



Portugal

Country Report on ICT in Education

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1. THE EDUCATIONAL CONTEXT

1.1 Key educational challenges and priorities

An emphasis is put on promoting learning success, leading to higher retention rates and smaller early school leaving numbers.

The main challenges are:

1. Attaining more efficiency in the school system;
2. Aiming at more effective learning and improved assessment;
3. Signaling students with learning difficulties envisioning a better pedagogical support.

The top priorities have therefore been defined according to the above-mentioned general principles:

1. Reduction of the curriculum subject range;
2. Reinforcement of school's autonomy;
3. Improving assessment of students;
4. Making learning more effective.

Moreover, the diversification of learning paths and the efforts made to lower truancy levels intended to meet the needs and interests of students and also the needs of the country in terms of economic development.

The guidelines for curriculum management and organization set by the Ministry of Education according to principles defined by Act No. 139/2012 are as follows:

1. Coherence in the sequence of the different levels of education, as well as articulation between secondary education and higher education and the market place;
2. Diversity of educational provision, taking into account students' needs, as well as the demands brought by national development strategies;

1.2 Education Reforms

Current educational policies, as defined by Act No.139/2012, have as their main goal improving educational quality and school success, and are based on the assumption that education is a decisive factor for the future of the country.

In order to optimize the management of the available resources, while taking into account the real needs of students and the role of the Ministry in defining guidelines, the emphasis is on the reinforcement of schools' autonomy, both in managing the curriculum and in choosing what subjects to offer according to the overall curriculum structure.

Head teachers now have more flexibility for organizing school activities as well as the duration of lessons, provided that the minimum amount of time devoted to each subject is respected. In foreign languages an emphasis is put on the teaching of English, which is now compulsory for all students for at least five years. All students have to learn a second foreign language.

Moreover, according to the Act No. 85/2009 of August, 27th, education is now compulsory until the age of 18 or until students complete their secondary education (which can occur at the age of 17 for children who started school at 5 and turned 6 by December, 31st). The implementation of this measure has been subjected to a phasing-in process, but now has been set up to all children within that age range.

Perfil do Aluno para o Séc. XXI: Student's Profile for the 21st century:

The Student's Profile for the 21st century, was approved in 2017, and is a reference document prepared by the Ministry of Education, for the organization of the whole educational system, contributing to the convergence and articulation of decisions inherent to the various dimensions of curriculum development.

The document describes Students' Profile intended to lead to a school education in which the students of this global generation build and settle a humanistic-based scientific and artistic culture. To do so, they mobilise values and skills that allow them to act upon the life and history of individuals and societies, to make free and informed decisions about natural, social and ethical issues, and to carry out a civic, active, conscious and responsible participation.

The Student's Profile Guidelines purpose is to contribute for a better organization and management, and also for setting up the definition of strategies, methodologies and pedagogical-didactic procedures to be used in teaching practices.

The Students' Profile document is structured first in principles, secondly through a vision and thirdly, within values and competence areas.

The Principles justify and give meaning to each of the actions related to the implementation and management of the curriculum at school, in all the subject areas.

The Vision, deriving from the Principles, explains what is intended for young people as citizens when leaving compulsory schooling.

Values, within the education system, are understood as guidelines according to which certain beliefs, behaviours and actions are defined as adequate and desirable. Values are thus understood as the elements and ethical features expressed through the way people act and justify their way of being and acting. It is the relationship built between reality, personality and context factors, a relationship expressed through attitudes and behaviours.

The Competence Areas comprise competences understood as complex combinations of knowledge, skills and attitudes that allow effective human action within diverse contexts. They are of diverse nature: cognitive and metacognitive, social and emotional, physical and practical. It should be highlighted that competences involve knowledge (factual, conceptual, procedural and metacognitive), cognitive and psychomotor skills, attitudes associated with social and organisational skills, and ethical values.

This document necessarily takes on a comprehensive, transversal and recursive character.

The scope of the Student's Profile respects the inclusive and multifaceted school, ensuring that, regardless of the pathway, all knowledge is guided by principles, values and by an explicit view point which results from social consensus.

[Link to the document.](#)

Projeto de Autonomia e Flexibilidade Curricular: Autonomy and Curricula Flexibility Project

The Autonomy and Curricula Flexibility Project, with 231 school clusters involved in this initiative during 2017/2018 school year, is a pedagogical curricula experience, empowers schools to manage primary and secondary education curricula as well as the organization of curricula-base matrices in learning areas and subjects as well as their workload, based on the possibility of curricula enhancement with knowledge, skills and attitudes that contribute for the achievement of visible competences in Student's Profile after concluding compulsory education.

In this curricular approach, the Citizenship and Development component of the National Strategy for Citizenship Education emerges throughout all school years. The curriculum also includes the integration of an Information and Communication Technologies component from the 5th grade onwards.

This project endows the creation of Curricular Autonomy Domains (DAC), meaning, the confluence of areas of interdisciplinary work and curricular articulation, as a result of flexibility local management registered by each school in their curricular planning instruments. In primary education, according to each school context, schools can create new subjects with topics and curricular documents based on their own characteristics.

Within the scope of the Autonomy and Curricular Flexibility, schools can also manage up to 25% of their weekly workload according to their curriculum-based matrices, per school year in regular education, or per training cycle, in professional courses. Each School's option for more autonomy and curricular flexibility also contributes to consolidating, deepening and enriching the *Core Learning*.

Aprendizagens Essenciais - Core Learning

The Core Learning (CL) are curricula orientation documents based on the planning, action and evaluation of teaching and learning, driving to the development of the competences registered in the Student's Profile of after finishing compulsory education. This is an initiative of curricular reorganization that supports the large scale pilot of the reform that was described in the previous section.

In the schools covered by the Autonomy and Curricula Flexibility Project, the Core Learning approach is used in classes of the first years of each the cycle (1st, 5th, 7th, 10th years of schooling), plus the 1st year of professional courses set up in learning modules. For each year and subject area / or subjects, the CL provides lists with the knowledge, skills and attitudes to be developed by all students.

2. DIGITAL EDUCATION POLICY

2.1 National/ regional digital education policies

Iniciativa Portugal INCode.2030 - The Portugal INCoDe.2030 Initiative

The Portugal INCoDe.2030 Initiative is framed by the international context and aims at improving Portugal's positioning and competitiveness, pursuing the purpose of securing a prominent place in digital competences within the years 2017-2030.

The current positioning of Portugal in Europe, the challenges to be assumed, the quantification of the measures taken and the results achieved over time, as a result of this program, can be understood through a set of indicators divided into 5 categories (accessibility, human potential, usage, investment, and training and certification) in 5 axis: Inclusion, Qualification, Specialization, Research and Education. The General Directorate of Education (DGE) is responsible for the Education axis.

Referencial da Educação para os Media - Media Education Guidance (2014)

Media Education Guidance is an educational procedure set out to empower citizens to experience today's 'communicational ecology' with a critical and interventionist spirit.

It aims at harnessing the resources and opportunities that media and communication networks provide to enrich personal and social development, so that every person can live, learn and work with more quality.

This document aims to propose a frame of reference for the pedagogical work on media education issues in preschool education and primary and secondary schooling, taking analogous documents from other countries as a reference, as well as the recent positions of European and international institutions.

It involves addressing issues such as: conditions and opportunities to access technological equipment and applications; diversity and media use rules; ability to seek, assess and select relevant information, to critically analyse it and significantly apply it to the needs of every day's life; ability to better communicate with others.

As media consumers, citizens are faced with ever-greater challenges due to the quantity and diversity of data and information, which increasingly require accurate and sophisticated literacy levels in this area.

In Portugal, as it happens in other European Union Countries and the Organisation for Economic Cooperation and Development (OECD), Media Education Guidance should be regarded as lifelong education, a process for which formal education is a key word.

2.2 Responsibilities

The responsibilities for ICT Teaching and Learning at schools are shared by several bodies of the Ministry of Education:

1. The Directorate General for Education and Science Statistics (Direção-Geral de Estatísticas de Educação e Ciência – formerly the Unit for Statistics and Planning of Education) which was responsible for maintaining infra-structure and equipment.
2. The Directorate General for Education, (Direção-Geral da Educação – DGE) which is responsible for education policies.
3. Municipalities are currently responsible for placing and maintaining infrastructures and equipment in primary schools. Head teachers are responsible for organising activities and promoting collaborative work using ICT among teachers teaching the same class.
4. ERTE is a multidisciplinary team of the Directorate-General for Education, headed by a team leader, directly dependent on the DSPE (Direção de Serviços de Projetos Educativos). It's tasks include in particular to:

- a) Suggest modes and modalities of integration in curricula, curriculum contents and training contents and effective use of Information and Communication Technologies (ICT) at all levels of education and teaching;
- b) Promote, research and disseminate studies on the educational use of ICT in schools;
- c) Put forward guidelines for a rational, effective and efficient pedagogical and didactic use of educational infrastructures, equipment and resources available in educational environments;
- d) Design, develop, monitor and evaluate innovative initiatives and promoters of educational success that contemplate, include and make use of ICT in educational environments;
- e) Design, develop, certificate and disseminate digital educational resources for different levels of education, subjects, curriculum contents and training contents;
- f) Manage, maintain, expand and improve the educational repository of digital educational resources;
- g) Contribute for the definition of terms of reference for the initial, continuous and specialized of educators and teachers training in the area of the educational use of ICT;
- h) Ensure the participation of the DGE in international projects, agencies and institutions in transnational projects, initiatives and coordinating groups that involve the study, promotion, evaluation and use of ICT in education.

2.3 Specific digital education initiatives

Area	Short description (objective, timeframe, target audience, key actors, number of schools, teachers involved, level of implementation national, regional local)
<p>Student identity management and School management systems</p>	<p>Statistics of Basic and Secondary Education portal - information is available here. The public access is available online at Info Escolas portal and offers information about all the schools in Portugal, public and private, organized regionally. This initiative aims at a greater transparency, namely in what concerns the information available to schools – as a tool to support management and the consolidation of the autonomy – and to families, students and the community – allowing for informed choices and active participation. With more and better information it is possible to identify constraints, reflect upon the practices, plan and conduct actions to promote success and battle early school leaving.</p>

New Learning Spaces

The EduLabs Project (2000-2008, 2014-2018)

Between 2000 and 2008, Portugal has developed a technology plan for education with great public investment, equipping schools with Internet access and classrooms with computers and interactive boards. There was also support for the purchase of computers and tablets by students, aiming at developing a classroom of one-to-one teaching model. Overall, the public and private investment on this project amounted to nearly € 3 billion.

Following this national project, the private companies that supplied equipment and platforms, formed a consortium designed to develop technologies in order to answer the school's needs.

This consortium developed the EduLabs Project (2014-2017) with pilot classes in schools involving approximately 2000 students and 250 teachers, aiming at creating a new pedagogical model through which teachers and students could work with digital tools, in active classes with high level of participation of students working in group or individually, inside and outside of the classroom and offering continuous monitoring of students.

Presently, EduLabs prioritises the pedagogical model, and technology is only a tool.

In this model, schools have computers, interactive boards, Wifi internet, and students have tablets, digital books and access to learning support platforms. Students and teachers are permanently connected by the platforms that supports teaching and learning.

The assessments that have been carried out, show that there is an improvement of 30 to 40% in students' attainment results, that were higher than with traditional teaching and an incomparable development of the so-called "21st century skills".

[Link to the project.](#)

[Link to an evaluation of the project.](#)

Tablets no Ensino e Aprendizagem (TEA) – Using Tablets for Teaching and Learning (2014-2016).

Under the auspices of Calouste Gulbenkian Foundation this project aimed at obtaining data that allowed an understanding as thorough as possible, of the following three questions:

1. In what ways have students and teachers of 3rd cycle Primary and Secondary Education appropriated themselves of the use of the supplied tablets;
2. What implications did this continued use of tablets had on teaching and learning; facing different professional development opportunities, and
3. Which ones were chosen by teachers to include in their methodological repertoire and used in their teaching practices?

[Link to the project website](#)

Laboratórios de Aprendizagem - Learning Labs 2015-2017

	<p>This initiative is developed by the General Directorate of Education (DGE, PT) in partnership with European Schoolnet (EUN), and consists of disseminating methodologies for curricular integration of ICT that have been validated in an Europe-wide range.</p> <p>Portugal has been disseminating Future Classroom Methodologies through a national level initiative in training courses only for teachers' trainers. This training involved the five FCL Ambassadors teacher trainers that were responsible for disseminating these innovative methodologies throughout a significant number of workshops for teachers all over the country. This was a strategy to involve many teachers and to allow a better dissemination of the Future Classroom Lab (FCL) in Portugal.</p> <p>Meanwhile the team of ambassadors was reinforced with further elements, two of which came from Azores and two more MOOCs were developed. Therefore, the Portuguese ambassadors have been developing the FCL Portuguese initiative, exposing a large number of teachers to these methodologies.</p> <p><u>Link to the project website.</u></p> <p><u>Iniciativa Ambientes Educativos Inovadores - The Future Classroom Lab Initiative (FCL)</u></p> <p>Created by European Schoolnet, the Future Classroom Lab (FCL) is an inspirational learning environment located in the offices of European Schoolnet in Brussels, which challenges visitors to rethink the role of pedagogy, technology and design in their classrooms. Through six learning zones, visitors can explore the essential elements in delivering 21st century learning: students' and teachers' skills and roles, learning styles, learning environment design, current and emerging technologies, and social trends affecting education.</p> <p>Since the opening of the Future Classroom Lab in January 2012, European Schoolnet and its 34 members supporting Ministries of Education have worked closely with a growing number of ICT providers to ensure an independently-funded and sustainable platform. Policy-makers, industry partners, teachers and other education stakeholders regularly come together in face-to-face training workshops and strategic seminars to develop visions for the school of the future and strategies on how to make it come true.</p>
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Game based education	No initiatives/projects at the moment
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Implementation
of computing,
coding, compu-
tational think-
ing initiatives

Projeto EduScratch

The EduScratch project main goal is to promote the use of Scratch in school environment. The platform provides schools and teachers with support, information regarding initiatives and events since 2010. Its development aims at disseminating and supporting the use of Scratch (and the knowledge about this tool), as well as encouraging its use through training and sharing.

<http://eduscratch.dge.mec.pt/> **APPS for Good (since 2014)**

“Apps for Good” is an open-source technology education movement that partners with educators in schools and learning centres to deliver courses to young people 10-18 years of age. Middle school and high school students work together as teams to find real day-to-day issues (e.g. energy-saving; food supply) they care about and learn to build a mobile, web or social app to solve them.

The main purpose is to secure students’ spontaneous expression, the search for original, diversified and innovative solutions to problems, the selection of techniques and instruments with persuasive intent and participation in the process of technological creation. The teams are supported by two teachers, who act as facilitators, while students share their ideas and clarify any doubts through video conferences with experts from Portugal and India. Teachers and students, with or without an IT background, have access to a platform where subjects are organised in different modules, videos and class tutorials and materials that will help them build an app.

For more information (in PT).

Programação no 1º ciclo do Ensino Básico- 1st cycle Primary School Programming Initiative (2015-2015)

During the school years 2015 to 2017, the General Directorate of Education (DGE) has promoted the pilot project "1st cycle Primary School Programming Initiative", with the support of the National Association of Teachers of Information Technology (ANPRI), ICT Competence Center of the University of Évora (CCTIC UE), ICT Competence Center of the School of Education of the Polytechnic Institute of Setúbal (CCTIC ESE Setúbal) and Microsoft company.

This project aims to contribute for the development of capacities associated with computational thinking, digital literacy and to foster cross-curricular competencies.

The idea behind the project is to reinforce not only pupils’ ICT skills , but help pupils to improve their reading, comprehension, expression and writing skills, knowledge of mathematics, science, music, art and other knowledge domains.

The project focuses also on generating ideas, encouraging pupils to be creative, foster collaboration and problem solving, and increase pupil’s motivation.

	<p>The General Directorate of Education, together with its partners, has produced two guiding documents for the implementation of the initiative: the General Guidelines and the Guidelines for Robotics. These documents are intended to be a contribution and a basic instrument for a diversified implementation, taking into account the projects developed in schools and its adaptation to existing resources. <u>For more information (in PT)</u></p> <p><u>Programação e Robótica no Ensino Básico – ProBótica- Programming and Robotics in Elementary Education (2017/18)</u> In the school year of 2017/18, the General Directorate of Education is promoting, with the support of the University of Évora, the Polytechnic Institute of Setúbal and the National Association of Computer Teachers and Microsoft Portugal the "Programming and Robotics in Elementary Education" project.</p> <p>This initiative stems from the implementation of the pilot project Initiation to Programming in the 1st Cycle of Basic Education that, took place between 2015 and 2017, and involved more than 700.000 students.</p> <p>The project targets pupils from first primary year to the 9th grade (secondary school), schools involved in this initiative will have access to an online platform and on- site (in person) and online support. Participants are invited to participate in various regional events, and become part of the online community of practice that will provides a set of digital educational resources. Furthermore, the project offers also additional complementary material such as curriculum enrichment activities and extracurricular additional activities. <u>For more information (in PT)</u></p> <p><u>Programação e Robótica - Robotics and programming (2015-2017):</u> The DGE carried out a census on the various programming and robotics clubs in Portuguese public and private schools. It launched a competition, aimed at all registered schools who supported and conducted activities related to programming and robotics, developed within these clubs. These activities in the clubs together provided a diversified learning, allowing students to explore their creative potential and increase their sense of responsibility. http://erte.dge.mec.pt/clubes-de-programacao-e-robotica</p> <p><u>Projeto GEN10S (since 2015)</u> This project promotes the developments of programming skills for children and equal opportunities in the digital area, reducing socio-economic and gender barriers.</p> <p>The initiative provides training in Scratch programming to 5,000 students in the 5th and 6th grade across the country. The training presents a new</p>
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	<p>perception of technology to children, demonstrating that from being mere consumers they can become producers. The project also includes the training of 500 teachers, trying to equip them with the necessary tools for the adoption of innovative forms of education.</p> <p><u>For more information</u></p> <p><i><u>Jornais Escolares - School Newspapers (since 2013)</u></i></p> <p>This initiative serves of a platform of dissemination, content sharing and peer learning. Teachers and educators can upload download and share educational material, school newspapers and lesson plans starting from preprimary to high school including vocational training. The idea behind this platform is to provide teachers, students and schools with knowledge and tools that will enable them to create the digital edition of their newspapers. School newspaper project coordinators may register using the form available in order to cover various the school clusters.</p> <p><u>for more information</u></p>
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<p>Self- or peer assessment tools/frameworks for teachers and students digital competence including certification</p>	<p><u>Mentep</u></p> <p>The MENTEP Project (Technological Mentoring-Enhanced Pedagogy) has as its main goal the development and validation of an online tool, which allows teachers to know their level of proficiency in the use of ICT in the promotion of learning, thus allowing them to control the evolution of learning in this area and to identify training needs.</p> <p>MENTEP is a partnership of 13 countries: Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Italy, Lithuania, Norway, Portugal, Slovenia, Spain.</p> <p>http://erte.dge.mec.pt/mentep-mentoring-technology-enhanced-pedagogy</p> <p>In Portugal, the study randomly involved 50 clusters and 987 teachers. All of these teachers initially filled a Benchmark Survey, after which, two groups were formed: a test group and a control group. The test group was invited to use the TET-SAT (Technology Enhanced Teaching – Self Assessment Tool) for teachers to self-assess their skills in the use of technology on an educational environment. After this self-assessment, TET –SAT suggested specific areas of training needs, through resources available in a national and international ecosystem.</p> <p>As a last step for the tool validation protocol, all teachers were invited to fill a Follow-up Survey and the analysis of the results obtained by the test group and control group provided data about the viability of the TET-SAT tool.</p> <p>At the moment, the project is in the phase of analysis of the preliminary results. The final report of the study will be completed in May 2018.</p>
<p>Tests (ICT or non ICT based) for teachers and students to test their digital competence</p>	<p><u>Co-Lab</u></p> <p>CO-LAB is a forward-looking project focused on making collaborative teaching and learning a reality in the classroom. Being able to collaborate effectively is a valuable 21st century skill, yet teaching about or through collaboration remains rare in schools because of the lack of understanding of what real collaboration in an educational setting means, and because the existing policy conditions do not always enable it to flourish. Practitioners and policy makers need a facilitating space and time to experiment and better understand what collaborative teaching and learning means in terms of policy and practice. CO-LAB provides these stakeholders with that opportunity.</p> <p>CO-LAB (December 2015 – January 2018) is coordinated by the European Schoolnet. The project's partnership is rich and diverse consisting of Ministries of Education, teacher training organizations and research institutes from Austria, Belgium, Estonia, Ireland, Poland, and Portugal. Each of these countries has recruited teacher trainers, student teachers, teachers, head teachers, policy makers and other relevant stakeholders at a national level to participate in the project.</p> <p><u>For more information</u></p>

Additional notable projects

Khan Academy

Created in 2006 by American Salman Khan, the Khan Academy website, now adapted to the Portuguese curricula, and made available by the PT Foundation, Portugal's largest communication company. Since 2013, it offers free videos and interactive exercises available at any time of the day. Just have a computer with internet access! The contents can be used by anyone, students, teachers, Heads of Education, etc.

With personalized teaching, this platform recognizes the knowledge that each student already has and suggests the knowledge that needs to be acquired. In addition, the teacher has immediate access to the performance of his students, being able to identify the difficulties of each one's difficulties.

In addition to interactive videos and an exercise platform, the PT Foundation also offers free workshops in schools, training teachers not only to use the platform on a day-to-day basis with their students, but also to share that knowledge with other educators.

<https://pt-pt.khanacademy.org/>

Projeto Teachers TryScience (2016-2017)

The Teachers TryScience project results from a collaborative effort between the New York Hall of Science, IBM Corporation and teachengineering.org. It constitutes a tool of work as well as complementarity for the teachers in the construction of the students' curricula, being transversal to several disciplines and years. The TryScience project provides teachers with activities, timetables, methodologies, objectives, adaptable lesson plans for various age range, pupils' needs and subjects. The goal of the project is to function as a strategy to encourage and increase skills in the areas of Science, Technology, Engineering and Mathematics, bringing the concept of project-based learning to classrooms.

In 2016/2017 school year, the project involved 14 school clusters, focusing on the theme of "Investigating and Communicating Science".

In order to encourage research and scientific accuracy, teams were composed of pre-school teachers, first and second year primary school teachers and their pupils. The teams were asked to collaboratively develop a project that includes science, communication and technology.

For more information.

Projeto Seguranet

The SeguraNet Project aims to promote safe use of internet and mobile devices by the school community (students, teachers and parents). The awareness activities for safer Internet use of the SeguraNet Project are the following:

- to promote the involvement of the existing National Networks - the network of in-service teacher training centres and the ICT Competence Centres – and the experts from the Universities in designing awareness tools, training initiatives, and schools activities with students participation;

	<ul style="list-style-type: none">• to support the consortium partners in all national campaigns and actions of the awareness node;• to conduct training courses for school teachers and for professionals from DGE external entities which work with children;• to promote awareness raising sessions in schools and municipalities (among others) with the support of the national Network of ICT Competency Centers;• to provide online and offline information and resources in multiple formats for each of the target audiences;• to promote the contest <i>SeguraNet Challenges</i> that involves students, teachers and parents (covering about 50 000 participants yearly);• to promote the <i>Digital Leaders Initiative</i> within the school community;• to promote awareness campaigns (SID and Cybersecurity month) in educational communities;• to participate in the <i>National Defense Day</i> activities (nationwide initiative involving 130 000 young people yearly);• to contribute to the <i>Insafe Network</i> and to the working groups of the <i>Safer Internet Consortium</i>;• to integrate <i>esafety</i> issues in the National Curricula. <p><u>For more general information (in PT)</u> <u>For the project website (in PT)</u> <u>For the Facebook page of the project</u></p>
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2.4. Digital education priorities

Area	High priority	Medium priority	Low priority	Reference to policy action measure (if any)
A: Digital Competence Development				
Developing measures to support digital competence of future teachers			X	
Developing measures to support digital competence of in service teachers	X			<i>Coding initiative</i>
Developing measures to boost youth employability and entrepreneurship		X		<i>National Strategy and Action Plan to promote Digital Employability:</i> https://www.portugal2020.pt/Portal2020/apresentacao-da-estrategia-e-plano-de-acao-para-a-empregabilidade-digital INOVA Contest: http://www.iniciativainova.pt/
ICT for accessibility and inclusion : early school leavers, migrants, special educational needs etc.		X		<i>More information on the e-government strategy document:</i> https://joinup.ec.europa.eu/sites/default/files/ckeditor_files/files/eGov%20in%20Portugal%20-%20January%202015%20-%20v_17_0_Final.pdf
B: Curricula and Assessment				
Developing digital competence/media literacy of students	X			
Developing computer/programming skills/ computational thinking skills	X			
Developing key competences		X	X	

Developing 21st century skills (critical thinking, problem solving, communication, collaboration, creativity and innovation)	X			<i>Student's profile for the 21st century</i>
Assessing with ICT/ICT based exams		X	X	
C: System-wide innovation				
Developing measures to support school leaders in the integration of ICT				
Piloting and validating innovative uses of ICT	X			<i>ERTE, DGE Mission:</i> http://erte.dge.mec.pt/index.php?section=2
Mainstreaming ICT in schools	X			
Monitor and research digital learning in schools	X			
Learning analytics (using digital technologies and data to support learning)			X	
D: Mobile Devices				
Use of tablets	X			
Use of mobile phones	X			
Bring Your Own Device		X		
Cloud computing/services	X			
E: Use of digital learning resources				
Developing educational content repositories/metadata	X			
Supporting the development of open educational content and resources	X			
Supporting the development of educational content/resources provided by publishers	X			

Promoting teachers' use, creation and sharing of educational resources	X			
F: Learning environments				
Developing/adapting flexible learning spaces	X			
Linking formal, non-formal and informal learning using ICT		X		
Providing equitable access to ICT (infrastructure, devices and content)		X		
Providing a safe learning environment to students and teachers	X			

3. INTEGRATION OF DIGITAL TECHNOLOGIES IN THE CURRICULUM

3.1 Digital technology based assessment

So far, there has not been any Portuguese initiative in this area.

3.2 School improvement with ICT

Participation in the MENTEP Project with about 1000 teachers from 50 school cluster - see section 2.3.

3.3 The curriculum framework

The Portuguese curriculum is defined at national level and is goal-oriented. The school's autonomy is reflected in the fact that one subject from the curricula can be chosen by each school and developed independently, taking into account curricular guidelines.

The general curriculum framework for schools is based on the development of students' knowledge and a set of essential skills that aim to:

1. Guarantee that all Portuguese citizens have a common general education that ensures that they discover and develop interests and skills that promote individual fulfillment, in harmony with the values of social solidarity;
2. Develop a culture of national awareness, openness to other opinions and in a context of universal humanism and international solidarity and cooperation;
3. Further the acquisition of independent attitudes in order to raise citizens with a sense of civic responsibility who participate democratically in community life.

3.4 Digital technologies in the curriculum

ICT has been integrated as a tool across the entire curriculum. In 2015, learning targets for ICT started being defined for all curriculum areas of the Portuguese education system (1st Cycle: primary grades 3rd to 4th grades). A voluntary programming initiative is underway, started in 2017/2018 with the aim of enlarging ICT to all levels of schools from the 5th to the 9th grades.

The following projects are promoting the integration of ICT in curricula across school levels:

eTwinning

The Portuguese eTwinning National Support Service is under the responsibility of the Team for Educational Technologies and Resources (ERTE), General Directorate of Education (DGE- the Ministry of Education).

DGE, through ERTE, establishes protocols with the so-called nine Competence Centres, scattered throughout the country, based at Universities, Polytechnics and Teacher Training Centres as well as other institutions. The remit of the centres is to establish a close connection with local schools, to train teachers in the educational use of ICT and to support schools when integrating ICT in classrooms.

There is also a network of eTwinning ambassadors, nine teachers whose schedule is 50% dedicated to the eTwinning Actions. They are one of the main channels through which DGE disseminates the project and strengthens school support.

For more information (in PT) and also [here](#).

Projeto TTI-TT (since 2016)

Since 2012, eTwinning has started a *European Pilot Platform* for projects development in order to bring training institutions from several European countries and their national eTwinning offices together. The idea behind this is to include eTwinning in initial teacher training.

Since 2016 Teachers from Universities and Polytechnics, responsible for teacher training, were invited to join TTI-TT. They have attended training from CSS, covering the following areas:

- Introduction to eTwinning: the European system, eTwinning projects, online course for TTI.
- Design of a collaborative activity scenario working remotely with students in another class.
- Online discussion with trainee students from other European countries: mutual discovery, comparison of school systems, training, etc.
- Implementation of a remote collaborative work during the probationary period: with a class of students from the same country (National eTwinning project) or with a class from another eTwinning country.

For more information

Webinars

The DGE holds regular video-webinars for teachers on educational topics (curriculum development, innovation, digital technology, etc.)

More information can be found [here](#)

Conta-nos uma História - Tell us a story! - Podcasts in Education

This initiative was launched in 2009/2010 and is now on its 9th edition. It aims at promoting and supporting the educational use of podcasting tools (audio and video). The initiative involves teachers and students at pre-school and primary school level.

This initiative intends to encourage the use of ICT, namely digital audio and video recording technologies and how it has been changed over the years in order to include new media: from podcasts to video and now even computer programs, in Portuguese and in English, following the changes of the curricular organization.

Storytelling plays an extremely important role in students' learning process at these levels of education and learning, both in the acquisition of knowledge, skills and values, and in activities of a more playful nature.

[For more information](#)

Rádios e Televisões Escolares na Net - School Radio and TV projects on the Web

Started in 2012, this initiative aims to support the implementation of Radio and Television projects in schools as well as to share good practices within this context. Teachers share resources and experiences through a Moodle forum. A yearly event allows teachers and students to get together and share their projects.

[For more information](#)

3.5 Students' digital competence

The competency profile for the students at the end of mandatory education was established and the document "The student's profile for the 21st Century" (see section 1.2) is the reference document for the organization of the whole educational system. Digital literacy plays a fundamental role and ICT is taught as a subject in its own right in grades 7th to 9th. Schools can opt for 90-minutes classes for one semester or 45-minutes classes over the whole school year. ICT is a mainly practical subject, organized in three areas (the topic of digital safety is covered in all areas):

1. Information;
2. Production;
3. Communication and Collaboration.

Students learn to be active users of computers, networks and the internet. Based on the ICT curricular goals, teachers should create learning situations that promote students' autonomy. Goals should therefore not be seen as a list of topics to be imparted to students in a sequential way, but rather as learning goals, regardless of the sequence that the teacher chooses to follow during each school year. It should therefore be noted that the numbering of the objectives and descriptors does not indicate or suggest a compulsory sequential approach. These learning areas are organised in domains, sub-domains and overall goals.

A new core learning initiative is taking place from 2017/2018 school year, where 235 school clusters (out of a total of 811) ICT subject from the 5th to the 9th year. ICT as a subject is taught from the 5th year. The ICT Subject aims at fostering in students a critical analysis of the function and power of information and communication technologies and to develop in them the ability to research, process, produce, communicate and collaborate through technologies, in parallel and in an integrated way with research and of information analysis in traditional formats (books, magazines, encyclopedias, newspapers and other information media).

The subject of ICT, in the 2nd and 3rd cycles, goes beyond the development of basic digital literacy, advancing to the domain of the development of students' analytical abilities, through the exploration of computational environments appropriate to their ages.

In the 2nd cycle of Elementary Education students should know basic concepts that allow them to progressively (i) adopt a critical, reflected and responsible attitude in the use of digital technologies, environments and services, (ii) development (iii) the ability to communicate appropriately, using digital resources and non-digital resources, and (iv) knowledge of strategies and tools to support creativity through the exploration of ideas and the development of thinking enabling them to produce creative digital artifacts. These achievements must be progressively extended and deepened through the 5th and the 6th year of schooling.

3.6 Assessment of digital competence

No information

4. DIGITAL LEARNING RESOURCES AND SERVICES

4.1 Digital content development

E-content is developed mainly by educational publishers: the two main editors/producers are:

Porto Editora, runs the Virtual School portal where it sells multimedia products and maintains the largest collection of commercial interactive online resources for all subjects in the Portuguese curriculum.

LeYa, one of the most important Portuguese textbook publishers, has developed Platform 20, a platform that provides access to learning resources such as digital textbooks, videos, animations, games and interactive tests.

Casa das Ciências -House of Sciences, funded by the Calouste Gulbenkian Foundation, is a project that fosters the creation of digital learning resources by secondary school teachers through support from higher education teachers. The project maintains a fairly large repository of digital learning resources (DLR) aims to increase STEM teaching and learning.

In addition, there are several initiatives for the development of e-books, but these are local and have a rather narrow scope.

4.2 Content sharing and creation

Since 2011, the Ministry of Education has offered an online service to distribute digital educational resources produced under Creative Commons license (Portal das Escolas). However, a large number of resources sharing occurs in an informal way through social media groups and cloud services.

4.3 Accessibility for learners with disabilities and social inclusion

In 1999, Portugal was the first country in Europe and the 4th country in the world to approve legislation aimed at ensuring the accessibility of central government sites to people with special needs, as part of the National Initiative for Citizens with Disabilities adopted by the Council of Ministers Resolution No. 96/99 of August, 26th. The Council of Ministers Resolution No. 110/2003 of August, 12th and the Council of Ministers Resolution No. 9/2007 of January, 17th maintained, among other things, the objective of improving accessibility to Portuguese government sites, including educational sites.

Several actions to improve the equity and availability of and access to assistive technologies for young people with special needs have also been undertaken and are listed in section 5.7 (National Strategy for Inclusion).

4.4 Learning Platforms

The *Escola Móvel Project*, Mobile School– now called *Ensino a Distância para a Itinerância*, *Distance Education for Itinerant Students* – emerged as a distance learning project using the Moodle learning management system (LMS) in 2007. The project supports lower secondary school students who are the children of seasonal workers, thus being subjected to traveling and often change of residence in a city or even country. The project aims to meet the specific needs of this community in terms of elementary education. Initially the *Escola Móvel* curriculum consisted of subjects that made up the National Curriculum for lower secondary education, with the exception of Physical Education. The *Escola Móvel Project* extended its educational provision and implementation of distance learning, ensuring the integration of different students by providing compulsory schooling, with the possibility of continuing studies in upper secondary education. The project was expanded to include other children who are at risk of dropping out, fail the academic year or that are social excluded. One of the target groups of the project are young people supported by the *Ajuda de Mãe (Mother's Help Institution)* and students older than 15 years who, for various reasons, have not completed their compulsory education. The project aims to provide differentiated learning contexts and individualised tutoring, working closely with local education authorities. The project is a partnership with a Lisbon-based school that hosts the virtual school in its premises and offers it organisational and financial infrastructures. In the school year 2011/2012, 23 teachers participated in this project, which reached over one hundred students. Students are grouped in classrooms and have to be online according to a traditional school subject-based timetable; at the end of compulsory schooling they sit in the same exam rooms as all other Portuguese students.

[For more information \(in PT\)](#)

Moodle

In Portugal, since 2006, every school teaching grades from the 5th to the 12th has access to a Moodle learning platform. This platform is used as a means of communication within the school community and as a workplace for students and teachers. The use of learning platforms has been disseminated throughout almost every state-run school. A [national study](#)¹ of this initiative shows that over 98% of the participating schools use Moodle as a LMS platform. The fact that the Moodle LMS software is free, open and fully customisable seems to have been the crucial factor in its spread among national schools.

The high percentage of schools using Moodle as shown by this survey can be seen as a favorable factor towards the acquisition, development and establishment of regular usage

¹ Costa, Carolina, Helena Alvelos, and Leonor Teixeira. "The use of Moodle e-learning platform: a study in a Portuguese University." *Procedia Technology* 5 (2012): 334-343.

habits, since it is part of both a shared language and a shared repertoire, collectively understood among teachers, pupils and the overall school community. Moreover, since all features are integrated in the same space and the potentials of the tool (resources, modules, activities) are known, it is easier to create support and cooperation networks among users, e.g. teachers of the same school/cluster or among teachers from different schools throughout the country.

Findings from this study also suggest that, since 2004, there has been an increasing interest in Moodle platforms from elementary and secondary schools in Portugal. This movement reached a peak in 2007, (including the end of the 2006/2007 school year and the beginning of the 2007/2008 school year).

5. TEACHER EDUCATION FOR DIGITAL LEARNING

5.1 Assessment Schemes

The monitoring of the training and certification system for ICT competences was conducted within the scope of the organic and operational structure of the Technological Plan for Education. The Education Planning and Statistics Office develops and maintains the information support system for training and certification of ICT competences. Currently there are no new actions identified in this field.

5.2 School leader support

The Portuguese Ministry of Education supports the Microsoft initiative for Innovative Leaders. The Innovative Leader Training Program aims at enabling Head Teachers to implement change and forward thinking in the institutions they lead.

Through the development of improvement plans, and under the mentoring of business leaders, this program intends to encourage Head Teachers to:

- develop management and leadership skills;
- identify areas for improvement of performance of schools;
- create and implement a Change Plan;
- promote contact and exchange between schools and companies;
- promote innovation and improved performance of their schools.

For more information

5.3 Digital technologies in initial teacher education

Initial teacher training is the responsibility of Higher Education institutions. The training provided aims to strengthen and promote teaching and leadership skills. The aim is to overcome the main factors that inhibit technological modernisation of the education system by promoting the use of ICT in teaching and learning, in school management, by training teachers in the pedagogical use of ICT and in the mechanisms for certification of ICT competences. In Portugal, institutions have autonomy in this area and are therefore free to decide whether or not they wish to include ICT in initial teacher education. Nonetheless, most institutions that are responsible for initial teacher training provide ICT as a core study.

5.4 ICT in in-service teacher education

ICT in-service training is not compulsory but is one of the most demanded areas. One of the main areas of intervention of the Portuguese Technological Plan was training. Legal guidelines concerning teacher training and certification on ICT competences were therefore compiled. Ordinance 731/2009 of July, 7th defines the training and certification system on ICT competence for teachers of all school levels. This system is organised in three levels, in accordance with the principles of strengthening, diversification and progressive increase of acquired skills. The system fosters both the acquisition of new knowledge on the pedagogical use of ICT and the validation of skills acquired outside the legal framework for in-service teacher training. The aim is to take into account the knowledge acquired during additional specialised academic training and the knowledge acquired during the professional teaching career. As a result, one-third of Portuguese teachers have received training and were accredited. Teacher Training Centers are deploying some ICT training according to specific school necessities, namely on interactive whiteboard use, web 2.0 tools, learning platforms and cloud-computing. The Learning Labs initiative has been developing through all the year of 2015, as mentioned in section 2.3.

5.5 Training Teacher Trainers

The most recent initiatives, training teacher trainers covered these main areas:

Internet safety

Internet safety is a central issue as well as a good starting point to address several uses of ICT in, and even beyond, school. Internet safety is a starting point to develop a number of skills necessary for the 21st century teacher. Around 360 teacher trainers have attended courses on this matter.

Laboratórios de aprendizagem: Formação de formadores- see also section 2.3

This initiative begun in 2014 and is developed by the General Directorate of Education (DGE, PT) in partnership with European Schoolnet (EUN), and consists of disseminating methodologies for curricular integration of ICT that have been validated in an Europe-wide range.

Portugal has been disseminating Future Classroom Methodologies through a national level initiative in training courses for teachers' trainers. These training courses were run by the six FCL Ambassadors that were responsible to disseminate these innovative methodologies.

Since the beginning of this initiative, more than 200 workshops have been developed all over the country and Autonomous Islands and in the three courses that were held, more than 250 trainers were trained. Meanwhile, the team of ambassadors was reinforced with further elements, two of which came from Azores and one from Madeira. Three editions of a MOOCs were also developed.

eTwinning teachers training

The Nacional Support Service (NSS) of the eTwinning Project has promoted two blended training course for Teachers' Trainers that will be certified by the NSS to be future disseminators of eTwinning. About 54 teachers were trained and some of them has already replicated this course among other groups of teachers.

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