3D LEARNING METHODOLOGY FOR ENTREPRENEURSHIP

3D ENTREPRENEURSHIP PROJECT

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Summary

INTRODUCTION

When talking about teaching-learning processes, we must emphasize that the European Commission has taken a real interest in participating with the Member States of the European Union to achieve a common objective: the development of key competencies, basic for all, from the early stages of education and throughout life, on a permanent basis.
The European Commission defines key competences as "the knowledge, skills and attitudes that everyone needs for personal fulfillment and development, employability, social inclusion and active citizenship".

Within the European Framework of Competences, the development of skills and abilities in different aspects, such as learning to learn, mathematical competence, linguistic competence, social competence, etc. are highlighted...., all of them necessary aspects in the integral development of individuals.
But in this dossier we would like to highlight one of the competences that we believe to be the most fundamental today in order to survive in the social, educational and work environment of young people and adults: digital competence and competence in technology.
We cannot forget that nowadays digital competence is necessary in different scenarios, and allows teaching to reach any place, thus achieving an inclusive quality education.
That is why Digcomp, a European framework for the development of digital competence in Europe, is already underway, detailing all the skills and abilities that are necessary to be competent in any digital environment.

Why developing a new methodology

Everything moves forward, and everything evolves. In the field of education, in recent years, there has been a major take-off of Information and Communication Technologies (ICT) and Learning and Knowledge Technologies (LKT) in teaching. Teaching techniques are changing, pedagogical methods are changing, teaching resources are changing, students' motivations are changing, the characteristics of labor demands are different from those of a few years ago... in an evolutionary process in which we are immersed, it is essential to adapt educational methodologies to the inevitable change.
As members of the EU, we must develop successful ways to promote the development of competencies through innovative approaches to learning, assessment methods and support for educational staff.
This is where the importance of lifelong learning comes into play, enabling the continuous development of individuals' professional and personal competencies, in order to be eligible for a range of personal and career development opportunities. Lifelong learning is one of the objectives of the Brussels agenda, and is therefore a key point of our project.

What this methodology includes

If the objective is to include new responses to an ever-changing demand in the world of education, we must introduce methodologies in our daily work. the world of teaching, we must introduce innovative methodologies in our daily work, focused on meeting the new challenges in the teaching-learning process. methodologies, focused on meeting the new challenges in the teaching-learning process.
Within the concept of innovative methodologies, we include active methodologies, participatory methods, methods that develop divergent thinking, we include resources and materials based on new materials that are based on new technologies, individualized, adapted to the needs,
and that adapt to the changes that are taking place in society and, above all, in the workplace, and, above all, labor.
Talking about innovative methodologies implies putting the point of view from another perspective, where the role of the teacher and the student change, the motivation to learn and the form changes, and the process itself changes.
We will talk about the importance of lifelong learning (and how fundamental it will be to adapt to new demands), about the importance of to adapt to the new demands), about competency development, technological and educational challenges, and the modalities of strategies and educational challenges and

the modalities of teaching strategies, methods and resources. And when we we talk about ICT, we will talk about virtual environments, 3D learning, augmented reality, simulators... augmented reality, simulators... and how all this becomes part of the current educational process. educational process. As we have already said: change has arrived, and it is here to stay. Let's do our best possible to develop critical methodologies to face this new challenge.

LIFELONG LEARNING

What is Lifelong Learning?

Never let a formal education stand in the way of your learning, as Mark Twain once said. That is what lifelong learning is all about. You must level up in a world that is always changing if you don't want to fall behind. Humans have a propensity to change and develop new abilities, routines, or interests. Our intrinsic capacity for learning. Just how we apply this knowledge will determine the outcome.

The idea of continuing one's education and developing new talents after completing their formal or required education is known as lifelong learning. It is generally understood to be the continuous, self-directed, and voluntary pursuit of information for either personal or professional goals.

In addition to promoting social engagement, active citizenship, and personal growth, it is crucial for a person's competitiveness and employment.

Learning to play an instrument, participating in an online skills course, or even signing up for a retraining programme are all examples of lifelong learning.

The importance of lifelong learning

Employers, individuals, and the future growth and development of the further education and skills sector are all increasingly seeing the value of lifelong learning.
Lifelong learning can assist us in achieving personal fulfillment and pleasure, whether we are following personal interests and hobbies or professional goals.
By paying attention to the ideas and objectives that motivate us, it encourages us to better our own quality of life and feeling of self-worth. It acknowledges that humans have a natural desire to explore, learn, and grow.
The majority of us, in actuality, have objectives or interests beyond from our formal education and employment. This is a characteristic of being a human: our innate curiosity and capacity for learning. We learn and evolve because of this skill.
Lifelong learning acknowledges that we learn in a variety of settings outside of the classroom.

- For example, in childhood, we learn to talk or ride a bike.
- As an adult, we learn how to use a smartphone or learn how to use a tool for his/her work

These are just a few instances of the lifelong learning activities we all do on a daily basis, whether it be through social interaction, trial and error, or self-initiated study.
Personal growth and fulfilment are the inherent interests, inclinations, and drives that urge us to discover new things. We develop ourselves, not someone else, as we learn.
Key checklist for lifelong learning:

- Voluntary
- Self-motivated or self-initiated
- Doesn't always require a cost
- Often informal
- Self-taught or instruction that is sought
- Motivation is out of personal interest or personal development

Impact on Professional Growth & Personal Development

Lifelong learning has different impacts on our lives. Before mentioning the impact on the personal and development fields, we can mention two general ones:
• It instills discipline in you and inspires you to work towards your objectives throughout your life.
• Assists you in creating a strong network of people with similar interests from all areas of life

- *Effect on Professional Growth*

Significantly improves your work prospects, placing you ahead of your rivals and gives you the self-assurance to make brave professional decisions
The development of adult skills and a strong commitment to continuing learning are now seen as essential to addressing future skill and workforce needs. With automation, artificial intelligence, big data, and the emergence of totally new industries, the workplace of the future is expected to undergo significant change. To meet the demand for skills, retraining and skill development will be essential.
Organisations frequently look for people who have a lifelong learning mindset and aptitude. This kind of education benefits the organisation as a whole. Additionally, it gives the workers a wide range of abilities.

A key element of staff development is lifelong learning. However, not all organisations are providing the resources they would like to assist with this. Therefore, it is up to the employees to take advantage of on-the-job training possibilities.
Whether education is paid for by an employer or by the student themselves, a few things determine how convenient e-learning is:

- Highly economical
- Requires minimal effort and time
- And it's convenient and necessary.

Lifelong learning can also refer to a particular kind of behaviour that businesses are looking for in employees. Employers are realising that obtaining formal academic qualifications is not the only method to identify and nurture potential, and that a desirable quality may be a commitment to lifelong learning.
Today's knowledge economy moves quickly; therefore, organisations now view lifelong learning as a crucial part of employee growth. In order for an organisation to remain competitive and relevant, it is believed that its staff must constantly pursue personal development in order to be flexible and adaptive.
However, other studies claim that organisations are using the idea of lifelong learning to put the burden of learning on employees rather than providing the tools, support, and training required to support this type of workforce.

- *Effects on personal development*

For individuals, lifelong learning will be more crucial than ever to their competitiveness and the long-term development of their employability. Employers place a great value on a candidate's dedication to learning and professional growth. In a competitive work market, those looking to advance personally or professionally can differentiate themselves from the competition. Lifelong learning might become crucial to retaining employment and moving up the career ladder in a labour market where skill requirements are expected to change quickly in the future.
The Covid-19 crisis has also shown that there are many advantages to lifelong learning beyond skill improvement and employability. Online courses were in high demand throughout the epidemic, and there was a strong desire to master new skills and completely unrelated topics. For individuals who are interested in lifelong learning, there are several advantages, including increased personal satisfaction, a sense of accomplishment, and a need to lessen social isolation.

How do you incorporate lifetime learning into your life?

- *Recognise your own interests and objectives*

Learning throughout your life is about you, not other people or their desires. Take some time to consider your interests and goals for the future. If advancing your career is something that interests you personally, there are ways to engage in self-directed learning to reach this objective. There are many methods to pursue this topic further if, for instance, history is your passion.

- *Make a list of the skills and knowledge you want to acquire*

Explore what it is about that particular passion or goal that you want to accomplish after determining what motivates you. Taking a history enthusiast looking for information, as an example, it might be enough to merely increase understanding of European history. Or maybe the curiosity is so great that earning a Ph.D. is a dream objective. Both of these involve various levels of interest and various modes of learning.

- *Decide how you want to participate and what resources are available*

Finding a starting point is the first step in achieving our individual goals. The best way to learn something is to do some reading and research on the subject of interest. Using history as an example, someone who wishes to learn more about a specific historical era can find books in the library catalogue, blogs, periodicals, and podcasts that are devoted to the topic, as well as museums and speeches. If someone had the personal aim of earning a Ph.D. in history, they may look at universities' part-time or online doctoral programmes as well as the processes necessary to get there.

- *Put the learning objectives into your daily life*

Making room in your busy schedule for a new learning objective requires thought and work. It won't happen if you don't make the time and space for it. It is easy to become discouraged or to give up the learning endeavour altogether. Plan how the new learning initiative's criteria can fit into your life or what you must do to make them fit. Can you find an hour a day, for instance, if your learning objective is to learn a new language? Or is 15 minutes each day more reasonable? Long-term commitment to the learning goal may be aided by awareness of the time and space you can dedicate to it.

- *Establish a commitment*

The final and most crucial stage is committing to your decision to take on a new learning venture. If you have realistic expectations and the drive to follow through, make a commitment and refrain from finding an excuse not to.

Approaches to lifelong learning

- Take advantage of educational resources

Students can take advantage of the educational resources available, such as library resources, online courses, and workshops offered by their work or community

- Seek out internships or job shadowing opportunities

Internships and job shadowing opportunities can provide students with valuable hands-on learning experiences and allow them to explore different career paths.

- Participating in extracurricular activities

Extracurricular activities, such as clubs, sports, and volunteer work, can be a great way for students to learn new skills and gain valuable experience.

- Engage in self-directed learning

Students can also engage in self-directed learning by reading books or articles, following thought leaders in their field on social media, or experimenting with new technologies or approaches in their studies.

- Seek out mentorship or coaching

Finally, students can seek mentorship or coaching from more experienced professionals or professors, providing valuable insights and guidance as they continue to learn and grow.

Pros and Cons of lifelong learning

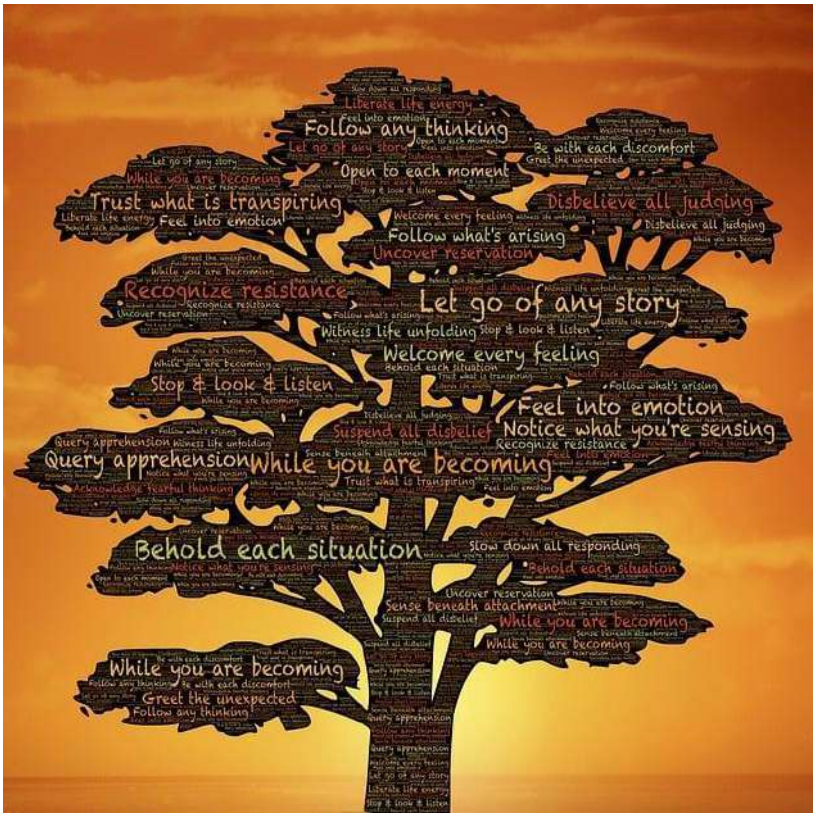
It's essential to understand the upsides and downsides of lifelong learning:

Pros of lifelong learning:

- It can help individuals stay current in their field and adapt to new technologies and changing job markets.
- It can help individuals develop new skills and expertise, making them more valuable to their current or future employers.
- It can provide individuals with the knowledge and skills they need to achieve their career goals.
- It can increase job satisfaction by helping individuals feel more engaged and motivated in their work.
- It can lead to increased earning potential, as well-educated individuals with a wide range of skills may be more attractive to employers and may be able to command higher salaries.

Cons of lifelong learning:

- It can be time-consuming and may require a significant investment of time and money.
- It may be difficult for individuals to balance lifelong learning with other responsibilities, such as work and family.
- It may be challenging for individuals to stay motivated and focused on their learning goals.
- It may be challenging for individuals to find learning opportunities that meet their needs or interests.



TRAINING WITHIN THE FRAMEWORK OF THE EUROPEAN CONTEXT

Context and goal

Each citizen will need a wide range of vital competencies to adapt nimbly to a quickly changing and highly linked environment as globalisation continues to present the European Union with fresh challenges. The dual role of education—both social and economic—has a crucial part to play in ensuring that European citizens have the critical competencies required to allow them to adjust quickly to such changes.

Taking this background into consideration, the main aims of the Reference Framework are to:

1) Determine and define the essential skills required for employability in a knowledge society, active citizenship, and personal fulfilment-

2) Support Member States' efforts to ensure that young people have key competences at a level that prepares them for adult life and serves as a foundation for further learning and working life, and that adults are able to develop and update their key competences over the course of their lives.

3) In order to facilitate national and European efforts towards mutually acceptable objectives, policymakers, educators, employers, and students themselves will receive a reference tool at the European level.

4) To provide a framework for additional action at the Community level, both within the Community Education and Training Programmes and the Work Programme for Education and Training 2010.

Key Competences

Here, we describe competencies as a combination of contextually appropriate knowledge, abilities, and attitudes. Key competencies are those that are essential for everyone's personal growth, participation in civic life, social inclusion, and employment.

The Reference Framework sets out **eight key competences:**

1) Communication in the mother tongue;

2) Communication in foreign languages;

3) Mathematical competence and basic competences in science and technology;

4) Digital competence;

5) Learning to learn;

6) Citizenship competence;

7) Sense of initiative and entrepreneurship;

8) Cultural awareness and expression.

Each of the core competencies is valued equally because they can all help one live a successful life in a knowledge-based society. Many of the competencies overlap and work together; for example, skills that are crucial to one domain will complement skills in another. Understanding requires a solid foundation in the fundamental abilities of language, literacy, numeracy, and information and communication technologies (ICT), and understanding how to learn underpins all learning activities.

The Reference Framework makes use of a number of themes, including the roles that critical thinking, creativity, initiative, problem-solving, risk assessment, decision-taking, and constructive emotion management play in each of the eight main skills.

Key competences for lifelong learning

The Council of the European Union adopted a recommendation on key competences for lifelong learning in May 2018. The recommendation identifies eight key competences essential to citizens for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship, and social inclusion. The recommendation is a reference tool for education and training stakeholders. It sets up a common understanding of the competencies needed nowadays and in the future. The reference framework presents successful ways to promote competence development through innovative learning approaches, assessment methods, or support for educational staff. All learners should achieve their full potential. To fulfill their different needs, the recommendation encourages Member States to: provide quality early childhood education and care, improve school education and ensure excellent teaching, further develop initial and continuing vocational education and training; and modernise higher education.

COMMUNICATION IN THE MOTHER TONGUE		
Knowledge	Skills	Attitudes
Vocabulary, functional grammar, and the functions of language. It includes an awareness of the main types of verbal interaction, a range of literary and non-literary texts, the main features of different styles and registers of language, and the variability of language and communication in different contexts.	Communicate both orally and in writing in a variety of communicative situations and to monitor and adapt their own communication to the requirements of the situation. This competence also includes the abilities to distinguish and use different types of texts, to search for, collect and process information, to use aids, and to formulate and express one's oral and written arguments in a convincing way appropriate to the context.	Positive attitude towards communication in the mother tongue involves a disposition to critical and constructive dialogue an appreciation of of aesthetic qualities and a willingness to strive for them, and an interest in interaction with others. This implies an awareness of the impact of language on others and a need to

		understand and use language in a positive and socially responsible manner.

COMMUNICATION IN FOREIGN LANGUAGES		
Knowledge	Skills	Attitudes
Vocabulary and functional grammar and an awareness of of the main types of verbal interaction and registers of language. Knowledge of societal Conventions, cultural aspects, and the variability of languages are important.	The ability to understand spoken messages, to initiate, sustain and conclude conversations and to read, understand and produce texts appropriate to the individual's needs. Individuals should also be able to use aids appropriately, and learn languages also informally as part of lifelong learning.	The appreciation of cultural diversity and an interest in and curiosity about languages and intercultural communication.

MATHEMATICAL COMPETENCE AND BASIC COMPETENCES IN SCIENCE AND TECHNOLOGY		
Knowledge	Skills	Attitudes
A sound knowledge of numbers, measures and structures, and basic operations and basic mathematical presentations, an understanding of mathematical terms and concepts, and an awareness of the questions to which mathematics can offer answers. Basic principles of the natural world, fundamental scientific concepts, principles and methods, technology and technological products and processes, as well as an understanding of the impact of science and technology on the natural world. These competences should enable individuals to	To apply basic mathematical principles and processes in everyday contexts at home and work, and to follow and assess chains of arguments. An individual should be able to reason mathematically, understand mathematical proof and communicate in mathematical language, and to use appropriate aids. the ability to use and handle technological tools and machines as well as scientific data to achieve a goal or to reach an evidence-based decision or conclusion. Individuals should also be able to recognize the essential features of scientific inquiry and have the ability to communicate the conclusions and reasoning that led to them.	The respect of truth and willingness to look for reasons and to assess their validity. Critical appreciation and curiosity, an interest in ethical issues and respect for both safety and sustainability, in particular as regards scientific and technological progress in relation to oneself, family, community and global issues.

better understand the advances, limitations and risks of scientific theories, applications and technology in societies at large (in relation to decision-making, values, moral questions, culture, etc.).		

DIGITAL COMPETENCE		
Knowledge	Skills	Attitudes
Individuals should understand how digital technologies can support communication, creativity, and innovation, and be aware of their opportunities, limitations, effects, and risks. They should understand the general principles, mechanisms, and logic underlying evolving digital technologies and know the basic functions and uses of different devices, software, and networks. Individuals should take a critical approach to the validity, reliability, and impact of information and data made available by digital means and be aware of the legal and ethical principles involved in engaging with digital technologies.	Individuals should be able to use digital technologies to support their active citizenship and social inclusion, collaboration with others, and creativity towards personal, socialsocial, or commercial goals. Skills include the ability to use, access, filter, evaluate, create, program and share digital content. Individuals should be able to manage and protect information, content, data, and digital identities, as well as recognise and effectively engage with software, devices, artificial intelligence or robots.	Engagement with digital technologies and content requires a reflective and critical, yet curious, open minded and forward-looking attitude to their evolution. It also requires an ethical, safe and responsible approach to the use of these tools.

LEARNING TO LEARN		
Knowledge	Skills	Attitudes
For successful interpersonal relations and social participation it is essential to understand the codes of conduct and rules of communication generally accepted in different societies and environments. Personal, social, and learning to learn	Skills include the ability to identify one's capacities, focus, deal with complexity, critically reflect and make decisions. This includes the ability to learn and work both collaboratively and autonomously, to organise and persevere with one's	This competence is based on a positive attitude toward one's personal,social, and physical wellbeing and on learning throughout one's life. It is based on an attitude of collaboration, assertiveness, and integrity. This includes respecting the diversity of

require knowledge of the components of a healthy mind, body, and lifestyle. It involves knowing one's preferred learning strategies, knowing one's competence development needs and various ways to develop competences and search for the education, training and career training, and guidance or support available.	learning, evaluate and share it, seek support when appropriate, and effectively manage one's career and social interactions. Individuals should be resilient and able to cope with uncertainty and stress. They should be able to communicate constructively in different environments, collaborate in teams, and negotiate. This includes showing tolerance, expressing and understanding different viewpoints, as well as the ability to create confidence and feel empathy	others and their needs and being prepared both to overcome prejudices and to compromise. Individuals should be able to identify and set goals, motivate themselves, and develop resilience and confidence to pursue and succeed at learning throughout their lives. A problem-solving attitude supports both the learning process and the individual's ability to handle obstacles and change. It includes the desire to apply prior learning and life experiences and the curiosity to look for opportunities to learn and develop in a variety of life contexts.

CITIZENSHIP COMPETENCE		
Knowledge	Skills	Attitudes
Citizenship competence is based on knowledge of basic concepts and phenomena relating to individuals, groups, work organisations, society, the economy, and culture. This involves an understanding of the European common values, as expressed in Article 2 of the Treaty on European Union and the Charter of Fundamental Rights of the European Union. It includes knowledge of contemporary events, as well as a critical understanding of the main developments in national, European, and world history. In addition, it includes an awareness of values, values and policies of social and political movements, as well	Skills for citizenship competence relate to the ability to engage effectively with others in common or public interest, including the sustainable development of society. This involves critical thinking and integrated problem solving skills, as well as skills to develop arguments and constructive participation in community activities and in decision-making at all levels, from local and national to the European and international level. This also involves the ability to access, have a critical understanding of, and interact with both traditional and new forms of media and understand the role and	Respect for human rights as a basis for democracy lays the foundations for a responsible and constructive attitude. Constructive participation involves the willingness to participate in democratic decisionmaking at all levels and civic activities. It includes support for social and cultural diversity, gender equality, and social cohesion; sustainable lifestyles; the promotion of culture, of peace and non-violence, a readiness to respect the privacy of others, and to take responsibility for the environment. Interest in political and socioeconomic developments, the humanities, and intercultural communication is needed to be prepared both to overcome

as sustainable systems, in particular climate and demographic change at the global level and their underlying causes. Knowledge of European integration as well as an awareness of diversity and cultural identities in Europe and the world is essential. This includes an understanding of the multi-cultural and socioeconomic dimensions of European societies, and how national cultural identity contributes to the European identity.	functions of media in democratic societies.	prejudices and to compromise where necessary and to ensure social justice and fairness.

SENSE OF INITIATIVE AND ENTREPRENEURSHIP		
Knowledge	Skills	Attitudes
Entrepreneurship competence requires knowing that there are different contexts and opportunities for turning ideas into action in personal, social, and professional activities, and an understanding of how these arise. Individuals should know and understand approaches to planning and management of projects, which include both processes and resources. They should have an understanding of economics and the social and economic opportunities and challenges facing an employer, organisation or society. They should also be aware of ethical principles and challenges of sustainable development and have self-awareness of their own strengths and weaknesses.	Entrepreneurial skills are founded on creativity, which includes imagination, strategic thinking and problem-solving, and critical and constructive reflection within evolving creative processes and innovation. They include the ability to work both as an individual and collaboratively in teams, to mobilize resources (people and things), and to sustain activity. This includes the ability to make financial decisions relating to cost and value. The ability to effectively communicate and negotiate with others, and to cope with uncertainty, ambiguity, and risk as part of making informed decisions is essential.	An entrepreneurial attitude is characterised by a sense of initiative and agency, pro-activity, being forward-looking, courage, and perseverance in achieving objectives. It includes a desire to motivate others and value their ideas, empathy; taking care of people and the world, and accepting responsibility and taking ethical approaches throughout the process.

CULTURAL AWARENESS AND EXPRESSION		
Knowledge	Skills	Attitudes
This competence requires knowledge of local, national, regional, European, and global	Skills include the ability to express and interpret figurative and abstract ideas,	It is important to have an open attitude towards, and respect for the diversity of

cultures and expressions, including their languages, heritage, traditions, and cultural products, and an understanding of how these expressions can influence each other as well as the individual's ideas. It includes understanding the different ways of communicating ideas between creator, participant, and audience within written, printed, and digital texts, theater, film, dance, games, art and design, music, rituals, and architecture, as well as hybrid forms. It requires an understanding of one's own developing identity and cultural heritage within a world of cultural diversity and how arts and other cultural forms can be a way to both view and shape the world	experiences, and emotions with empathy, and the ability to do so in a range of arts and other cultural forms. Skills also include the ability to identify and realise opportunities for personal, social, or commercial value through the arts and other cultural forms and the ability to engage in creative processes, both as an individual and collectively.	cultural expression, along with an ethical and responsible approach to intellectual and cultural ownership. A positive attitude also includes a curiosity about the world, an openness to imagine new possibilities, and a willingness to participate in cultural experiences

Developing Key Competences

Everyone has the chance to build critical competencies through access to high-quality, inclusive education, training, and lifelong learning.

Competency-based instruction, training, and a teaching and learning strategy known as "lifelong learning" try to develop critical competencies, such as pertinent information, skills, and attitudes.

The best way to understand it is to contrast it with knowledge-based teaching and learning, which only emphasises the knowledge component.

Examples of good practices that encourage the development of essential competencies come from the following fields:

Assistance for trainers

The accomplishments and motivations of students are significantly influenced by educational personnel, which has an impact on how well students improve their competence. At the same time, methods to teaching and learning that are usually connected to competence development place even greater focus on the traits and skills necessary for successful instructors.

Therefore, competency-oriented techniques must to be incorporated into the initial training of educational staff members as well as their ongoing professional development.

It is important to assist educators in creating cutting-edge, competence-focused strategies and to promote collaboration both within and outside of their institutions of higher learning. Participation in networks and communities of practise, staff exchanges and mobility, and cooperative peer learning can all help with this. The quality of learning is improved by having access to centres of knowledge and current research, proper guiding tools and materials, flexibility and autonomy in organising learning

Environments and methods for teaching and learning

Competency-based strategies, such as project learning, result when inquiry-based, creative, hands-on, or work-based learning is used with the involvement of learners. At the same time, they present chances for creativity, teamwork, and interdisciplinary learning; they put students at the centre of the process and solicit their active participation. For instance, the use of digital technology in project-based learning enhances learning and supports the growth of digital competencies. Competence-oriented techniques boost learners' overall motivation, performance, and active involvement when paired with social and emotional learning and health-improving physical activities.

The best way to encourage competency development is to have it occur in a range of learning situations.

It is supported by partnerships with non-educational partners in the neighborhood communities and employers, as well as collaboration among stakeholders in education, training, and nonformal learning.

Evaluation and verification of competences

Assessment has an impact on people and their learning development. It can aid in acquiring and assimilating new information and abilities. As they grow independent and self-assured in their studies, it can also assist students in understanding their preferred learning styles.

When a student is looking for work or more learning opportunities, validation of their competencies or assessments that result in qualifications helps them express their competencies.

In light of this, it is essential to provide evaluation methods and tools that demonstrate how well a learner has developed particular competencies. This process is supported by precise learning outcomes frameworks, such as the Entrepreneurship Competence Framework and the Digital Competence Framework, as well as diagnostic, formative, and summative assessments. Digital technologies and tools could both help in capturing the various characteristics of learner growth.

The **European Qualifications Framework** for Lifelong Learning (EQF) aims to improve the transparency, comparability, and portability of people's qualifications.

Knowledge is defined in the EQF as being classified as factual or theoretical. Cognitive is the term used to describe talents inside the EQF (requiring manual skill and the use of techniques, materials, equipment, and instruments) and practical (requiring the use of logical, intuitive, and creative thinking).

COMPETENCES

What is a competence?

Competencies are those skills, abilities and knowledge that a person has to efficiently perform a certain task.

Competencies are characteristics that qualify someone in a certain field. They include not only theoretical skills, but also define thinking, character, values and good handling of problem situations.

Competencies are acquired through learning and training of people; they are a fundamental tool for the exercise in the field where these competencies are needed.

They combine the skills and the ability to perform a function effectively and transversally over time, generally defined in the professional or production field.

Types of competencies

Competencies are defined according to the area in which they are performed. There are several types of competencies that can be divided into basic competencies, generic competencies and specific competencies.

Basic competences

Basic competencies, or also called life competencies, help the individual to insert himself adequately in a given social context, such as, for example, adaptation, respect and tolerance. They are often associated with universal values.

Generic competencies

Generic competencies are also defined as core competencies. Generic competencies are those that are useful in any type of profession or job, such as, for example, teamwork, proactivity, empathy or creativity.

Specific competencies

Specific competencies refer to those competencies that are necessary in a professional field or in a specific area. Some of them are:

Teaching competencies: are those defined for the effective transmission of knowledge. Some teaching competencies are the organization and animation of learning situations, the management of student progress and the ability to inform and involve parents in their children's learning.

Communicative competencies: those that demonstrate the ability to communicate effectively while respecting grammatical rules as well as those in the field of linguistics (lexical, phonetic and semantic).

Professional competencies: are the integrated set of skills, knowledge and aptitudes needed to perform a specific job or develop certain professional activities.

Each job requires different skills, so depending on your career objective, you will need to develop some or others. It is important that you know the skills you have and the skills that will be required in the desired job position to identify your areas of improvement and look for the best options to develop those skills.

Types of professional competencies

Professional competencies can be classified into two main groups:

Technical competencies

Technical competencies, also called specific competencies or hard skills, are those that are associated with specific jobs and are essential for successfully carrying out a specific work activity.

For example, a person trained in cooking should have acquired technical skills such as the use of knives, cooking techniques or kitchen organization.

These skills are different for each profession and are usually acquired through specific training. Thus, it is the mastery of any technique or tool necessary for the correct performance of the functions.

Currently, many professional sectors have been affected by digitalization, a reality that has been accentuated by the impact of the health and economic crisis produced by COVID-19. This has meant that a large number of people, whether or not they perform an activity related to the digital sector, have developed knowledge in digital technologies.

Cross-cutting competencies

The **transversal competencies** or **soft skills** are all those skills, knowledge and attitudes that can be generalized to any work environment, i.e. they can be put into practice in different types of professions.

These transversal competencies are used to develop different occupations and have been acquired in different contexts (work or non-work). Some transversal competencies are: teamwork, adaptability, initiative, critical thinking, emotional intelligence and autonomy.

Transversal competencies are a fundamental part of the professional profile, as they allow you to differentiate yourself from other people with the same training and experience.

For the effective exercise of a profession, you have to bring both types of competencies into play. The technical skills needed to exercise a profession are usually the first to be valued by employers, but all those transversal skills that can be transferred to any professional activity are increasingly valued, they help you to differentiate yourself from others and make you more suitable for a type of work.

The transversal competencies of professionals are not a mere complement to the technical competencies for which you have been hired or valued in your job. These competencies should be incorporated into the curriculum as elements identifying a professional attitude suited to modern times.

The most highly valued transversal competencies

There are a number of transversal competencies that are considered essential in many industries and workplaces and, more importantly, are in sync with the new needs and the new job landscape. Below you will find some of the most important ones.

Adaptability: ability to work effectively in diverse situations and with different people, adapting to the changes proposed by the organization and assuming roles and functions that are not those we usually perform. It involves the ability to modify one's approach to new information and to react positively to unforeseen events.

Autonomy: the ability to perform a task independently, executing it from start to finish, without the need for any help or support. This ability to work autonomously does not mean, however, that in certain stages or specific tasks the professional cannot be advised.

Digital competence: the ability to use all the technological means at one's disposal and to adapt dynamically to changing technological environments. The skill in the use of office applications, mastery in the management of social networks or knowledge of SEO (search engine optimization) are some of the aspects that encompass this ability.

Communication skills: the ability to convey our ideas and proposals clearly and unambiguously, while creating an atmosphere that encourages the interlocutor to make his or her own suggestions. Active listening, supporting the speech, expressing oneself with respect and taking the listeners into account are some of the strategies that guarantee good communication.

Initiative: proactive disposition to make decisions on proposals or actions. If these proposals are aimed at improving the production process, customer service or the product, we could be talking about the capacity for creativity and innovation.

Emotional intelligence: the ability to self-control and manage one's own emotions and, at a higher level of mastery, the ability to perceive, interpret and channel the emotions of others through empathy and the ability to manage conflicts. Leaders with emotional intelligence are able to promote well-being in the work environment, which ultimately has a positive impact on team performance and productivity.

Leadership: ability to coordinate a work team effectively, contributing to the achievement of the established objectives and promoting the highest possible performance of each team member, while favoring a collaborative and pleasant work environment. The person with leadership skills assumes his or her role as coordinator with comfort, is concerned with motivating his or her team and knows how to delegate when necessary.

Achievement orientation: competence that refers to the concern for quality and for improving one's own performance. The achievement-oriented person always works with business objectives in mind, sets standards to evaluate the performance of his or her own tasks and strives to optimize resources and reduce time.

Critical thinking: ability to analyze and evaluate data and facts in a precise and reasoned manner, avoiding particular biases and elaborating one's own point of view based on the verification of information. Critical thinking starts from the questioning of reality, seeks objectivity, allows associating information with its meaning at a deep level and includes the capacity for self-criticism.

Planning and organization: disposition and ability to create the appropriate conditions for the use of existing human or material resources to outline lines of action to achieve the established objectives with maximum efficiency and effectiveness.

Problem solving: ability to face and respond to a given situation through the organization and/or application of a strategy or operational sequence (problem identification, diagnosis, solution formulation and evaluation) defined or not to find the solution.

Teamwork: ability to collaborate in a coordinated manner in the task performed jointly by a team of people to achieve a proposed objective. Participating as an integrated member of a group with a cooperative attitude is a skill highly valued by companies.

How to improve your soft skills

Based on their backgrounds and how they come across throughout the interview process, managers choose people for their teams. They might work hard to assemble a diverse group of individuals who will contribute to the growth of their division and the success of the whole business. When making hiring decisions and selecting candidates for leadership positions and promotions, it's crucial to take both hard and soft skills into account.

Your career advancement and the development of your interpersonal relationships are only two of the numerous advantages of developing your soft skills.

1. Prepare to learn.

You may experience setbacks as you work to improve any soft skill, but you also may experience many victories. It's crucial that you take something away from them. Consider taking some time after the project is over (or perhaps in phases throughout it) to gather feedback on your leadership and how the project could be improved for the next time, for instance, if you are in charge of a project and working on your

collaboration and leadership soft skills. The individuals you work with are best qualified to assess the success of the project and provide input based on previous experiences.

2. Consider others.

Observing those around you is one of the best methods to develop your soft skills. This may entail paying attention to supervisors, coworkers, and staff from different departments. Watch them as they do a task, paying attention to their individual process—which may require a variety of soft skills—and how they connect with others. Everyone brings a unique blend of hard and soft abilities to the job, so it's crucial to be open to learning from others.

3. Be receptive to critique

Being receptive to criticism from managers, supervisors, and even coworkers is a key component of developing your soft skills. When you're receptive to criticism, you may be better able to take it on board and use it to your work—including developing your soft skills—to advance your position. Feedback could be given on your leadership potential, time management, group-working abilities, communication skills, and more. When you receive feedback, think about saying "thank you" to the giver and creating a plan with yourself or by communicating with a manager to address the issues raised.

4. Effective communication

A soft skill that is advantageous to everyone in the job is effective communication. Take advantage of the chances you have to build relationships with individuals in your office, even though you may have jobs and obligations that don't require their assistance. For this soft talent to improve, communicate frequently. This include verbal exchanges in person, emails, and group presentations. Since almost every form of communication is different from the next, it's crucial to communicate via a variety of channels in order to develop your soft communication abilities.

Consider your tone of voice, how you address others, and the clarity of your message when communicating. You might also observe how others communicate and learn strategies from them to improve your own communication.

5. Highlight teamwork

When you work well with others, you demonstrate to your company that you are excellent at cooperating. In order to fulfill a common task, teamwork may take place in a group environment for a presentation or one-on-one with a colleague. Allow each group member to contribute their fair share during a joint work or regular duty and recognize the members' individual talents and personalities. When you place a strong emphasis on teamwork, you create opportunities for yourself to learn from your colleagues and develop your own talents.

6. Get outside of your comfort zone

As with anything you want to improve, it's important to step outside of your comfort zone and take on something new. This may be a new setting, new responsibilities or a leadership role. You can even offer to be the one in your group who gives the project presentation as a way for you to improve your public speaking skills. Placing yourself in unfamiliar territory professionally has the potential to showcase to your manager how seriously you take your job and allow you to learn something completely new.

7. Resolve conflicts

It's typical for conflicts to arise at work, but how you handle them is important. Consider other options when a dispute arises so that you can maintain your working relationship, benefit from one another's knowledge, and continue to be successful as a team. A collaborative work atmosphere benefits all employees of the company, and you can demonstrate both your leadership and teamwork skills in it.

8. Create wholesome connections

A lot of the soft skills you deploy at work depend on your interactions with coworkers and managers. By having a sincere discussion with your coworkers about their weekend plans, families, hobbies, and interests, you may help them develop strong working connections. Make an effort to relate to them through a common experience. Consider asking everyone in your department if they would like to go out for a group lunch on Friday if you work in a large department.

Stepping away from the office is a nice way to connect with them on a personal level. This may assist you professionally because you know their personality a bit more and understand how it factors into their work ethic.

TECHNOLOGICAL AND EDUCATIONAL CHALLENGES

Adults learn very differently from children in terms of how they acquire information. They are very self-directed and much more results-driven, goal-oriented, and pragmatic. We can't just assume that all adult learners comprehend or know how to use technology when it comes to them.

Fortunately, we live in a time when educational systems are fairly adaptable to changing reality, whether it has changed as a result of a recent pandemic, the advancement of technology, or simply as a reaction to contemporary lifestyles. Modern learning standards and models support a much more personalized approach to instruction, including computer-based (online) learning, which is thought to be especially crucial for adult learners.

Contrary to popular misconceptions that have little to do with the reality of the situation, adult education is much more convenient, simple, and compatible with work-life balance, and thanks to technology, "learning online, mobile, or blended has the potential to make this extremely fun." (Lordache, 2020). The variety of academic programs and professional courses, along with information about their length, delivery style, format for learning assessments, and cost, enable students to make an informed decision and select a course that will best fit their lifestyle.

Based on the research of The Organisation for Economic Co-operation and Development (OECD), here are the key facts about job-related training presented in ˝Future-Ready Adult Learning Systems˝:

Image source: https://www.linkedin.com/pulse/adult-education-new-challenges-trends-ion-iordache/

This information unequivocally demonstrates the critical need for education among adult learners and the urgent need for additional educational reforms to better meet their requirements and inspire them to continue their studies.

Thanks to technology, finding online classes that can help you stay on top is now simpler than ever. However, if your most recent educational experience was in a conventional classroom, you might find some aspects of online learning challenging.

Some challenges faced could be:

1. **Computer Literacy**

For millennials who are proficient with computers, this is typically (but not always) not a problem. On the other hand, older adults who still have many years of working age remaining may have skipped acquiring a respectable level of computer literacy.

For adult learners, online literacy can be particularly difficult. Anyone who hasn't embraced the social media era of web technology may find the variety of tasks that an online learner may be required to complete online to be beyond them.

Some of these tasks could be:

- Executing simple web queries
- Using cloud-based programs like Google Drive
- Taking part in webinars with live video
- Produce audio or video material

2. **Lack of support**

No matter how excellent a course's material is, some students will eventually require that personal touch in order to complete it. Many online learners aren't aware of this, but you can hire an online tutor to spend time with you and work through your problems.

3. **Learning Management systems**

Adult learners must adjust to learning management systems in addition to having basic computer skills. It can take some time to get used to how learning management systems work, even if you have some familiarity with Facebook or other forms of web technology. The early learning curve can be challenging, but it all ends by the time you're in your second or third course.

4. **Financial challenges**

Most jobs nowadays require constant learning in order to keep up. Many courses are offered online, but not many people can afford them.

5. **Time and Location - Finding the balance**

In the case that the financial aspect is not a challenge, time management can be challenging with a busy schedule and a full time job. Time management is often a challenge for students in school/university, but for adults who have other everyday priorities, it is even more challenging.

LEARNING MODALITIES AND STRATEGIES

Learning modalities

Learning modalities refer to the various ways that individuals absorb knowledge, such as through visual aids, auditory triggers, or physical movement. On the other hand, learning strategies are particular techniques or methods that people utilize to enhance their learning process.

There are several benefits of learning modalities that can improve the learning experience for individuals:

1. **Accommodates diverse learning styles:**

People have different ways of learning, and using learning modalities can help cater to these diverse learning styles. By incorporating different modalities, such as visual, auditory, or kinesthetic methods, individuals can learn in ways that are aligned with their personal strengths and preferences.

2. **Enhances engagement:**

Using different modalities can make the learning experience more engaging and interactive. This can increase individuals' motivation and interest in the subject matter, which can improve their retention of information and overall learning outcomes.

3. **Increases retention:**

Research has shown that using learning modalities can help individuals retain information better. For example, visual aids can help individuals remember information by creating mental images, while hands-on activities can help individuals learn by doing.

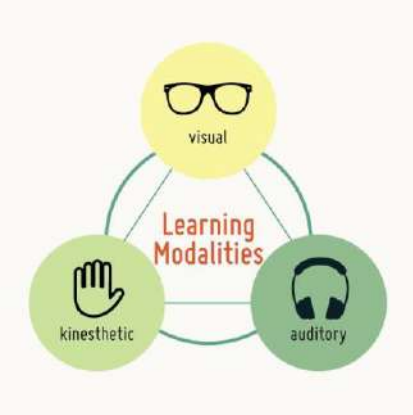
4. **Improves critical thinking skills:**

Using learning modalities can also improve individuals' critical thinking skills by encouraging them to analyze information and think creatively. For example, problem-solving activities can help individuals develop their analytical skills and improve their ability to think outside the box.

5. **Enhances memory:**

Using learning modalities can help individuals improve their memory by making connections between different types of information. For example, using analogies or metaphors can help individuals remember complex concepts by relating them to something familiar.

Here are some examples of learning modalities:



1. **Visual learners**:

They tend to learn best through visual aids, such as diagrams, pictures, and videos. They may also prefer to read and take notes to better retain information.

2. **Auditory learners:**

They learn best through sound, such as lectures, podcasts, and discussions. They may prefer to listen to lectures rather than read texts, and they may use mnemonic devices to help them remember information.

3. **Kinesthetic learners:**

They learn best through physical activities, such as hands-on experiences, role-playing, and movement. They may prefer to take part in activities that allow them to interact with the environment, and they may use manipulatives to help them learn.

4. **Cognitive learners:**

They focus on mental processes, such as thinking, reasoning, and problem-solving. They may prefer to analyze and break down complex information to better understand it.

5. **Social learners:**

They learn best through interaction with others, such as group discussions, debates, and collaborative projects. They may also seek feedback from peers to help them learn and improve.

It's worth noting that everyone has their own unique combination of learning modalities and strategies that suit them best. By identifying your learning style and experimenting with different techniques, you can improve your learning experience and achieve better outcomes.

Teaching strategies

Educators use teaching strategies to aid student learning, which are techniques or methods that can vary depending on the subject, student demographics, and learning objectives. There is a wide range of teaching strategies that can be implemented, and some common ones include:

1. **Lecture method:**

This method, is a traditional approach in which the teacher presents information to students, often used for introducing new concepts or explaining complex topics.

2. **Discussion-based teaching**:

Students participate in conversations to encourage critical thinking and the sharing of ideas, enhancing student engagement and developing higher-level thinking skills.

3. **Cooperative learning:**

It involves small groups of students working together to complete tasks or solve problems, emphasizing teamwork, communication, and collaboration.

4. **Inquiry-based learning:**

It requires students to explore and discover knowledge by asking questions, conducting research, and solving problems, promoting active learning and critical thinking skills.

5. **Project-based learning:**

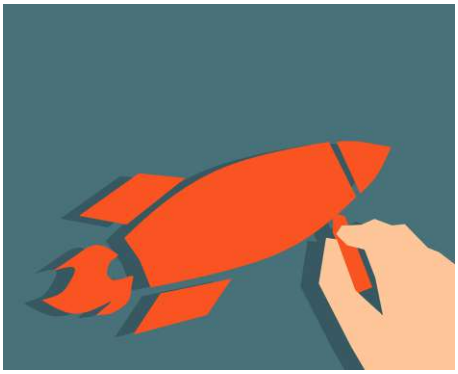
It involves students working on extended projects, promoting critical thinking, problem-solving, and collaboration skills.

6. **Flipped classroom**:

The students learn content outside of class time and engage in activities and discussions during class, encouraging active learning and practical application of knowledge.

7. **Technology-based learning:**

It involves utilizing digital tools and resources, such as educational apps, online learning platforms, and multimedia content, to enhance student learning and promote self-paced learning.



PEDAGOGICAL AND COMMUNICATIVE APPROACH

Due to the universalization of education, where the use of new technologies has had a lot to do, we could not think nowadays of an education that does not raise the possibility of e-learning.

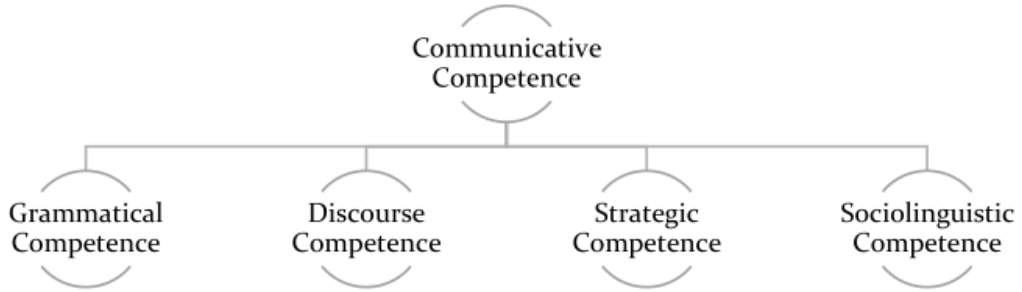
Talking about E-Learning and 3D Methodologies leads us to talk about new pedagogical approaches and methods, both for teaching-learning and communication through new technologies.

As we know, E-Learning and 3D teaching show us a series of interesting advantages in relation to more traditional teaching. Here are some of them:

- Elimination of geographical and time barriers, as well as physical and architectural barriers. In fact, e-learning allows the elimination of almost any type of barrier, making education available to anyone.
- Time saving, allowing each participant to learn at their own pace, planning their own time, and accessing the materials whenever they want/can.
- Updating contents, accessing updates and news at any time.

In all this process of teaching and learning in the online environment that has been described, it is worth mentioning as an important aspect, that all the training that is given must be done from a communicative methodology between teachers and students.
The environments and pedagogical models have been modified, where virtual spaces are a common space for teaching-learning, where not only will work to develop a formal education, but also an education for life, the so-called lifelong education. Currently, this type of model is increasingly used in the workplace, where we speak of online training.
The process of communication in the virtual space will be encouraged at all times, and closely linked to the above, the learning of foreign languages, mainly English as a universal language within the European projects and training development.

When talking about 3D methodologies, this project talks about universalized methodologies, where materials and trainings are transmitted at the European level, not only at the national and local level. In order for the participants to have options to participate in a much wider teaching curriculum, the acquisition of foreign languages and the ability to communicate within the European Union is necessary.



Therefore, it is necessary to work to develop the communicative competence of the participants, their ability to communicate in the foreign language in any context they find themselves in. In order to make this possible, there are different methods that aim to bring real situations closer to what is being taught.
The **communicative approach** to language is precisely a method whose objective is to ensure that participants acquire a learning process that is useful for them to be able to communicate with people in real situations. It is based on the realization of programmed activities in which the materials and activities that are organized allow the participants to get as close as possible to the reality of a language.

In the words of Dell Hymes (1990), a leading sociolinguist, who introduced the concept of communicative competence: *"is the ability to know when to talk, when not to talk, and what to talk about, to whom, when, where, and in what form."*

To this purpose, the activities that are planned, within the 3D methodologies, are always based on situations that may occur in the real and daily life of people, which they may experience in different situations, to which they will have to give an answer. Once the real situation to be solved is posed, they must investigate, communicate, and manage to solve the situation. The participants must solve this situation using conversation and their linguistic ability to solve it.
In the new scenarios where work is done virtually without spatial and temporal barriers, interaction and communication become fundamental aspects of the teaching-learning process.

BENEFITS:

- *Encourages the development of language skills and competencies.*
- *The learning process is centered on the participants.*
- *It provides real learning that allows participants to express themselves in real and daily life contexts.*
- *It allows learning from mistakes, which are important, creating a situation of trust among participants.*
- *It fosters social relationships through teamwork.*
- *Teaching is not limited to memorization, repetition, and translation but to the experience of learning.* It provides learning opportunities through the personal experiences of the participants, their opinions, and real aspects, the applicability of what has been learned is clearly seen.
- Motivates participants, thus enhancing learning.

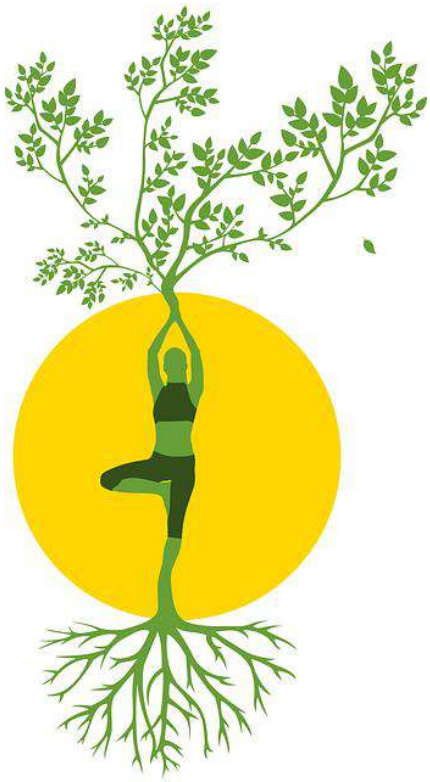
To carry out the Communicative Approach, we can plan different activities that can be based on:

- Theater games or role-playing games, to create real-life situations, transferring them to the classroom or virtual training space. Here, all participants receive immediate feedback (verbal and/or physical) from the other participants.
- Use real materials, such as native speakers' conversations, real texts published in the press or web articles, etc.
- Project work is a very appropriate methodology to put the communicative method into practice, since research is done on a topic to gather all the necessary information (in different languages)

and the results are presented to the rest of the participants orally, as well as in written form through a final report, working on complete linguistic competence.

The communicative approach has been the king of communication and language learning in recent years, although it is currently giving way to the "task-based approach", which is its heir, where a complete development of communicative competence is specifically sought.

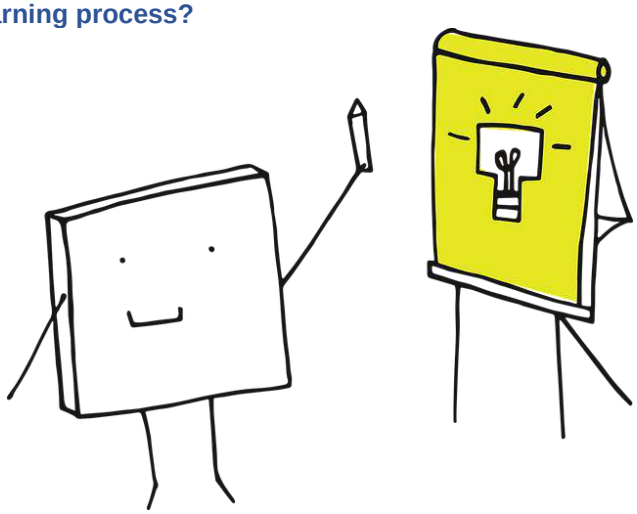
ROLES IN THE TEACHING-LEARNING PROCESS



For some time now, education in the 21st century has been undergoing a series of transformations both inside and outside the classroom. Despite the changes in the educational field, knowing and understanding the teaching-learning process is key to creating effective pedagogical action.

In order to build meaningful learning in students, teachers must answer three key questions: who learns, how do they learn, and what, when and how to evaluate? An adequate teaching-learning process will help us to respond and act in the face of these educational challenges.

What is the teaching-learning process?



Teachers have probably heard at some point in education about the teaching-learning process, but do you know what it is exactly? Let's start by defining the two terms that make it up:
Teaching process:
In this part of the process the most important task of the teacher is to accompany the student's learning. Teaching should be seen as the result of a personal relationship between the teacher and the student.
The teacher must take into account the content, the application of didactic techniques and strategies to teach how to learn and the formation of values in the student.
Learning process:
According to Piaget's theory (1969), thinking is the basis on which learning is based; it is the way intelligence manifests itself.
Intelligence develops a structure and a functioning, that same functioning modifies the structure. The construction is made through the interaction of the organism with the environment.
In this learning process, the main ideas put forward by this theory are:

- The person in charge of learning is the student, with the teacher being a guide and/or facilitator.
- The learning of any subject or theme requires logical and psychological continuity or sequence.
- Individual differences among students must be respected.

As teachers, it is necessary to understand that learning is personal, goal-centered and needs continuous and constant feedback. Above all, learning must be based on a good relationship between the elements involved in the process: teacher, student, and peers.
How does the teaching-learning process work?
Learning and teaching are processes that occur continuously in the life of every human being, so we cannot talk about one without talking about the other. Both processes come together around a central axis, the teaching-learning process, which structures them in a unity of meaning.
The teaching-learning process is composed of four elements: the **teacher**, **the student**, the **content** and the **environmental variables** (characteristics of the school/classroom). Each of these elements influences to a greater or lesser degree, depending on the way they are related in a given context.
By analyzing each of these four elements, the main influencing variables of the teaching-learning process are identified:
1.Student: ability (intelligence, speed of learning); motivation to learn; previous experience (prior knowledge); disposition; interest and; socioeconomic structure.
2.Knowledge: meaning/value, practical applicability.
3.Environmental variables: understanding of the essence of the educational process.
4.Educator: teacher-student relationship; cognitive dimension (intellectual and technical-didactic aspects); teacher's attitude; innovative capacity; commitment to the teaching-learning process.

Students and educator's role in the teaching learning process

According to the theories of Andragogy, social change, and transformative learning, the educator in adult education must work to achieve positive change by coordinating the learning process in a way that helps the learner overcome certain false beliefs he has as a result of social conditioning, his workplace, and the environment and how he acquired his knowledge.

In addition to imparting knowledge, an educator should encourage self-directed learning in their students. **Encouragement** of the student and **facilitation** of the learning process are additional objectives of the educator. The function of the educator is to **direct**, **encourage, coordinate,** and **assist** in exploring the topics he suggests. He also promotes the **heuristic approach** to knowledge and is always in contact with the trainees.

The instructor has a responsibility to help the students comprehend why they are participating in the educational process. through a wholly experiential training that makes use of the students' prior experiences as well as those they have had while participating in the educational course. A key factor is the atmosphere on the squad. According to Mezirow (1991), educators aim to foster respect, freedom of speech, and a connection to issues that stem from the social context from which they were born.

The basis of P. Freire's theory of social transformation is the critical thinking that people develop as a result of learning how to comprehend reality and its issues and then transform them (Knowles, Holton, and Swanson, 1998). Through this teaching method, the teacher establishes the ideal learning environment and encourages dialogue that is focused on the issues of the students (Knowles, 2000).

The participants in transformative learning seek out others who share their desire to develop strategies for resisting the unedited cultural norms of organisations, societies, families, and political life; they become active subjects in cultural change (Rogers, 1996). Participants in transformative learning are expected to change the way they organise and socialise. The rules, social norms, institutions, and systems that enable a more full and open participation in intellectual discussion, transformative learning, contemplative action, and to a greater activation of the participants must be supported and expanded by adult trainers (Mezirow, 2007).

They have a responsibility to provide chances and empower people with laws that encourage fuller, more open participation in debates and in social and political democratic life (Kokkos, 2005). They must also try to bring about a change for the better. This can be accomplished as soon as they set their objectives and expectations apart from those of the instructors, encourage dialogue, and encourage trainee engagement while eschewing dogmatism (Navridis, 1994).

In order to elaborate the trainees' knowledge experiences and admissions, the educator must function as an intergraded coordinator of the training process, as a council, as a stimulator, and as a guide on the path to knowledge (Navridis, 2005).

The adult learners' role is the process of teaching learning is the key to choose the right methodology taking into account the Knowles keys assumptions:

1. Self-concept
As people grow older, they become more independent and turn to a more self-directed learning approach. Unlike children who are dependent on others for learning and understanding, adults have more control and responsibility over their personal education and progression.

2. Adult learner experience
Over time, adults gain innumerable experiences that deepen their resources for learning, placing them in a position where they can use their experiences as a useful tool in self-education. Based on this assumption, adult education programs must usually center around experimental tasks and open discussions based on what learners already know.

3. Readiness to learn
The third element in Knowles' adult learning theory is the learner's readiness to learn. As mature learners take on various roles in society, their readiness or motivation to learn becomes oriented toward the skills necessary for these roles. Whether they're an employee, parent, spouse, or citizen, a large part of their readiness to learn is directed toward these roles.

4. Orientation of learning
For children, the application of a subject is postponed in later life, and their orientation of learning is usually subject-centered. The things they learn at school are not normally applied to real-life problems, and they must wait until they're older and encounter a need for the skills and knowledge they acquired.
This is in contrast to Knowles' adult learning theory, where the application of learning becomes immediate and more problem-centered as the learner matures. When adults encounter issues and complications, they immediately apply their knowledge to solve those problems.

5. Motivation to learn
The last assumption in Knowles' adult learning theory relates to motivation. According to Knowles, adults are motivated to learn internally (Knowles et al., 2012). Their desire for career growth and professional development drives their motivation to pursue education.
In conclusion, the educator helps to create a learning environment where discussion is the primary focus, he coordinates and organises the teams using the procedures for planning educational activities, he motivates the students to actively engage in all of the activities, he appropriately defines the context of the teaching chapters, and he applies educational techniques that aim at combining theory and the trainees' experiences. Despite any flaws, the educator efficiently adapts to the contemporary model of adult training, which emphasises the use of active methods including group projects, exercises, broader learning discussions, and questions that produce positive adult training outcomes. The trainer's and trainee's personal change is evident.

The teaching-learning process in e-learning

ICT is an element that in the field of education increases the educational possibilities in the teaching-learning process, some of them are: building virtual training environments, contributions to conventional classroom systems, facilitating educational communication, among others.
This dynamic between ICT and education, characterizes new training scenarios in e-learning, which poses new modalities within the teaching-learning process, providing spaces that facilitate teacher-student and student-student interaction.
The teaching-learning process through ICT presents the possibility of adapting the information to the needs and characteristics of the students, allowing them to choose when, how and where to study.
In e-learning, the teaching-learning process is more personalized, offering the possibility of developing new formative, expressive and educational experiences for the student.
Learning and teaching are two different actions, but in the educational field they complement each other to form and consolidate knowledge in the student in the teaching-learning process.
Teachers' role is to be facilitators of learning for students, so their commitment should not focus on teaching but on supporting the student to learn.
In this case, it could be followed the principles of Self-directed Learning theory, and allow the learners to drive their own learning journey. Students can be encouraged to identify their own learning needs, plot how to achieve their goals, find resources, then assess their own progress.

Online learning is an ideal environment for this type of learning, and gives students the ability to follow flexible learning paths, access to services that curate and recommend learning content to prevent skill gaps, and AI that is developed to deliver content tailored for each individual's needs.

VIRTUAL LEARNING ENVIRONMENTS

Teaching-Learning processes are constantly evolving, and more and more new generations and educational realities live their development in the online world. For this reason, virtual learning environments can be a very useful tool. In the adult and lifelong learning environment, it is an absolutely necessary tool to be able to manage work and training times.

A virtual learning environment can be defined as an educational space that is hosted in a web or virtual space, where a set of computer tools are inserted that allow the didactic interaction between the teacher and the participants of the training, regardless of the physical and temporal space. All these activities and interactions take place in a simulated form without any physical interaction between the participants.

The Virtual Learning Environment (VLE) or Learning Management System (LMS) usually consists of a repository of documents, sites, blogs with links or any other type of content with virtual access (articles, reference web pages, video tutorials...). These virtual environments can also be used to carry out surveys, submit assignments, take online exams, view grades, post notices, etc...

In the development of virtual environments, we can differentiate two types of communication:

- Synchronous communication: where the interactions between the teacher and the participants are based primarily on offline forums, messaging, email....
- Asynchronous communication, where the interactions between the teacher and the participants take place in real time, such as chats, video calls...

The virtual environment can be formed by a single platform or by several platforms with different characteristics. One of the best-known tools for VLE environments is Moodle, a free software widely used by all training institutions. There are others that can be very interesting, such as Atutor or Docebo. The most appropriate would be that each teacher and training entity can evaluate which is the most appropriate VLE based on the characteristics of the training they want to provide.
It is important to take care of the virtual environment where we place the online training, taking into account fundamental aspects:

- Be very clear about the type of activities you want to include in this virtual space, in order to be clear about the most appropriate type of tool or application.
- Take into account the skills of the participants, adapting the virtual spaces to the participants.
- Be very creative in the use of virtual tools.

- Create the virtual environment as close as possible to real situations, with tools that the participants will have to use in the future.

The 3 fundamental features in virtual environments:

- **Interactivity**: it must allow the interaction of the participants with other participants, with the teachers, with the materials...
- **Flexibility**: it should be possible to adapt the materials and resources to the needs of the participants and the actions and activities we want to teach.
- It must be **scalable**: it must be an environment that allows us to include different tools and increasingly complex functionalities.

Some of the information included in this section has been extracted from an article prepared by UNESCO, so we have selected those solutions that are of interest:

Virtual Learning Environments:

- **Moodle**: a free, open source learning environment that allows any educational institution to have a complete system of online courses.
- **Google classroom:** virtual classroom provided by Google, which allows the application of all the tools provided by Google.
- **Edmodo:** an educational technology network that allows communication between students and teachers in a closed and private environment in the form of *microblogging.*
- **Schoology**: virtual learning environment that has a fully operational and sufficient free plan.
- **NEO LMS:** virtual learning environment that allows the creation and management of all types of learning activities.
- **Chamilo**: open source virtual campus that any person, institution or company can use freely and whose development is promoted by the Chamilo Association.
- **Sakai**: open source educational software that provides a collaborative learning environment.
- **Territorium**: learning management system, which can be accessed from the web and from the app and allows working in a low connectivity environment. It is offered free of charge, in a basic version, during the COVID-19 crisis.

Applications and platforms for open education:

- **ClassDojo:** free application that allows teachers to connect with students, creating a community around the class. It allows the sharing of photos, videos, announcements, instant messages, etc.
- **EkStep**: an open platform with learning resources on literacy and numeracy.
- **Mindspark**: an online tutoring system that helps students practice and learn mathematics, according to their needs.
- **Seesaw**: digital portfolio in which students can archive their work, so that teachers can monitor their progress.

Applications and platforms to carry out video classes:

- **Dingtalk**: a free communication and collaboration platform, which allows video conferencing, task and calendar management, etc.
- **Lark:** a collaboration platform that offers a free service for training entities and allows storage of up to 200G, as well as a videoconferencing system that enables the development of live classes in a synchronous way.
- **Edpuzzle:** intuitive platform that allows communication with students and the creation of video classes.

Digital Tools:

- Flipgrid: free online application (currently only in English), which allows you to propose activities in which the answers are given in short videos -easy to make- of up to five minutes.
- Educaplay y **LearningApps**: tools that allow you to create your own activities.
- Toony Tool y Pixton: tools to create digital comics.
- RubiStar: tool for the creation of digital rubrics.
- **Poll Everywhere** y **Crowdsignal**: tools for the creation of online questionnaires.
- **Plickers** y **SurveyMonkey**: tools for content evaluation.
- Book Creator y **Storyboard That**: tools to create digital books.
- Mindomo y **Mindmeister**: tools for the creation of mind maps.
- **E-lang**: tool aimed at language learning through modules and using the Moodle platform.

WHY 3D LEARNING IS THE FUTURE OF EDUCATION

The Concept Of 3D Learning

In order to establish an accurate definition of the 3D e-Learning methodology, we must first of all divide both concepts and analyze them independently:

- On the one hand, the concept of **E-Learning** (Electronic Learning) determines that all methodologies, activities and resources that are worked on are done through devices connected to the network, i.e., online. We could therefore speak of virtual learning, tele-training or online training. A clear example of this methodology would be to work with video tutorials, articles on web pages, materials in the cloud, etc. ....
  Its most outstanding feature, logically, is that, with this methodology, we can reach any place where people are, without being conditioned to a physical space. For this reason, schools and, above all, companies have opted for this type of methodology for the ongoing training of their employees.
  If we talk about the type of E-Learning that exists, we can refer to 4 main modalities: synchronous (in real time, such as a videoconference), asynchronous (resources and materials uploaded to an online environment, such as a virtual platform), M-Learning (through cell phones) and B-Learning (hybrid modality in LMS platforms).

- On the other hand, we find the term **3D**, that is, 3 dimensions, where the graphic representation used is in 3 dimensions of space (height,width, and depth). With this technology it is possible to create three-dimensional objects and realistic images of objects, spaces and situations.
-

Therefore, the term 3D E-Learning refers to the educational methods that allow the development of a Teaching-Learning process through any electronic device, in an online format, focusing on all 3D resources, such as augmented reality or virtual reality.

This also includes the use of all the new digital ecosystems where people share a virtual reality where they interact and collaborate through a digital identity (virtual reality and/or augmented reality platforms).

Three Dimensional Learning

This also includes the use of all the new digital ecosystems, where people share a virtual reality where they interact and collaborate through a digital identity (virtual reality and/or augmented reality platforms).

As Barberá, E. (2003, p. 27) indicates, when we talk about **E-Learning methodologies**, he tells us that: *"The first, temporally, insofar as it extends the educational time, since it must not be limited to school hours: the first, temporally, in that it expands the educational time since it should not be limited to class hours; the second, geographically, in that it widens the radius of educational action, since it can reach students scattered in nearby or distant territories; the third, cognitively, attending to skills that teachers and students can develop differently with the use of processes facilitated by technology; and, the fourth, in relation to resources, since both students and teachers can enjoy an almost unlimited set of documentary sources of all kinds".*

This offers certain advantages such as:

- It favors the active participation of the participants in the whole teaching-learning process, since it requires a high level of commitment and effort on their part.
- It develops the capacity for spatial vision, which facilitates the understanding of the contents presented, resembling the objectives and situations as real environments.
- It gives the possibility of learning through real practice, since through 3D learning, objects can be manipulated, making the activities fully interactive.
- It allows the trainer to update the contents and information, as it is a virtual replica.
- Promotes proactivity, motivating to investigate, manipulate, and learn based on the training.
- Develops the capacity for teamwork since it allows participants to build community, trust and improve interaction, exploration, and communication together.
- It allows to adapt the rhythms to each participant, being able to follow a personalized learning pace, working each phase of the teaching-learning process based on the time, capabilities, and needs of each participant.
- It is much more fun and motivating, since it is directly related to gamification.
- It allows participants great time flexibility, being this one of the most positively valued advantages by the participants.

It is a very attractive methodology, since it allows training to be perceived in a very real way. For this reason, companies tend to use it on a regular basis, to represent real job situations and train workers in real work environments.

We cannot forget to mention the possibility of carrying out an E-A process from 3D E-Learning based on 3D Virtual Worlds, or MUVEs (Multi-User Virtual Environments), as a tool and learning space. The 3D virtual world is globally known as the Metaverse, and is beginning to be used in training environments for all the advantages we have already mentioned above.

Landeta, A. (2010, p. 25) states that "e-learning is destined to be the great educational tool of the 21st century, the one that allows global access to the knowledge society, both geographically and socially".

Because as everything evolves, so do E-A processes. Long gone are the days of Moodle E-Learning applications, which are becoming obsolete. Online education is also forced to change, and to adapt to new market options. These last few years have been marked by widespread technological advances, which have highlighted the maturity and virtue of E-learning processes and immersive training methodologies that respond to the needs of market demands. COVID has been an accelerator of change, consolidating the trends that had been anticipated and that are now presented as the most viable options for training, specifically for adult continuing education.
Innovation in distance education is moving towards 3D E-Learning environments. Virtual worlds and virtual/augmented reality are emerging methods of E-Learning transformation.

We have seen the benefits of these methodologies, therefore, we have no doubt that innovation, once again, will win the race towards Education 4.0.

3D ENTREPRENEURSHIP

What Is Entrepreneurship?

- Entrepreneurship is the act of creating, developing, and managing a new business enterprise, with the primary aim of making it profitable and sustainable.
- This process involves being innovative, thinking creatively, taking calculated risks, and spotting opportunities in the market.
- Entrepreneurs are typically motivated by their passion for their products or services and are willing to assume considerable personal and financial risk to achieve their objectives.
- They excel at recognizing and addressing unfulfilled needs in the market, and are adept at forming robust networks and partnerships to help their businesses succeed and expand.

Steps of entrepreneurship:

Entrepreneurship operates through a series of steps, starting with recognizing a business opportunity and carrying out market research to ensure that it is viable.
After validating the opportunity, entrepreneurs create a product or service and build a team to support it. Securing funding is also important, as entrepreneurs may need capital to cover expenses.
Once the business is launched, entrepreneurs focus on growing their customer base, generating revenue, and ensuring long-term profitability.
Entrepreneurs must be adaptable and flexible throughout the process and remain focused on their goals and objectives.

Benefits of entrepreneurship:

Entrepreneurship offers numerous benefits to both the entrepreneurs themselves and the wider community. For entrepreneurs, the benefits include:

1. **Independence and control**:

Entrepreneurs have the freedom to create and manage their own businesses, which can provide a sense of autonomy and control over their professional lives.

2. **Financial rewards**:

Successful entrepreneurs have the potential to earn substantial profits and build wealth over time.

3. **Personal fulfillment**:

Many entrepreneurs find great satisfaction in pursuing their passions and turning their ideas into reality.

4. **Flexibility**:

Entrepreneurs can often set their own schedules and work from anywhere, which can offer greater work-life balance and flexibility.

For the wider community, the benefits of entrepreneurship include:

1. **Job creation**:

Entrepreneurs often create jobs, which can help to reduce unemployment and boost economic growth.

2. **Innovation**:

Entrepreneurship encourages innovation and the development of new products and services, which can drive progress and improve quality of life.

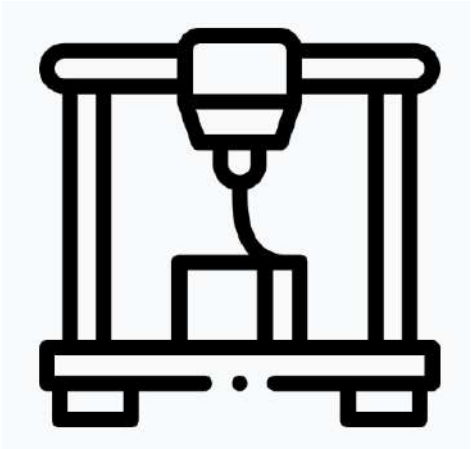
3. **Increased competition**:

Entrepreneurship fosters competition, which can lead to better products and services, lower prices, and improved customer satisfaction.

4. **Social impact**:

Some entrepreneurs focus on creating businesses that have a positive social or environmental impact, such as through sustainable practices or charitable initiatives.

Overall, entrepreneurship can be a powerful force for economic and social progress, offering benefits to individuals and communities alike.



Future entrepreneurs can benefit significantly from 3D technologies, such as 3D printing, scanning, and modeling.

- These technologies can be used for prototyping, allowing entrepreneurs to test and refine their product designs before bringing them to market.
- 3D printing also allows for greater customization and personalization of products, which can be advantageous in certain markets.
- Additionally, 3D printing can reduce inventory costs, simplify the supply chain, and enable new business models.
- These benefits provide entrepreneurs with exciting opportunities to innovate and streamline their businesses and to create new products and services that were previously impractical or too costly to produce.

3D technology is important in entrepreneurship because it offers significant benefits and opportunities for entrepreneurs to innovate and create new products and services. Here are a few examples:

1. **Rapid prototyping**:

3D printing allows entrepreneurs to quickly and cost-effectively produce physical prototypes of their product designs, which can help them test and refine their ideas before bringing them to market.

2. **Customization**:

3D printing also allows for greater customization and personalization of products, which can be a key competitive advantage in certain markets. For example, a startup could offer personalized, 3D-printed orthotics or prosthetics.

3. **On-demand manufacturing**:

3D printing enables entrepreneurs to produce products on demand, reducing the need for large inventories and associated storage costs. This can be particularly beneficial for startups with limited resources.

4. **Small-scale production**:

3D printing can be used for small-scale production runs of niche or customized products, allowing entrepreneurs to serve specialized markets or test new product lines without committing to large-scale manufacturing.

5. **Innovation**:

3D printing also enables entrepreneurs to experiment with new materials and product designs, potentially leading to breakthrough innovations and the creation of new markets.

TRAINING FOR LEARNERS AND TRAINERS

Training for trainers

Training for trainers is a program that trains trainers with the necessary skills and knowledge to deliver effective training programs.

Typically, it includes a combination of theoretical and practical training with feedback opportunities to practice and improve trainers' skills.

The training program objective is to equip trainers with skills that enable them to facilitate effective learning experiences, such as designing and delivering training programs, assessing and evaluating learning outcomes, and creating a positive learning environment.

This training is particularly beneficial in fields like education, healthcare, and workforce development where training is critical to success. It can be customized to cater to specific needs, ensuring that trainers have the necessary skills and knowledge to be successful in their respective fields.

Benefits of training the trainers

Providing regular training for trainers is important and sometimes required for several reasons.

1. First, it ensures that trainers stay informed of the latest trends and best practices in their field, which helps them deliver relevant and effective training.

2. Another benefit is that, regular training helps trainers improve their skills, resulting in more engaging and effective training programs.

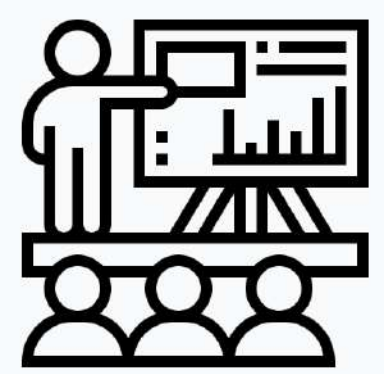
3. More over, well-trained trainers can create training programs that achieve the desired learning outcomes, resulting in learners who are better prepared and skilled.

4. Also, regular training can ensure compliance with industry standards and regulations, particularly in certain industries.

5. Finally, providing regular training for trainers demonstrates organizational support and can increase job satisfaction and engagement.

Training for learners

Learner training is a program that aims to provide individuals with the skills and knowledge required to perform specific tasks.



- It can take various forms such as classroom instruction, online courses, and on-the-job training.
- The objective of such training is to prepare individuals to be successful in their roles by teaching them technical and soft skills, such as communication, teamwork, and problem-solving.

Industries such as healthcare, technology, and manufacturing benefit from learner training.

- Effective programs are designed to meet the needs of individual learners and delivered in an engaging and supportive environment with opportunities for feedback.
- Investing in learner training is crucial for building a skilled and productive workforce.

Benefits of training the learners:

1. **Improved job performance**:

Providing training to learners equips them with the necessary knowledge and skills to enhance their job performance, leading to improved productivity, higher quality of work, and increased job satisfaction.

2. **Increased employee retention**:

Offering training opportunities to employees demonstrates that the organization is invested in their professional growth and development, which can increase employee loyalty and retention.

3. **Enhanced job opportunities**:

Learner training equips individuals with new skills and knowledge, which can open up new job opportunities within the organization or in other companies.

4. **Reduced errors and accidents**:

Proper training can reduce errors and accidents, resulting in a safer work environment and reduced costs associated with accidents or rework.

5. **Improved customer satisfaction**:

When employees are well-trained, they can provide better customer service, resulting in higher levels of customer satisfaction and loyalty.

6. **Increased profitability**:

Adequate training for learners can enhance job performance, minimize expenses associated with mistakes and mishaps, and increase customer satisfaction, thereby leading to higher profitability for the organization.

They are also involved in post-training and follow-up activities; which gives them the opportunity to act as trainers for opening the scope and improve the learning strategies for upcoming projects. This opportunity allows them to practice their new skills or demonstrate the knowledge they gained.

DIDACTIC PREMISES

As we have been talking about, the training possibilities are limitless with the creation of immersive environments where classrooms are organized inside and where we can work through working groups remotely, both offline and online, making possible the development of unimaginable skills and abilities.

This is experiential learning, which favors lifelong learning environments, where the goal is to start working with virtual reality due to the power and impact it produces on participants.

Following the words of Lorenzo García Aretio, he tells us that society is currently undergoing important changes in relation to training through ICT and virtual environments, advancing so fast that it is a challenge to adapt to the changes. He affirms that "changes in space-time coordinates, content supports, communication channels, methodology, student profiles, etc. force us to change the way of thinking and doing education". In any case, García Aretio understands that the pedagogical principles, regardless of the support, have not changed, being these principles behind the theories and models, and insists that the fundamental principles are still present behind every successful practice that is developed.

He argues that 8 basic and universal principles must be taken into account in order for these modalities to be adequate in a Teaching-Learning process:

Individualization:

Gone is the teaching process where all participants learned the same thing, with the same materials and methods. Nowadays and thanks to virtual environments, each participant must learn at his own pace, based on the materials and resources that motivate him the most, based on his abilities and strengths, on his most explicit senses (visual, kinesthetic, auditory...). Therefore, in VEs, each participant must be treated as unique and different from the others. This means that trainers must adapt the training to the rhythms, abilities, skills and needs of each participant with their differences. Technology and distance education can play a very relevant role in helping to adapt learning to the pace and needs of each person.

Socialización:

As mentioned in previous points, people are relational beings with a need to socialize. That is why it is so important to promote communication, interaction and collaboration, especially in these virtual environments that can even become isolators of social reality. We cannot forget that if there is no communication there is no education. Personalization integrates individualization and socialization, and all this can be developed especially in training through e-learning environments.

Autonomía

In spite of what was said in the previous point, and without being contrary to it, the trainer must work on the planning of activities and methods in virtual environments that enhance the autonomy of the participants, decision-making and acting accordingly. In virtual environments, it is especially important that the participants take responsibility for their own process, since they will be very autonomous in it, and should, with the help of the trainer, build their learning and take the appropriate steps towards higher levels of learning.

Activity

The principle of activity in the participants is very important in all Teaching-Learning processes, and especially in virtual environments, since the participant must be active, perform mental activities, of cognitive effort. To be able to do this, the trainer must plan activities where he/she participates, observes, experiments, analyzes, orders, reasons... always based on Bloom's Taxonomy.

Intuition

When a trainer chooses the resources and materials to be used in the virtual training environment, he or she must take into account the strength and power of the senses in this environment. It is necessary to unite the visual with the verbal and the emotional. It is therefore essential that trainers take this aspect into account when programming and planning training.

Creativity

Creativity is part of the training process and is especially relevant in digital environments. Both teachers and participants must develop their creative capacity and be innovative in their workplace and in the learning and teaching process. In the case of virtual environments, it is important to foster curiosity, imagination and the development of divergent thinking. Likewise, virtual environments give trainers the possibility to plan creative and innovative activities and resources.

Game

The use of gamification in teaching improves the skills-based evaluation process and also the retention of educational content. Using incentive and motivation, gamification, digital games, etc. opens multiple possibilities for training.

Motivation

Motivation is the driving force behind learning, so it is important to develop intrinsic motivation, to encourage the participants' taste for learning and interest in the contents. Positive behaviors towards learning should be encouraged. Virtual environments open a large window in this aspect, since the possibilities are endless and the fact that they are digital environments directly motivates adult participants.

Following these more universal principles, and just like face-to-face and more traditional training, for E-learning and 3D methodologies to be effective, they must respect a number of pedagogical principles, which according to Mario Stofenmacher (2011), will be:

- **The teacher as a "resource"**: The teacher is understood not as a transmitter of knowledge, but as a facilitator of learning, helping and guiding the participants throughout the training course. He/she must make the indications for learning very clear, clearly outline the path to follow, show the materials and their access, resolve any doubts, mark the steps... always accompanying the participants, but letting them be responsible for their learning in an autonomous way.

- Based on this, the teacher must know each of the participants perfectly, know their competencies, their skills, their strengths and weaknesses... both individually and as a group. Once the characteristics of the group have been defined, the teacher must design and build a model that meets the specific needs of each group of participants. It will be, therefore, a model based on the participants, adapted to their needs and responding to their interests, so we always speak of the **participant as the center of the device.**
- **Principle of action:** it is always sought that participants perform activities actively, not passively, so that they are the protagonists of their own learning. Problems will be posed for resolution, manipulation of tools as real as possible, active games, justified argumentation, relation of concepts... where they can actively apply what is going to be learned.
- **Experience through practice:** e-learning training should be as practical as possible, where the emphasis should be on planning activities to develop and work on the "know-how" or "procedural contents" of the training plans. Solving real-life problems is a very good way to transfer knowledge.
- **The alternation principle**: the planning of e-learning training should combine different types of methods, activities and resources, encouraging the motivation of participants and achieving the development of different competencies (working with activities, exercises, readings, videos, games, case studies, etc.).
- **The game principle:** gamification takes on a relevant importance when planning E-learning training, because besides being very motivating for the participants, it allows creating situations perceived as real (through simulations), avoiding the risks and dangers of someone who is learning in a real environment.
- **The synthesis principle**: the training programming process should include synthesis work that favors memorization, comprehension... where the participants express the main idea in their own words and style, using analogies, research work, expansion and confrontation. Here the work of communication that we have mentioned in previous points is of vital importance. This can be done through analysis, organization of priorities and reinforcement of key messages.
- **The meaning principle:** the meaningfulness of what participants are learning is key to their settlement. When the participant understands the meaning of the learning, and its applicability in real life, this will reinforce useful learning in the long term. To this end, it will help the trainer to establish clear, concise, directly observable and measurable objectives in the training planning.
- **The formalization principle:** it is the trainer's task to logically structure the contents to be worked on, with their timing and logical order. Bloom's Taxonomy (which will allow establishing a hierarchy of the objectives and contents to be worked on) will be followed for the planning on the virtual platform or Virtual Space used to develop the training. This formalization should serve the principle

of synthesis, building a visual reference, ordering the learning sequence and favoring the anchoring of concepts.

- **Previous communication:** as we have already mentioned, communication in virtual spaces is essential. This communication must be given both individually and in groups, depending on the type of training to be given. Communication is important to guide participants in their teaching-learning process, to make them autonomous, to create high levels of motivation and high expectations.
- **Action plan:** this refers to the continuation and application of what has been learned, a fundamental aspect once the more "academic" training is completed. The action plan is an indispensable tool to concretize the idea that the training is permanent, so that it continues on the job once the virtual training is finished. It forces participants to project their professional reality and to concretely appreciate how they will transfer and use what they have learned.
- **The benefit of experience**: for training to be effective, it must focus on what is real and concrete. The best way to ensure knowledge transfer is to develop a model with accompanying forms that help participants apply the new behaviors in their workplace.

LEARNING GUIDES

Based on all the research process that we have been carrying out in the development of the 3DDD Project, we are in a position to specify some of the most important aspects to guide both the teacher and the participants in the process of training based on 3D methodologies.
We have done all the research in relation to innovative 3D methodologies, so we have established methods, resources and materials for the development of online training.

For the content creation, materials and resources, development of competences .... through training using 3D methodologies, it is essential to establish a guide that allows people to plan and schedule the training adequately based on the participants that are presented.

Based on the different points already developed and the different phases of the project, we will now go on to specify aspects that will be taken into account for the proper development of the Teaching-Learning process.
The first thing a trainer will have to do is to decide the type of communication, materials and resources to create for the training to be given. All this will have an impact on the quality of the e-learning and 3D methodologies to be used later on. The trainer must take into account that:

- **The contents must be focused on the participants:** the training program, as well as the materials and resources must be relevant and designed to meet the specific needs of the participants, being fundamental to work for the development of the capacities, competences and skills, as well as the knowledge of these participants.
- **The planning and programming of the actions must be fully granulated**: the planning to work on all the contents must be fragmented and segmented, in order to be able to organize the modules correctly and facilitate the acquisition of new contents, as well as to be able to set flexible schedules.
- **The content presented must be attractive:** motivation is one of the driving forces of learning, so the content, materials and resources presented must be creative and attract the attention of the participants, motivating them to learn.

- **Interactivity as fundamental principles:** maintaining two-way communication is fundamental in an e-learning training process, continuous contacts must be established to maintain attention and promote learning.

- **The training must be adapted to the profile of the participants:** not only is it necessary to adapt the training to the interests of the participants, but throughout the process it is important to carry out a processual evaluation to see the need to adapt the training to the profiles.

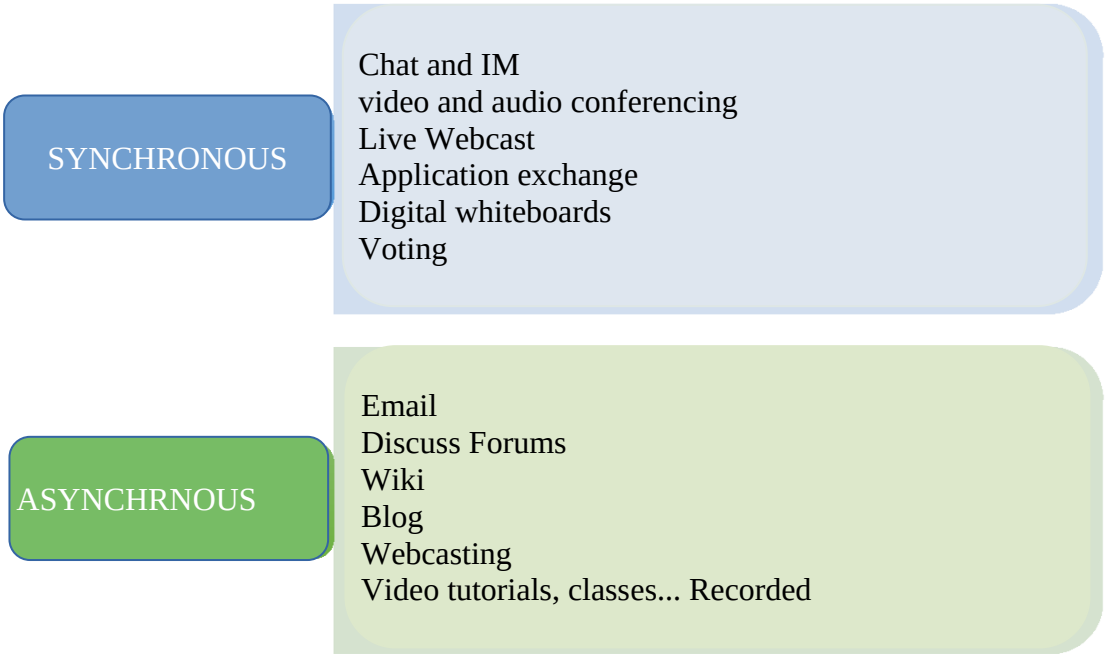
Before we begin, we must recognize certain aspects of the e-learning process:

1. Two types of e-learning actions should be differentiated:

a) **Synchronous:** actions are carried out in real time, between two people or a group of participants at a given time. Some examples can be online chat, audio or video conferences.

b) **Asynchronous:** actions are carried out independently of time. E-mail, forums, recorded video tutorials or any material posted on the network are examples of tools for this type of communication.

It is important for the teacher to know which of the two forms of communication is necessary based on the moment the group is in. It is possible to create an exclusively synchronous or asynchronous training course, or even to mix both types of communication for a better quality of training. The choice should be made by the trainer, based on the needs and circumstances of the group of participants.



Modalities of online training

The truth is that, in these pedagogical learning models, the ideal is often to combine different approaches to some extent, in order to adapt to the training needs of the students. But technologies have also taken a giant step forward in e-learning methodology, which has facilitated other related modalities. In this way we can differentiate different modalities of online training:

- *B_learning or Blended- learning*. According to Horn & Staker (2014), B-learning constitutes an intermediate step between face-to-face education and e-learning or distance learning. It combines both strategies, being a blended learning. It is especially recommended for participants who are new to online training.

- *M-learning.* Also called mobile learning, i.e. a learning system that uses any mobile device, such as smartphone, PDA, tablet, PocketPC, ipod and any other that has some wireless connectivity. Due to this, all the advantages of mobile devices applied to the training methodology can be extracted, i.e., immediacy, personal use, connectivity... etc.

- *U-learning.* This is the name given to the set of activities that support learning based on technology. This training model makes it possible for accessibility to be effective at any time, in any place and through all available media, i.e. television, teleconferencing, computer, smartphone, PDA, etc.

It is thanks to this new way of approaching learning that we can give full flexibility to training by incorporating new technologies, which facilitates access to content at the right time and thus making the process much more efficient.

Types of systems: choosing an e-learning platform

In order to make life easier in the online teaching-learning process, e-learning platforms or LMS (Learning Management System) have been appearing on the market. LMS are software that are installed on a server and allow learning through the network.

Choosing which platform is the most suitable for the type of training to be provided is fundamental, given that it must be adapted to the pedagogical needs of the participants. Following FAO (2014), it is essential that they meet the following requirements:

- It must facilitate learning, which means that it must be clear and intuitive.

- It must support different types of content and resources, both online and offline.

- It must be able to be developed on any mobile device in order to adjust to learning that in the era of 3.0 and 4.0 education takes place anywhere.

- It must conform to content implementation standards.

- It must have a good security protocol.

- It must have tools for monitoring and evaluation of students.

Designing an e-learning course

Several models for designing e-learning systems and training could be followed at the pedagogical level, most of them based on the widespread ADDIE model: Analysis, Design, Development, Implementation and Evaluation.

The ADDIE model for e-learning can be clearly seen in the following scheme:

Aspects to take into account: Resources and Materials

In order to make what we are describing a little more concrete, here are some of the technological trends that will be decisive for the development of lifelong learning ecosystems, collaborative and based on connected experiences:

1. **Virtual Reality & Metaverse:** these are immersive and multisensory experiences where the use of virtual reality can be developed through different technological devices.

2. **Learning Intelligent System:** Artificial Intelligence & Machine Learning: these are based on adaptive learning from the automation of processes for the prediction and adaptation of automatic learning models, recommendation engines, student trace analysis, paging detection, behavioral biometrics...

3. **Educational BOTS & Chatbots:** Tutor Robot: connected tools that allow proactivity in the attention to the student. They are assistants that communicate through conversation, correct work automatically, assign grades with constructive comments...

4. **Edutok & Twitch:** these are knowledge disseminators that use YouTube as a tool and means of dissemination, as well as TikTok.

5. **Infoproducts:** digital products produced in digital format and distributed online: ebooks, videos, podcasts... of an educational nature.

6. **NanoMoocs**: micro-course format training that incorporates learning analytics modules, both conceptual and emotional.

7. **Flipped Classroom**: already known in real spaces, it is now applied to virtual spaces, where the material is located in virtual environments and face-to-face sessions are left behind through synchronous webinars for interaction, debate and shared work.

8. **Breakout, Gymkanas and Digital Scape-rooms**: where gamification is used to motivate students and learn at the same time.

9. **Learning Landscapes:** where teachers creatively create their own learning experiences through the programming of different activities combining Gamification, Visual Thinking, etc.

Some very clear examples of this methodology applied to lifelong learning can be to apply 3D e-Learning to the training of:

- Doctors/surgeons, through 3D formats in new operation techniques in virtual environments where to handle virtually the operation tools in a real situation. The tools would be manipulated through a 3D program that allows familiarization with the new techniques.

- The application would be developed by aeronautical engineers for a specific course on aircraft maintenance. This application would be in a virtual environment to deepen the practical section before the user physically works with the aircraft, this will provide greater visual knowledge to become familiar with parts and other parts of each machine.

- Car/motorcycle mechanics, where through the virtual environment they can disassemble and assemble engines, manipulate parts... before doing it in a real machine, familiarizing themselves with the parts and systems of the machines.

There are so many options available to us in all sectors and areas of work and training that it would be impossible to mention them all. The three above are examples to understand the change in the training paradigm of the 21st century.

The novelty of these methodologies implies that we can customize and create our own ideal programs for the specific training of each company. There are already some Augmented Reality and Virtual Reality programs on the market that we can use:

- **VR Math:** to work and study geometry in depth. By means of 3D figures it allows to understand in a more visual way the characteristics of each of the figures and how to measure their angles, surfaces or bases.

- **Anatomyou:** you can study the organs of the human body with 360º vision. It is divided into categories according to the systems of the organism and it is possible to generate a "journey" through the interior of each one of them.

- **VR Education & Learning 360:** to work on aspects of astronomy, biology and English. It offers videos and images in virtual reality.

- **Physicists who changed the world in educational 3D:** simulation of a spaceship where the most important scientists in history appear, providing information about their lives, work and the consequences of their achievements.

- **Sites in VR:** allows you to be transported to the most important historical places in the world.
- **InMind VR 2:** arcade and strategy game about neuroscience.
- **Unimersiv:** it is possible to go on excursions in time and space to learn about events throughout history.
- **VR Learn English:** virtual reality in a house, through which you can learn English vocabulary
- **Solar Systema VR:** participants become astronauts in the Solar System and discover information about the Universe.
- **VR Ocean Aquarium 3D:** participants become divers in the ocean.
- **Mars in a Real Place:** allows access to 3D photographs of Mars.
- **Mondly VR:** enables learning in 30 languages through conversations with virtual characters.
- **PI VR Animals:** participants are transported to a Safari in the African savannah and can explore the animal kingdom.
- **Expeditions:** Google's platform that allows us to load and move through different scenarios around the world.
- **MEL Chemestry VR:** the scenario is a laboratory where a course of chemistry lessons is taught.

As for specific applications for companies, we find applications for design, modeling... such as: **Tinkercad, Morphi, Putty 3D, uMake, Qlone, Qubismo, Scultura 3D, Sketch, Shapr3D, AutoCAD mobile, On Shape, etc.**

TRAINING ACTIONS

As we have described in the development of the document, 5 different phases have been identified through research in the project, always based on the five stages of the ADDIE process. These five stages are a guide for the trainers, who can adapt, expand or complement each of the phases that are developed. The five phases are described below:

Analysis

In the previous analysis, we have differentiated 3 important steps:

- ***Identify the target audience:***
  It is essential to identify the training needs of the training participants. The target audience can be identified taking into account important characteristics such as previous knowledge, skills already acquired, geographical origin, learning context, access to technology.... This will help to create much more useful and effective content.
- ***Establish training objectives:***

The short, medium and long term objectives that participants are expected to achieve are established. A distinction can be made between general objectives (for the entire training) and specific objectives (for each module or phase).

They should be written in the infinitive, and should be observable and directly evaluable.

Design

The design stage comprises the following activities:

- ***Designing the contents:*** based on the established objectives, the contents to be worked on in the training will be specified, which may be differentiated between conceptual, procedural and attitudinal, based on the potential needs of the participants. A sequencing and timing of the contents should also be established. The instructional design (ID) is especially important at this point, since it is used to structure the contents over time (timing) and to provide a pedagogical envelope for the materials and resources used.

- Designing the activities: adapted to the contents and objectives previously planned, the initial activities, the development activities and the final activities must be established. All of them will allow to carry out a continuous evaluation, and a development of sequenced contents. As mentioned in previous sections, this design of activities will follow Bloom's Taxonomy, where structure and complexity are fundamental, and will serve to achieve significant learning in the participants.

- Establish the resources and materials: adequate to all the other elements, motivating, attractive and creative. They should be of different types and the use of materials with 3D methodologies will be prioritized.

The result of the design stage is an action plan that will be used as a reference to carry out the training. This action plan illustrates the structure of the training program (e.g., its organization into courses, units, lessons, activities); the learning objectives associated with each unit; and the pedagogical methods and formats (e.g., self-paced interactive materials, synchronous and/or asynchronous joint activities) for delivering each unit.

Development

At this stage is when the e-learning content and 3D resources are actually produced. There are 3 steps for development:

- ***Content development:*** all the information and all the knowledge that is needed must be gathered.

- ***Development of the storyboard:*** it is about developing the document where the pedagogical methods, resources and materials, activities, forms of communication, evaluation tests and follow-ups are described... Basically, all the activities to be developed throughout the training must be planned and sequenced, indicating the pedagogical components and the materials and resources to be used at each moment.

- ***Development of pedagogical programs:*** the multimedia and interactive components, elements of the platform to be accessed by the participants will be developed.

Implementation

In this stage the course is delivered to the participants. The learning resources are installed on a server and made available to the participants. Facilitated or instructor-led training, this stage also includes administering and facilitating the activities of the trainees.

Evaluation

The achievement of learning objectives, the transfer of job-related knowledge and skills, and the impact of the project on the organization will be assessed.
Different types of evaluation will be carried out:

- Initial evaluation.
- Procedural or systematic evaluation.
- Final or summative evaluation.

TUTORING

The teaching function and the tutorial function differ greatly. The trainer is the one who trains, the tutor is the one who guides. But, as we can see, the two functions are always combined into one, and trainers must perform the tutoring function, especially if we are talking about e-learning and 3D training.
We spoke earlier about the importance of communication in online training processes. That is why the role of the tutor is fundamental.

In the case of e-learning, the tutor is a link between the participants and the learning, the information and the resources/materials. He/she offers support and guidance, so his/her work becomes complex if we realize that he/she must know the participants individually and in groups. Based on this, it must help to improve the process of content acquisition, capture the attention and meet the needs and expectations. Therefore, tutoring involves a very important two-way communication.
E-learning demands a much more active, autonomous and responsible role from the participants. For this reason, the role of the trainer-tutor is fundamentally one of support, guidance and content organization.

We find, therefore, different tutoring tasks that will revolve around the following aspects:

- ***Contents:*** helping the participant to approach the contents, highlighting the most significant ones, helping with information selection techniques.
- ***Work organization:*** advising on the best work method based on their characteristics, how to sequence it and how to accomplish the tasks in the established time.
- ***Study strategies:*** offering different strategies to acquire learning in a meaningful way: outlines, summaries, etc…
- ***Use of materials:*** make available as many meaningful materials as possible, identifying the most appropriate type of material for the participants.
- ***Evaluation and monitoring:*** monitoring and evaluating the participants, the completion of the tasks, their cognitive progress, their development of skills and competencies…

There are different types of tutoring, determined by the dedication of the trainers. Positive tutoring must avoid reactive tutoring, whose objective is simply to give answers to students on questions they ask about the course content. For the 3D methodology proposed here, we will opt for two types of tutoring that are more appropriate:

- Proactive tutoring: the person who performs the tutoring is the one who contacts each participant for the different tasks, reminding them of the work to be done, evaluating the tasks and maintaining the pace of the group and of each person.

- Dynamization: it is based on participation, interactivity and communication. The person in charge of the tutoring assumes tasks of supervision and dynamization of the learning process of each participant from the continuous interaction with him/her, in the sense of modifying the contents of the course according to his/her previous ideas, needs, interests and learning. From this interaction, the tutor facilitates different learning resources and uses communicative tools to encourage

interaction, evaluate individual tasks and moderate group tasks, so that students always receive individual and unique feedback on the projects and work they are carrying out.

SUPPORT TO THE TRAINING EXPERIENCE

New educational environments are rapidly changing education as we know it. It is essential to keep up with the changes and new educational and training trends.
Digital environments, e-learning and 3D methodologies allow to support and sustain a modern teaching-learning process, motivating and giving answers to the demands of the participants. The digital environment is created by teachers, trainers, participants... in a coordinated and collaborative way.

In this project a ***previous research*** has been carried out, where the characteristics of the target people, the casuistry of each partner country of the project, the different cultures and ways of learning, the educational needs... have been taken into account and this has been possible thanks to the mobilities between the different partners of the project, in addition to the research of each one of them in the country of origin. The central idea behind the exchange of best practices between partners has been the acquisition of knowledge. The comparison of data has led to the development of a much more universal and globalized material. In this way, material has been developed that can be adapted to different and diverse social and educational realities. The materials arising from this analysis and research contribute to be a support material, both at a practical and theoretical level, thus allowing the development of competences and skills, acquisition of contents and empowerment of proactive attitudes. This results in higher quality teaching-learning processes, a priority objective of any teaching-learning process.

Experimentation has been a fundamental element in the development of this project. The field of 3D methodologies is on the one hand a great unknown, but on the other hand it allows to elaborate totally creative worlds. Thus, experimentation has been crucial to develop the materials and resources. The described characteristics of these methodologies allow the development of totally modifiable, flexible training courses, adapted to the needs that arise, and to the skills developed, even being able to level the training and the complexity of the materials and resources.

Openness and inter/intra personal skills are necessary aspects in the development of this type of projects. ***The transversal competencies***, which are very flexible and can be applied in any field or reality created, serve as a support to give the most appropriate response possible. Working in a transversal and flexible way, where applying the competences results in strengthening at a cognitive level and at an attitudinal and values level.

The 3D project has allowed us to work within a ***multidisciplinary team***, where the different visions from different areas of knowledge, has allowed us to professionalize the work done and create multidisciplinary materials and resources. The composition of the teams from each partner entity has provided the project with a very high level of demand and professionalism, which has been directly projected in the quality of the results.

The ***internationalization*** resulting from the presence of partners from different countries, which is made possible by the European Erasmus+ projects, is an added bonus to these actions. The vision of different realities, different types of training, different cultural focuses, etc... allows to diversify and make more flexible the tools created to be applied in any country of the European Union and beyond. Globalization and universalization is one of the objectives of this project, which is made possible thanks to the participation of the different partners with their own realities.

The stages of the training experience: before, during and after

The Project 3D experience has been marked by 4 main phases that have perfectly structured the development of the experience. These phases are identified below:

1. ***Research and analysis phase (BEFORE):*** prior to the training processes, which has allowed us to establish the methodological principles, the pedagogical methods, the structuring of the contents and the adaptation of materials and resources. Analyzing different aspects, training needs, the need to develop curricular elements (where competencies were prioritized) and the socio-educational, cultural and professional/vocational analysis, allows us to advance safely to the next phase.

2. ***Design and development phase (DURING)***: where the tools, resources and materials that are the result of the development of the project have been elaborated. This phase is laborious because it must take into account the first phase with all the information gathered and the research in the different partner countries, and through the multidisciplinary team, results in the final product of the project. The design and development phase involves an important creativity and creation phase, where fundamental competencies are developed. This phase allows the creation of materials, resources, guides and other elements, in order to carry out the implementation phase.

3. ***Implementation phase (DURING):*** the resources, materials and tools created will be implemented in the different entities of the different partner countries of the project, which will allow an analysis of the characteristics of socio-cultural environments and gives rise to a process of adaptation. The implementation will clarify some of the aspects, which can be improved in the process.

4. ***Monitoring and evaluation phase (AFTER):*** although we have named this stage as the final stage, it should be noted that the monitoring phase is carried out throughout the process, from the beginning, during and at the end of the process in order to improve, modify, cancel, expand, change, ... any resource, tool, material, process, phase, etc. that may be necessary

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