initiatives aimed at promoting their learning from the earliest years of education.

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Preschool (3-6 y.o.)

The National Guidelines for the Curriculum of the Pre-school and First Cycle of Education (DPR n.89/2009, Ministerial Decree 254/2012) establish that STEM subjects are introduced even in preschool. This is done with a playful approach that stimulates curiosity, observation of nature to familiarize with elementary scientific and mathematical concepts. Songs, nursery rhymes, and movement games can be used to introduce numbers and the first mathematical operations. In some cases, work begins with robotics (unplugged) to lay the foundations of computational thinking.

Primary School (6-10 y.o.)

At this stage, the approach to STEM is mainly practical and discovery-oriented. The main objective is to lay the foundations for a lasting interest in STEM. Mathematics is the subject that has more space in the programming compared to other subjects and teaching focuses on the development of logical-mathematical thinking and basic numerical skills. Sciences are introduced progressively, through observations of nature and simple experiments, stimulating curiosity and critical thinking. Technology is explored through the use of basic digital tools and practical activities related to computational thinking and the

beginning of programming. The use of robotics is becoming increasingly widespread. Engineering is present indirectly, through construction projects and problem solving.

Lower Secondary School (11-13 y.o.)

Teaching becomes more structured. Mathematics deepens arithmetic and algebraic skills, introducing geometric and statistical concepts. Sciences (natural sciences, chemistry, physics) are taught more systematically, with a focus on learning fundamental concepts and applying the scientific method. Technology plays a greater role, with the introduction of basic programming concepts and the use of more advanced computer tools. Engineering is often integrated through practical projects that require the design and construction of artifacts in special laboratories.

Upper Secondary School (14-19 y.o.)

Mathematics, Physics, Natural Sciences, Computer Science are taught in all addresses of secondary schools, but take on a more or less specialized character depending on the different study addresses (classical, scientific, artistic, humanistic, linguistic lyceums, technical, professional institutes) both in terms of hours and deepening of concepts. Scientific lyceums offer an in-depth study of science and mathematics. Technical and professional institutes, on the other hand, combine a solid theoretical-technical-scientific base with a large practical component that becomes specialized in the last 3 years of study (electronics, computer science, mechanics, etc.). In all addresses, the focus is on developing advanced skills in individual STEM disciplines and their application in real contexts.

Portugal

STEM education is vital at every educational stage, as it lays the foundation for future success and innovation. STEM is crucial for developing a well-rounded, knowledgeable, and innovative workforce. It prepares students to tackle real-world challenges, contribute to scientific and technological advancements, and drive the country's economic growth and development. STEM subjects are essential for personal development, societal advancement and the creation of a better future. They equip individuals with the tools to innovate, solve problems, and make informed decisions, ultimately contributing to the progress and well-being of society.

In Portugal, the educational system is structured into several stages, each designed to cater to different age groups and educational needs. These stages are designed to provide comprehensive education and training, ensuring that students in Portugal receive a well-rounded and thorough educational experience. STEM subjects are integrated into the curriculum at various educational stages.

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Pre-School Education (3-5 y.o.)

Pre-School Education for children aged 3 to 5 focuses on early childhood education, socialization, and the development of basic skills. Although attendance is not compulsory, it is strongly encouraged. In this stage, children are introduced to technology through age-appropriate digital tools and educational apps. Activities may include simple coding games or interactive storybooks designed to make learning both fun and engaging.

Basic Education (6-15 y.o.)

Basic Education is segmented into three distinct cycles.

- The 1st Cycle covers ages 6 to 10 (Grades 1 to 4) and concentrates on fundamental literacy and numeracy, along with an introduction to basic subjects like Portuguese, mathematics, and environmental studies.
- The 2nd Cycle, for ages 10 to 12 (Grades 5 to 6), advances the development of core subjects, including Portuguese, mathematics, natural sciences, social studies, and foreign languages.
- The 3rd Cycle, which caters to ages 12 to 15 (Grades 7 to 9), delves into more advanced studies of science, humanities, arts, and additional foreign languages, offering students a broader and deeper educational experience in preparation for secondary education. During this cycle, the emphasis on STEM subjects increases, with students engaging in projects and experiments that foster critical thinking and creativity. This stage is crucial for developing analytical and computational skills essential for future academic and career success.

Secondary Education (15-18 y.o.)

Secondary Education, offers specialized education that prepares them for higher education or vocational training. Students can choose between general, technological, or vocational courses, tailored to their interests and career aspirations.

The curriculum in this phase allows students to specialize in specific STEM subjects, deepening their understanding of advanced topics such as calculus, physics, and computer science, which are fundamental for technological and scientific advancements.



Higher Education (18-26 y.o.)

Higher Education encompasses two main pathways: Universities and Polytechnic Institutes. Universities offer Bachelor's, Master's, and Doctoral degrees, focusing on academic and research-oriented education across various fields of study. Polytechnic Institutes provide professional and technical degrees, including Bachelor's and Master's, aimed at practical and vocational training tailored to specific industries and professions.

At this level, STEM education equips students with professional training and research opportunities, allowing them to gain expertise in their chosen fields and contribute to cutting-edge research and innovation. Graduates are thus prepared with the knowledge and skills necessary to excel in high-demand STEM careers, thereby driving economic growth and technological progress.

Spain

STEM subjects in the Spanish educational system have gained importance in recent years, especially with the implementation of the LOMLOE (Organic Law for the Modification of the LOE). This law integrates the STEM educational approach into the competency-based curriculum, highlighting the importance of mathematical competence and competence in science and technology.

In Spain, various initiatives have been developed to promote this approach, such as the creation of creative hubs in Galicia, which are spaces designed to encourage collaborative work and the use of advanced technologies.

Additionally, efforts have been made to increase the accessibility and retention of young people in STEM programs, recognizing the importance of gender and cultural diversity in these fields.

Spain has a general educational law which impacts directly in all the Spanish regions, and each region has some specific regulations for education. In general, the educational system is organized into stages, cycles, grades, courses, and levels of education. The teachings offered by the Spanish Educational System are as follows:

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Early Childhood Education (birth-6 y.o.)

Early childhood education constitutes an educational stage with its own identity that attends to children from birth to six years of age. This stage is organized into two cycles. The first cycle comprises up to three years, and the second from three to six years of age. It is voluntary.

Primary Education (6-12 y.o.)

Primary education is an educational stage that constitutes, along with compulsory secondary education and basic vocational training cycles, basic education.

Primary education comprises three cycles of two academic years each and is organized into areas that will have a global and integrative character, oriented towards the development of key competencies of students and may be organized into fields. Generally, it will be attended between the ages of six and twelve, and students will join the first year of primary education in the calendar year they turn six.

In primary education, the STEM approach is gradually introduced. Students begin to familiarize themselves with basic concepts of science and technology through practical activities and projects. The aim is to foster curiosity and interest in these disciplines from an early age.

Compulsory Secondary Education (12-16 y.o.)

Compulsory secondary education is an educational stage that constitutes, along with primary education and basic vocational training cycles, basic education.

Compulsory secondary education comprises four courses and is organized into subjects and fields. The fourth course will have an orientate character, both for post-compulsory studies and for incorporation into working life.

Compulsory secondary education is mandatory and free, and in the common regime, it will be attended, generally, between the ages of twelve and sixteen, although students will have the right to remain in the stage until the age of eighteen, completed in the year the course

ends.

In secondary education, the STEM approach becomes more structured. Students have specific subjects in science, mathematics and technology. Additionally, extra-curricular activities such as science clubs and robotics competitions are promoted to encourage practical and collaborative learning.



High School (+16 y.o.)

Secondary education is divided into compulsory secondary education and post-compulsory secondary education.

High school is one of the teachings that make up post-compulsory secondary education, along with intermediate level vocational training, professional artistic education, both in music and dance as well as intermediate level plastic arts and design, and intermediate level sports education.

The stage comprises two courses, is developed in different modalities, and is organized flexibly into common subjects, specific modality subjects, and optional subjects, with the aim of offering specialized preparation to students.

In high school, students can choose specific pathways that include advanced subjects in science and technology. This allows them to delve deeper into areas of interest and prepare for higher education in STEM fields.

Vocational Training (+15 y.o.)

Vocational Training (FP) in Spain is structured to accommodate various educational needs and age groups, and it is free of charge in public centers. This training is organized into three distinct levels:

- **Basic Vocational Training Cycle** is targeted at students who have not completed Compulsory Secondary Education (ESO). It generally caters to those aged between 15 and 17 and spans two academic years. This foundational level provides the necessary skills to proceed to more advanced training or to enter the workforce with basic qualifications.
- **Intermediate Vocational Training Cycle** requires students to have either an ESO diploma or to pass an entrance exam. This level is typically for students aged between 16 and 18 and also lasts two academic years. It builds on the basic skills acquired in the previous cycle and prepares students for higher vocational training or direct entry into specific employment sectors.
- **Higher Vocational Training Cycle** is designed for students who have either completed the Baccalaureate or who hold an Intermediate Level title in the same field of study. This stage is generally intended for students aged 18 and older and lasts two academic years. It offers specialized training that aligns closely with professional standards and market needs, providing a pathway to higher employment opportunities or further education.

In addition to vocational training, Spain offers **university education** that is structured into three academic cycles: Bachelor's Degree, Master's Degree, and Doctorate. These programs are particularly rich in STEM disciplines, providing specialized training that prepares students for professional careers in science, technology, engineering, and mathematics. University programs are designed not only to impart deep theoretical knowledge but also to offer practical skills and research opportunities that are crucial for success in these fields.

Actors Responsible for Inclusion and Attention to **Diversity** in Educational Centers of Each Country

Czech Republic

Teachers are at the forefront, adapting lessons and creating supportive environments, but they often need additional training and resources.



Progresses in the fields of ITC have made Inclusion in Czech schools involves multiple stakeholders who play a crucial role in ensuring equal educational opportunities. Teachers are at the forefront, adapting lessons and creating supportive environments, but they often need additional training and resources. Teaching assistants help students with special educational needs (SEN), but their availability varies across schools even among regions in the Czech Republic. There is a shortage of professional staff and funding for teaching assistant positions. School psychologists, special educators, and speech therapists provide essential support, though there is a shortage of these professionals. Parents also play a key role in advocating for their children's needs and cooperating with schools. Additionally, the government and non-profit organizations work to improve inclusive education through policies, funding, and specialized programs.

The Ministry of Education of the Czech Republic is the main organisation which sets the rules, defines the national level of education and oversees educational policies. Inclusive education in the Czech Republic is currently being developed following the Education Policy Strategy of the Czech Republic 2030+.

According to Czech law, inclusion should be implemented at every level of education, whenever necessary. [The amendment to the Education Act on September 1, 2016](#) brought several essential changes in supporting children

with special educational needs and securing adequate state funding. Every student with special educational needs has a legal right to appropriate support based on their individual educational requirements. This applies to all compulsory subjects and such practice is quite common in primary schools. However, at higher levels, the situation is somewhat more complex, as not all teachers are equally open to students with special educational needs, although this is gradually changing. It is also important to note that secondary and higher education is optional, so students must meet academic requirements; otherwise, they may be dismissed from the institution.



According to the Education Policy Strategy of the Czech Republic 2030+, the Czech education system is highly decentralized and ranks among the OECD countries with the highest level of school autonomy. This brings several benefits, such as the ability to tailor teaching content and methods to local student needs, respond flexibly to changes, and foster educational innovation. Although the Ministry of Education is responsible for overall guidelines, school principals have significant autonomy in how they implement them and what activities their school participates in. As a result, there are often significant differences between schools.

In terms of inclusion and the involvement of individual actors, support is slightly different at each school level.

Kindergardens can receive support from Pedagogical-Psychological Counseling Centers (PPP) or Special Education Centers (SPC), depending on the specific issue. Based on their recommendations, the kindergarten

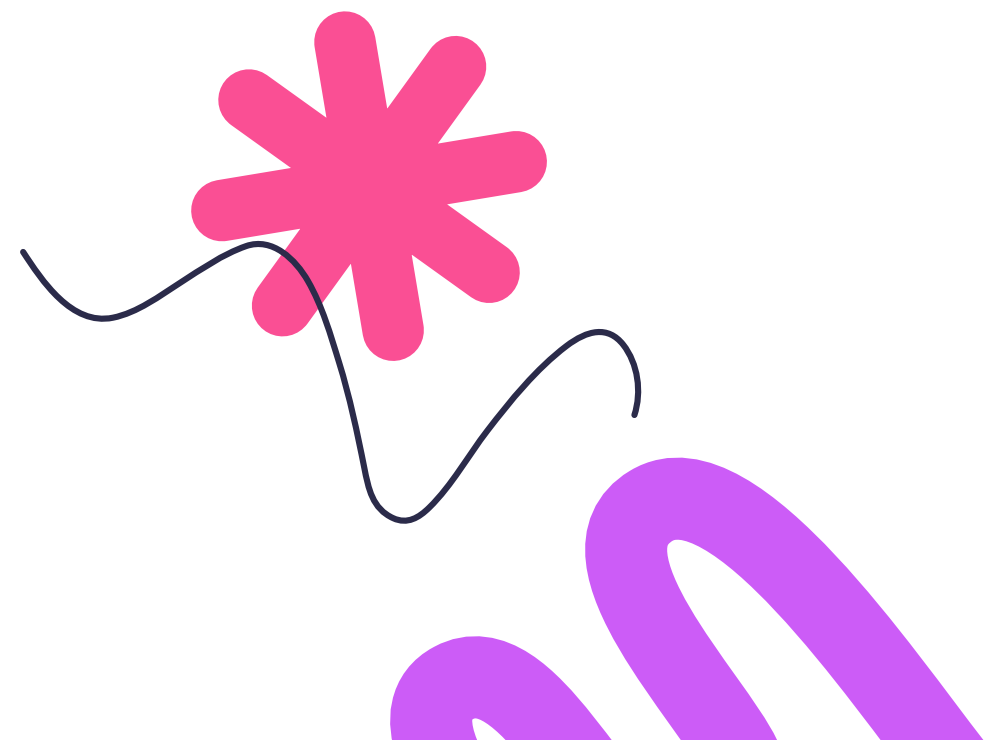
can receive an assistant teacher, but the school is responsible for finding a qualified one. In some cases, a special education teacher or psychologist may work with the child, although most kindergartens do not have these specialists, as it is not mandatory.

For **Primary schools**, there is a legal requirement to have a school counsellor and a prevention methodologist. It is highly beneficial for a school to have at least one psychologist and one special education teacher. The entire team is responsible for overseeing the implementation of recommendations from the PPP and SPC and for providing continuous support to students with special educational needs.

Regarding **Grammar schools, Secondary schools and Vocational schools**, the requirement to have a school counsellor and a prevention methodologist also applies. If additional staff is present, it is typically either a psychologist or a special education teacher. It is rare for both to be available.

Similarly to secondary schools, the requirement for a counselor and a prevention methodologist remains the same for **High vocational schools**.

In recent years, **Universities and Colleges** have been establishing counseling centers where special education teachers and psychologists provide support to students with special educational needs.



Hungary

Several international conventions and local governmental regulations have a profound impact on education and inclusion. Key among these are the UN CRPD (Convention on the Rights of Persons with Disabilities) and the UN CRC (United Nations Convention on the Rights of the Child), which set global standards for the rights and inclusion of persons with disabilities and children's rights, respectively.

In Hungary, specific local laws such as the Law on Education outline the aims to teach and learn about differences, acceptance, and inclusion across various curricula. The National Public Education Act includes provisions like the 'Educational Advisory Service,' which plays a dedicated role in special education. An Expert Committee under this act decides the type of school a child with special education needs will attend, whether an inclusive form or otherwise. Additionally, the National Disability Programme advocates for a shift from integration towards inclusion and enhanced accessibility, and the Act on the development and protection of the built environment supports universal design and physical accessibility.

Schools themselves maintain documents that reflect their commitment to inclusivity. The Founding Charter of a school indicates the type of special needs integrated at the institution. The Pedagogical Program offers schools the possibility to highlight their special focuses and includes aims to integrate and educate about inclu-



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sion and acceptance as part of their operations. Heads of classes often undertake activities designed to shape attitudes and raise awareness among students.

Several key actors play roles in fostering an inclusive educational environment. Heads of institutions can significantly influence inclusivity, depending on their personal dedication to these values. All teachers have access to further training courses that are obligatory for



advancement, although participation in courses specifically about inclusion is not mandatory. Travelling special needs educators move between schools to provide individual classes, facing significant workloads that can hinder their ability to fulfill additional tasks such as promoting inclusion in the classroom community and supporting the integration of children and students.

Education assistants, shadow teachers, or personal assistants also play roles in supporting integration, although these positions are not very common and are often hindered by low salaries, which impacts the recruitment and retention of qualified staff. These roles are crucial in helping to sensitize majority pupils and support the integration of children and students with special educational needs.

Italy

The Italian school promotes a model of full inclusiveness, welcoming all students, regardless of their abilities or difficulties (there are no special or differentiated schools for students with severe disabilities). Inclusion is a fundamental value of the Italian education system, enshrined in the Constitution, which aims to guarantee every student the right to education and the full development of their potential. It has been confirmed by Law 517/77 (specific for the school inclusion) and the law 104/92 (ensuring the overcoming of the disabling barriers in the whole society).

Despite this, however, Italian law does not provide for the presence of professionals in the psycho-pedagogical field who can theoretically and practically support teachers. Schools have the possibility to hire external figures for consultancy through annual calls for tenders.

In recent years, the concept of Special Educational Needs (BES) was introduced through the Ministerial Decree of 27 December 2012 and the subsequent Circular No. 8 of 6 March 2013. The BES category represents a global approach to the person, considering any developmental or learning difficulty that may require individualised or customised teaching. BES are divided into three main sub-categories:

- Disability: Pupils with certified intellectual, motor, psychiatric or sensory disabilities. An Individualised

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Educational Plan (IEP) is created for these students.

- Specific Learning Disorders: pupils with dyslexia, dysgraphia and dysorthographia or dyscalculia may benefit from compensatory and/or dispensatory tools.
- Other disadvantaged situations: pupils with socio-economic, linguistic or cultural disadvantages. In these cases, a Personalised Education Plan (PDP) is drawn up at the discretion of the class council.



The actors responsible for inclusion and attention to diversity operating at school level are:

- Headmaster: ultimately responsible for inclusion within the school. He/she ensures that all necessary interventions are put in place to guarantee the right to study of pupils with disabilities, coordinates human and material resources, and promotes a culture of inclusion within the school community.
- Teachers' Board: oversees the definition and implementation of the school-wide Inclusion Plan,
- Reference teachers and the Class Council are responsible for implementing the Individualised/Personalized Educational Plan (IEP) for the pupil with

Special Educational Needs,

- Delegated teacher is the reference figure to whom families can turn for all the information they deem useful regarding their child's educational path within that specific school institution.
- Support teacher is a specialized teachers who works as facilitator of learning, with pedagogical, didactic, methodological and relational skills, who supports the whole class and not only the student with disabilities, whom he/she usually supports in the learning and socialisation process.
- Personal assistants: in the case of severe physical disabilities, the presence of specialised assistants can also be envisaged.

Responsibility for the inclusion of pupils with disabilities is shared between the school community and the local health and social services, which relate in different working groups:

- Multifunctional Assessment Unit (UVM): made up of health and social professionals, it assesses the needs of pupils with disabilities and identifies appropriate personalised school and social-health interventions.

- Study and Working Group for School Inclusion (GLI): Present in every school, it draws up the Plan for Inclusion, defining objectives and strategies for the inclusion of pupils with disabilities.
- Individual Pupil Operative Working Group (GLO): Draws up and approves the IEP (Individualised Educational Plan) for pupils with certified disabilities or the PDP (Personalised Educational Plan) for BES pupils.
- Territorial Support Centres (CTS): act as an interface between the administration and schools, supporting school integration and the use of new technologies for the learning and socialisation of pupils with disabilities.
- Territorial Centres for Inclusion (CTI): They operate at district level, supporting schools in inclusion and promoting school autonomy.



UDL promotes flexible pedagogical practices that provide accessible opportunities and alternatives for all students regarding methods, materials, tools, support, and assessment formats.

Portugal

Decree-Law No. 54/2018, enacted on July 6th, addresses Inclusive Education in Portugal. It establishes principles and regulations aimed at ensuring inclusion as a process that responds to the diverse needs and potential of all students. This is achieved by promoting participation in learning processes and the broader educational community.

The methodological approaches outlined in this decree-law are based on Universal Design for Learning (UDL) and a multi-tiered approach to curriculum access. These approaches emphasize flexible curricular models, systematic monitoring of the effectiveness of interventions, collaboration between teachers and parents or guardians, and the adoption of learning support measures organized into different levels of intervention. These levels are structured according to the educational responses required for each student to acquire common competencies while valuing their unique potential and interests.

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A multidisciplinary team is responsible for determining whether learning and inclusion support measures are necessary. This team, consisting of both permanent and variable members, serves as an organizational resource for learning support. It ensures a broad, integrated, and participatory approach that involves all stakeholders in the educational process. The team is assigned specific functions and competencies to operationalize inclusive education.

The learning and inclusion support measures are categorized into three types: universal, selective, and additional measures.

UNIVERSAL MEASURES

These are practices or services designed to promote learning and success for all students without needing to identify specific intervention needs:

- Pedagogical differentiation
- Curricular accommodations
- Curricular enrichment
- Promotion of pro-social behaviour
- Academic or behavioural interventions in small groups

SELECTIVE MEASURES

These measures target students who are at increased risk of academic failure or who require additional support:

- Differentiated curricular pathways
- Minor curricular adaptations

- Psycho-pedagogical support
- Early reinforcement and ongoing support for learning
- Tutorial support

ADDITIONAL MEASURES

These involve more frequent and intensive interventions tailored to the unique needs and potential of each student. They can be implemented individually or in small groups and are typically of longer duration:

- Subject-specific attendance for the school year
- Significant curricular adaptations
- Individual transition plans
- Development of structured teaching methodologies and strategies
- Promotion of personal and social autonomy skills

The education of students with special educational needs incorporates well-established pedagogical principles that benefit all students. It acknowledges that human differences are normal and that learning should be tailored to individual needs rather than compelling individuals to conform to predefined standards regarding the pace and nature of the educational process.

Spain

Every secondary education institute, integrated public center, and primary or preschool education school with 12 or more units maintains its own guidance department.

In Spain, both internal and external entities play crucial roles in fostering inclusion and attention to diversity within educational centers.

Internal Services: Guidance Departments in Educational Centers

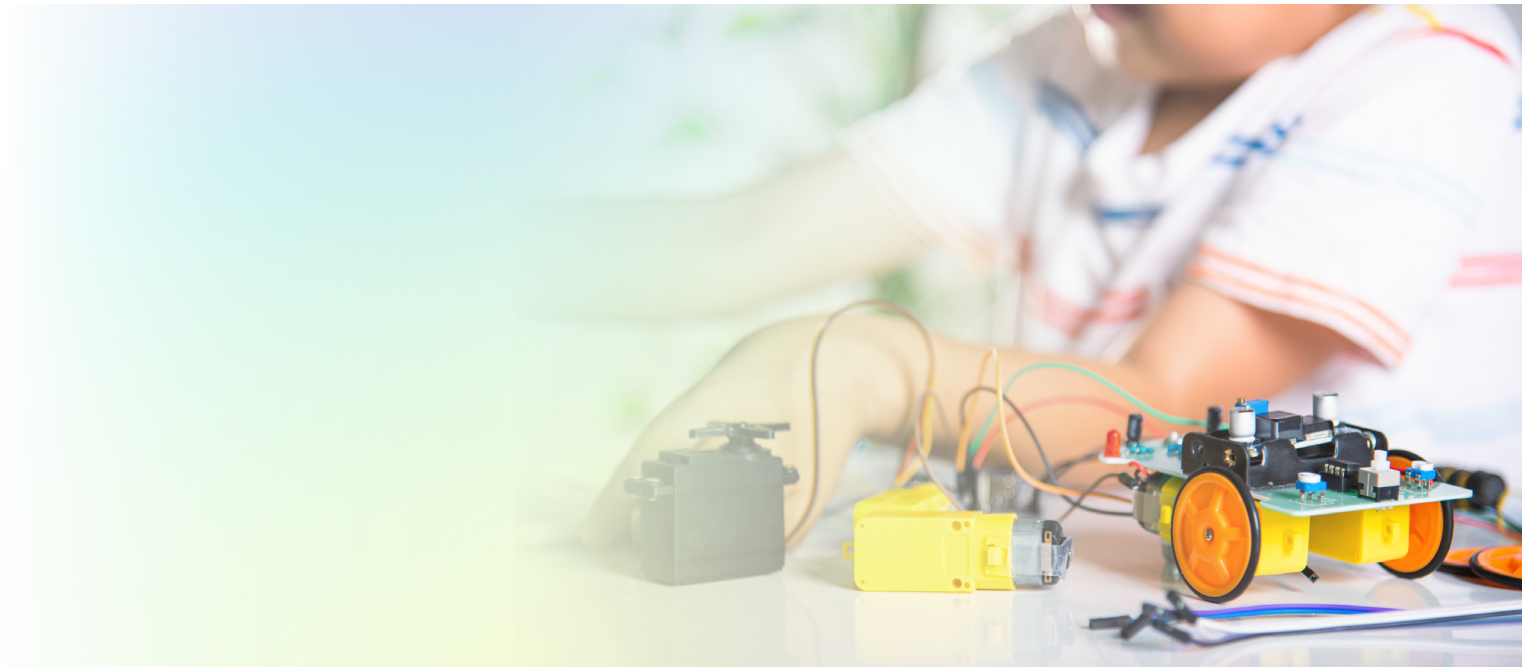
In regions such as Galicia, every secondary education institute, integrated public center, and primary or preschool education school with 12 or more units maintains its own guidance department. These departments are staffed with career civil servants in psychology and pedagogy, one of whom leads the department. Additional personnel typically include therapeutic pedagogy teachers, hearing and language specialists, and a teacher responsible for training and job orientation in institutes that offer specific vocational training. Each area or track within the department is also assigned a tutor.

In preschool and primary education schools, the head of the guidance department is usually a civil servant from the teaching body, ideally holding a doctorate or degree in fields such as psychopedagogy, psychology, or educational sciences. This department also includes therapeutic pedagogy and hearing and language teachers to support students with special educational needs, along with cycle coordinators and, where applicable, a designated preschool teacher. These professionals collabo-

rate to ensure that every student receives a quality education and equal opportunities for academic success.

External Services to Schools: Specific Guidance Teams

Operating at a provincial level, specific guidance teams offer specialized support to school guidance departments in various psychopedagogical, social, and family aspects. These teams are equipped to handle a range of



specialties including behavioral disorders, autism spectrum disorders, high abilities, sensory disabilities, and motor disabilities. Their functions extend to providing specialized advice and support, cooperating in the design, development, and evaluation of intervention programs, collaborating on psychopedagogical evaluations and schooling reports, and offering specialized training for guidance departments.

Together, these internal and external services form a comprehensive support network designed to enhance inclusivity and diversity within Spain's educational framework, ensuring that all students, regardless of their needs, have access to the resources necessary for their success.

Cross-Sector Collaboration

Czech Republic

Cross-sector collaboration is very much welcomed to enhance both STEM and inclusive education. The Ministry of Education works to ensure that policies encourage equal access to quality education and integrate inclusive education into the national curriculum. However, more effective coordination between these sectors is required to bridge gaps, ensure resource distribution, and offer targeted support to students, particularly in underfunded schools.

Often, educational institutions in the Czech Republic collaborate with various organisations to offer STEM clubs for children - robotics clubs, science experiments (little scientist, etc.) - at kindergartens and elementary schools, but usually for a fee. The possibilities on cross-sectoral collaboration depend a lot on the region, with Prague having a large selection. Most organizations are friendly to students with special educational needs.

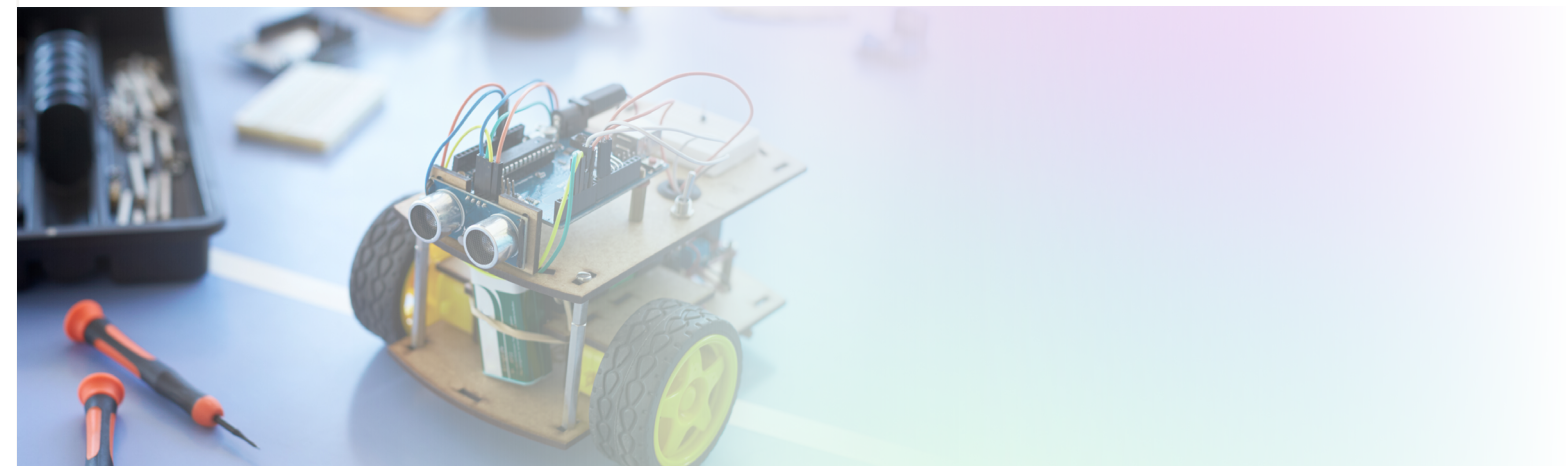
Among other initiatives, National Pedagogical Institute of the Czech Republic offers a wide selection of courses for teachers which differ from “AI Webinars for teachers”, “Study of Teaching assistants” to “How to support a child with behavioural problems”. DigiUcitel is an educational platform for primary and secondary schools where they focus on digital competences of educators (based on the EU framework). JeduEdu is an initiative that wants to connect STEM education through extracurricular activities for children and their parents. Their concept is built



More effective coordination between these sectors is required to bridge gaps, ensure resource distribution, and offer targeted support to students, particularly in underfunded schools.

on playing with the robots, their visual programming and other creative tasks.

Other notable initiatives of cross-sector collaboration include: Lead live (Ředitel naživo) is a leadership programme focused on the Directors and deputies of primary and secondary schools to take their schools forward in practice, Academy of Sciences, which offers various internships for high school students focused on STEM or CTM Academy, z.s. where they pay special attention to gifted children in the Czech Republic or the organization



MENSA grammar school which focuses on the education of gifted students and is tied to MENSA organisation which connects individuals with IQ higher than 130.

Some big companies such as Škoda Auto, ČEZ, and Avast can play an important role by offering internships, apprenticeships, and providing technical equipment to schools. This helps students gain practical skills that align with the needs of the job market. Additionally, universities like the Czech Technical University in Prague collaborate with secondary schools to offer programs aimed at improving STEM education and teacher training, ensuring a modern curriculum and up-to-date teaching practices.

Non-profit organizations, including the Czech Donors Forum and the People in Need Foundation support students from disadvantaged backgrounds as well by providing scholarships, tutoring, and extracurricular activities focused on STEM subjects.

Hungary

Hand in Hand, as a service provider for persons with disabilities, has developed a comprehensive approach to fostering inclusivity through various initiatives:

Training and Events for Attitude Shaping

Hand in Hand conducts attitude-shaping trainings for teachers and hosts events for students. These initiatives are designed to modify perceptions and encourage a more inclusive environment in educational settings.

Cooperation with Educational Institutions and Projects

The organization collaborates with schools on several Erasmus+ projects that focus on inclusion:

- **I_AM:** A project titled “Inclusive education using Animation and Multimedia,” which utilizes creative media to make learning more accessible and engaging for all students. <https://kezenfogva.hu/node/2088>
- **Yard4All:** This initiative aims to utilize schoolyards to promote the wellbeing and development of every child, ensuring that school spaces cater to the needs of all students. <https://kezenfogva.hu/node/2089>



These initiatives are designed to modify perceptions and encourage a more inclusive environment in educational settings.

- **KÉP:** A program that shares and adapts a complex sensitization programme throughout the Central European region to enhance awareness and understanding of inclusivity. <https://kezenfogva.hu/kep>

Partnerships with Companies

Hand in Hand also partners with companies such as Grafton, a recruitment agency, to provide special training for persons with disabilities on topics such as job searches and application processes, enhancing their employment opportunities.

Technological Innovations and Tools

Further technological initiatives from Hungary:

- **SMETRY:** A digital analysis system that helps understand social relationships and inclusion within classrooms, which is part of a planned community development strategy in primary and secondary schools. <https://moderniskola.hu/2024/09/a-kozossegfejlesztes-egy-tudatosan-tervezett-folyamat-lehet-mintsem-egy-szerencses-veletlenekbol-allo-osszeallas-interju/>
- **Verbalio:** Software that supports alternative communication, facilitating better interaction for those with communication barriers. <https://verbalio.com/>
- **AAC Devices:** The organization offers the possibility to rent Augmentative and Alternative Communication (AAC) devices, which assist

individuals who have difficulty with verbal communication.

- **DATA System:** The Digital Autonomy Support in the Autism Spectrum system aids individuals with autism in improving their daily living skills, autonomy, and social participation by providing integrated mobile platforms for visual supports. <https://data.aosz.hu/english-summary/>
- **IT Foundation for the Visually Impaired:** This foundation offers technology-driven solutions to support visually impaired individuals, enhancing their ability to participate fully in educational and social settings. <https://infoalap.hu/english/>
- **National ‘Digital Well-being’ Program:** Provides tools and recommendations aimed at improving digital access and literacy among disabled persons, promoting tech-based inclusivity. <https://digitalisjoletprogram.hu/hu/djp-ajanlasok>

Italy

Cross-sector collaboration is essential for inclusive STEM education, as it combines diverse skills and resources to meet the complex needs of all students, especially those with disabilities. In Italy, various initiatives foster such partnerships to create more equitable learning environments. These collaborations pool knowledge, resources, and networks, resulting in more comprehensive and impactful interventions that bridge theory and practice by grounding educational programs in real-world needs and current research/technology.

Several Italian **universities** promote infodays, campuses, seminars and workshops about STEM professions, especially for secondary school students, with an inclusive approach. Universities organize also specific training for inclusive STEM teaching (e.g. [STEAM4Teachers](#) of Politecnico di Milano).

One of the best practice for **research on inclusive STEM** teaching in Italy is the Laboratory “Polin” in Torino. **University of Turin**, Department of Mathematics ‘G. Peano’, activated the project ‘For an accessible and inclusive mathematics’, which evolved in 2018 with the creation of the ‘S. Polin’ Laboratory for the research and testing of new assistive technologies for STEM. The spectrum of its activities has been extended to motor and sensory disabilities and, more recently, to specific learning disorders (SLDs). The Laboratory, a unique structure of its kind in

 **University of Turin, Department of Mathematics ‘G. Peano’, activated the project ‘For an accessible and inclusive mathematics’, which evolved in 2018 with the creation of the ‘S. Polin’ Laboratory for the research and testing of new assistive technologies for STEM.**

Italy and one of the very few in Europe, deals not only with developing new technological solutions to facilitate access to STEM studies and professions by people with disabilities and DSA, but also with testing, adapting and disseminating existing technologies. (<http://www.integr-abile.unito.it/>)

The “Tutti inclusi” (All Included) call for proposals, issued by the “Con i Bambini” (With the Children) social enterprise as part of the Fund for the fight against juvenile educational poverty, aims to support innovative projects that remove barriers (physical and cultural) hindering access to education and recreation for minors with disabilities or significant developmental disorders. Projects must be submitted by at least two organizations from a range of eligible entities, including third sector organizations, schools, educational institutions, universities, research bodies, and businesses. One of the approved



project related to EDIGIT topics is Project T.I. Abilito - Technology and Artificial Intelligence for the care, inclusion and correct communication of disabilities. (<https://www.innform.eu/progetto-ti-abilito/>). It aims to promote the use of technology for individuals with intellectual disabilities in places they frequent daily (schools, daycare centers, etc.) within the Potenza province. Partnering with

social cooperatives, Onlus organizations, and the University of Turin, the project seeks to foster social integration, offer equal care and educational opportunities, and support these individuals' life projects through innovative tools and practices. Specifically, T.I. Abilito will pilot inclusive pathways for over 100 minors with disabilities in educational, therapeutic, and recreational activities using new technologies.



At local level, collaboration with the municipality (for supplementary assistance to the student with disabilities), diagnosis and treatment services, local health authorities, therapists, and disability support organizations is essential to ensure that students with disabilities receive the necessary individualized support and accommodations to succeed in STEM. This includes access to assistive technologies, personalized learning plans, and specialized instruction.

Portugal

European Union initiatives like Erasmus+ promote cross-sector cooperation, encouraging exchanges among educators, researchers, and care practitioners.



In Portugal, collaboration between the education, research, and disability care sectors has been increasingly recognized. National policies, European funding programs, and the initiatives of academic institutions and social organizations fuel this growing attention. Although notable progress has been achieved in integrating these sectors, challenges persist in maintaining effective and lasting cooperation.

Research Contributions to Disability Care

Academic research in Portugal has significantly contributed to the advancement of knowledge in disability care, with a focus on assistive technologies, inclusive teaching methods, and intervention strategies. Universities and research centers, such as the Institute of Education at the University of Lisbon and the Faculty of Psychology at the University of Porto, conduct studies on neurodevelopmental disorders, accessibility in education, and workforce inclusion. However, a gap still exists between research findings and their practical application in disability care settings. To bridge this gap, there is a need for more structured mechanisms to facilitate knowledge transfer between academia and care providers, ensuring that research results lead to real improvements in disability care practices.

Existing Cross-sector Initiatives

Portugal showcases successful collaborations across sectors to enhance accessibility and inclusion for individuals with disabilities. Partnerships between universities and rehabilitation centers have led to training programs for professionals in this field. The Gulbenkian Foundation supports projects that connect education, research, and social care. European Union initiatives like Erasmus+ promote cross-sector cooperation, encouraging exchanges among educators, researchers, and care practitioners. For instance, Escola Secundária de Barcelinhos launched the “Break Down the Barriers” project in September 2020, involving countries such as Croatia and Turkey, to promote inclusive education through engaging activities. The University of Lisbon ensures equal access for all in mobility programs, offering adapted infrastructures and specific support for students with special educational needs.

Concrete examples of these Cross-sector Initiatives include:

- Internships and Work-based Learning: Many vocational education programs partner with local businesses and disability care institutions to provide internships for students with disabilities, ensuring a smoother transition into the labor market. Additionally, our students also complete their internships in these locations, gaining hands-on experience in inclusive professional environments.
- Study Visits: Schools often organize visits to disability care centers, rehabilitation facilities, and inclusive workplaces to expose students to real-world applications of inclusive practices.
- Scientific Meetings and Conferences: Regular scientific meetings and conferences bring together researchers, educators, and disability care professionals to exchange knowledge, present research findings, and discuss best practices for fostering inclusive education and support systems.

- Joint Research and Pilot Programs: Secondary schools sometimes collaborate with universities to test innovative pedagogical approaches, such as adaptive learning technologies or specialized curricula for students with disabilities.



- Training for Educators and Caregivers: Workshops and short-term training programs are frequently organized in collaboration with higher education institutions, equipping teachers and caregivers with evidence-based practices for inclusive education.

Portugal faces challenges in enhancing cross-sector collaboration, including funding limitations, lack of standardized frameworks, and insufficient inter-institutional communication. Additionally, professionals in disability care and education seek more training opportunities based on the latest research.

Spain

Cross-sector collaboration is crucial for promoting STEM education and inclusive education. By joining efforts across different sectors, innovative and accessible educational programs can be created for all students.

In this context, the Inclusive **Talents project** stands out as a key initiative aimed at fostering STEM vocations among pre-university students through the resolution of technological challenges proposed by persons with disabilities.

The Inclusive Talents project is a collaborative initiative developed by CITIC in partnership with the Consello Social of the University of A Coruña, the Association of Relatives of People with Cerebral Palsy of A Coruña (ASPACE Coruña), and the City Council of La Coruña, supported by both the Galician and Spanish governments.

The primary aim of the Inclusive Talents project is to promote STEM vocations among non-university students and enhance their skills in these fields. A critical aspect of the project is to underscore the social utility of science and technology. Moreover, it seeks to increase visibility for the challenges faced by people with disabilities by having students develop technological solutions that assist in their daily lives.



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Methodology

The project employs a collaborative methodology that involves teams composed of students, teachers, individuals with disabilities, CITIC researchers, and professionals from third sector associations. These teams work together to address and solve challenges identified by people with disabilities through the application of technology.

Annual Activities and Implementation

Throughout the school year, the Inclusive Talents project undertakes several activities:

- **Monthly Videoconferences:** These sessions involve third sector associations, students from educational centers, and CITIC researchers, focusing on the ongoing development of technological challenges.

- **Awareness Days:** During these events, users from third sector associations visit educational centers to share their experiences and educate students about cerebral palsy and other disabilities.

- **Visits to Third Sector Associations:** These excursions allow students from educational centers to visit third sector associations, providing them with firsthand experience and deeper insight into the needs and daily challenges faced by individuals with disabilities.

- **Project Presentation Day:** Held in a science fair format, this culminating event allows students and users to showcase the technological solutions they have developed to the wider community, highlighting the practical outcomes of their collaboration.

The Inclusive Talents project serves as the foundational model for the broader EDIGIT project in Europe, aiming to extend its impact and methodology across the continent. This project exemplifies how collaborative efforts between educational institutions, government, and the third sector can lead to innovative solutions that enhance inclusivity and accessibility for individuals with disabilities.

Challenges

Czech Republic

- Lack of funds and equipment for schools.
- Difficulty in finding qualified teachers/instructors at reasonable salaries.
- Reluctance of teachers to engage in professional development in this area.
- Not everyone possesses the patience or skills to work with various age groups of students with different special educational needs.
- There is a lack of skills from university education on how to work with students with special educational needs.

Hungary

- Attitude of the society.
- Lack of information.
- Lack of experience and possibilities to connect.
- Lack of knowledge about tools, methods.
- Finances, not knowing about financing possibilities.
- To develop social skills, empathy, open-mindedness that are required for inclusion and inclusive teaching.
- To learn about good practices, how to do it well.
- No time and space to connect, discuss, gain ideas.
- Teachers are overloaded with the obligatory materials for the school year. It is hard to be flexible and add creative elements.

Italy

- Lack of sense-perceptual aids and computer stations for disabled students (usually not in the classroom).
- Some technologies, assistive or compensatory, still do not handle digital scientific content appropriately.
- Support teachers lack specific training in STEM subjects.
- Lack of adequately trained teachers in inclusive STEM.
- Perception of the student with disabilities as a person unable to pursue STEM studies.

Portugal

Lack of Accessible Learning Materials

- Limited availability of accessible materials.
- Online resources and laboratory manuals not adapted.
- Fragmented initiatives for accessible digital content.

Insufficient Teacher Training

- Lack of formal training in inclusive practices.
- General pedagogical training, but not specific for STEM.
- Difficulties for teachers to implement inclusive strategies.

Accessibility Challenges in Laboratory and Practical Work

- Hands-on experiments challenging for students with disabilities.
- Lack of assistive technologies and adaptive tools.
- Non-accessible lab equipment, such as tactile models and speech-to-text software.

Digital Accessibility and Technological Barriers

- Digital tools and online learning platforms not fully accessible.
- Non-compliance with Web Content Accessibility Guidelines (WCAG).
- Difficulties accessing content, participating in discussions, and completing tasks.

Policy and Implementation Gaps

- Legal frameworks for inclusive education (Decree-Law No. 54/2018).
- Lack of resources and institutional commitment.
- Limited funding for research and development of accessible education tools.

Spain

- The most important challenge in the country is that the educational system does not include specific training for teachers in this area. Although the legislation regulates intervention, there is no specific training.

Conclusions

The EDiGIT project, along with the situation of STEM subjects in various educational systems, highlights several critical areas of interest and concern in education and technological inclusion. Below are key findings that reflect both advancements and ongoing challenges in these areas. These conclusions are essential for understanding current dynamics and future needs in inclusive education and the promotion of STEM disciplines, especially considering the effective integration of persons with disabilities and ensuring that technological developments benefit all sectors of society.



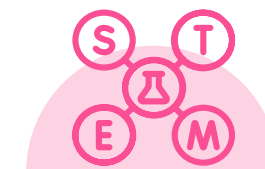
Digital Divide and Disability



Knowledge Transfer and Structured Methodology



Cross-Sector Collaboration



Focus on STEM at the Educational Level



Common Challenges



Importance of Inclusion in STEM Education

- **Digital Divide and Disability:** The EDiGIT project highlights concerns about the digital divide, particularly how it affects persons with disabilities, specifically those with cerebral palsy. It emphasizes the importance of fully integrating disabled individuals in the design, development, and testing of innovative technological solutions to ensure that technological advancements are truly inclusive.
- **Knowledge Transfer and Structured Methodology:** EDiGIT focuses on transferring the experiences and knowledge from the “Inclusive Talents” project through a structured methodology that enables educators to implement similar initiatives in their teaching contexts. This underscores the impor-

tance of creating thematic training modules and online training platforms to facilitate education approaches centered on inclusion.

- **Cross-Sector Collaboration:** The project emphasizes collaboration among the disability care, technology, and education sectors to promote inclusion and raise awareness of the realities faced by persons with disabilities, fostering a society sensitive to disabilities.
- **Focus on STEM at the Educational Level:** In the contexts of the Czech Republic, Hungary, Italy, Portugal and Spain, there is a general concern to improve STEM education. Although specific approaches and challenges vary, each country demonstrates a commitment to enhancing training in science, technology, engineering, and mathematics from early education to higher levels. This includes implementing practical and exploratory activities at younger levels to more specialized and advanced programs at later educational stages.
- **Common Challenges:** Mentioned challenges include a lack of resources, the need for more specific teacher training in STEM and inclusive practices, and the adaptation of materials and environments to be accessible to all students, including those with disabilities.
- **Importance of Inclusion in STEM Education:** Across all contexts, the importance of inclusive STEM education is emphasized, which not only prepares students for future professional roles in these critical areas but also ensures that students with disabilities have the same opportunities to participate and benefit from education in these key disciplines.



EDIGIT

Education and Digital literacy to Grow Inclusive Talents



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