



IO1

# State of the Art

## Creativity and Creative Learning Environments

Portugal – Italy – Spain

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## I. Introduction

This State of the Art - Creativity and Creative Learning Environments was developed as part of DigitArt Project, co-financed by Agência Nacional Erasmus+ Juventude em Ação - Key Action 2 - Cooperation for Innovation and the Exchange of Good Practices - Partnerships for Creativity, coordinated by Contextos - Cooperativa para o Desenvolvimento e Coesão Social, CRL (Portugal), in partnership with Lascò Srl (Italy), and FRONTEIRAS - Asociación Cultural (Spain).

This document is the first of a total of four publications (Intellectual Outputs) that result from this project:

- IO1 – State of the Art - Creativity and Creative Learning Environments
- IO2 – Participatory Video - Methodological Guide for the Implementation of Innovative Strategies that Promote the Participation of Youth
- IO3 – Training Itinerary to Improve ICT Competences
- IO4 – Methodological Guide for the Development of Collaborative Projects for Youth

The fifth and final output of the project, IO5 – Collaborative Documentary, tells the story of the DigitArt project in a video format.

This first volume, IO1 – State of the Art, lays the foundation for the work ahead, presenting a collection of information about creativity and creative learning environments in Portugal, Italy, and Spain. It uses a qualitative approach to better understand the current situation in the local contexts of the partner organizations of these three countries, reflecting on national planning and education system documents, perspectives, problems, and challenges, as well as possible solutions, and case study analysis, that can promote creativity and creative learning environments. Firstly, a quality content analysis of national planning and education system documents of each country is presented, followed by the results of semi-structured individual interviews with educators and others involved in education, carried out locally, in Faro - Portugal, Caserta - Italy and Huelva - Spain. The State-of-the-Art ends with the

presentation of a case analysis for each country, showcasing a good example of creative learning.

## II. Theoretical Framework

This chapter presents an analysis of literature in order to better understand the theoretical interpretation of creativity, creative learning and creative teaching, and creative learning environments characteristics.

### 2.1. Creativity

- **How has the concept of creativity evolved?**

Starting from the '90s, the concept of creativity has acquired an increasingly important role in the political, economic, and social discourse and, consequently, in the field of education as well. While previously, creativity was seen as a marginal aspect of education or was merely linked to the field of the arts, nowadays creativity is understood as a cornerstone of an individual's learning experience.

This shift in the apprehension of creativity has occurred for two main reasons related to the changes in the dynamics of the labour market. On one side, the globalization of economic activity has brought about increased competitiveness for markets, driving the need for nation states to raise the levels of educational achievement of their potential labour forces<sup>1</sup>. Therefore, knowledge has become the primary source of economic productivity<sup>2</sup>. And, on the other side, the worker is no longer guaranteed a job for his whole life, as previous generations have known. Hence, workers must be ready to constantly develop their own skills through lifelong learning and to undertake new tasks.

The predictable effect of this major change in the labour market is that what was significant in terms of educational achievement has changed accordingly. However, the difference between educational achievement of the past and that of the present/future is not merely excellence in the depth of knowledge about certain

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<sup>1</sup> JEFFREY, B., CRAFT, A., *The universalization of creativity in education*, in Craft, A., Jeffrey, B. and Leibling, M. (Eds), *Creativity in Education*, Continuum, London, 2001.

<sup>2</sup> SELTZER, K. AND BENTLEY, T., *The Creative Age: Knowledge and Skills for the New Economy*, Demos, London, 1999.

domains, but rather the use of creativity. Creativity is the key aspect for problem-solving and for the identification of new opportunities. In conclusion, creativity forms the backbone of the knowledge-based economy<sup>3</sup>.

In fact, the strategic role of creativity in today's society is broadly recognized by the European Union (EU), that has increased the policy debate on this topic in the last two decades. Creativity is perceived by EU as the prime source for innovation, which in turn is acknowledged as the main driver of sustainable economic development. Creativity and innovation are thus recognized as pivotal in addressing the economic, environmental, and social crises and, therefore, EU has implemented a series of initiatives aimed at strengthening Europe's innovative capacity and the development of a creative and knowledge-intensive economy and society. EU plans to reach these goals by reinforcing the role of education and training in the knowledge triangle and by focusing the school curricula on creativity, innovation, and entrepreneurship. In fact, it has been acknowledged that schools and initial education play a key role in fostering and developing individuals' creative and innovative capacities for their further learning and future working lives<sup>4</sup>.

- **So, what is creativity?**

Creativity has been defined in many ways by scholars, depending on the historical period and psychological movements. Nevertheless, the definitions of creativity given by these scholars present common elements that can be summarized as follows:

- **Novelty** – a creative idea or product must be original, rare, unusual, or statistically infrequent.
- **Usefulness or appropriateness** – a creative idea or product must have value to either meet a need or be a solution to a problem.

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<sup>3</sup> CRAFT, A., *Creativity in schools, tensions and dilemmas*, Routledge, London, 2005; ROBINSON K., *Out of our Minds: Learning to Be Creative*, Capstone, Oxford, 2001.

<sup>4</sup> CACHIA, R., FERRARI, A., ALA-MUTKA, K., PUNIE, Y., *Creative Learning and Innovative Teaching: Final Report on the Study on Creativity and Innovation in Education in the EU Member States*, Joint Research Centre Institute for Prospective Technological Studies, Seville, 2010.

- **Social context or environment** – the novelty and usefulness of the creative idea or product is established by the surrounding social context. Therefore, the degree of creativity depends on the environment<sup>5</sup>.

## 2.2. Creativity in Education

What is the role of creativity in education? How to define creative learning and creative teaching? Firstly, it is important to question whether it makes sense to talk about the concept of creativity within the educational system, since creativity has been considered for centuries an individual's innate feature. However, in the last years, research has showed that people are not born creative or un-creative, proving that creativity can actually be enhanced with appropriate support, learning experiences, and opportunities to use the acquired skills in real-world settings<sup>6</sup>.

It has been demonstrated that the current regular system of teaching is inadequate to the need of fostering creativity among pupils. In its foundations, the idea of creative learning is antithetical to the administration of teacher-directed, atomized, and reductive worksheets, quizzes, exercises, and tests, which transform the teacher in a simple delivery agent for a syllabus developed by the Ministries of Education. In contrast, creative learning is an experimental, destabilizing force, that questions the starting points and opens the outcomes of curriculum. It allows the pupils to experiment other ways of thinking, knowing, being and doing. Therefore, it creates uncertainty and instability, and thus requires to be conducted by a confident and knowledgeable teacher and staff. The change that creative methods bring into the schools is given by this open-endedness, which does not frame creative learning only as a process or as having predetermined outcomes<sup>7</sup>.

To this purpose, the teachers should be able to employ creative thinking to plan lessons, that can then be presented creatively to learners who make use of their

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<sup>5</sup> PLUCKER, J., *Creativity & Innovation: Theory, Research and Practice*, Prufrock Press, Austin, 2016.

<sup>6</sup> PLUCKER, J., *Creativity & Innovation: Theory, Research and Practice*, Prufrock Press, Austin, 2016.

<sup>7</sup> SEFTON-GREEN, J., THOMSON, P., JONES K., BRESLER, L., *The Routledge International Handbook of Creative Learning*, Routledge, London, 2011.

creative abilities to integrate the new learning with previously learned content and skills, and finally express what they have learned in a creative way that is meaningful to them. This method of education, with the complementary goals of developing understanding and creating personal meaning, is intended to cause deep, long-lasting learning and the development of personal creativity. Attainment of this personal creativity has many potential long-term benefits for the individual, both in terms of personal development and success in life<sup>8</sup>. In fact, it has been demonstrated that gaining this ability has positive spill-over effects onto learning, supporting, and enhancing self-learning, learning to learn and life-long learning skills and competences<sup>9</sup>.

- **Creative Learning Environments**

Once we have set the need for a shift in the traditional educational methods, it is necessary to establish the characteristics of a creative educational environment that allows the creative development of the pupils. Scholars have identified characteristics of creative teaching and creative learning that should be present in those environments. Those are: innovation, ownership of knowledge, control of learning processes, and relevance. These characteristics can be defined as follows:

- **Innovation** – something new is created. A major change has taken place, a new skill mastered, new insight gained, new understanding realized, new meaningful knowledge acquired. A radical shift is verified, as opposed to more gradual, cumulative learning, the two types of learning being complementary.
- **Ownership of knowledge** – the pupil learns for himself/herself - not the teacher's, examiner's, or society's knowledge. Creative learning is internalized and makes a difference to the pupil's self.
- **Control of learning processes** – the pupil is self-motivated, not governed by extrinsic factors or purely task-oriented exercises.

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<sup>8</sup> DAVIES, D., JINDAL-SNAPE, D., COLLIER, C., DIGBY, R., HAY, P., HOWE, A., *Creative learning environments in education- A systematic literature review*, in *Thinking Skills and Creativity*, 8, Elsevier Ltd, Amsterdam, 2006, pp. 80-91; IM H., HOKANSON B., JOHNSON, K.K., *Teaching creative thinking skills: a longitudinal study*, in *Clothing and Textiles Research Journal*, 33, pp. 129-142; PLUCKER, J., *Creativity & Innovation: Theory, Research and Practice*, Prufrock Press, Austin, 2016.

<sup>9</sup> CACHIA, R., FERRARI, A., ALA-MUTKA, K., PUNIE, Y., *Creative Learning and Innovative Teaching: Final Report on the Study on Creativity and Innovation in Education in the EU Member States*, Joint Research Centre Institute for Prospective Technological Studies, Seville, 2010.

- **Relevance** – learning what is meaningful to the immediate needs and interests of the pupil and the group.<sup>10</sup>

Specific strategies that teachers can adopt to enhance these characteristics of creative learning and teaching, and promote the development of creativity in their pupils have also been identified, namely:

1. Teaching creative thinking strategies, including brainstorming, redefining a problem, or generating multiple ideas.
2. Providing opportunities for choice and discovery in content and mode of expression.
3. Reinforcing intrinsic motivation.
4. Encouraging students when they give answers that are nonconforming.
5. Developing a supportive atmosphere of inquiry, curiosity, and self-directed learning.
6. Engaging students in activities that use imagination and fantasy to address real-world issues and problems.
7. Promoting active learning where students listen, ask questions, discuss, plan, express themselves, experiment, research, create and/or compose.
8. Providing access to varied materials (math manipulatives, art supplies, magazines) and a variety of ways to access information and to express what has been learned.
9. Offering opportunities to explore topics of interest within the context of the curriculum or other topics of particular interest.
10. Promoting problem finding and problem solving.
11. Promoting self-evaluation where students learn how to critique their own work, based on self-determined criteria.<sup>11</sup>

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<sup>10</sup> WOODS, P., *Teacher Skills and Strategies*, Falmer, London, 1990; Jeffrey B., *Creative teaching and learning: towards a common discourse and practice*, in *Cambridge Journal of Education*, 36(3), Carfax International Publishers, Abington (Oxfordshire), 2006, pp. 399–414.

<sup>11</sup> MAKER, C. J., JO, S., MUAMMAR, O. M., *Development of creativity: the influence of varying levels of implementation of the DISCOVER curriculum model, a non-traditional pedagogical approach*, in *Learning an individual differences*, 18, JAI Press, Greenwich Conn, 2008, 402-417; Schacter J., Thum Y. M., Zifkin D., *How much does creative teaching enhance elementary school students' achievement?*, in *Journal of Creative Behavior*, 40, John Wiley & Sons, Hoboken (NJ), pp. 42-72; PLUCKER J., *Creativity & Innovation : Theory, Research and Practice*, Prufrock Press, Austin, 2016.

In conclusion, the properties and the implications of creative teaching and creative learning can be summarized as follows:

1. The pupil is the main protagonist of the learning process: he/she is placed in a condition of equality with the teacher, and he/she shows a proactive attitude towards the stimuli provided by the teacher. The pupil is in the position of directing the learning process, orienting it according to his/her interests and abilities and he/she is encouraged to evaluate first-hand his/her own work.
2. The teacher makes use of non-traditional methods and tools that stimulate the pupil to train divergent thinking. The teacher will thus offer him/her the tools to build his/her own path through the learning course, in order that the pupil can get to results through an independent process. The teacher shouldn't force the pupil to follow the learning path outlined by the curriculum.
3. The learning process is directed to create new and unexpected outcomes, that are complementary, but not identical to the ones anticipated by the curriculum of study.

### III. National Plans and Education Systems

This chapter presents a content analysis of national plans and education system documents of each project partner country – Portugal, Italy, and Spain, in order to get a better understanding of the current educational framework, and existing guidelines for the future, in terms of creative teaching and learning in those three countries.

#### 3.1. Portugal

In order to get a general picture of the direction undertaken by Portugal in the field of education and training, we analysed, for this research, the following plans put in place by the Portuguese government in the field of school reform and digital transition:

- *Recovery and Resilience Plan (Plano de Recuperação e Resiliência)*
- *Plan 21/23 ESCOLA+, Learning Recovery Plan (PLANO 21/23 ESCOLA+, Plano de Recuperação de Aprendizagens)*
- *National Plan of Arts (Plano Nacional das Artes)*
- *Action Plan for the Digital Transition of Portugal (Plano de Ação para a Transição Digital de Portugal)*

Through this analysis, we identified common objectives and measures set by these plans, that can be organized in the following topics:

1. Flexibility and autonomy of the curriculum
2. Collaborations with local bodies and organizations
3. Development of technological and digital infrastructure
4. Development of education in the field of arts

#### **A common goal: inclusion and respect for the individual needs of the students**

The measures encouraged by the plans listed above aim to create a more inclusive school, by making available to pupils the material and intellectual tools for them to be able to express their full potential. By adopting new teaching means and

methodologies and adapting them to the needs of individual students, the government aims to promote academic success and equal opportunities for all pupils, concretely leading them to acquire the necessary skills to transition from school to work. In this regard, the national plans establish how schools must prepare students, who will be adults in 2030, for jobs not yet created, technologies not yet invented, and problems that are still unknown. For this purpose, it is necessary to teach students to question established knowledge, integrate emerging knowledge, communicate efficiently and solve complex problems. In this sense, there will be a need to use new pedagogical-didactic methodologies to promote the skills required by the labour market, such as those of research, analysis, mastery of display and argumentative techniques, the ability to work cooperatively and autonomously.

- **1. Flexibility and autonomy of the curriculum**

Fundamental to achieving this goal is first and foremost the entrusting of the management and development of the curriculum to individual schools, as highlighted in the PRR, the Plan 21/23 Escola+ and the National Arts Plan. It is believed that granting this power to schools can counteract school failure, since the school will be able to adopt solutions that are appropriate to the specific contexts and needs of its pupils, by initiating dialogue with students, families and communities. In this sense, the autonomy of schools in the construction of the curriculum allows the implementation of interdisciplinary pedagogical projects, which prove to be particularly effective in consolidating essential learning and developing transversal and entrepreneurial skills. On the one hand, the interdisciplinary approach to learning allows pupils to consolidate their knowledge through the integration of theories and concepts deriving from different subjects. On the other hand, this approach also encourages the integration of different teaching and learning methodologies, allowing students to tackle transversal problems by using different strategies. With these more innovative teaching methodologies, students will be encouraged to develop skills in the field of research, evaluation, reflection, critical and autonomous management of information. Due to this approach, the student becomes the absolute protagonist of the learning path, being an active subject in the design of transversal paths and in the building of connections between

different subjects. Moreover, according to this role, the student also participates in the dynamics of teaching evaluation and is placed in the position (at least in secondary school) to build his/her own curriculum on the basis of his/her own needs and interests. The autonomous management of the curriculum by the individual schools finally allows for the implementation of citizenship skills in pupils, as it favours the adaptation of the learning path to the territory in which it is developed. In this sense, individual schools are allowed to develop training courses in collaboration with local entities with the aim to promote active citizenship and democratic participation among students.

- **2. Collaborations with local bodies and organizations**

The PRR, the Plan 21/23 ESCOLA+ and the National Arts Plan insist on the need to open the school to the local community and the surrounding territory. Through this opening, the school would play, in addition to the traditional role of training agency, that of socio-cultural connector and meeting place for the local community as well. The school institution is thus conceived as an "open system", capable of broadening its training and operational horizon to the social, economic and territorial context and of exercising an active and proactive role towards it. The ultimate goal of this measure is to place the student at the centre of the educational project and create the optimal conditions to ensure him academic success and to contribute to his social fulfilment as a citizen. In this context, the school and the external organizations constitute a "dual system" made up of the "inside" (everything that pertains to the school itself and is generated inside the school buildings) as well as the "outside", (represented by the initiatives promoted by the institutions, associations, companies and all those entities which can interact and collaborate with the school). The fundamental role of these collaborations will be to diversify and integrate the training offer and to adjust it to the transformation of the labour market and the new requirements of employability. Experts from various active sectors of the territory would therefore be able to participate in school activities for the development of training sessions and the promotion of experimental projects, with the aim of narrowing the gap between the demand and the offer in the working sector. At the same time, the National Arts Plan encourages the collaboration between schools, local artists and cultural agents, with the aim of

fostering the territorialization of cultural policies and the convergence between education on arts and education for citizenship.

- **3. Development of technological and digital infrastructure**

The documents that focus on the topic of school digitalization are the Action Plan for the Digital Transition of Portugal and the Recovery and Resilience Plan, which dedicates a specific section to digital school. These plans underline the need to provide students with skills that are more in line with the requirements of the labour market. To pursue this goal and bring the school up to date, the plans encourage the development of digital training and the enhancement of technological infrastructures in schools. In the information society we are living in, ICT technologies improve life opportunities for those who are able to use them, and, in this regard, it is essential to include every student in the knowledge and employment of these tools. The Internet is, in fact, recognized as the main tool for accessing information in our age and it is a common good that facilitates the active life of citizens in the creation of a democratic society. In addition, the knowledge of digital tools turns out to be a fundamental skill for students in view of full personal and professional fulfilment.

For these reasons, the analysed national plans establish precise objectives to prepare the new generations to contribute to digital development. The first objective concerns equal opportunities in accessing and using digital tools. On the one hand, the aim is to provide these tools to students, teachers and school staff who, for economic or geographical reasons, are not in a position to fully take advantage of them. On the other hand, the measures for equal opportunities aim to reduce the traditional gender gap in the pursuit of digital careers, favouring the equal participation of both sexes in this field. The second objective aims at transforming the didactical approach through the strengthening of technological and digital infrastructures in schools and the rethinking of these tools for pedagogical purposes. The analysed documents promote the abandoning of traditional teaching methodologies based on the centrality of the teacher and the passive transmission of contents for an innovative school that provides students with lifelong learning skills and encourages them to take an active role in the

activities. In this sense, a more digitalized school transforms learning through the diversification of means, methodologies and didactic resources and helps to rethink in a new way the teaching-learning dynamics and communication channels within the classroom. Finally, the third objective is to guarantee a response to the specific needs of the labour market. It is believed that digital teaching ensures the achievement of this goal since it contributes not only to the development of specific computer skills in students, but also to more transversal skills such as research, critical thinking, problem solving, and the development of a creative mindset.

Having established the final objectives of these reforms, the Portuguese government intends to pursue these goals through the implementation of specific measures for digital innovation in schools. The first urgent measure in this regard involves upgrading the infrastructure and technological equipment in schools and ensuring access to a quality connection throughout the school spaces. Furthermore, the reforms put in practice different measures to tackle the disparities in the use of these tools. On the one hand, the measures aim at implementing and extending internet coverage in the most peripheral areas and at guaranteeing students and teachers free access to it also from home. In addition to that, the plans suggest the need to provide students with computers for individual use and in general with all the technological and digital equipment that allows them to make full use of the teaching resources. Finally, the government intends to reduce the gender gap in the acquisition of digital skills by encouraging female students to undertake technological studies and professions. According to the analysed plans, this purpose will be achieved through the implementation of orientation sessions and training courses aimed at fostering the continuation of STEM careers.

As for the second objective, namely that of innovating teaching methods through the use of digital tools, the government identifies the training of teachers as the first fundamental measure. According to the plans, the teachers should not only be trained on the digital tools developed for administrative purposes, but also on digital teaching methods that involve storytelling, gamification, and self-production of content. Moreover, the documents make clear that the use of digital tools and the transmission

of IT skills shouldn't be ensured only in relation to technological-IT subjects, but that they should be applied to any educational field, in order to promote interdisciplinary learning paths that are more effective for the acquisition of transversal skills.

Another series of measures on the implementation of digital teaching aim at ensuring the use of different means, methodologies, and didactic resources to be put in practice both in the physical environment of the classroom and in a virtual environment, especially in response to the challenges posed by the Covid-19 pandemic. For this purpose, the government has encouraged the development of new digital educational contents supported by distance learning platforms: these include didactic boards, multimedia platforms and online courses, which are meant to be used alongside face-to-face teaching. In addition to this measure, the plans promote the dematerialization of pedagogical resources (such as school manuals, dictionaries, activity notebooks), but also of national tests and exams (that are being replaced by interactive online tests). Due to these measures, the new reforms guarantee access to collaboration tools in digital environments, which bring various benefits to the learning process: the use of these tools stimulates creativity and innovation, allows the remote support of the class and online collaborative work, and brings new generations closer to the new paradigms of society and labour market. Furthermore, in order to meet the skills required in a professional environment, these plans promote collaboration between schools and businesses, so that the experts in the IT-technology sector can implement training activities at school and transmit practical digital skills to pupils.

- **4. Development of education in the field of arts**

The publication of the National Arts Plan shows that the Portuguese government acknowledges the pivotal value of arts and cultural heritage to the personal development of students and fosters the strengthening of these disciplines in the school curriculum. Art is a universal language, which conveys meanings that are impossible to any other type of language, be it semantic, dialogic, or scientific. Thus, education about citizenship, social transformation, collective well-being is impossible if it does not include the artistic and patrimonial dimension. Today, it is a scientifically-

proven certainty that art as a personal and cultural expression is an essential tool for the social and human development of young people: in fact, studying and practicing arts supports the development of perception and imagination, allows the understanding of the surrounding environment, promotes critical and creative thinking skills, and qualifies as the tool “par excellence” in educating the emotions.

There are multiple ways in which education in the field of arts and cultural heritage contributes to citizenship education. Firstly, aesthetic education integrates ethical and political education, as it helps the student to build a conscience and to assimilate concepts such as those of truth, freedom, and justice, which are fundamental for the integral development of a person. Secondly, education on arts strengthens students’ openness to the community and to the world, since studying the heritage of different cultures teaches them to respect the experience of the other and to promote sharing. At the same time, artistic and cultural education contributes to the development and strengthening of communities, as it increases their sense of belonging and enhances their practices and traditions.

Cultural training, in addition to citizenship education, helps the students to develop additional skills that are considered essential by the end of compulsory education. On the one hand, education in arts promotes the appropriation of different languages and aesthetic expressions that integrate the skills of logical-verbal rationality that are taught in school. On the other hand, training in the artistic-cultural field allows the formation of critical and creative thinking, through the use of different senses and points of view that are used to interpret arts.

Therefore, given the recognized importance attributed to artistic and cultural education, the National Arts Plan encourages and disseminates various measures with the aim of ensuring a solid education in arts for students, but also for citizens in general. These measures include:

- The promotion, protection, and enhancement of the national cultural heritage;

- The support for individual and collective artistic-cultural projects carried out by schools and communities;
- The guarantee of access to cultural resources for all citizens;
- Strengthening the involvement of communities in the use and production of artistic and cultural products;
- The development of cultural relations with other communities and the promotion of Portuguese culture abroad;
- The organization, promotion, and implementation of cultural initiatives for the whole community in partnership with public and private entities;
- The promotion of artistic and cultural education in lifelong-learning programs.
- The expansion of the educational offer in this field through the integration of the programs defined in the following plans: Plano Nacional de Leitura; Plano Nacional de Cinema; Programa de Educação Estética e Artística; Programa Rede de Bibliotecas Escolares; Rede Portuguesa de Museus;
- The development of partnerships between schools, museums, theatres, cinemas, cultural institutions, and agencies in order to design teaching and learning strategies that promote an integrative curriculum, based on a consolidated management of cultural knowledge and experience.

In conclusion, it is necessary to underline that all the measures exposed in this research are still in the experimentation and evaluation phase. The analysed plans are very recent and were conceived for the 2020s. Many of the proposed interventions have been designed in response to the challenges arising from the Covid-19 pandemic and, therefore, their effects are not evident yet. Consequently, an assessment of the benefits and weaknesses of the reforms would be premature at this stage, even if from this analysis we are already able to discern the leading direction that Portugal is taking in the field of education and training.

### **3.2. Italy**

School and the world of education, in general, are called today to a radical change of paradigm. The transition from the school of the industrial society to the school of the knowledge society, the complexity and hybridization of knowledge, now requires completely different scenarios of use, tools, and methods, and not only. It is essential to design learning spaces and contexts that facilitate teaching processes and support teachers in their task of building educational experiences of value and impact for their learners, enhancing every single unique feature.

In the knowledge society, open to multiple cultural experiences (formal, informal, non-formal), which is in a dialogue with the territory, crossed by the paradigm of flexibility, there is no "space" for a static, monofunctional, aseptic school.

This challenge emerges from the studies, research works, and documents analysed relating to the Italian education system. Today, the fluidity of relations and communication processes triggered by ICT clashes, with physical environments no longer able to respond to constantly evolving educational contexts, which requires a gradual rethinking and redesign of spaces and places.

Flexible, multifunctional, modular, and easily configurable solutions based on the activity carried out always satisfy different contexts, in which online and offline integrate perfectly. Spaces conceived in this way foster the involvement and active exploration of the student, cooperative bonds, and the perception of "feeling good at school", transferring positive emotions to the learning context that accelerate the learning ability of the individual learner.

Furthermore, the school is called to go beyond its configuration as a school building and become a place "tailored" to its "inhabitants", a place with a central role, a reference territory, a functional and sustainable environment, a "safe" place. In fact, from a post-pandemic perspective, we are moving towards a model of space that is

"proxemic" and guarantees everyone the ability to build relationships and interactions safely, enjoying total comfort, without invading their personal space.

Furthermore, the long period of DAD forced by the pandemic has put a strain on the school system, and the technologies - essential to an enhanced teaching process -, revealing serious limitations in the emotional and interactive involvement of students when used as a substitute for the classic lectures. Therefore, it is essential to retrieve the essence of face-to-face teaching and the value of the training process understood in its entirety, but at the same time to integrate new innovative tools and technologies, such as virtual and augmented reality, which serve teaching and the individual in the learning process.

To maximize the potential of this integration, it is necessary to include the new technologies in updated teaching and training models exploring forms of expression and multimodal narratives, online and offline relationship dynamics, aiming at developing and strengthening skills in learners, such as active learning, enhancement of creativity and transversal skills.

In this section, we have reported the common themes and reflections concerning the analysed studies, as well as the emerging themes and trends, challenges, and solutions to be put in place.

Firstly, we organized the analysed documents considering the year of publication, type of context, and research objectives. Secondly, we arranged them according to the contact points obtained from our investigation, grouping common contents and themes by macro topics, to easily integrate them with the other research paths of our project partners.

Three main objectives have been identified related to the aims of this analysis:

- Analysing the training spaces within the Italian competitive scenario, outlining the limitations and possibilities of development;

- Identifying conceptual tools and frameworks, the design of environments and learning contexts that stimulate creativity, the ability to relate, involve learners, and support them in overcoming the challenges associated with the acquisition of new concepts;
- Defining approaches and solutions for the creation of integrated on-life spaces (online and offline). These should be areas where material and analogue reality can be integrated with virtual and interactive reality for a fluid relational, social, and communicative dimension of trainers, teachers, and students.

These are the analysed sources:

- *Education and research: National Recovery and Resilience Plan National*
- *Institute of Documentation, Innovation and Educational Research (Indire)*
- *PROGRAMMA DI FORMAZIONE PER LA SCUOLA DIGITALE "Formare al Futuro" del Ministero dell'Istruzione*
- *Quality of the Learning Environment in Digital Classrooms: An Italian Case Study*
- *Author links open overlay panel Andrea Garavaglia - Valentina Garzia - Livia Petti*
- *Work of the research group Indire on school architecture and related volume "Teaching in flexible spaces. Designing, organizing and using learning environments at school "(Giunti, 2019)*
- *MIUR, National School Building Registry, 2018-19 school building data, School Ecosystem, XIX Report of Legambiente 2018, (School Building Registry data 2017, MIUR)*
- *Report on school buildings, by the Agnelli Foundation, 2018, #scuolesicure survey published in Wired, 2012.Digitale*
- *Agcom, Educare, 2019 (based on MIUR 2016-17 data*
- *Focus MIUR, Multimedia equipment for teaching in schools as 2014/15*
- *Report "Open schools, protected society" Politecnico di Torino 2021*
- *The CROSSLESSON: an educational model between virtual reality and gamification. Maria Rita Manzoni, UST Varese Digital Innovation Hub*

As previously stated, we have grouped common themes and requests that emerged from the analysed documents. These are the trends and challenges identified:

- **1. Rethinking the space and spaces of relationship**

Many documents and studies highlight how the environment interacts with the quality of learning processes, from guidelines for school buildings to cultural orientation papers issued by national and international organizations.

The intention is to support the design or rethink processes of learning environments and support the idea of wellbeing in school that recalls modern standards of comfort and habitability.

It is of utmost importance to rethink school environments by enhancing "feeling good" at school, with a vision that goes beyond the traditional model made up of desks, classrooms, and corridors and which defines new models of relationships that are not limited only to the class or group, but that know how to open up and involve the entire school community, as well as the local community.

It should be a welcoming environment, in which it is possible to design educational paths that "come out" of the classroom and that exploit the potential offered by all the other places in the school, including unused spaces and those apparently "useless". A vision that differs from the idea of school as a "sum of classrooms" and extends beyond the didactic dimension, to the social context and the ability of an environment to influence the quality of social relations should be put into practice. The classroom is not the only spatial reference for teaching. Every place inside or outside the school should be considered a place to learn if made coherent and functional to the training path, skills and knowledge to be developed.

Nowadays, schools have been enriched with new functions. They are not only places dedicated to training, but environments that stimulate the construction of "bridges" between different generations and cultures. They are spaces for the integration of

knowledge, experience, and cultural models. The challenge for the school is therefore to become a space for dialogue with the community; learning environments, but also service centres for the territory; places for children, but also points of reference for that archipelago of associations that operate and gravitate in urban realities. In this new cultural humus, even the school building changes and requires accurate pedagogical information to accommodate the full potential of society in the making.

The challenge is not only linked to the training spaces. It mainly concerns teachers and their ability to organize and integrate different languages, frameworks and different communication channels to make training spaces and contexts heterogeneous and flexible. The possibility of developing innovative teaching is closely linked to the definition of student-centred environments.

- **2. The digital challenge: "onlife" integration**

Schools will need all the tools and structures necessary to become increasingly digital. Thus, investments must be aimed at strengthening and adapting technological equipment that promotes online learning and at creating digital school centres capable of enhancing and closing the gap by making rural areas and hinterland more accessible.

It is necessary to rethink online training by integrating the online and offline experience without replicating traditional teaching and training models. There is still a strong tendency in Italian classrooms to favour sequential and structured forms of thought typical of a book-centred world, as opposed to the holistic and global thinking methods induced in adolescents by the mass media and digital universe, which they frequent in the extracurricular dimension.

For this reason, as part of the activities, research has been launched aimed at the observation, enhancement, support, and experimentation of innovative laboratory teaching models to be implemented (or already in place) in schools of all levels, both in terms of contents, methods, tools and technologies involved (including the

identification of advanced, immersive and simulating technological settings to support teaching practice), and the necessary professional development support actions to assist this innovation process.

Among these, the adoption of immersive technologies as a method for distance learning and as a learning environment should be taken into consideration, while encouraging the dissemination of best practices among teachers. By "immersive", we mean the technologies that tend to blur the boundary between the physical world and the virtual world and that foster a sense of cognitive - and in some cases also perceptive - immersion within the latter. Examples of immersive technologies are 3D viewers, wired gloves, surround sound, simulation software, but also most of the videogames and so-called "virtual worlds".

The immersive dimension specific to video games or virtual reality involves mainly the emotional sphere of those who use it, determining highly motivating forms of active involvement. The challenge of bringing VR and other technologies such as gamification into the classroom is to exploit motivation to trigger reflection, to leverage body intelligence to arrive at a critical rethinking of the experience itself.

Game-based learning situations with or without VR have in themselves the characteristic of overturning the transmission model in which the teacher/trainer is at the centre of the teaching process, and the students are passive spectators, transforming the latter into active protagonists of their learning, builders of their knowledge in a context of cooperation and collaboration.

VR and gamification applied to teaching are expressed in the methodologies of inquiry-based learning or challenge-based learning, which are built on constructivist pedagogical theories, all united by the use of the problematic situation and investigation as a fundamental learning tool.

The first use of virtual reality is undoubtedly that of simulation, particularly relevant when one has to do with too dangerous, too big, or too small or simply too expensive

that prevents the real realization of an experience, but where the learning implies manipulation, physical interaction with the environment, in other words, the activation of kinesthetic intelligence.

Moreover, in the teaching of scientific disciplines, the use of VR is significant when it is necessary to "dismantle" students' misconceptions or misunderstandings, which are difficult to modify with verbal explanations when words are not sufficient to demonstrate that a given experiment produces a certain result, nor it is enough to tell them that what they think is wrong when they need to experience and interact with a certain environment.

The most interesting use in the classroom, however, is the one that hybridizes virtual reality with game-based learning, involving students in the creation of virtual environments and 3D spaces that can be populated by characters that act as avatars with missions - in this case of learning - to be carried out. Through the mechanisms of identification or the opposite of projection in a character, it is possible for the student, in the protected space of the virtual, "living" environment, with intrapersonal or emotional intelligence, to explore a different identity.

- **3. New skills and multimodal formats**

The idea of new training and teaching is increasingly advancing, with digital or hybrid practices and methodologies, of study and analysis of more flexible spaces and times, with an emphasis on organizational flexibility: a new way of thinking school time and space based on the rethinking of teaching time and a revision of the organization and timing of teaching activities, taking into account the potential of the use of digital technology.

An increasingly "multimodal" school/training with a change of cultural perspective shifts the attention from the media-instrumental aspect to their characteristics and methods of communication. The training experience must be rethought, declining it through the features of contexts, languages, ways of relating and communicating

online, with formats such as short lessons, video microlearning, online tutoring for students. Today, the new IT structure makes it possible to create and offer educational materials in multiple formats and customized videos, as well as to support the live streaming of the lessons, their recording, and the possibility of reviewing them on demand.

Many educational institutions are already equipped with multimedia technology in every classroom. The aim is to enhance further the laboratories (scientific, computer, technical, linguistic, musical, theatrical, artistic, or specific depending on the chosen field of study), to improve the learning of digital skills, transversal skills, to turn schools into attractive environments for students, and to raise the level of learning performance and related educational services offered.

- **4. Area Maker**

The growing popularity of laboratory teaching highlights that it is possible to engage students, even very young ones, in the complex use of technology to support the experimentation of new laboratory teaching methods. The democratization of innovation promoted by the Maker movement and the evolution of new technologies allow everyone to contribute to innovation: their entry into school has inevitably led to growing didactic innovation based on pedagogical activism. This research, based on multidisciplinary laboratory teaching and on the digital fabrication laboratory (Maker space / Fablab), provides a protected space, which allows students to face a new and profound experience: failure. Learning to deal with error - something rarely taught in schools - turns out to be a crucial educational advantage. Through cycles of error and redesign, students have not only developed incredibly original and complex projects but also a more tenacious attitude and have learned to work in heterogeneous teams, improving in the management of intellectual diversity.

- **5. Access to information: connection and integration**

Connection and integration of languages and infrastructures. The challenge is to enhance:

- Access to digital libraries and journals;
- Adaptation of IT equipment and connections;
- More modern furniture and tools to encourage self-learning;
- Technological supports for digital content and the creation of web platforms;
- E-learning practices and use of open networks;
- Connectivity and connection with the territory for a school that is increasingly open and at the centre of the life of the community;
- Promote the use of buildings beyond school hours and the development of more advanced teaching and learning systems.

- **6. Use of public and private social networks**

In the recent history of information and communication technologies, the proliferation of social networking sites (SNS) is one of the most relevant phenomena of the various SNS online. As students appear to be reluctant to use it for academic purposes, it is suggested that the focus should move away from its educational uses and consider these platforms as a place for socializing.

Scholars have emphasized the potential of SNS for learning as they would support "the process of building networks of information, contacts, and resources that are applied to real problems" (Anderson & Dron, 2011, p. 87). As also underlined by the connectivist approach (Siemens, 2005), the shift of focus from the group to the network as a place of learning is based on exploration, connection, creation, and evaluation within networks that connect people, artifacts, and digital content.

According to Greenhow (2011), SNS could be rethought as support for student learning outcomes from at least two perspectives: firstly, they can provide peer/pupil support to manage the ups and downs of high school or college life, or help with school activities; secondly, SNS can drive social and civic benefits, both online and

offline. Some experiences described by the author illustrate how environmental activism was promoted through a series of actions aimed at young people within an application implemented on Facebook, which encouraged role modelling and civic engagement, thanks to the expansion of the learning environment and the blending of information and learning resources.

The traditional limitations of e-learning programs that focus primarily on content with limited interactions can be overcome by encouraging learners to share personal and professional interests and aspirations usually excluded from e-learning settings.

This relational amplifier function has also been emphasized by Duffy (2011) concerning tertiary education. According to this author, SNS offer many opportunities for creating collaborative activities that occur online, especially since many students are already using them for socialization and communication purposes and would be willing to use these sites in learning as well. Moreover, the SNS are free and do not have the restrictions usually found in many institutional LMS.

The cognitive and relational function of the SNS was particularly emphasized by Siemens and Weller (2011), according to which learners are encouraged in the SNS to carry out peer-to-peer dialogues, promote the sharing of resources, and foster the development of communication skills, due to the possibility of reconciling personal and professional life. Contrary to the prevailing trend in higher education (HE) of adopting online learning to reproduce the traditional format of learning contexts, SNS blurs the distinction between learning spaces, social spaces, and leisure spaces, thus suggesting mixing different types of business can be helpful.

Halverson (2011) lists three main challenges, such as the obligation of instructors to protect student privacy, conflicts that can arise when mixing the goals set by students in participatory culture models with those of the school set by trainers, and the construction of identity as a holistic framework against the institutional demand to build the identity of students as students. In line with these challenges, Siemens and Weller (2011) point out that educators should also be aware that conflicts and

tensions arise when the structure of networks collides with the hierarchical structure of traditional education (p.166).

- **7. Spaces of Integration and Communities of Practice**

Personal work plans have been introduced in some schools, allowing time for individual learning and personal training, as well as for "open learning" in groups made up of students from different grades. Workshops dedicated to specific activities, such as a theatre, a carpentry room, and a large garden with a vegetable area; computers and interactive whiteboards are found both in the classrooms and in special areas. Besides teaching, all teachers have a role in the project, being involved in collaborative preparation of activities, classroom visits to observe each other, practice, give theoretical input, and carry out shared planning, evaluation, and documentation both in weekly and online meetings.

All teachers are involved in the planning, organization, reflection, and documentation of their projects, both weekly meetings, and discussions on a digital forum platform. Teachers observe each other's practices (intervisions) and attend each other's lessons to develop assessment tools collectively. The school provides teacher training programs in collaboration with the University of Florence and is an experimental school open to visiting scholars and students.

### **3.3. Spain**

Like other sectors of society, education has undergone a total revolution due to technological advances and faces the challenge of using new technologies and the most innovative resources to improve the training of students.

Digital transformation has reached the classroom. But besides teaching students to use new technologies (today, many are already digital natives and have great digital knowledge), it is time to apply technology to facilitate the transformation of the traditional schools into Smart Schools.

What is the school's reaction to this unimaginable, until recently, digital transformation? Well, the school is facing an unprecedented crossroads in which strong resistance to abandoning topics and routines is revealed. For example, entrusting the improvement of education to simple quantitative aspects, such as the increase in teachers or repeated debates about the ratios of students per classroom. Thus, we forget that the commitment to quality and equity should not be limited to arithmetic in that small space, and it must do so based on the enormous possibilities of innovation and improvement that the educational centre has.

It is time to build the model for the future: complex and inspired by the principles of quality, equity, and inclusion, which must combine the essential presence together with the large window of opportunities that distance education offers, for everyone equally, through hybrids or combined systems.

The creative dimension acquires more and more relevance in today's world, and the creative school has to train people in all its dimensions. Therefore, teachers must use strategies to address not only the verbal, analytical and abstract operations, typical convergent thinking, but also the non-verbal, spatial, analogical, and aesthetic functions, which are specific to divergent thinking.

From an educational point of view, it can be stated that these days, creativity is not reduced to an artistic field (painting, music, poetry, etc.), but rather constitutes a base on which teaching and learning of any subject can be supported.

The creative dimension can be seen at all ages, but the sooner we begin to cultivate it, the more possibilities there are to develop creative abilities. The main objective of education is to create men and women capable of doing new things.

Studies have shown that this merely instrumental digitization provides poor educational results if it is not accompanied, among others, by profound methodological changes, systematic monitoring, and evaluation processes, and a trained teaching staff truly committed to this digital and educational transformation.

In this section, the common themes, and elements for reflection regarding the studies consulted, the emerging themes and trends, the challenges, and the solutions to be implemented have been analysed.

We organize the documents analysed in our research, grouping common contents and themes by macro topics to easily integrate them with the other research paths of our project partners.

Among the different points of this analysis, three main objectives have been identified:

- Analysing the role of ICT within training spaces in the Spanish educational scene, outlining the limits and possibilities of development;
- Identifying tools and conceptual frameworks, the design of learning environments and contexts that stimulate creativity, the ability to relate, engage students and support them in overcoming the challenges associated with the acquisition of new concepts;
- Identifying approaches and solutions for the creation of integrated spaces in life. These should be areas where material and analogue reality can be integrated with virtual and interactive reality to make fluid the relational, social, and communicative dimensions of trainers, teachers, and students fluid.

These are the analysed sources:

- *Plan Estratégico de Formación Profesional del Sistema Educativo 2019-2022*
- *Programa Escuela 2.0 del Ministerio de Educación, Cultura y Deporte*
- *Programa Educa en Digital para impulsar la transformación tecnológica de la Educación en España*
- *Estudio de las potencialidades de las TIC y su papel fomentando la creatividad: percepciones del profesorado. RIED. Revista Iberoamericana de Educación a Distancia*
- *Nuevos informes sobre transformación digital en España. Índice DESI*
- *La creatividad como un elemento clave de la educación para el desarrollo sostenible. Fundación Botín*

- *Espacios creativos para el aprendizaje del siglo XXI. Informe del Área de tecnología educativa del Gobierno de Canarias*
- *Informe Repensar la Educación. Una mirada desde “Fuera” de la Escuela*
- *Desarrollo de la creatividad en el aula de Educación Primaria a través de un proyecto artístico multidisciplinar (2015). Universidad Internacional de La Rioja*
- *Análisis del Sistema Educativo Español. Retos y propuestas de mejora. Universidad Pontificia Comillas - Madrid*

### • 1. The New School or School 2.0

The competences that 21st-century students need to develop, so that, when finishing compulsory education, they can become capable and competent citizens to conduct themselves in our society too, are radically different from those that previous generations might have needed.

All these skills must be developed in an environment in which the Internet, social networks and digital technologies are the medium in which most of the work is done; consequently, technologies and digital content play an increasingly important role in the promotion of educational innovation and therefore Digital Competence, understood as the habitual use of technological resources to solve problems of daily life, thus becoming a basic competence for life.

With new ways of learning, new ways of teaching are needed and, consequently, the 21st-century teacher profile also requires new roles and skills, other than the mere ability to transmit knowledge. For this reason, the so-called emergent pedagogies of which many authors point out that promote postulates of "The new school or School 2.0", now possible thanks to technology, are gaining more and more strength.

Flexible, open teaching, and working methods stimulate, in particular, creative processes. Such methods include open and action-oriented teaching, project work, weekly programs, autonomous work, and classroom learning. Learning through discovery, project-oriented teaching, and action-oriented learning enable the development of exploratory and initiated learning, while fostering networked learning.

In Spain, the path to digitization began during the 2009-10 academic year. The educational centres, supported with public funds, had the opportunity to initiate the integration of ICT in the classroom from the hand of the Ministry of Education, Culture and Sports in a pioneering project in education in Spain. The main objective was to launch the digital classrooms of the 21st century, classrooms equipped with technological infrastructure and connectivity. The program was based on the following lines of intervention:

- Provide Information and Communication Technologies (ICT) resources to both students and teachers: laptops, digital whiteboards, etc.;
- Promote teacher training both in technological aspects as well as in methodological and social aspects, promoting the integration of ICT resources into their teaching practice;
- Encourage the development and creation of digital content, as well as facilitate access to new educational digital materials for dissemination and use in the classroom;
- Educate in values and with the responsibility of giving a didactic use to technological tools, both in the classroom and in the student's family environment.

Throughout these years we have seen how classrooms continue their path towards digitization, although very slowly in most cases. At the same time, there are aspects that we analyse below that are failing.

The fact that the new e-learning training technologies offer the student resources and information of all kinds to be able to learn, has fuelled the false myth that the tutor loses his role in the training process. We deduce that it is the opposite and that ICTs are the perfect ally since they are tools that further enhance their role and help them in their new dynamic role: the teacher must focus on creating learning situations.

The teacher is no longer a mere one-sided transmitter of knowledge. His role is to supervise the individual development of each student and to promote teamwork, creativity, and the application of knowledge to solve complex problems. In this new

school model, the teacher is no longer the source of information, but the person in charge of providing the information. Teachers have an increasingly important role outside the classroom, also acting as e-learning tutors.

The tutor is now in charge of looking for data and training resources, as well as being aware of the demand for additional information that the students ask for. Teachers are guides in the learning process.

As for students, they become the centre of the classroom, gaining much prominence, even in defining the pace of learning in class and, of course, individually. Student participation has become a key aspect that teachers must work on at school, generating new ways of learning. Therefore, the learning process becomes more individualized, interactive, and exciting.

- **2. Open training and creativity**

The strategic framework for Education and Training 2020 (ET2020) seeks the development of open and innovative education and training to achieve full incorporation into the digital age, keeping as one of its strategic objectives increasing creativity and innovation. Creativity is positioned as a vital part of education for the digital future and for the technology-driven learning environments and work-life that students will inevitably grapple with (Creely, Henderson & Henriksen, 2019). However, aspects such as multiculturalism, the digitization of information, and the importance of social networks are not addressed with sufficient importance in our classrooms, still being an underused resource in teaching (Tabuenca, Sánchez and Cuetos, 2019).

Although creativity has become a central theme for 21st-century teaching and learning, it is still unclear what this means for the field of education, in politics, and, therefore, in practice. A more coherent approach is needed between the implementation of creativity and technology in educational policy theory and the reality of the classroom (Henriksen, Henderson, Creely, Ceretkova, Černochová, Sendova, Sointu & Tienken, 2018). This may be because it is difficult to approximate a specific definition of

creativity. There are different perceptions of its meaning depending on the existing techniques for its evaluation. It was originally described as the ability to solve questions and problems (Smilansky and Halberstadt, 1986); an intellectual ability to generate an original product or with an added value, social or personal, with a specific purpose and using given information (Hu and Adey, 2002).

Creativity is associated with the generation of new ideas, which involves a complex functional system that allows the individual to receive, analyse, compare, and generate ideas or responses (Sarmiento, 2017). There are four concurrent traits that various authors agree as distinctive of creativity: fluidity, flexibility, originality, and elaboration (Lappas and Fessakis, 2014; Moguel Pérez, Michel López and Torres Hernández, 2016). They refer to the production of multiple ideas or alternatives, their processing in various ways, breaking with routine, but in a structured way after a process of synthesis. More recently, Nikolopoulou (2018) compiled the interaction between the characteristics of ICT and those of creativity, adding concepts such as the use of imagination, originality, and critical and divergent thinking.

Thus, creativity can be promoted and extended with the use of new technologies where opportunities are provided for the development of ideas, making connections, creating, making, and fostering strategies such as collaboration, communication, and evaluation (Loveless, 2002). It seems that the use of ICT in creativity improvement programs gives positive results (Rashid and Rahman, 2014; Stolaki and Economides, 2018; Sokól, Figurska and Blasková, 2015) since the integration of ICT in the teaching method and the design of the activities is conducive to the expression of students' creativity and their ability to solve problems. Many studies support the notion that e-learning, online knowledge sharing, and interactivity enhance student creativity (Phutela and Dwivedi, 2019; Wei, Peng, and Chou, 2015; Yeh, Yeh, and Chen, 2012). However, creativity is deeply related to technology integration problems, so these creativity and technology problems can be considered together (Henriksen, Mishra & Fisser, 2016).

It is important to bear in mind that it is not in the ICTs themselves that the key must be sought to understand their impact on education, but in the possibilities that they offer

for interaction, participation, and the active demonstration of imagination, production, purpose, originality and value, both to teachers and students (Coll, 2011; Nikolopoulou, 2018). For the use of ICT to be the most appropriate, teachers and families play an essential role as extrinsic factors, highlighting the influence of teachers on the creativity of their students, even if they are already adults (Ehtiyar and Baser, 2019). These actions need a teacher trained in this area, who involves ICT in the teaching of their students and guides them in their use to maximize the possibilities of creative production (Giménez, Luengo and Bartrina, 2017; Stolaki and Economides, 2018, Henriksen, Mishra and Fisser, 2016), improving the teaching activity and learning of their students. Currently, the deepest gap has another character, generational, at least in the European framework, since students have more skills in handling learning tools and access to sources of knowledge than their educators, parents, or tutors.

Teachers should, therefore, be responsible for creating an environment in the classroom that allows students to participate in a diverse environment, using a wide range of teaching strategies, searching, organizing, and selecting information, inquiry, and fostering creative thinking, among others (Betancourt Morejón and Valadez Sierra, 2009). It is essential to find points of union between creativity and education and, for this, it is necessary to create alternative, diverse and stimulating spaces (Jorda Lueges and Martínez Vázquez, 2015).

- **3. The digital challenge and new trends**

In recent years, teaching has not only had to be applied in relation to technology but to adapt to a new and different model of the digital native student.

The new generations have been born and raised surrounded by technology. The immediacy and the philosophy of the "double screen" are part of their daily life and conditioning education for them is essential to achieve their attention.

Offering digital support conditioned to new educational trends is essential for new teaching models to prosper and fulfill their purpose.

**Virtual worlds** are the basis of some of these virtual educational projects and their proper functioning depends on the quality of the content they contemplate. Putting them into operation is not easy without basic knowledge and it is necessary to achieve maximum performance from the students.

**Mobile Learning** is a teaching process carried out through mobile devices. These are connected to the network, allowing instant interaction between teachers and their students, facilitating communication between them. The options for this teaching model are endless and the most attractive thing about it is the great acceptance it has among students.

**Gamification** is an educational strategy, increasingly common in Spanish classrooms. It seeks to motivate students through environments that are not *a priori* playful. By turning teaching into a game, students are stimulated, and their participation, concentration, and motivation are higher than the one shown in traditional education, so the results are very positive.

At the same time, we mention “**Thinking-based learning**”, whose basis for this methodology lies in teaching students to build their own learning. The objective is not for students to learn a specific syllabus, but rather to acquire the necessary skills to assimilate the information they are receiving and apply it autonomously in the future.

The **Flipped Classroom** method consists of exchanging teaching roles and times between teachers and students. Teachers prepare materials for home and students will work on materials and activities to display in the classroom. One of the didactic purposes of this educational trend is that, after this change in roles, students are able to extract from a series of information sources the material necessary to understand a given concept and acquire the necessary skill in it to be able to explain it to his fellow students. In this way, the classroom becomes a workspace where the teacher is a learning guide, forgetting the conception of a master class in which the information is only possessed by a single person.

As we can see, this small sample of new methodologies shows that current educational trends revolve not only around the digital universe but are also based on the self-development of students. It is intended to train increasingly autonomous students who can assimilate the content from different variables, but always with their mindset on its usefulness for their future. With these didactic methods, the aim is to leave behind the memorized concepts that will not later be applied in real life and it seeks to give way to quality theoretical and practical training.

In all cases, it is emphasized that it is the teacher who is responsible for creating a favourable and innovative environment that encourages teamwork, providing a pleasant climate that encourages the learning process. The data analysed shows that teachers are aware that to promote an education according to our time, new didactic proposals must be made that introduce the necessary tools for this purpose, reinforcing new skills and competencies in the development of creativity. As Csikszentmihalyi and Wolfe (2014) point out, creativity in schools is the joint result of accessibility to information, the existence of interested students and teachers who are receptive to new ideas.

They point out that, in addition to training students in the proper use of new technologies, they themselves should, at the same time, receive good training to teach in an optimal and advantageous way, collecting, in this sense, all the aspects that encompass the concept of teaching digital competence (CDD). For this purpose, the development of CDD is sought, which goes far beyond knowing how to use technologies, since it implies having knowledge and capacities to carry out processes of selection and curricular integration of these technologies (Prendes Espinosa, Gutiérrez Porlán and Martínez Sánchez, 2018). The digital skills of teachers are very relevant in the development of learning procedures that introduce technologies as tools at the service of education (Fernández-Cruz and Fernández-Díaz, 2016). The CDD has therefore become an essential aspect in the training of teachers, being understood, in short, as the set of knowledge, skills, and attitudes that teachers should acquire to take responsibility for ensuring quality education, which enhances the development of talent.

### Challenges and proposals for improvement:

- We must train the citizens of the 21st century: the 21st-century society requires creative, entrepreneurial, critical individuals, competent with the digital world, with high social skills and who adapt to diverse work environments.
- Social inclusion as the axis: the establishment of regional public policies for sustainable development in which social inclusion is one of the pillars is essential.
- Institutional leadership is required: digital culture has been established in society for years. Educational institutions cannot remain outside, so institutional leadership based on the construction of a solid sense of community becomes essential, together with the use of ICT from and for the pedagogy and curriculum of the centre.
- Contents + Pedagogy + Technology: the intersection between three fundamental factors are key for the introduction of ICT in educational processes: solid knowledge of the contents, mastery of pedagogical skills and management of technological tools and their possible applications. Technology does not reinvent pedagogy, it only expands its possibilities.
- ICTs involve new evaluation methods: learning using ICTs requires a different methodological approach than the acquisition of mere content. Evaluating this type of learning should therefore not focus on determining success in content acquisition but on mastering the skills of the 21st century.
- Promoting creativity: there is an imminent need to rethink education systems to avoid stifling the creativity of learners. That is, to bury an educational system based on control and to establish one of empowerment. The student is born

being creative and the educational system has to create the conditions for them to continue developing that creativity.

- Leadership without bureaucracy: leadership in an educational institution should have as its main purpose the educational improvement of teachers, with a leadership focused on pedagogy and away from pure bureaucracy. All agents in the educational community must be involved in achieving the goals of the centre.
- Objective: development of competencies. Changes in the educational system should be oriented towards improving the skills of students. The digital society requires skills that educational systems have to develop (autonomy, adaptation, information processing, etc.), reforming the curriculum. It will require simpler teaching units based on such useful skills for social insertion, learning in a networked way.
- A new role of the teacher and his training: from the transmission of content to the guidance and support of the student, generating the conditions for them to be the one who, actively and experimentally, builds their own knowledge. This implies that teacher training is reconfigured, contemplating in a more solid way the pedagogical use of digital environments for the 21st-century society.
- Interaction on the contents: learning is not in the contents but in the interactions that occur around them. Networked learning through interactions should consist of adding, remixing, and putting knowledge into practice.
- Avoid technology anxiety: technology advances at a dizzying rate, it is impossible to predict what kind of technology there will be in the near future. What society will have to do is design how it wants the education of the 21st century to be, and the technology supporting it will be the one available at the moment of implementation.

## **IV. Interviews with Teachers and Others involved in Education**

This chapter presents the results of semi-structured individual interviews conducted with teachers, educators, trainers, and other people involved in education, carried out locally in Faro - Portugal, Caserta - Italy, and Huelva - Spain, by the three partner organizations of the project. Their intention was to involve people from different types of education establishments, namely establishments of formal education - vocational, secondary, regular, and alternative primary and elementary schools -, non-formal education - youth centres, youth initiatives, and non-governmental youth organizations -, and alternative education - Waldorf pedagogy, democratic schools, etc.

### **4.1. Portugal - Faro**

Here, we present the main conclusions gathered from individual interviews carried out by Contextos (Faro, Portugal), with different people involved in the educational area, from teachers of different study cycles (1st, 2nd, and 3rd cycles, and university education), and different types of educational establishments (namely, public education, private professional education, and private Waldorf pedagogy education), to representatives and technicians of non-profit youth organizations in the district of Faro.

During the interviews, each participant was invited to reflect on the following questions:

- What do you understand by creative learning and creative learning environment?
- How would you characterize the current situation of creative learning in your educational establishment/organization/other?
- What difficulties and challenges do you identify in the field of creative learning?

These structuring questions gave rise to others, and to different reflections, which are further presented.

## **Creative Learning**

Creative learning is understood, by most interviewees, as a teaching-learning process that aims to integrate knowledge and develop skills using creative teaching approaches that allow participants to experience, understand, and reach new learning perspectives themselves, in opposition to memorizing information.

It is mentioned by some participants as a way of promoting learning that uses alternative approaches and methods to formal education, with some participants interpreting creative learning as opposed to conventional/traditional school methods. Creative learning approaches are described as being interactive, surprising, “out of the box”, divergent, based on moments that promote creativity, exploration, trial, and error.

It is described as a practical, hands-on approach, and participatory learning, based on dialogue, that tries to listen to and attract students' interest in learning. It is also referred to as a learning process whose main premise is authenticity, meaning that respects, above all, the student's proposal, which comes from the Nature of each individual. According to this perspective, considering we are all unique and unrepeatably, the "more authorship" the proposals have, the more authentic they will be, and therefore, the more creative.

It is strongly expressed that the teacher must assume a guiding and stimulating posture, but that the students must be the authors of the creation, acquiring knowledge through the act of doing. Creative learning is therefore defined as an approach where students are the centre of learning, each one of them in their own individuality, and where teachers are facilitators that guide and encourage their students, giving them the freedom to explore, experiment, exchange ideas, make mistakes and try again.

Some participants reflect on the difference between teaching creatively/using tools that can promote creative learning, and creating something new, the act of creation itself. They express that not all practical approaches configure, automatically, creative learning and that the tools that may promote creative learning, such as watching a movie, do not constitute creative learning by themselves, that only the consequences,

the critical thinking, and creation, that may arise from watching that movie, are creative learning. It is explicit that creative learning should always add something, a personal reformulation of what has been learned.

Indeed, a special emphasis is given by many of the interviewees to reflection and critical thinking, characterizing creative learning as being based on interaction – not necessarily active external participation, but at least critical internal reflection, where students reflect, think critically, reformulate, and come to their own conclusions. In fact, some say that creative learning is basically the freedom to think, question, and interact, an approach that ultimately aims at fostering students' critical thinking about different issues and promoting problem-solving.

Finally, the importance of curiosity, creativity, and creative learning, transversally, in any area of knowledge, and in different disciplines, from Sciences, Arts, Mathematics, Physical Exercise, etc., is strongly expressed and emphasized, defending its importance from the 1st cycle of education, and throughout all-scholar years, without any barriers and in a multidisciplinary way, as well as throughout life.

### **Creative Learning Environments**

Creative learning environments are referred to, by many participants, as places where people want to be and where they want to return, where they feel motivated to learn, where they feel included as active agents in the learning process, and where everyone can contribute to the learning process of the group. Comfortable environments, suitable for different ages, that respect each person, their needs, and motivations, that promote a fluid workflow, curiosity, imagination, and creativity, that provide and encourage students to be themselves and to express themselves freely, and to create their own proposals and initiatives to solve problems and achieve the proposed goals. An environment where each child is “embraced” and grows, with a deep respect for their individuality. An environment that promotes and respects each one's own identity and authenticity, in which the student follows his/her learning path, in tune with what his/her Nature is. Some reinforce that, in these creative learning environments, the existing structure and rules, while necessary, should not be rigid.

Some of the main expressions used by the respondents to define a creative learning environment are comfortable, safe, informal, appealing, stimulating, motivating, and open. It is strongly reinforced that a creative learning environment promotes the safety and openness necessary for students to express themselves, share, and make mistakes, clearly stating that these must be spaces of freedom and non-judgment. Environments where there is, above all, a spirit of collaboration, experimentation, where it is possible to try again; an environment of respect, trust, and dialogue, where teachers accept different opinions, question, and promote students' reflection, a place where each person learns for pleasure and discovery, and where creativity is used as a working tool. It is also described as a space where multiple languages must be explored, not just rational language, and where different approaches, including body movement, are used to achieve more meaningful learning.

### **- Physical Environments**

Specific reflections are made by some of the interviewees about the classroom space, being mentioned that, in order to promote a creative learning environment, the space of the traditional classroom must be reorganized. Some say that chairs and tables, in their conventional position, with students facing each other's back, do not favour creative learning at all. The physical space must promote dialogue, and the circle configuration, in which all people can look each other in the eyes, is the best solution to adopt. Furthermore, other elements are imagined for the classroom, in addition to the usual chairs, from poufs to balls to sit on, "everything we don't see in a typical classroom". In fact, it is mentioned that the need to have physical environments that may enhance creative learning in traditional schools calls for the creativity of the teachers themselves, that need to deconstruct the conventional classroom to create more favourable environments.

The use of physical spaces other than the classroom for creative teaching and learning is also mentioned, such as outdoor spaces, community places, heritage sites, field visits, etc., as well as the use of technological tools in the classroom, and the combination of face-to-face and digital solutions as a possible added value approach for learning.

## - Digital Environments

Respondents believe that creative learning can be applied both in the physical and digital environments but recognize that the physical environment has several benefits that the digital environment does not possess, referring to some aspects to be taken into account. Generally, respondents reveal that they prefer the physical environment to the digital environment for creative learning purposes.

While interviewees recognize the value of digital environments, tools, and resources that nowadays are within one click away distance, they also identify challenges in terms of creativity and other issues. In fact, some interviewees consider themselves to be somewhat "resistant" to digital, assuming that it is not the solution, but a complementary element indeed and a contribution to creativity and creative learning. A significant part of the participants reinforces that creativity needs physical environments, intuition, observation, body expression, which they feel that digital environments cannot offer. Other difficulties and limitations mentioned are as follows:

- Age – although some interviewees refer, for example, to the use of games to teach programming language to children as a positive aspect, others defend the use of the digital approaches only when they are older. In the case of Waldorf pedagogy, this fact is particularly relevant, with the consideration that digital environments can indeed promote creative learning, but only at more advanced ages. When the student is still discovering himself/herself, and understanding the world around him/her, technology "does not serve him/her", because it is in the student's encounter with himself/herself, and in the domain of materiality, of what is at his/her disposal, that he/she can reach and master, that he/she discovers his/her creativity and authenticity.
- Digital skills – although teachers and educators have been having access to some training in the digital field, particularly accelerated by the covid-19 pandemic, the levels of digital skills vary widely. In addition to skills, the research that is necessary for educators, teachers, and others, to keep up to date, and to use the most relevant resources, as well as the ability to plan and adapt if

something goes wrong, are some of the challenges mentioned about creative learning in the digital format.

- Engagement and creativity – the need to use different resources and other tools that can stimulate engagement and creativity in the digital format are also referred to as a challenge. It is important that those who facilitate it – teachers, educators, etc., - can promote the involvement, participation, motivation, and creativity of their learners in the digital format, but this is not always easy.
- Dialogue – digital tools still do not replace face-to-face meetings and dialogue is much more fluid in physical learning environments. To try to compensate for this, in the digital environment it is necessary to make room for conversations in very small groups, creating, for example, video call rooms. Furthermore, if the communication is not in real-time (asynchronous communication, in chats/forums, for example), the experience can be frustrating and even demotivating for the participants.
- Interaction and human connection - as social beings, we need face-to-face, human contact, interaction, connection, and mutual help, and it is argued that digital is, therefore, an asset, yet it never replaces the physical presence. One of the interviewed teachers mentioned that she received that same feedback from her students, who said they preferred face-to-face dynamics to online dynamics and gamification.

### **A History of Adapting to the Pandemic**

*During the pandemic, one of the interviewees, a teacher, and Director of a Professional Event Organization Course, adapted her classes from face-to-face to digital by organizing online culinary events. The students were given the challenge of preparing the event from beginning to end, from the publicity poster and opening of registrations to the list of necessary ingredients, and to leading the live events for the rest of the class, from their kitchens. The programmatic curriculum was adapted by the teacher to this new format, and the experience went very well from the start. Then, something surprising happened... the students' families themselves began to join in the class activities and actively participate!*

*It was a unique opportunity to strengthen relationships, and for other people to participate and interact in the classes, a very positive experience! Even so, and despite the success of this format, after months and months of online classes, the lack of face-to-face contact, of peer relationships, began to visibly affect the motivation of her students. Therefore, in the interviewee's opinion, nothing replaces social relationships, nothing replaces a smile, a hug, a lunch together.*

### **- Hybrid Environments**

Measuring the pros and cons, respondents recognize that both physical and digital learning environments must coexist naturally in today's society.

The creation of hybrid classroom environments is mentioned, in which the digital and virtual instruments are combined with the physical and face-to-face approach. Some participants refer to this mixed approach as the most interesting option, highlighting that using digital tools classes can indeed become more innovative, creative, and inspiring.

### **Characterization of the Current Situation of Creative Learning**

All interviewees reveal that they actively seek to apply creative learning approaches in their educational establishments and/or organizations and acknowledge the will and effort of schools and teachers, as well as the difficulties and aspects that can be improved.

Respondents who work with children, in educational establishments and youth organizations, assume to give them a voice and promote their autonomy, ensuring that they feel comfortable, safe and that they can be themselves, being progressively encouraged, as they grow, to be more and more autonomous and to make increasing use of their sense of initiative. For example, in Waldorf Pedagogy, it is in the encounter with himself/herself that the child will discover his/her creativity and authenticity, through what is within his/her reach, which he/she dominates, which is in the sphere of ideas and in the sphere of his/her hands that put his/her ideas into practice.

In youth organizations, the interviewees notice that the young people involved are gradually beginning to show more and more initiative to work as a team and collaborate, listening to each other and proposing their own ideas. In fact, it is even mentioned that some of the activities developed by these organisations often start with their younger participants. Those young people often move their initiatives forward, being able to implement projects from start to finish. While doing so, they naturally count on an ever-present support system that ensures that they are comfortable, that they have what they need, and that the characteristics unique to each person are respected.

This type of approach reveals to promote skills in children and young people, such as autonomy, teamwork, initiative, self-confidence, the ability to think “outside the box”, as well as stimulating motivation for civic participation, developing useful initiatives for the communities where they are located. It is also mentioned that the approaches conducted by these organisations encourage people to get involved.

In the formal education system, namely secondary and university education, the interviewees feel that usually, teachers understand that their students possess different motivations and ways of seeing the world from the previous generations and that teachers are making an effort, over the years, to increasingly use more active teaching-learning methodologies, in order to make their students feel stimulated and motivated to learn. At the same time, it is also expressed that there is still a long way to go and that despite the efforts of teachers, they do not always succeed. The aging of the teachers is pointed out as one of the reasons, revealing that there can be a “clash” between what today's students may need or want and what teachers are actually capable of offering. It is also expressed the opinion that teachers and schools are, in general, prepared for change, for more creative learning, but that adequate instruments are often lacking.

It should be noted that, even in traditional, secondary, and university education, there are some good examples of classroom environments, comfortable spaces, rooms “different from the others”, creative “laboratories” that change according to the intended

situation. Some interviewees also mention the existence of a set of creative activities within the school itself (which can even take place in the corridors, from exhibitions to painting walls, etc.), highlighting the role of the National Arts Plan, and the Cultural Plan of the Schools. In addition to activities within the school, cultural interaction projects that go out to the city are also mentioned, as is the case of the Menina “*Estás à Janela*” project (Animation, Poetry, Music, Theatre, Storytellers), an event organized by the students of the Event Organization Professional Course of Escola Secundária Pinheiro e Rosa, that interacts with the local community and involve local partners such as associations, companies, and others.

In general, the interviewees mention the effort made so students can have contact with different experiences in different courses and educational establishments. Despite this, the participants acknowledge some constraints to creative learning within their teaching reality, being mentioned that creative learning is applied in different proportions by different people within the establishments and that its application depends on different factors, such as the teacher, the students, modules, type of content, etc. Some even state that the expository method is used regularly, especially in an introductory phase, to establish the bases of common knowledge and language of the contents taught, something they consider necessary and that only after there is a common understanding of the class, creative learning, through questioning, critical thinking, and creation, can really begin.

Nonetheless, different teachers use different learning environments in different situations. Some carry out field trips, for example, others will be able to teach in outdoor environments, others will always choose to teach in the classroom, with a conventional classroom configuration, with computers, for example, in the case of technological courses, or in wider classes, which allow visual contact and body movement, especially in the case of more artistic studies.

Respondents particularly reinforce the fact that they actively try to promote dialogue and interaction with their students and to arouse their interest and involvement. Ask questions, ask for their opinion, challenge them to think of solutions to solve problems,

encourage them to interpret the information and reach their own conclusions, promote group work, and make use of the added value offered by the technology, are some of the approaches mentioned by the interviewees. Emotion is mentioned as a catalyst for fixing memories (promoting impactful experiences makes learning more likely to be registered), and the fact that the students themselves interpret the information to reach their own conclusions makes them more involved, and more likely to really understand things and remember them in the future. In the university context, it is also mentioned that students are more motivated when they have the opportunity to work on projects that are not merely academic. Working on something that they recognize is useful, that is bigger than them, and realizing that they have the ability to do it, is empowering.

Finally, it should be noted that Waldorf teaching differs from traditional teaching in terms of teaching and learning, with some aspects being worth mentioning: traditional school textbooks are not used, the learning notebooks are created by the students themselves as they learn; the school stages and educational plans are specific to the school in question, and created according to the child's developmental stages; there is a teacher who accompanies each child/young person from the 1st to the 8th class, carrying out a regular follow-up in the various subjects; and the fact that, in terms of the learning environment, the child is taught to make his/her own discoveries, learning to do things in practice, and not just in theory, while following the “path of humanity” (discoveries made by the humanity in the past, and that the child, as a human being, is also capable of doing for himself/herself).

### **Problems and difficulties in creative learning and possible solutions**

The main problems and difficulties identified by the interviewees in terms of creative learning and creative learning environments, as well as possible solutions and clues for the future, concern the following questions:

1. De-stigmatize creativity – creativity is not just in the artistic sense, it comes from everything, it is in everything, in all areas of knowledge, it is present in everyone's daily life, but currently, the trend to see creativity as something only artistic and cultural, elitist, might still be present. It is necessary to spread this notion and end

the stigma that may still exist, of creativity only linked to the Arts, cinema, painting, sculpture, etc. Creativity is in everything and in everyone.

2. Pre-conceived ideas of parents and society about young people – many parents, and society in general, think that children are too young to be autonomous, thus limiting them. But there are more and more approaches that encourage children's autonomy and a growing educational trend that aims to give children a voice from an early age. Curiosity, creativity, and creative learning must be promoted from an early age, in the personal life and in the educational path of children.
3. Lack of availability – Youth organizations mention lack of time as a limiting factor in being able to follow, as much as they would like to, the initiatives proposed by their youngsters. On the one hand, the creative capacity of the members of these organizations is stimulated, but, unfortunately, the ability to execute their ideas and proposals is not always verified, mainly due to the time limitations of the governing body to accompany them. On the other hand, the members themselves progressively begin to assume responsibility for the development of some internal proposals, thus helping to meet the group's expectations. The lack of time is also pointed out in terms of educational establishments, mentioning that the bureaucratic work and administrative responsibilities assigned to teachers sometimes leave them little time for creative practices. Teachers are overworked and it is said that the system in place needs to change to allow teachers to promote more creative learning opportunities. Overall, there is a willingness and effort to promote creativity and creative learning despite the difficulties.
4. Regular teaching needs to be updated and more individualized – Although there is a progressive improvement in schools in general, different needs for improvement are still identified. Some interviewees mentioned that current issues and topics that will be needed in adult life, for example, are rarely addressed. Others also mention that young people finish their regular formal education “standardised” and that their

authenticity and potential are not developed. The difficulties of teachers in teaching differently, and according to the needs and characteristics of each child/young person, are recognized, but it is claimed that teachers do try to do more and better, acknowledging the autonomy of children and young people, and realizing that it is actually possible to teach autonomously, that children and young people themselves can establish their own goals and strategies to achieve them, and that Waldorf pedagogy, movements such as Escola Moderna, and others, support this view.

5. **Generational gap / Average age of teachers** – the average age of teachers, around 55-60 years old, is another of the challenges highlighted. Teachers who were not born in a digital world, who have had a different way of seeing things and working, often resort to methods that may not be the most suitable for new generations. Although it is recognized and reinforced those teachers have been making a great effort to adapt to current learning needs, their initial training was very traditional and classic, not having gone through these creative learning methodologies. In Portugal, we can have the best professors ever in terms of scientific preparation, but it is mentioned that some instruments may be lacking to apply creative approaches to learning. It is therefore argued that the initial teacher's training needs to be rethought.
6. **Non-recognition of volunteering and alternative activities** – the fact that other activities, which go beyond formal education, such as volunteering, still do not receive appropriate recognition, by society, employers, etc., is pointed out as a problem. It is argued that other experiences, which may constitute opportunities for creative learning, in addition to formal education, should be more valued.
7. **Excessive weight of logical-verbal competences** – the excessive importance given, in general education, to logical-verbal rationality competences, based on memorization, that exclude other languages and competences, is identified as a

challenge to overcome. We have a teaching system that highly values rationality and memorization, and there is a tendency to forget other types of activities. And if we talk about disadvantaged young people, economically, geographically, or otherwise, the lack of contact with other disciplines and opportunities is even more prevalent. It's a problem of cultural level, of the whole society, that compromises creative learning and creative opportunities.

8. Excessive information, dependence on technology, and challenges in the digital transition – despite the technology being seen as an advantage, and assuming that current times are very enriching for learning, excess information can generate a lot of “noise”. Younger people need to know how to take advantage of the huge amount of information they have available, and, above all, know how to select and filter it, so that it can be, in fact, useful to them. It is also pointed out as a problem an excessive dependence on technology by young people, in detriment of the human aspects linked to the feelings and emotions, which are not being developed in schools. Challenges are also referred to in terms of transition to digital considering that, despite the acceleration promoted by the covid-19 pandemic, there are still doubts on how to make the best use possible of this digital transition in terms of creative teaching and learning.
9. External evaluation (National Exams) – excessive weight is given to external evaluation in schools, in the form of National Exams. The fact of having to teach to give answers to these exams can condition the opportunities for creative learning, leaving the teacher too busy “training” their students for those, thus compromising their freedom to manage the curriculum, the disciplines, etc.
10. Programmatic constraint – freedom, in the context of education, is restricted to a program, and to a short/medium-term objective in terms of training. Despite this, it is acknowledged that there are possibilities to promote creative learning, albeit circumspect, in all areas, in all disciplines. Additionally, it is highlighted as positive

the fact that schools in Portugal have the freedom to develop their own educational plans, having only to ensure that, at the end of each teaching cycle, 1st, 2nd, and 3rd, the learning is standardized, so that any transitions between schools are as fluid as possible.

- 11.** Disconnection from the community – although some good examples are mentioned, it is also said that many schools do not know their local community. Many schools and teachers are very focused on themselves, on the work that must be done, and often don't know, for example, the cultural, sports organizations, etc., that exist around the school, and the organizations also reveal lacking knowledge about the functioning of schools and how they can articulate with each other. There is a certain disconnection, a lack of knowledge on both sides, which can be worked on to promote more creative learning opportunities.
  
- 12.** Physical, material and other limitations – the Education System in Portugal has many wishes and intentions, many proposals to innovate and promote creative learning, and many schools and teachers strive in this direction. But it is pointed out that physical/material limitations often condition creative learning, for reasons that are often practical, such as budget availability, physical and material conditions, but also Human Resources, among others. The lack of availability of spaces in schools is also mentioned, defending the need, for example, for a work multipurpose room that could be open to all in the establishment.

Finally, it is underlined that, despite the problems and difficulties identified, it is up to the teachers, educators, and other agents involved in education, to use their creative capacity, to provide a creative learning environment for their children and young people, an environment of learning in which it is the student who finds the answers, in which they are not simply “provided with”. This is, at the same time, the greatest challenge, and the greatest possible solution, which demands a lot from teachers,

educators, and other agents, to effectively allow for the creative learning of their students.

#### **4.2. Italy - Caserta**

We met teachers from vocational schools, educators, and trainers, and we asked them in the prepared interviews:

- What their definition of a creative learning environment is;
- How they judge the current creative learning situation in their training experiences;
- What problems they identify in creative learning.

During the meetings, most respondents identified the impact the pandemic has had on the innovation of their schools and professional centres, particularly on the innovation of their traditional teaching and training models.

Most of the participants pinpointed a more significant push toward introducing new and diversified digital tools in their classrooms, but above all, the adoption of more creative approaches and practices to engage and motivate students were challenged by the pandemic.

School today finds its mission in training children for life. It must provide them with the means and tools they will need to face the future, helping them develop skills and competencies to meet the challenges of today's world. This mission is also pursued by supporting students in the discovery process and encouraging the development of their creative potential; the discovery promotes an autonomous way of thinking in the pupils, stimulating the aptitude to learn throughout their life.

Creativity is a non-exclusive characteristic of "talented" people: creativity is a capacity more than an innate gift, and it can be "educable" and developed, so training contexts

in which divergent thinking is promoted and demanded help to enhance and reinforce creative attitudes and behaviors on the part of students.

Cultivating creativity and divergent thinking means refining the critical spirit that allows you to analyse and evaluate many possible solutions for a given problem, recognizing original connections between thoughts and objects, proposing innovations and changes, modelling and adapting the knowledge acquired to the various and different contexts that will arise in the course of life.

Flexibility, innovation, and renewal are skills that the school must promote, encourage and support to make it possible to create that unconventional thought, which is characteristic of each person in its individuality and uniqueness, making constant potential opportunities for growth and continuous learning in the face of new and difficult situations.

### **What is the ideal environment to develop it, and how can it become state-of-the-art?**

Among the characteristics of environments and training spaces that stimulate creativity, the interviewees identified workshops that encourage digital technology in the adoption of games within training experiences.

The online and offline world is more a single reality rather than a divided one. Vital, relational, social, work and economic realities are perceived as the result of a continuous interaction between material and analogue reality and virtual and interactive reality, and the broad evolution of video games, in particular online gaming, has amplified the frequency and time of play among young people, lived not only as an evasive but formative experience of comparison and exchange. Therefore, the need for more sustained use of digital in education and training has been identified, but also for exploiting the game to enhance particular skills such as learning to learn, the ability to move in different learning environments and contexts, and acquire different and complementary skills. Nowadays, almost everyone can search, sift, interpret, and understand new information, thanks to the accessibility of

the Internet. Analysis and critical thinking skills are also necessary, but also emotional levers such as feeling ignorant and trying to fill personal gaps, the ability to abstract, conceptualize, and control their cognitive biases. Furthermore, since most people enjoy the possibility of accessing new information, it is necessary to develop the skills to manage their own learning independently, such as the ability to analyse the quality of the acquired data, analyse and interpret them critically and above all make them consistent. They are already acquired once with the knowledge.

### **Creating multicultural spaces**

Learning in a multicultural environment favours a broader perspective with respect to a problem, a theme, a topic to be discovered. Learning from peers from different cultures exposes us to new systems of thought, beliefs, and understandings. By interacting with students with backgrounds other than their own, students are more likely to develop a holistic vision and approach to a path of knowledge. Perceiving the world as a network of interconnected parts, developing an open mind to critically examine one's role within the world, learning in a multicultural environment enhances creative thinking and educates complexity. When different groups of people share different perspectives together, they allow everyone to observe a situation from a variety of angles and find more creative and practical solutions, prompting them to think critically and embrace different approaches.

### **Spaces for Interdisciplinary Approaches**

The current Italian educational structure dates back to the pre-WWII era and, although it was designed to give students a well-rounded education, it has more often led to an elitist system that hinders rather than fosters intellectual curiosity. If there is one aspect of the Italian education system that many students fear, it is the antiquated practice of mnemonic learning. While students from other countries, such as the United States, are encouraged to engage with topics and share their perspectives actively, the Italian method remains focused on chronological and anecdotal learning.

**For this, they suggest, the interviewees need to introduce:**

1. Active, flexible, cooperative learning processes, open to relationships, experimentation, participation and autonomy, made even more effective by the potential of widespread technology, for integrated didactic solutions (blended learning) with a part in the classroom and part of the teaching to be carried out through digital content and/or with the creation of a community within which knowledge and know-how are shared (social learning);
2. Use of innovative methodological tools (flipped classroom, problem-solving, cooperative learning, Webquest, peer tutoring, coding...) that are able to penetrate the inaccessible boundaries of knowledge, to favour the construction of knowledge, the realization of authentic tasks, the multiplication of didactic mediators;
3. To increase the computer devices inside the classrooms, to reduce the excessive mobility towards laboratories, special classrooms, equipped spaces;
4. Build common projects and initiatives with the community to involve teachers and students from different disciplinary sectors by creating a system of alliances with key players in the ecosystem, to stimulate and develop students' entrepreneurial skills and bring them closer to the world of business;
5. Overcome the separation between humanistic and scientific disciplines by integrating humanistic approaches, based on interpretative and dialectical reasoning, with the scientific one that stimulates critical and functional analysis but with a more limited ability to communicate with people and other disciplines;
6. Platforms that promote learning through the use of original cultural and audiovisual content, video lessons with film extracts, works of art, literary works, interactive apps.

### 4.3. Spain – Huelva

We have maintained contact with professors of professional schools, educators, and trainers, and we asked them in the interviews carried out:

- What is your definition of a creative learning environment?
- What is the current situation of creative learning in the educational centres of the interviewees?
- What problems does the interviewee identify in the area of creative learning?

After the work sessions and interviews carried out, we can highlight the role that the pandemic has played in marking a milestone within traditional education since it has been a turning point in the traditional teaching techniques and has brought about a reinvention in educational centres. Now, more than ever, new digital tools and more creative methodologies are being used to motivate and engage students.

To get their attention, a series of didactic methods have been devised that takes into account the new reality that they are facing and pose education from other perspectives. They are becoming very common in Spain and little by little they are spreading more and more. And it is increasingly common for students to go to class with their smartphones, yet tablets are also provided in many schools, and in some centres homework can be delivered through virtual platforms.

Regarding the benefits of digitizing schools, the immediacy of access to resources, direct interaction between student and teacher, and being able to have all the work stored in the cloud stand out. Other benefits that we can highlight:

- Motivate: New technologies make classes more enjoyable for students.
- Adapt: Teaching is adapted to each child.
- Understand: Information is better assimilated due to images and videos.
- Practice: After the theory, the student can practice.
- Develop new skills: related to the interaction between people.
- Streamline communication: between the entire educational community: students, faculty, parents, and tutors...

### **The ideal environment to stimulate creativity**

Creativity is a quality that can be developed and whose stimulation at an early age favours the development of divergent thinking, flexibility, and decision-making. The benefits gained from such development also improve self-confidence, self-expression, problem-solving skills, and self-esteem. This last characteristic is essential because it feeds back creativity and motivation, both associated with self-realization. When a student is stimulated, he/she sees his/her personality strengthened, which allows him/her to adapt to changes and various situations that may come in his/her life.

Another very significant aspect is the strategies for the development of creativity. From the research carried out, it has been noted that most of the strategies promote the development of communication skills, creative research, perception, as well as the stimulation of expressive processes. The importance of favouring the process without worrying excessively about the result, favouring a climate of freedom, being flexible, and evaluating positively are key elements, as is also fundamental to the development of creativity in a group, which would suppose the promotion of activities and projects of collaboration.

### **Multiculturalism in the classroom**

Building contexts where diverse experiences can be lived, with different people and with heterogeneous languages, is a propitious action for the development of creativity in education. Creating alternative educational contexts where divergent thoughts and productions are fostered means opening spaces to live experiences with other people, languages, and cultural identities. It is a way to understand interculturality in a broad sense, not only as relationships between students from different cultures but as a general perspective of understanding education, as a space for the circulation of different languages, knowledge, forms of thought, and interaction.

There is a social conscience committed to the need to change the current educational system, adapting it to real needs. The interviewees agree that in Spain there are some foundations, pedagogues, educators, psychologists, and philosophers committed to the importance of creativity in education and that they also have programs established

in schools. But there is still a long way to go. And the fact is that this road seems very long when we look at our favoured European neighbours, those we look at when talking about skills assessment, such as Finland, Ireland, the Netherlands. It turns out that in those countries the systems give more space for creativity.

Perhaps the current educational system in Spain will improve with the simple fact of giving students more spaces to experiment, explore and dream the infinite. Be that as it may, in order to do it better, the attitude of teachers and students, as well as the joint work, seem essential. Teachers have to be creative, they need to acquire training and be open to change.

Regarding the students, they do not have to sit down to receive the information they have to learn, the teachers have to challenge them, teach them to observe, respect their ideas and value their interventions.

The Spanish educational system has lived through eight educational laws in forty years of democracy, which has caused a continuous swing during those decades. The current educational system is eminently theoretical, without facing the challenges of life. Teachers have to become guides of student learning, encourage creativity and listen actively.

### **What do we have to change?**

1. Educate people, not just professionals. Education has a social component that we are also obliged to develop. It is about balancing the very purposes of education between job training and education as the formation of citizens in our society.
2. Identify and design the type of education that we will need in the future. Defining what we want the new generations to learn is the first step in knowing what tools to use to achieve it.
3. Develop truly equitable and inclusive educational models and settings.

4. Equip centres with more up-to-date technology and learn to use that technology better. What the current situation requires is a rethinking of educational processes and how they have to be carried out.
5. Take into account the digital dimension of students. It is not enough to just think about the classroom and the immediate environment.
6. Approaching hybridization between the classroom and the potential of online environments. The objective is that, although the education is face-to-face, the options offered by the teaching activity in non-face-to-face and online environments can be used 100% to better cover all the dimensions of the students.
7. Educate for uncertainty. It's not so much about accumulating knowledge but knowing how to solve the new and uncertain situations in which they are going to find themselves.
8. Encourage the leadership of the teaching staff, as well as their previous training in the digital environments in which the themes of the didactic units of the subsequent training process of the student will be developed. We need teachers who take initiative, who have the capacity to respond and do not limit themselves to simply transmitting knowledge, but who are capable of accompanying students in their own growth.
9. Let learning prevail over evaluation. Assessing students in order to make sure they assimilated the content is not so important. That is why it is essential to structure systems that allow students to learn.

## V. Case Analysis

Here is a case analysis for each partner country, showcasing a good example of creative learning in the reality of Portugal, Italy, and Spain.

For Portugal, we present the National Arts Plan, an initiative of both the Ministry of Culture and the Ministry of Education of Portugal, referring to the physical learning environment – Porto Santo School example – and tools of digital learning – the online Educational Resources platform of the plan.

For Italy, we present the Future Lab of Francesco Giordani High School, in Caserta, identified by MIUR – Italian Ministry of Education, among the first fifteen schools in Italy for the experimentation of Scuol @ 2.0, due to its ability to connect scientific and technological training to digital systems.

And for Spain, we present the León Ortega School of Art, in Huelva, an institution focused on the artistic and design fields, where the Youth Creative Bootcamp – Blended Mobility for Youth activity of DigitArt project, will take place.

### 5.1. Portugal – National Arts Plan

Website: <https://www.pna.gov.pt>

The National Arts Plan is a mission structure, born in June 2019, through the Resolution of the Council of Ministers nº 42/2019 of February 21st, with the duration of 10 years, until 2029. This plan arises exactly from the need to increase the use of new learning strategies in schools, namely through the promotion of the Arts, Culture, and Heritage, as privileged spaces, and territories for learning.

It is a Plan that aims to *“make the arts more accessible to citizens, in particular to children and young people, through the educational community, promoting participation, enjoyment and cultural creation, in a logic of inclusion and lifelong learning. It intends to encourage the cultural commitment of communities and*

*organizations, and to develop networks of collaboration and partnerships with public and private entities, namely, working in conjunction with pre-existing plans, programs, and networks.”*<sup>12</sup> Therefore, despite its name, the plan exists not to develop the disciplines of Arts in Schools, but to promote the use of artistic methodologies, in a transversal way, in all disciplines, being Art, Culture, and Heritage, the axes and instruments of work and learning.

### **Axes of Action of the National Arts Plan**

The National Arts Plan comprises 3 axes:

- **Axis A - Cultural Policy**

Although the privileged territory is, in fact, the school space, the final objective is to work together, in a network, with the entire community that articulates with the school. The Cultural Policy measures the impact and sustainability of cultural actions on the lives of citizens in general, and reinforces, among artists, cultural institutions, and municipal public institutions, the awareness of the educational and social impact they make. The objective is to promote dialogue, to create spaces for cultural mediation.

- **Axis B - Training**

Within this axis, the Plan presents 2 areas of action:

**1. Porto Santo School** – an old primary school, on the island of Porto Santo, in Madeira, was converted into a confluence space that connects Heritage, Culture and Arts, and Education, where artistic residencies, seminars, etc., can be promoted. In 2021, the Porto Santo conferences took place in that space, under the Portuguese Presidency of the European Union, resulting in the creation of the Porto Santo Charter, *“a guiding document, with principles and recommendations that promote full cultural citizenship.”*<sup>13</sup>

**2. Academy** – Specific training courses are proposed for schools, cultural mediators, cultural agents of the municipalities, etc., promoting the view that

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<sup>12</sup> Plano Nacional das Artes - <https://www.dge.mec.pt/plano-nacional-das-artes>

<sup>13</sup> Presidência Portuguesa do Conselho da União Europeia - <https://www.2021portugal.eu/pt/noticias/carta-de-porto-santo-da-democratizacao-a-democracia-cultural/>

curricular subjects can be worked in a transversal way, and connected to some form of artistic expression, combining, for example, Mathematics and Visual Arts, Science and Cinema, etc., thus exploring the transversality of the curriculum with Arts, Heritage, and Culture.

- **Axis C - Education and Access**

Despite being the last one, it is a central axis. It works specifically in the territory, in schools, in groups of schools. It proposes that schools create a Cultural School Project, following the Project Methodology. It is defined a coordinating teacher and created an advisory committee, formed by internal elements of the school (teachers, students, employees, parents, and guardians) and elements external to the school (municipality, cultural agents, universities, companies, etc.). Together, this group is responsible for defining the theme they wish to address, and the school embraces the challenge of working on that theme through the Arts, Heritage, and Culture.

### **Functioning of the Plan**

There is an Executive Committee that manages all the Plan's work areas. Inter-municipal coordinators support schools at regional levels.

The National Arts Plan is applicable to all levels of education, from kindergarten/preschool to secondary education. In 2021, the Plan is also moving forward for higher education. Adherence by schools is completely voluntary.

In total, there are about 250 groups of schools participating in the National Arts Plan in continental Portugal and islands.<sup>14</sup> There are also Portuguese schools abroad that have joined the Plan – so far, the Portuguese School of Maputo, the Portuguese School of Luanda, the Portuguese School of São Tomé e Príncipe and the Portuguese School of Dili.

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<sup>14</sup> Plano Nacional das Artes - <https://www.pna.gov.pt/escolas-pna/>

### **National Arts Plan in Faro**

All groups of schools in the municipality of Faro adhered to the National Arts Plan: Agrupamento de Escolas Pinheiro e Rosa; Agrupamento de Escolas Tomás Cabreira; Agrupamento de Escolas João de Deus; Agrupamento de Escolas Montenegro; Agrupamento de Escolas D. Afonso III.

At the local level, the National Arts Plan has also established partnerships with other entities, namely with the Municipality of Faro and Faro 2027 – Candidacy of Faro to European Capital of Culture, and initiatives like MI.MOMO.FARO - Minecraft and Modernist Architecture in Faro.

### **Porto Santo School**

*“I really want to be like this, in a place ... with people, doing things, all the time ... feeling alive!”<sup>15</sup>*

On the island of Porto Santo, in Vila de Porto Santo, Madeira, an old primary school, built in the 60s, of the 20th century, is now a laboratory of arts and thought, having been converted into a cultural space and artistic residencies. It is a building of modernist architecture, in a process of Heritage Classification, designed by Raul Chorão Ramalho. It has an innovative design, presenting in each of the classrooms a complementary space for outdoor teaching/learning.<sup>16</sup> With the support of the National Arts Plan, this school space was adapted by Porta 33 - Associação Quebra Costas Centro de Arte Contemporânea to become a cultural project of workshops and residences.<sup>17</sup>

The former classrooms are now workshops/residencies spaces open to all types of knowledge. A diffusing cultural centre, made by creators, not only artists, but others – from people from geology, botany, oceanography to literature and performance, for

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<sup>15</sup> Porta 33, Escola do Porto Santo - [https://www.youtube.com/watch?v=SSuT5iUuOww&ab\\_channel=PORTA33-ESCOLADOPORTOSANTO](https://www.youtube.com/watch?v=SSuT5iUuOww&ab_channel=PORTA33-ESCOLADOPORTOSANTO)

<sup>16</sup> Sistema de Informação para o Património Arquitetónico (SIPA) - [http://www.monumentos.gov.pt/Site/APP\\_PagesUser/SIPA.aspx?id=15807](http://www.monumentos.gov.pt/Site/APP_PagesUser/SIPA.aspx?id=15807)

<sup>17</sup> Público, Na ilha de Porto Santo, uma antiga escola é agora um laboratório de artes e pensamento - <https://www.publico.pt/2021/06/26/culturaipsilon/noticia/ilha-porto-santo-antiga-escola-laboratorio-artes-pensamento-1968091>

example. Each former classroom, now a workshop/residence space, is simultaneously a place of work and a dorm room, that aims to inspire creations linked to the island, and where creators can work with the local population, especially in schools.<sup>18</sup>

The space is composed of:

- 4 former classrooms – 4 workshop/residence areas, each with an associated outdoor space;
- Former canteen – multipurpose space for exhibitions, conferences, film screenings, presentations, etc., that simultaneously maintains its kitchen function/structure, for community celebrations.<sup>19</sup>

### **Online Educational Resources of the National Arts Plan**

Educational Resources: <https://www.pna.gov.pt/recursos-educativos/>

The National Arts Plan was born a few months before the covid-19 pandemic. The Plan proposed “bringing down” the walls of schools, connecting schools, and communities, while the confinement of the pandemic did the opposite, which was “building walls”. Therefore, the plan had to quickly adapt to the digital format, and the pandemic led to more accelerated development of the Educational Resources component, available on the National Arts Plan website.

The online page presents transdisciplinary Pedagogical Resources, aggregating examples that cross the different curricular scientific areas with Art, Heritage, and Culture, with the aim of serving teachers, parents, and students. The choice of resources available on the site is made by the Plan itself, which assumes a kind of “Curatorship”.

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<sup>18</sup> Escola do Porto Santo, Telejornal RTP Madeira - [https://www.youtube.com/watch?v=VX3CeH3cLCc&ab\\_channel=Porta33](https://www.youtube.com/watch?v=VX3CeH3cLCc&ab_channel=Porta33)

<sup>19</sup> Escola do Porto Santo – Porta 33 – Casa das Artes 06 maio - <https://pt-pt.facebook.com/porta33madeira/videos/escola-do-porto-santo-porta33-casa-das-artes-06-maio/197390508884068/>

## 5.2. Italy – Future Lab of Francesco Giordani High School

Video: [Inaugurazione Future Labs ITI-LS "G.Caserta"](#)

We visited the Future Lab of the High School “Francesco Giordani” in Caserta. In 2011, it was identified by MIUR among the first fifteen schools in Italy for the experimentation of Scuol @ 2.0, for its ability to connect scientific and technological training to digital systems, with a particular eye on the media, indispensable factors to be full citizens in the 21st century. The Future Labs, identified as part of the National Digital School Plan, are poles for the training of teachers on educational and digital innovation created within state educational institutions with a solid vocation to digital and are distributed in all Italian regions.

The ITI-Liceo Scientifico "Francesco Giordani" has been identified by MIUR as one of the two Campania "Future Labs", and therefore with the resources of the project in the Institute, innovative teaching environments have been created, equipped with modern technologies and with spaces that allow the organization of flexible and stimulating environments, functional to the new teaching methods and the training of teachers.

The Future Lab is located on the mezzanine floor of the office building; it has a total area of 320 square meters, is divided into six learning areas: interaction, presentation, investigation, creation, collaboration, and development, equipped with innovative equipment and flexible and organizable furnishings.

The main instruments available:

VR viewers, cameras, Chromebooks, microscopy sets for tablets and smartphones, microscope with a tablet, stereomicroscope for 3D objects with wifi camera, educational robotic kit with programmable bricks, sensors and motors, automation systems, Arduino kit, 3D printer, Humanoid robot, alternative energy set, digital whiteboard system, programmable drones, notebook and 65" interactive monitor for BYOD.

In particular:

- **Presentation Area:** In the presentation area, the reconfigurable furnishings encourage interactive presentations, active listening, and feedback.
- **Confrontation:** The ability to collaborate effectively with others develops in this area.
- **Interaction:** In this area, the teacher uses different technologies with different classroom configurations to improve the interactivity and participation of the students.
- **Creation:** In this area, students have a space to shape their imagination to plan, design, and produce their works. This space encourages students to develop soft skills through team and project-based work.
- **Investigation:** The zone is organized to encourage students to discover things for themselves and be active participants. The area will be used for exploratory and project-based activities. The furnishings are flexible to facilitate the ideal reconfiguration to allow you to work in groups, pairs, or individually.

Innovative methodologies adopted:

There is the so-called metacognitive didactics which concerns the sense-perspective core of the entire teaching/learning process and acts on the evolutionary paths of each person.

Knowing how memory and the mind that learns work and what role emotions play in this path is a fundamental lever to teach one's discipline better and help students learn in a better way.

In fact, with metacognitive didactics, the aim is to foster these kinds of skills in students (metacognitive, strategic, and self-regulatory) and to help them improve their study and learning strategies, as well as to better manage the emotions that come into play in the formative path.

Among other teaching methods and strategies more effective in actively engaging students and in promoting their cognitive processes, the following can be found:

- Didactics centred on the theory of cognitive load; meaningful learning, construction of conceptual and technical maps of the anticipated organisers;
- Constructivist teaching and heuristic lesson, Inquiry-Based Learning, questioning and "SQR3" method;
- Placed Learning Episodes and Flipped classroom;
- Cooperative learning (Learning Together, Jigsaw 2);
- Didactics centred on the development of skills (condensation and curvature of disciplinary contents by the thematic nucleus and based on their training value, towards the construction of skills; authentic tests, case studies, incidents; systematic observations and cognitive autobiographies);
- Game-centric didactic strategies.

Over 25 courses organized on: Innovative learning environments - Digital education: new paradigm, Active learning with STEM, Connected learning and educational use of social media B1 - Social learning and citizenship: learning and creativity in digital environments.

- Cooperative learning and use of the cloud;
- Cooperative education and digital worlds;
- Gamification;
- IOT;
- Digital storytelling;
- Integrated digital learning.

All the courses recorded the participation of hundreds of teachers from schools of all levels and school staff.

Although the project has suffered a considerable slowdown due to the pandemic with courses delivered only in online mode, the Future lab immediately highlighted excellent results among teachers.

They found more significant growth in the enhancement of digital skills, the ability to use technologies in the design and management of the training experience, and the quality of interactions with colleagues, students, and other stakeholders in the training process.

The innovative learning methodology and the receptivity offered by the spaces have amplified the quality of relationships and communications, creating a fertile context for learning. For many of them, it was more straightforward: exchanging points of view, confronting each other, carrying out complex activities with greater comfort, the possibility of bringing out and expressing their thoughts, their creativity, negotiating and sharing their opinions and observations with others, greater awareness of new concepts and skills learned. In addition, the laboratory-type teaching based on operability has produced better interactivity between teacher and students and more relaxed management of learning times, which has favoured, in addition to better acquisition of new knowledge and skills, greater concentration, ability to explore, and critical interaction of the topics analysed.

### **5.3. Spain – León Ortega Huelva School of Art**

Website: <http://escueladeartedehuelva.com/>

The School of Art of Huelva "León Ortega" houses teachings that focus on the artistic field and design. Its classrooms and workshops host various training proposals: Bachelor of Fine Arts, Design, and Image; higher artistic teachings of Product Design; Higher-level vocational trainings: window dressing, modelling, interior design, ephemeral architecture, industrial furniture design, artistic ceramics, photography, artistic cabinetmaking, wood sculpture techniques; and the mid-level vocational trainings in ceramic decoration.

The centre is organized by professional family departments and didactic departments of the different teaching areas. At the same time, as different kinds of teachings are found in the centre, different methodologies are applied to each type of study.

In what concerns the higher artistic teachings of Product Design, this specialty helps to develop professional practice, technical knowledge, technology, and the theoretical understanding necessary to design objects for the habitat, containers and packaging, furniture, or sports accessories. By challenging their creativity and applying a design method, the student develops their creative potential in the hands of companies and product design professionals. The school provides the necessary spaces for the development of this practical and intellectual learning.

We can say that in the Product Design field, they project the human dimension of the objects that make up our environment: from personal objects to the containers and packaging of everyday objects, as well as lighting or furniture; from personal hygiene items to accessories for leisure, work, or sport; from objects that make up the public spaces to the ones that are used to cook, preserve, or present food.

This centre does not have a Future Lab, but it is organized into workshops in which the different instruments, machinery, hardware, software, etc., necessary for the different studies, are found. They have a ceramic workshop, wood workshop, product design workshops, photography and audio-visual media studio laboratory, exhibition hall, etc.

The main instruments available to the centre are:

Photography studio with corresponding lighting equipment, chroma-key backgrounds, reflex cameras, tripods, gimbal, ...

Design workshop: 3d printers, laser scanner, ...

### **Bachelor's Degree in Art**

Regarding the teaching-learning processes, in the academic year 2021/2022, the Baccalaureate teachers have the objective of acquiring the ability to know and handle copyright-free image banks and Creative Commons licenses.

Deepening the project-based learning strategy in middle and higher-grade cycles and in the project subjects of Higher Artistic Studies (EEAA.SS.), and applying new technologies (3D modelling) improve the digital competence of the centre's teaching

staff in relation to the improvement of methodological practices in different areas (Philosophy, History, and Religion).

Another objective is the diversification of the didactic methodology and assessment and analysis instruments. In this sense, it is important to point out the interest of teachers in self-training initiatives such as workgroups or other non-regulated initiatives. Likewise, collaborative methodologies are being introduced, although at higher levels, such as 2nd-year high school courses, and due to the requirements set by the PAU, these types of methodologies are conditioned by the availability of time to be able to develop the entire syllabus. On the other hand, in recent years there has been an improvement in the evaluation instruments and in the analysis work. This has generated the creation of new organizational structures and has initiated a culture of reflection on teaching practice. It would be interesting for the next few years to encourage a culture of intra-centre and inter-centre exchanges and create a database on BB.PP.

In this course, they offer the following educational innovation programs in the centre in which both the teachers and the students of the intermediate and higher-level training cycles participate:

### **AulaDjaque**

The aulaDjaque Educational Innovation Program begins its fifth year of experience at this school. In the previous courses, the team of professors integrated in aulaDjaque have tried to enrich the diversity of the contents of their educational programs with materials from the chess universe, exploring the creative possibilities associated with them from various means.

They have also transferred intervention proposals in the areas of Education for citizenship and human rights, based on the culture and history of chess, and trying to sensitize the educational community on the intellectual, ethical, and aesthetic richness of the game. As a testimony of this activity, various didactic materials have been created, organizing exhibitions in the centre (showing the variety and quality of the

artistic and design material produced by the students), as well as outside the facilities. Days dedicated to educational chess have been organized: on International Chess Day, in interscholastic tournaments, and through live chess performances carried out by students. The school has also hosted an inter-centre workshop on direct action (Check and values) and has participated in the video contest organized by aulaDjaque ("Show your best move"), obtaining one of the prizes reserved for it.

### **Village Plan**

To achieve the objectives of the Program, three lines of activities are developed:

- Awareness-raising activities and didactic treatment of climate change, involving the participating groups in a process of awareness and knowledge of climate change.
- Emission Reduction Plan, by carrying out a preliminary diagnosis, which allows assessing the situation in which the centre finds itself and preparing a Greenhouse Gas Emissions Reduction Plan that allows quantification and subsequent reduction, focused on the consumption of electricity and heating, transportation to the centres and paper consumption.
- Publicise employment associated with both education and ecological awareness and sustainable development, publicising various sustainable initiatives of companies or entities in the closest environment linked to eco-innovation.

### **Live and feel the heritage**

Building cultural identity through Heritage and Art Present in our DNA, the Educational Project of the School states that the contents that are taught incorporate artistic-cultural, historical, technical, economic, and social specifications of our Autonomous Community, and that these contribute to guarantee the knowledge, conservation, enrichment and dissemination of the artistic and cultural heritage of Andalusia. Therefore, with more impetus than any other teaching, the centre understands and defends Heritage and Art as a tool to access Culture and through it, understand the essence of Huelva. The hallmark of the school is, therefore, the accompaniment of

students in their professional training process, but also in their search for personal and cultural identity, contributing to the generation of citizens that are aware and respectful of the pillars of their culture.

### **Cinema classroom**

The diversity of the existing studies in the school favours the interest in the generation of artistic products which, with subjects such as audio-visual culture, photography, or performing arts, offers the opportunity of language and audio-visual creation. Thus, throughout the course, a whole series of activities of various kinds are carried out, which bring students closer to the audio-visual and cinematographic world, allowing them to analyse productions, study the language used in these productions and generate audio-visual work.

In addition, the teaching staff is organized into working groups every year. It currently has the following ones:

### **Architectural guide of Huelva City**

Educational research and innovation. Development of educational programs. In the absence of a photographic guide of local architecture (Huelva), they are preparing to create it taking as reference other cities, considering:

- Interdepartmental coordination, laying the foundations for future collaborative work (co-working) working groups focused on Educational research and innovation, and in the development of educational programs for students from different training cycles or professional families.
- Creation of reference material for the educational centre (local architecture photographic guide).
- Research of different supports for the presentation of the guide: physical and virtual, expanding the knowledge about current commercial products.
- Enhancement of the architectural heritage of Huelva City.

### **Working group: “Plastic-recycles 1 and 2: raw materials and products”**

Educational innovation focused on methodological and didactic updating, which lies in including content and activities aimed at training students in eco-design and circular economy, through the recycling of plastic containers.

### **Working group “Promotion EALO”**

Teacher training is linked to the improvement of educational practices, performance, and educational success of all students.

1. The organization of the curriculum is based on key competences. Curriculum design and planning.
2. Inclusive school for equality and equity: attention to diversity, coexistence, and equality.
3. Promotion of innovative intervention strategies in classrooms that compensate for vulnerable situations in which students may find themselves and contribute to cultural diversity in the classroom.
4. Promotion of strategies and resources for the awareness and prevention of school bullying and cyberbullying, with special attention to the most vulnerable groups, through actions that help the prevention and early detection of these situations.
5. Support for the development of strategies that promote coeducational practices and the II Plan for Gender Equality in Education in educational centres.

### **ERASMUS + at the "LEÓN ORTEGA" School of Art**

- Transfer of good practices from the teachers participating in the ECHE letter (in which they have already been for years) to the VET and SCH teachers (which are the two new accreditations that the centre has)
- Repository of didactic activities carried out by the teachers with the students who are going to carry out mobilities.

- International chess work (they have been in the aulaDjaque program for years and have found an international partner who works on school chess in its country) in the SCH field (high school).
- Multilingual communication through technologies with foreign centres in the SCH field. \* Inclusion of Erasmus linguistic support in the middle-grade vocational training programs.
- Use of traditional Portuguese ceramic techniques in the ceramic decoration program.
- Dump of data in Seneca of projects K121. Internationalization and dissemination of the program through an international section on its website that includes the application for higher education. It is intended to triple this information for the other two sections (VET and SCH) and complete the available information with a section on Erasmus experiences.

The School of Art of Huelva "León Ortega" makes constant efforts to maintain an updated curricular offer in accordance with the demands of the current labour market and in line with the current information society. For this reason, information and communication technologies are gradually gaining ground in the programming of the different training courses and subjects. Thus, the different modules incorporate diverse computer tools that allow the development of new technologies applied to the world of art and design in its different branches.

The Educational Digital Transformation (EDT) training within the classroom is now essential because it provides innovative views on student learning, a new way of understanding the teaching-learning relationship, where the development of digital competence acquires a great role and relevance within their classrooms.

EDT, emotional and collaborative learning can be considered as a product of consensus among teachers through activities such as cinema forums, courses, conferences, among others.

## **VI. Conclusions**

The work conducted here by the project partners – Contextos - Cooperativa para o Desenvolvimento e Coesão Social, CRL (Portugal), Lascò Srl (Italy), and Asociación Fronteras (Spain) – in terms of theoretical framework, analysis of national plans and education system documents, interviews with different people and establishments involved in education, and the case analysis presented for each country - National Arts Plan (Portugal), Future Lab of Francesco Giordani High School, in Caserta (Italy) and León Ortega School of Art, in Huelva (Spain), strongly reinforced the importance of creativity, of creative teaching-learning processes, and of creative learning environments, and gave DigitArt consortium valuable clues for the next steps of the project.

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**VIII. Annexes****Participants in the Interviews | Chapter IV – 4.1. Portugal**

<b>Name</b>	<b>Institution</b>	<b>Position</b>
Ana Baião	Universidade do Algarve – ESEC <a href="https://esec.uaalg.pt/">https://esec.uaalg.pt/</a>	Teacher
Ana Bela da Conceição	Plano Nacional das Artes <a href="https://www.pna.gov.pt/">https://www.pna.gov.pt/</a>	Regional Coordinator Algarve and Alentejo
Beatriz Lemos	Associação de Guias de Portugal <a href="https://pt-pt.facebook.com/1companhiaguiasfaro/">https://pt-pt.facebook.com/1companhiaguiasfaro/</a>	Youth Leader
Eliana Calixto	Sê Mais Sê Melhor – Associação para a Promoção do Potencial Humano <a href="https://www.semaissemelhor.org/">https://www.semaissemelhor.org/</a>	Project Coordinator / Trainer
José Jesus	ETIC – Escola de Tecnologias, Inovação e Criação do Algarve <a href="https://eticalgarve.com/">https://eticalgarve.com/</a>	Trainer / Tutor
Luís Costa	Universidade do Algarve – FCT <a href="https://fct.uaalg.pt/">https://fct.uaalg.pt/</a>	Researcher / Teaching Assistant
Natália Estrelo	Escola Secundária Pinheiro e Rosa <a href="https://www.aeprsa.pt/">https://www.aeprsa.pt/</a>	Teacher
Susana Contino	Escola Waldorf	Teacher
Vera Pinheiro	Escola Secundária Pinheiro e Rosa <a href="https://www.aeprsa.pt/">https://www.aeprsa.pt/</a>	Teacher
Vivaldo Quintas Luís	Escola Secundária Tomás Cabreira <a href="http://www.agr-tc.pt/">http://www.agr-tc.pt/</a>	Teacher

### Participants in the Interviews | Chapter IV – 4.2. Italy

Name	Institution	Position
Ippolito Carmela	Associazione Akira <a href="http://www.associazionekira.it">www.associazionekira.it</a>	Trainer
Ippolito Iolanda	Forum Lex <a href="http://www.forumlex.it">www.forumlex.it</a>	Director
Lanzetta Carmela	IC E. P. Fonseca <a href="http://www.icfonseca.edu.it">www.icfonseca.edu.it</a>	Teacher
Masi Andreina	Accademia Italiana <a href="http://www.accademia-italiana.it">www.accademia-italiana.it</a>	Teacher
Musto Massimiliano	Consorzio Ro.Ma. <a href="http://www.consorzioroma.it">www.consorzioroma.it</a>	Director
Noce Alessia	ISS E. Majorana <a href="http://www.isissmajorana.edu.it">www.isissmajorana.edu.it</a>	Teacher
Ordine Francesco	Associazione Akira <a href="http://www.associazionekira.it">www.associazionekira.it</a>	Trainer
Pontillo Tiziana	ITIS-LS F. Giordani <a href="http://www.giordanicaserta.edu.it">www.giordanicaserta.edu.it</a>	Teacher
Romano Elisabetta	Mo.D.A.V.I. Napoli <a href="http://www.modavinapoli.it">www.modavinapoli.it</a>	Trainer
Rossi Damiano	Scuola elementare del teatro <a href="http://www.scuolaelementareteatro.it">www.scuolaelementareteatro.it</a>	Trainer
Scaringi Gianrolando	Terra di Libri <a href="http://www.terradilibri.it">www.terradilibri.it</a>	Director
Serpico Antonella	ITIS-LS F. Giordani <a href="http://www.giordanicaserta.edu.it">www.giordanicaserta.edu.it</a>	Director

### Participants in the Interviews | Chapter IV – 4.3. Spain

Name	Institution	Position
Carmina Galeote	Art School of Huelva <a href="http://www.escueladeartedehuelva.com">www.escueladeartedehuelva.com</a>	Head of studies
Fran Gómez	Ciudad Cultura – City council of Huelva <a href="http://www.huelva.es/portal/es/paginas/huelva-ciudad-cultura">www.huelva.es/portal/es/paginas/huelva-ciudad-cultura</a>	Director
Gustavo Domínguez	Espacio Cero <a href="http://www.espaciocerogaleria.com">www.espaciocerogaleria.com</a>	Teacher & Director
Jesús García	Photography classroom - University of Huelva <a href="http://www.cultura.uhu.es/cursos-fotografia-video">www.cultura.uhu.es/cursos-fotografia-video</a>	Teacher
José A. Méndez	Art School of Huelva <a href="http://www.escueladeartedehuelva.com">www.escueladeartedehuelva.com</a>	Vice director
Manuel Vázquez	Art Center Gravina <a href="http://www.gravinacentrodearte.es">www.gravinacentrodearte.es</a>	Director
Nieve Castro	Theatre Classroom – University of Huelva <a href="http://www.cultura.uhu.es/escuela-de-teatro">www.cultura.uhu.es/escuela-de-teatro</a>	Teacher
Rocío Fernández	Flamenco club of Huelva	Teacher
Susana Mayo	Institute of secondary education La Orden <a href="http://www.ieslaorden.es">www.ieslaorden.es</a>	Teacher
Teresa Suárez	School Salesiano <a href="http://www.huelva.salesianos.edu">www.huelva.salesianos.edu</a>	Teacher