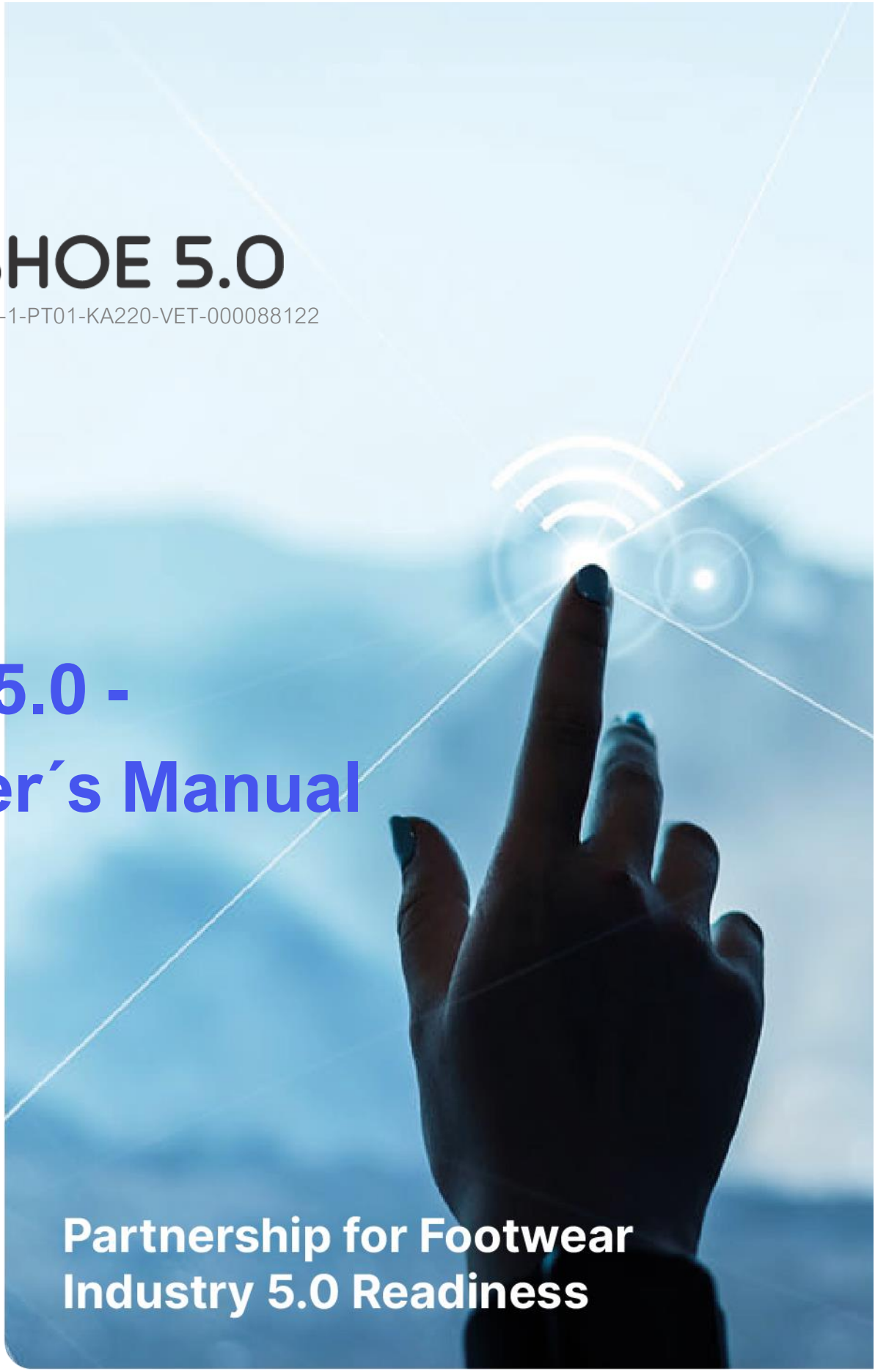
SHOE 5.0

2022-1-PT01-KA220-VET-000088122

Shoe 5.0 - Trainer´s Manual



Co-funded by the European Union

Document Description	
Document name	**Shoe 5.0 Manual for Trainers**
Abstract	
Version	1
Authors	Edit Value Capital Humano
Creation Date	26/02/2024
Version Date	14/05/2025
Status	Concluded
Destination	
Work Package /Activity number	Work Package 3, Activity 2 - Adapt methods and materials to trainers/coaches/SME leaders
Related Documents	

History		
Version	**List of changes, Author(s) / Reviewers**	**Date**
1	Edit Value Capital Humano	27/06/2024
2	Edit Value Capital Humano	12/09/2024
3	Edit Value Capital Humano	14/02/2025

Contents

List of Figures

1. Presentation of Shoe 5.0 Project

The Shoe 5.0 – Partnership for Footwear Industry 5.0 Readiness project is an Erasmus+ project that aims to prepare the EU footwear sector to embrace the transition challenge to a **sustainable**, **human-centric**, and **resilient** industry**, transcending efficiency and productivity** objectives and allying benefits for industry, workers, and society.

With the aim of **introducing** and **applying** the assumptions of **Industry 5.0** to the European Footwear Sector and in line with the **EU Skills Pact for the Textile, Clothing, Leather and Footwear Sectors** (EU TCLF Skills Pact), the Shoe 5.0 Project seeks to **improve** the **skills/qualification of workers**, bringing together **benefits** not only for **workers**, but also for **companies and society**.

The project proposes to develop a **multilevel tailor-made upskilling and reskilling scheme** and correspondent innovative content and tools, to implement the presuppositions of industry 5.0 towards a **green** and **digital transition**, making footwear factories a place where creative and talented people can come and work and live a **human-centric experience**.

The

SHOE 5.0

Project Focus On

01. Human Centric Approach

Promotion of talent, diversity and empowerment of workers

02. Resilience

Development and implementation of new technologies and digital tools that allow companies to be agile and resilient

03. Sustainability

The transfer of knowledge to workers so they can lead action on sustainability and the respect of planetary boundaries

Figure 1 - Shoe 5.0 Project Focus

Shoe 5.0 intends to make an additional step towards the **digital transformation** of **footwear Vocational Education Training (VET)** in Europe, and for that purpose, **two main audiences are particularly targeted** and involved in the project activities.

01. Footwear Workforce

Includes current footwear workers and managers in footwear and leather good companies. The main objectives regarding this group are to maintain their interest and increase their motivation to work in the sector, as well as to capacitate them with the relevant latest skills and competencies.

02. VET Teachers, Trainers

Coaches and respective stakeholders from other related industries, such as leather goods, footwear components, etc. The education community takes centre stage when it comes to the digital transition of teaching practices. Since VET providers and teachers are designing the study programmes for learners, they have the opportunity to incorporate new teaching tools and methods

Figure 2 - Shoe 5.0 Main Audiences

The work programme for the development of activities is divided in **five Working Packages (WP)** that include **project management**, the **elaboration of curricula** and necessary **learning tools**, **training pilot actions** in four EU countries, and **several events** spread during the **36 months'project implementation:**

Figure 3 - Shoe 5.0 Project Work Programme

This work programme is being developed by a consortium of **7** highly qualified **partners** from **5 European countries**: Portugal, Spain, Italy, Belgium and Romania:

Capital Humano
EDIT VALUE, Lda
(PT)

CTCP- Centro Tecnológico
do Calçado
(PT)

CTCR- Centro Tecnológico
del Calzado de La Rioja
(ES)

POLICALZ - POLITECNICO
CALZATURIERO SCARL
(IT)

CEC - European Footwear Confederation (BE)

ByAr - Embracegadget, Lda (PT)

TUIASI - Universitatea Tehnica Gheorghe Asachi Din Iasi (RO)

Figure 4- Shoe 5.0 Project Consortium

To find out more about the project and get access to its results, check out our **website** and stay updated through our **social media accounts**:

https://shoe50.eu/ @shoe5.0 @shoe5.0

2. Model of Learning and Development

The manual for trainers, developed within the framework of work package 3, is an essential tool that aims to **provide guidance and resources** for the **effective use of training techniques.** This document covers a range of topics, **from teaching strategies to learning approaches**, offering a **comprehensive guide for trainers** in a variety of areas. Throughout this handbook, trainers will find **valuable insights**, **practical tips** and **applicable examples** that will help them hone their skills and maximize the impact of training. The introduction provides an overview of the content covered, preparing trainers to explore the techniques detailed in the rest of the manual.

Learning agility - the willingness and ability to learn from experience and to intentionally apply learning to a new situation - **has gained prominence** in recent years as a key area of research aimed at understanding **how to promote the development and empowerment of people** in an organizational context. taking advantage of their capabilities as a competitive advantage. Today and in the near future, **organizations are challenged** by an increasingly **complex external business environment**, which is **constantly changing** due to **globalization, market changes and uncertainties**, **virtual interactions** and **technological advances.**

2.1. 70-20-10 Model

The 70-20-10 model for Learning and Development is a structured approach that has been **widely adopted** by organizations around the world. This model was first proposed by Morgan McCall, Robert Eichinger and Michael Lombardo in the **1990s,** based on research that showed how professionals learned and developed over time.

The theoretical basis of the 70-20-10 model is **based on studies** into **how people learn and develop throughout their lives.** Research in the field of educational psychology and organizational learning has shown that most **knowledge** and **skills** are acquired through **practice** and **reflection** on experience.

In addition, the model is also inspired by Lev Vygotsky's **sociocultural theory**, which emphasizes the **importance of social interaction and collaboration** in the learning process. According to this perspective, **learning** is seen as a **socially mediated process** in which **individuals construct knowledge together** with others and in specific social contexts.

The 70-20-10 model for Learning and Development offers a **holistic and balanced approach** to promoting learning and professional growth, **recognizing the importance** not only of **formal learning**, but also of **informal and experiential learning** in the learner development process.

Since then, it has been **widely adopted** and adapted by various organizations around the world as an effective framework for promoting the continuous development of learners.

The model proposes a **specific distribution of resources and efforts in the learning process,** highlighting three distinct areas:

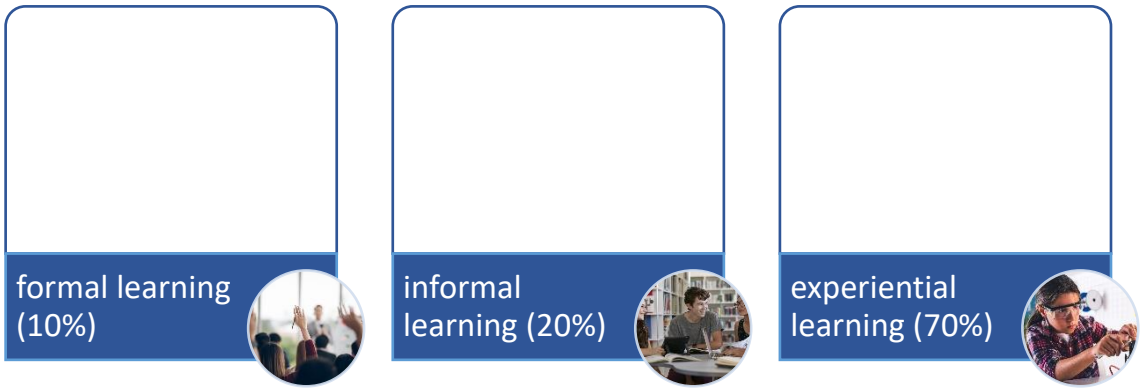


Figure 5 - 70-20-10 Model

Formal learning, represented by **10%** of the model, refers to the type of **learning that takes place through structured programs,** such as workshops, online courses, formal training, and face-to-face classes. This is the **most traditional** and **recognized type** of **learning**, where learners have access to specific, pre-planned content.

On the other hand, **informal learning**, which covers **20%** of the model, **takes place in an unstructured and often unplanned way**. This type of learning occurs through **interaction with others**, **observation**, **experimentation**, **informal feedback**, and other means that are not part of a formal training program.

Finally, the largest part of the model, representing **70%**, is dedicated to **experiential learning**. This type of learning involves the **practical application of knowledge acquired through experimentation, solving real problems, practical projects and learning opportunities** in the workplace. It is considered the **most effective type of learning**, as individuals can directly apply what they have learned in real-world situations.

It is important to note that **the 70-20-10 model is not a rigid and inflexible approach**, but rather a guide that **can be adapted to the specific needs** of each organization and context.

The application of this model was the subject of **recent research conducted by Training Industry**. The research explored:

1. The updated balance among on-the-job, social and formal training.
2. Nuances that can alter the learning ratios for different types of employees, companies and countries.
3. How the model relates to strategic Learning & Development efforts.

The **arrival of the internet**, and the **current proliferation of online and mobile learning technologies**, has altered the training industry's views of the 70-20-10 learning model. At the minimum, a **growing chorus of training professionals contends that the aged model does not reflect the market's fast-growing emphasis on informal learning.**

This model emphasises training in a holistic dimension, in which the project is embodied. However, **it should not be followed with the rigidity it imposes, since training must always develop competences and not all of them can be learnt in the workplace, so the learner needs to focus their skills and efforts on understanding the different themes**. On the other hand, according to Kajewski, K., & Madsen, V. (2012), there is **no empirical evidence** to support the specific percentages that the 70-20-10 model imposes, due to the **variety of functions, industries and personalities.**

The difficulties in **measuring the impact of the model's components**, coupled with the aforementioned **limited scientific basis** and consequent **over-generalisation**, **challenge the model's cross-sectional applicability.**

It is with this breadth and scope in mind that the trainer should orientate their training dynamics, not centred on percentages, but understanding that learning comes from different contexts and that they all contribute to the training path, i.e. both formal and informal learning should be correlated, not just focusing on learning through experience.

Recently, **Training Industry**, Inc. published a research report on the 70-20-10 framework, introducing the concept of the **OSF ratio.**

This model, which has become popular among L&D professionals, represents an adaptation of the 70-20-10 model, which perceives learning as coming from the **workplace (O), social context (S) and formal context (F).**

This model is an evolution of the previous one, as it introduces variables such as **flexibility and customisation, technological evolution, organisational culture and the international/globalisation context.**

Despite the evolution and consequent increase in approval and use among academics, it is **wrong to assume that the ratio presented is the ideal and most appropriate.**

2.2. Project Based Learning

Another popular educational methodology is **Project Based Learning (PBL).** This is a **learner- or learners-centred approach** that involves learning through the **development of practical projects.**

According to this approach, l**earning occurs by engaging the learner community in complex practical projects** over an extended period, investigating and solving questions, problems, or challenges.

The intended pathway for learners/learners is as follows:

1. **Defining problems -** analysing non-conformities, identifying causes and implications, assessing the context**.** This is the moment to **formulate questions** and **make assumptions**. This phase is extremely important and must be taken seriously, since the formulation and structuring of problems can determine the success of the solution;
2. **Generating multiple ideas** – **moment for brainstorming.** The emphasis is to **generate** many **ideas** in a non-judgement, free environment.
3. **Designing and developing a prototype of the solution –** the purpose of prototyping is to **expand the ideas** generated in the brainstorming phase and to **convey the appearance and feel of a solution to the problem**. A prototype can take the form of a **mock-up, a storyboard, role-play, an object**, among others.
4. **Test the solution -** This is the moment when the **prototypes are put to the test of applicability.** Ideally, this phase should take place in a **"real" environment, albeit controlled** and **not fully exposed to the external environment.** This test is what makes it possible to **gauge whether the solution developed works in a real setting.** The results of testing can provide learners with important feedback on the their solutions, and generate new questions to consider.

Figure 6 - PBL methodology steps

The Project Based Learning methodology encourages the development of skills such as **critical thinking**, **problem identification** and **resolution**, **creativity** and **communication**. This **multidisciplinary approach** will result **in better preparation of learners** for the **labour market** and for all the **real issues and problems of the professional context.**

In the industrial sector, this approach is particularly **popular** due to its **"on-the-job"** component, which allows for the **rapid and effective development of technical and practical skills**; the **innovation** that can come from incorporating elements that were previously external to organisations, which favours **industrial competitiveness**, and the **readiness** with which new learners leave the academic environment when the PBL methodology is applied.

Technical and Higher education establishments like Florida Gulf Coast University and the New Tech Network schools are incorporating this methodology in their study programmes, with high community approval.

3. Training and Professional Development

Training and Professional Development, much more than a legal obligation, is an essential component of the **organisation's strategy.**

Professional development (PD) is a **consciously designed**, **systematic process** that strengthens how employees **obtain**, **retain**, and **apply knowledge, skills, and attitudes** in the workplace.

Training and Professional Development are crucial components in **ensuring** that learners acquire the **skills and knowledge needed to carry out their tasks effectively**.

Given its **relevance** and the necessity for training to be both **cost-effective** and **beneficial,** especially since training often involves high costs, it is crucial to adopt the **most effective training approach.**

To this end, this chapter analyses various training approaches, training methods, that can be used to maximise continuous learning and development.

3.1. Interactive Training

Interactive training is a pedagogical approach that involves the **active participation** of learners **throughout the qualification process**.

Unlike traditional teaching strategies, where learners passively receive information, this training method promotes the **acquisition of knowledge and practical skills** through **interaction** between **trainers and learners** and the **use of interactive and dynamic tools** such as games and simulations, quizzes and interactive tests, among others.

Characteristics/Principles of Interactive Training

Figure 7- Characteristic's/Principles of Interactive Training

Active Participation

Learners are encouraged to actively participate in the training by asking and answering questions, discussing concepts and sharing experiences

Use of Technology

Interactive training involve the recurrent use of digital tools such as educational games, quizzes, e-learning platforms, among others

Collaboration

The cornerstone of this training modality is collaborations, whether between trainers and learners or learner/learner. It´s a training model where social competences are tested and enhanced.

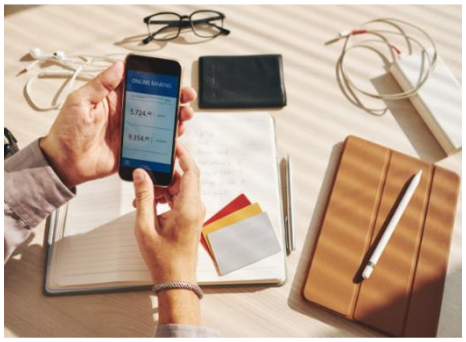
Interactive learning as a modern approach promotes **diverse and engaging learning experiences** that are not limited to theoretical concepts but emphasize real-life applications more.

This model includes the use of **various techniques** that incorporate **Virtual Reality, Augmented Reality and Mixed Reality scenarios:**

- **Simulations and branching scenarios**:

Learners are presented with realistic work-related situations and challenges. In a safe environment Learners must make decisions and navigate through the scenario, receiving real time feedback. This tool reinforces critical thinking skills.

- **Quizzes and assessments:**



Interactive quizzes and assessments not only engage learners, they measure knowledge acquisition and provide immediate feedback. This enables targeted learning and reinforces key concepts. Platforms such as Kahoot and Socrative are extremely popular in training.

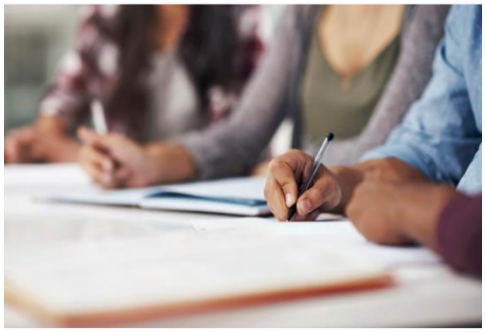
- **Collaborative activities:**

Group discussions, case studies and role-playing exercises encourage teamwork, communication and knowledge sharing. Through collaboration, learners benefit from diverse perspectives and develop problem-solving skills.

- **Gamification:**

The use of educational games in the training process introduces a healthy dose of competition and motivation by incorporating game mechanics such as points, badges and league tables.

- **Microlearning modules:**



Bite-sized, focused learning modules cater to shorter attention spans and busy schedules. These modules can be easily integrated into daily workflows, promoting continuous learning.

By using these interactive elements, corporate training becomes a **dynamic**, **engaging** and **highly valuable experience**.

Nowadays, **due to its benefits,** organisations are increasingly incorporating **interactive training into their learning and development strategies:**

✓ **Higher Levels of Engagement**

Given the distinctive, immersive, and interactive nature of the tools used in interactive training, the training process becomes significantly more interesting, dynamic, and motivating. This results in **greater engagement.**

✓ **Increased Motivation**

Interactive technologies tend to be more appealing and offer interesting ways of acquiring information. Learners are likely to feel more motivated and engage in the training involves technologies rather than attending a unilateral presentation of content.

✓ **Higher retention rates**

In addition to higher levels of engagement and motivation, higher knowledge retention rates are expected with the adoption of this training methodology. When compared to traditional learning practices, which eventually aim to quickly understand a topic without contextualising it, with the involvement of the learner in the training context and consequent insertion of the learner in a real context, greater retention and understanding of the information is expected.

✓ **Development of transversal skills**

Creativity, collaboration, teamwork, problem-solving skills, innovation and other social/soft skills are enhanced by the dynamics inherent to this training modality.

✓ **Real Time Feedback**

This training model allows learners to learn by doing, make mistakes in a controlled environment and improve their performance by the instant feedback provided.

✓ **Increased Learning Efficiency**

All of the above aspects will ultimately lead to effective training.

In short, interactive corporate training is a **dynamic learning approach** that **transcends the limitations of traditional passive learning methods.** It incorporates engaging elements that actively involve learners, participating directly in the learning process.

3.2 Video Training

Of all the training tools and techniques available, video content has emerged as one of the **most powerful and effective forms of communication**, **revolutionising** the way companies educate and train their workforce.

Video training consists of **using videos** (either developed by the company or by third parties) to **transmit knowledge**, **teach new skills**, or **train employees** in various areas.

This is a **very versatile** form of training that can be used for a **variety of purposes,** both to speed up the **integration of new employees**, **introduce new work processes**, as well as to **meet the needs of continuous professional development**.

Examples of How and When to Use Video Training

a) Onboarding:

For new-hires, visual media can **introduce employees to a company's culture, values,** and **policies**, along with outlining job-specific requirements.

b) Technical training:

Providing employees with knowledge on **how to use new tools**, **working methods and procedures**, **software**, or **specific equipment** by creating videos can be very effective. **Explainer videos**, in this context, can be an excellent way to break down complex topics into easily understandable segments. It is important to incorporate scenes where real situations are recreated or simulated into the videos in **technical training**. These scenes

demonstrate and exemplify the theoretical training, allowing learners to **witness the potential outcomes** of their decisions and procedures.

c) Soft Skills Development:

Using training videos on **soft skills training** can be interesting for **explaining and exemplifying concepts,** but it is advisable to complement this training model with others that promote contact between learners (preferably in person) for the practical application and testing of the theoretical models explored.

Video Training Creating Process

If it is intended to make training videos **internally**, for reasons of **greater personalisation of the training content, reliability of the information**, among others, it is advisable to fulfil the following phases:

I. Needs identification and research

Before diving into video production, **it´s important to identify the training needs.**

As with all training processes, regardless of the pedagogical model to be adopted, a **training needs assessment must be carried out**, in which employees and managers are **questioned about the skills that need to be acquired or improved**, the new work tools that need to be implemented, changes to work processes and methodologies, among others.

II. Research and Learning Design:

After this analysis, it is important to **identify whether the educational content is suitable for the training model**, whether the **preparation of the video will enable the specific learning outcomes** to be achieved, and whether it is a **training model that is appreciated and easily accessible** by the target audience (older age groups may be resistant to digital tools).

III. Scripting and Visual Planning:

A **well-structured script** is the basis of an effective training video. The script should outline the **flow of the content**, the **narration,** the **on-screen text** and the **visual cues**.

Visual planning involves creating a **storyboard and visualizing how the different scenes will unfold**. This phase lays the foundations for the actual production process.

A well-structured and detailed planning of this stage, although time-consuming, can prevent future difficulties and facilitate the work that follows.

IV. Production:

The production phase is where the script comes to life. The production phase can be carried out traditionally where a **trainer stands in front of the camera and carries out the educational process**, or **just narrates the session**, or it can be done in a more modern way using **artificial intelligence tools where avatars and/or computer-generated synthetic voices are used.** In the case of traditionally shot videos, aspects such as **adequate lighting**, **sound quality**, and **appropriate visual composition** must be taken into consideration.

Appealing communication is extremely important! Good articulation, **voice intonation** and **gestures** are essential.

V. Edition

This phase **applies more to traditional videos**, those made on digital platforms with AI, or videos that only consist of images and subtitles, editing is done at the same time as production.

This is the phase that **usually requires the most expertise**, in order to **appear professional and credible** to the target audience. It is advisable to call in **audio-visual editing specialists.**

VI. Revision:

Once the initial video has been produced, it needs to be **rigorously reviewed**. It must be ensured that the **content is in line with the learning objectives**, that **the script is clear and concise** and that the **visual elements support the narrative**.

Testing the video and asking for feedback from people not involved in the project, who can identify gaps, non-conformities or aspects for improvement, **can increase the final quality of the product.**

VII. Release

Once you have finalized the video, you need to **determine the best platforms/medium for making the content available.** This could include **learning management systems**, **internal company platforms or dedicated training portals**.

To promote the involvement and effectiveness of the training, in some cases it may be interesting to incorporate **interactive elements** such as quizzes, debates and downloadable resources.

VII. Evaluating Effectiveness

Finally, as with all training courses, regardless of the training model applied, the **effectiveness of the training should be evaluated.** This should include questions such as:

- Do you consider that the training model used (videos) was the most appropriate in relation to the content?
- Was the video well structured and edited?
- Do you think the video promoted the acquisition of knowledge?
- Suggestions for improvement/Comments

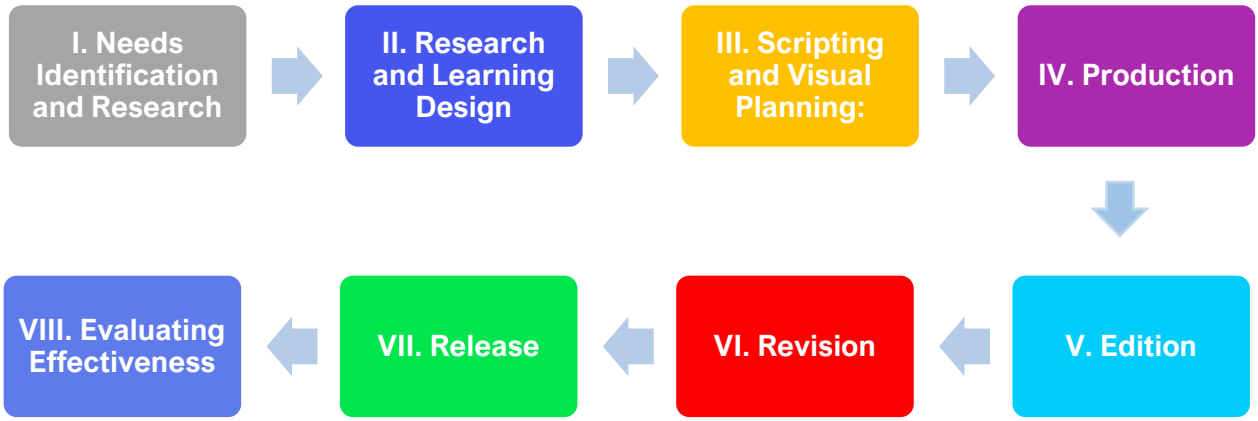


Figure 8 - Video Making Process

Main Advantages and Features of Video Training:

✓ **Flexibility and Accessibility:**

The fact that the videos can be accessed anytime, anywhere, enables geographically dispersed teams to access the same training content without the need to travel.

Flexibility also extends to learning timings. These resources allow learners to adapt their professional development to their cognitive abilities, learning speed, time constraints, family life, and so on.

✓ **Engagement and Information Retention:**

The use of videos is more engaging and promotes higher retention rates for several reasons.

Firstly, the use of videos makes it possible to summarize large amounts of information into easily digestible formulas that require less mental effort to process, and possibilities the illustration of concepts, sometimes abstract, in a clear way.

Secondly, videos include images, animation, music and other interactive elements that capture the learner's attention. This appeal to more than one sense (sight, hearing), in addition to

greater involvement, guarantees greater retention of the message.

✓ **Standardization:**

Ensures that all employees receive the same training, eliminating variations that can occur with different trainers.

✓ **Cost reduction:**

Video training eliminates costs associated with traveling for both learners and trainers, be it transportation costs, accommodation, meals, among others.

Although making videos or purchasing them from third parties can incur costs, when used on a large scale, the investment pays off.

✓ **Reviewability:**

Employees can review the videos whenever necessary, which is useful for reinforcing learning and as a reference resource.

To summarize, video training is a **modern and effective approach** to training and professional development, providing a **flexible, engaging and accessible learning experience** that can be adapted to the specific needs of each organization.

This educational model lacks the practical component.

3.3 eLearning and Blended learning

E-learning is the training model that **takes place entirely online**, through a **virtual learning space** and that uses **digital technologies** (internet) to provide a **range of solutions** and to **exploit a variety of pedagogical and technological resources and tools**.

Simply put, e-learning refers to the use of digital technologies to run training programmes. This training model only **requires access to a**

computer and an internet connection, and, for that reason, it can be carried out at the location that best suits the employee.

Commonly referred to as **remote or online training,** eLearning is a training model that can include **asynchronous and synchronous sessions**:

- **Asynchronous sessions** are those developed in non-real time, where learners, from the comfort of their homes or elsewhere, work autonomously, accessing training resources and other curricular materials made available on an online platform.
- **Synchronous sessions** are those developed in real time, where at a given time, learners meet on a virtual communication platform (Zoom, Teams, Skype, among others) to participate in training activities, clarify doubts or questions, among others.

The use of this training modality requires trainers to:

I. Identify the content

Identify learning needs and the content that fills the competences and skills gaps.

Realising whether, given the training needs**, this is the most appropriate methodology for the learning objectives**

II. Choose an online learning platform

Choose a platform that is user-friendly and intuitive so that learners can easily consult and extract training content and resources.

When making this selection, it is also important to take into account the functionalities that the platform offers, such as quizzes, discussion forums, progress tracking, assessment methods, etc.

III. Develop the content

Developing and exploiting training content, personalising it to the target audience.

For relevant, attractive and engaging content, **it is advisable to use various interactive training resources** such as videos, texts, infographics, power point presentations, quizzes, educational games and simulations, among others.

IV. Prepare evaluation and progress monitoring method

In some cases, depending on the objectives and nature of the training, it is necessary to **apply evaluation and progress monitoring tools**, and **methodologies and evaluation instruments need to be defined.**

This training methodology allows **for greater autonomy and flexibility** in the employee qualification process, although not total when it includes synchronous sessions. It also allows for **a cost reduction** and **greater training standardisation**. Despite this, due to the freedom it offers, e-learning also requires **greater discipline and responsibility** on the part of the employee to complete the training.

Like previous models, eLearning can be applied to **all types of training**, *onboarding, technical, transversal*, among others, due to the **possibility of** (almost) **practical testing** using virtual and augmented reality tools, **communication mechanisms and the possibility of real-time feedback.**

Blended Learning is the training model that **combines online learning with face-to-face training.** It is a blended learning model that combines e-learning with traditional in-person learning.

This model benefits from the advantages and characteristics of both traditional training models and e-learning, with one advantage over e-learning being the practical testing, in face-to-face sessions, of the theoretical content taught online.

3.4 Peer-to-Peer learning

Peer-to-peer learning is a **mutual learning and training strategy that involves learners of the same level** engaging in collaborative learning, without the intervention of a trainer. It is a training approach in which **workers acquire knowledge with peers**, Simply put, peer-to-peer learning is when one or more learners teach other learners.

This method is based on **collaboration** and the **exchange of knowledge between peers**, promoting an **active and participatory environment.** The opportunity to teach and be taught by one another is an effective way for organizations to grow stronger employees that work together productively.

Examples of Peer-to-Peer Learning:

- **Debates** – A debate is a formal gathering where a participant tries to persuade others to agree with their perspective. Although the aim of a debate is not primarily to generate new ideas, actions and learning, those involved can learn a lot from the different points of view, while simultaneously enhancing critical thinking skills.
- **Discussion Groups**- Although very similar to the previous example, in a discussion group all learners are invited to share their insights and opinions on various topics. As in a debate, the primary objective is not to acquire new knowledge, but the high level of exchange of opinions and ideas helps to research and formulate arguments, identify and rectify mistakes, generate thought-provoking questions, and solve problems.
- **Action-learning groups -** Groups made up of 5 to 7 learners with similar levels of responsibility and experience who are dedicated to solving highly complex problems. In these situations, learning is a shared process of insightful

questioning, reflective listening and the generation of new actions. Although very much focused on teamwork, this tool also promotes the autonomy of the learners, as individual contributions are expected, and work teams are created made up of insightful and productive employees with good problem-solving and leadership skills.

- **Coaching** - Peer coaching is a confidential, mutually beneficial relationship where two professional colleagues learn new concepts and share ideas, and solve work-related problems together. The peer coach can be a supervisor, mentor, or veteran employee in the same department. Since peers work on things together, peer coaching is not an exercise of advice or guidance but a give-and-take.

Peer-to-Peer Learning Benefits:

✓ **Grater Motivation and Productivity**

By sharing the learning process with a pair, employees generally feel more motivated and involved. Further, employees tend to feel more comfortable in peer learning situations than in traditional training environments, where the fear of clarifying doubts and failure is diminished due to the relationship of trust and closeness that underlies the pair/group created for this purpose.

✓ **Diversity of perspectives/solutions**

The exchange of ideas that peers are exposed to in this model provides multiple perspectives and approaches to the same subject and problem.

✓ **Sense of Confidence and Self-efficacy**

This model encourages shared decision-making and action, which is also underpinned by shared responsibility, which contributes to an increase in self-confidence and effectiveness, with less fear of negative repercussions.

✓ **Development of Social Skills**

Due to the co-operation dynamic, social skills such as communication, collaboration, teamwork, empathy, problem-solving and critical thinking, among others, are inherently enhanced.

✓ **Cost-effective**

Since there is no trainer, the costs of hiring one are eliminated, which allows for a reduction in costs.

Like the previous models, this training approach can be applied across the **entire structure** and in almost **all types of training** (transversal and technical), and is particularly **important during the onboarding** of new employees, for instruction in the **organization's modus operandi**, **transmission of values and organizational culture**, among others. Within the scope of this model, supervision from a higher hierarchical level to analyse the model's effectiveness is fundamental.

3.5 Microlearning

Microlearning is a learning approach that **breaks learning content down into small, bite-sized information modules.**

This methodology is especially effective in the workplace for several reasons, namely:

✓ **Knowledge Retention**

The main advantage of this approach is related with knowledge retention capacity. Studies show that when information is presented in small fragments, it is easier to assimilate and retain. In addition, as this methodology favours the use of dynamic tools such as videos and games and these capture the learners' attention more, knowledge retention is enhanced.

✓ **Accessibility**

Given the short amount of time each microlearning content consumes, the worker doesn't need to set aside large amounts of time for the training component and can easily speed it up.

✓ **Objectivity**

As each module is designed to address a specific skill or knowledge, **learning is much more targeted.**

Microlearning content formats:

- **Videos:** Short instructional videos, often under 5 minutes. These videos are best suited to transversal skills training, related concepts and very specific technical content.
- **Infographics:** Visual representations of information or data.
- **Quizzes:** Interactive assessments to reinforce learning. These are an effective way to measure training effectiveness and determine whether learners are retaining knowledge. They should be short and take learners less than a minute to complete.
- **Podcasts**: Brief audio segments covering specific topics. Can provide a great microlearning solution for concepts that don't require visualizations.
- **Flashcards:** Digital cards for quick review of key concepts.
- **Interactive Simulations**: Hands-on practice scenarios. Ideal for simples procedures.
- **Articles/Blog Posts:** Concise written content focused on a single topic.
- **Animations:** Simplified visual explanations of complex concepts.
- **Checklists:** provide workers with an overview of the steps involved in carrying out the task, while guiding them through it, keeping workers focused on the procedures. They can be used as a reference resource when employees encounter process-related problems, used to help integrate new employees or train end users in new systems.

Despite its advantages, it is **not advisable to use** this methodology when **explaining/introducing complex topics/concepts/work tools,** due to the **concise and summarised** nature of the model**.** Microlearning may not be the most effective training approach for deepening subjects, due to its inherent overview feature.

3.6 On-The-job Training

In an increasingly demanding labour market where **new workers** are required to make an **instant impact** and **be productive as quickly as possible**, investment in 'on-the-job training' must be a priority.

Also known as OJT, on-the-job training is a training methodology in wich **learners aquire skills and knowledge directly in the workplace, while performing their duties**.It´s a an approach to employee development involving **hands-on experience** within a **real working environment.**

Learning occurs largely by **observing behaviour and reproducing actions**, usually **under the supervision of a mentor or manager**.

To develop on-the-job training it is necessary to:

I. **Identify Training Gaps**

Understand the skills and knowledge that need to be developed given the work **tasks/tools** that an employee **will be taking on**;

II. **Select Qualified Mentors**

Identify **more experienced and long-standing company employees** who have **mastered the tasks and procedures** to accompany and deliver the training;

III. **Define Learning Objectives**

Set and **comunicate** to **both parties clear and specific goals** for the process;

IV. **Develop a Training Plan**

Taking into account the training objectives, determine a **detailed training plan** with the **tasks to be carried out**, the **degree of autonomy and execution expected** in each moment, **deadlines** and **evaluation methodology**. Bear in mind that th**is plan is not static;** it can and should suffer modifications depending on the worker's development.

V. **Implement the training**

Implement the training plan with the following steps: first, have the learner **observe how to carry out the tasks**; second, **guide them** using a checklist; and finally, allow the **learner to perform the tasks independently**. During the training implementation stage, it is advisable to **support the learners more closely**, as this involves continuous practical guidance.

VI. **Provide Regular feedback**

In addition to the more immediate feedback that is given during the course of the training, it is important to **formalise feedback moments** through **meetings** with the learners, mentor, head of the given department/area and human resources representative. These meetings aims to **understand the status and evolution of the training process**, to **understand the perception of both parties** involved in the process and to **analyse/monitor/evaluate the objectives set**, with the possibility of reformulations and adjustments.

VII. **Evaluate**

In addition to the evaluation that takes place in meetings, it is advisable to **apply evaluation questionnaires** to the learners and mentor in order to assess the functioning and suitability of the process, roles and training impact.

This methodology is very popular because it is **easy to implement**, allows **time and money saving**, promotes **rapid adaptation to tasks and working methods**, and **increases productivity** from an early stage.

This approach is appropriate when **new employees are being integrated into the organisations**, when **functional changes** are being made, **when careers are progressing**, or when new systems or processes are being implemented.

3.7 Employee Cross-Training

Cross-training is a training approach in which employees are **encouraged and trained to develop roles for which they were not initially hired.**

Preparing employees to carry out tasks and functions outside their usual responsibilities enhances **flexibility**, fosters a **deeper understanding of the business**, and improves **teamwork** by enabling employees to **support each other across different functions**.

This training model allows workers to **switch between roles, responsibilities and teams when necessary**. This possibility is valuable for companies as it makes it possible to **amortise the impact of planned or unforeseen absences**: employee departures; parental leave; illnesses; work accidents, among others.

With the **sharing of information inherent to this pedagogical method**, when an **employee leaves a company** for good or absents themselves, **knowledge stays within the company** and the **fulfilment of mission-critical tasks is not compromised** and neither is the **company's normal operation**.

In addition, this method is also widely popular for **career growth and succession purposes** within company, as it is often used to prepare top workers for management positions.

This concept:

- Helps employees to **boost** their **existing skills** and become more **flexible** and **valuable resources** for the organization;
- Creates a more **skilled team**;
- Encourages workforce to **explore other opportunities** throughout the organization – it´s a strong driver of internal mobility;
- **Boost productivity**;

- Makes team **more dynamic, innovative and better able to overcome challenges**.
- Enables **varied work**, which is **more stimulating** and contributes to **organisational commitment and engagement;**
- Improve **retention rates;**
- Better prepares for **talent shortages** and **crises of diverse nature;**
- Foster **empathy, understanding, and communication** by putting workers in each other's shoes
- Identify **redundancies.**

In order to properly apply cross-training, the company must have **a high degree of maturity in its work processes and procedures. Internal documents** such as the job manual **are essential.** It is extremely important to have knowledge and documentation of the entire **organisational structure** and its **interconnection** and i**nterdependent relationships, departments, functions, roles, tasks, responsibilities, procedures, knowledge and necessary skills.**

Examples of cross-training include training customer service employees in sales, teaching different production functions to machine operators, cross-training HR in financial tasks, and so on.

Employee cross-training is a **valuable investment** for companies as it can transform the workforce, making it more **versatile, motivated and efficient**. Implemented correctly, this method can provide a **significant competitive advantage for the company**, improving both **resilience and organisational innovation.**

3.8 Gamification

Gamification is a **modern and innovative approach** to training that consists of **applying** and **incorporating game design elements and principles** into the context of corporate training.

This training method leverages **the psychological principles of reward-based learning**, **encouraging participation** and **making acquiring new skills and knowledge more engaging.**

The aim of gamification application is to create a **fun, engaging, effective and rewarding learning experience.**

The game elements and principles to which this approach refers are the control mechanisms and processes that **rule and guide the player's actions and the game's feedback on those actions.**

Examples of mechanisms that should be incorporated in gamification training to fulfil it´s aim and to produce benefits:

- **Leader boards/Ranking Tables** – Provides metrics for learners to compare themselves with each others. Promote friendly competition that motivates learners.
- **Badges** - Given when tasks are completed, good marks are obtained or milestones reached. Increase employee confidence and provide extrinsic motivation.
- **Points** - Learners earn points for completing activities. This are measurable displays of accomplishments.

- **Levels** - Indicate when a learner has hit a milestone. It shows that the learner can access extra learning material and is capable of achieving a more advanced set of objectives. It gives learners a sense of advancement and intrinsic motivation to keep learning.
- **Progress bars** - They show the part of the course the learner has completed and how much more they need to tackle. It boost training completion rates.

By introducing these elements, gamification transforms traditional learning experiences into an **engaging, interactive, and competitive activity.**

Gamification can boost the training experience for your learners. But it requires strategic planning to avoid **incentivizing wrong behaviours** or **encouraging too much** competition.

3.9 Role-Based Training

Role Based Training is a training approach that focuses on equipping employees with the specific knowledge and skills needed to **effectively perform the specific role they are or will be performing.**

This pedagogical methodology is personalised in the sense that it is **tailored to learner roles and responsibilities.**

This methodology is very popular in **larger companies at times of mass recruitment and onboarding;** however, it has been gaining prominence in smaller companies that seek to specialise and segment areas, for example IT departments, engineering, compliance, sales, and other areas.

Benefits of Role-Based Training:

✓ **Information Overload Reduction**

Since training is tailored to the role, learners are not overloaded with information about procedures and specifics of other roles.

✓ **Increased Productivity**

By focusing on specific skills and knowledge, employees are more likely to be able to perform their tasks more efficiently, increasing the organisation's overall productivity.

✓ **Higher Engagement and Motivation**

Given its specialised and practical component, learners know that the training they are receiving will be useful and applicable in their daily lives and therefore feel more motivated

✓ **Cost-effective**

By avoiding generic training sessions, with information transmission not applicable to all employees, productive time is saved and consequently training costs are reduced. Furthermore, when training is very specific and exhaustive, and employees are thus informed about how to proceed in different situations and which are the implications of each action, employees will avoid costly mistakes in the future.

✓ **Higher Impact**

When tailored to learners skills and proficiency, role-based training offers personalized learning experiences that have a much higher impact on employee development

✓ **Clarity of Expectations**

This approach helps employees clearly understand the tasks, responsibilities and performance expectations associated with their jobs, which results in better performance and job satisfaction.

The use of effective training techniques is crucial to **guaranteeing the quality and effectiveness of the educational process**. The diversity of techniques available **allows trainers to adapt strategies according to the needs and characteristics of the learners**.

It should be noted that, in most cases, **no training method is self-exclusive**, and many of them can be **combined for a more enjoyable, dynamic and enriching training experience.**

The **right training techniques** help keep learners **engaged, motivated and receptive** to the content presented, resulting in **better understanding and retention of knowledge**. In addition, the use of a variety of techniques helps to promote a **dynamic and stimulating learning environment, encouraging interaction and active participation by the learners.**

4. The role of a Training Facilitator

A training facilitator or trainer is the **person responsible for guide a learners or a group of learners trough a learning process.**

This figure is responsible for **developing and producing training programs**. This role includes not only **conducting training sessions,** but also **developing lesson plans**, **providing continuous support to learners and measuring the program's success.**

4.1 Essential Skills and Qualities of Training Facilitators

To be successful, a facilitator must bring together a diverse **set of technical and behavioural skills. Technical skills**, such as subject matter expertise and time management, **ensure that the content is conveyed clearly and efficiently**. On the other hand, **behavioural skills** such as **empathy, flexibility** and the ability to maintain a **positive attitude** are essential for creating an **inclusive and motivating learning environment.**

These and other qualities not only **facilitate the learning process**, but also promotes the **active participation and continuous development of learners.**

A. Subject Matter Expertise

A training facilitator must have **in-depth knowledge** of the topics they teach. **Content specialisation and qualification** are essential for transmitting **accurate and precise information** and confidently answering all kinds of questions from learners.

This expertise requires **constant updating** and **study** of the subject in question by the trainer. The trainer must always be **aware of developments** in the field of study and also in the world of training, trends, tools, methods, etc.

B. Effective Communication Skills

After mastering the subject, a trainer's most important skill is their **ability to communicate effectively.**

Effective communication is a key skill for any trainer, as it plays a **crucial role in facilitating learning and creating a productive and inclusive training environment**.

This competence covers **both verbal and non-verbal communication**, requiring trainers to be **clear, concise and accessible** in their interactions with learners.

This includes the ability to **adapt the communication style** to meet the **needs and learning styles of different learners**; **adapt the leadership style** to guide the entire group of learners through the program as a unit; the **ability to rephrase the same content multiple times** and in **various ways**; the ability to key themes and concepts, among other aspects.

C. Active Listening and Close Observation

An excellent facilitator is someone who not only knows how to communicate properly but also **masters the art of active listening**.

An effective trainer must be able to **actively listen to the learners** and **follow their thought processes without judgment. Reacting both verbally and non-verbally to what the learners says**, even when incorrect, is fundamental to establishing the learners/trainer relationship and consequently improving the learners' engagement.

Incorporating learners' insights and examples during training sessions is highly valued and contributes to their perception of the trainer's quality.

In addition to active listening, in order to **fully understand the training atmosphere** and the learners, the trainer must have **keen observation skills.**

Close observation involves **capturing the reactions of learners** through **gestures, facial expressions, or body language**. This skill helps to **identify and resolve issues or resistance** that may arise during the training, which the learners may not express verbally or in writing.

This ability for the trainer to **pick up on small gestures**, **glances and facial expressions** allows them to collect the **honest reaction and opinion of individuals**, which provides **valuable insights** and **allows the training to be better orientated**.

D. Flexibility and Adaptability

During training sessions, **it is common for unforeseen events to occur** (an exercise takes more or less time than expected, a training resource doesn't work, a troublemaker disrupts the normal flow of the session, among others). A good training facilitator **must be prepared and able to quickly adapt to** changes, reorganize, and **re-energize** the learners in real-time according to the circumstances.

This may involve **modifying pedagogical approaches** or **integrating new technologies.** An adaptable trainer is capable of **keeping the training relevant, effective, and engaging,** regardless of the changes around them.

The key to flexibility and adaptability lies in **anticipating various scenarios** and **preparing responses**, as well as maintaining an **open change mind-set**.

E. Time Management

Managing time efficiently is vital for the success of a training session, making time management one of the most valued skills in a trainer.

A good facilitator must be able to **ensure that all planned activities are completed within a defined timeframe**, whether set by themselves or others.

To achieve this, the trainer needs to **plan the session in advance** by **creating an agenda** and adhere to it during the training.

While conducting the training, the trainer **should be firm about the time allocated to learners for activities, examples, and sharing viewpoints.**

Proper time management allows:.

- Maximization of training efficiency;
- Maintaining high levels of interest and engagement among learners;
- Avoiding redundant and unproductive discussions;
- Adapting and reacting to unforeseen events;
- Achieving the proposed objectives

F. Empathy

Empathy in training refers to the facilitator's ability to **understand and share the feelings, experiences, and perspectives of the learners and act accordingly**

It involves **reading the learners' perceptions** (expressed verbally and non-verbally) regarding the content and development of the training, and **responding**

compassionately and understandingly to identified needs and concerns, always in an inclusive environment.

This skill is essential for **creating a positive, inclusive, and effective learning environment**. Empathy allows trainers to **connect emotionally** with learners, **promoting a sense of security** and support that is fundamental to the success of the learning process.

G. Positivity and Authenticity

Maintaining a positive attitude throughout the training helps the session to **unfold smoothly**, enhances **learner's engagement and motivation**, and makes the training experience much more **enjoyable** for everyone involved. Contributing to this positive atmosphere is the preference for **positive language** over common language, which tends to be more depreciative and demotivating.

Being authentic is also important, as it **facilitates** the creation of a **genuine connection** with the learners, **increasing trust and collaboration**. When learners perceive that the trainer is **genuine and sincere**, they are more likely to **open up and actively participate** in the learning process. Authenticity helps to build an environment of m**utual trust,** essential for effective training.

H. Neutrality

A good training facilitator is one who has the ability to **remain neutral** towards the learners and treats them all **equitably**, regardless of **power**, **personality**, **opinions**, **ideological positions**, and other biases. A neutral facilitator is one who does not let these characteristics affect them and treats all learners as equals.

This neutrality allows the facilitator to **guide the group impartially, promoting an inclusive, fair, and prejudice-free environment**. By maintaining neutrality, the facilitator ensures that all voices are heard and that no opinion or perspective is favoured over another.

I. Problem Solving and Decision Making

During the facilitation of a training session, the facilitator must be prepared to handle situations that **impact the normal flow of the session**. Facing a **sceptic or a troublemaker** is a matter of timing rather than the likelihood of occurrence. In such and other situations, the facilitator must be able to **solve problems quickly** and **make informed decisions** to keep the training course productive. This includes **dealing with interruptions**, **adjusting the training plan** as necessary to ensure objectives are met, and renewing the training environment.

J. Patience

Last but not least, staying patient during the training process is crucial for the training to be successful.

A trainer **should never show anger, frustration**, **demotivation or discouragement** when the training is not going as intended. Even when the learners are not participating as desired, when the comments made seem out of place, when during brainstorming no idea seems to fit, the trainer should remain calm, take a deep breath and face the setbacks with the utmost lightness and naturalness.

4.2 Being a Tutor

A training facilitator can assume **various configurations** depending on the **formative approach adopted and the pedagogical objectives**. In the context of the implementation of Industry 5.0, **the role of a tutor** appears to be the **most suitable** for ensuring that learners develop the necessary skills to navigate and thrive in this new industrial paradigm.

The role of a tutor **goes beyond** the mere **transmission of knowledge**; it involves **guiding, supporting, and motivating learners to ensure an effective, enriching, and personalized experience.**

Tutor Functions:

- **Provide training**

  Teach and train learners in the **new skills** and w**orking methods/tools required by Industry 5.0,** such as collaborative robots, big data analysis, interpersonal skills, etc.

  In this context, before the training itself begins, it is essential to **clarify the process of change.** It is important to explain the **paradigm shift**, the **reasons** behind it, the **underlying assumptions**, and **what is expected** of the employees, among other aspects. This clarification and introduction to the new organizational culture 5.0 are crucial for **demystifying preconceived notions and reducing resistance to change.**

- **Individualized Guidance**

  One of the underlying principles of Industry 5.0 is the centralization on the human being. In this sense, it is important to provide a tutor for the guidance of a learner, or a small group of learners, with a view to **personalized and adapted support** during this transition. A tutor inherently involves **tailoring methodologies** and **training resources according to individual needs.**

- **Emotional and Motivatinal Support**

  A tutor is not only focused on supporting the development of technical skills; they are also responsible for ensuring the **well-being and emotional comfort** of the learners under their care. Given the anxiety and discomfort that the introduction of new work mechanisms can bring to learners, as well as the fear of labor replacement, the tutor should strive to **reassure, empower, and motivate the learners.**

- **Active Learning and Continuous Improvement**

  In addition to facilitating the understanding and integration of advanced technologies (which are more theoretical and technical), a tutor should promote **active learning** through the development of **practical activities and involvement** in projects that encourage the development **of softer skills** and the application of the theoretical knowledge.

  The tutor should also aim to instil a **mindset of continuous learning** so that the learners, even after the training relationship has ended, continues independently to update themselves in order to keep pace with rapid technological advancements.

- **Promoting Creativity and Innovation**

  In the execution of their duties, the trainer must also encourage **creativity** and **innovation** for **identifying and solving complex problems**, **developing new products and processes**, among other things. To overcome the challenges of Industry 5.0 and remain competitive and at the forefront of knowledge, companies need **capable and proactive employees** who can **keep up** with and **anticipate** future scenarios. This requires trainers to promote an environment that fosters **experimentation** and the pursuit of **innovative solutions**, encouraging learners to develop a **mindset of continuous improvement and adaptability**. The ability to **anticipate changes** and **adapt quickly** is crucial for employees to make significant contributions to the success and sustainable growth of their organizations.

- **Feedback and Evaluation**

  A tutor should also provide **continuous feedback**, helping learners understand where they **need to improve** and **celebrating their achievements** with them. Continuous assessment, essential to the process, allows for **monitoring progress**, **offering constructive suggestions for improvement**, and adjusting teaching methodologies as necessary.

  In this way, the tutor can guarantee effective guidance, motivate learners and ensure their continuous development, adapting to their needs and promoting a positive and productive learning environment.

4.3 Tutor Tips

✓ **Understand Learners Needs:**

Identify the company's goals, individual functional gaps, training needs, and how to address them by personalizing the pedagogical approach;

✓ **Articulate Learning Objectives Explicitly:**

Articulate learning objectives precisely and clearly. This allows learners to understand the significance of each component and its contribution to the overall learning paradigm.

✓ **Establish a Trusting Relationship**

Try to create a friendly atmosphere of trust and mutual respect so that learners feel at ease with the process, believe in it, and feel comfortable expressing their doubts and concerns.

✓ **Flexibility and Adaptive Pedagogy**

Demonstrate flexibility in instructional methodologies, acknowledging the divergence in learners learning preferences and styles. Tailor tutoring approaches based on ongoing learners feedback and evolving pedagogical exigencies

✓ **Strategic Integration of Technology**

Ensure the wise utilization of technology, guaranteeing its seamless integration into the educational sphere. Provide guidance on navigating and utilizing online tools effectively for an enhanced learning experience.

By assiduously adhering to these principles and fulfilling the above functions, it is possible to **orchestrate a pedagogically sound and engaging learning experience**.

5. The New Learner Profile

The new learner profile reflects the **changes in society** and, consequently, the **evolving educational needs** and **competencies required** in the modern and digitally interconnect world.

This profile includes several fundamental characteristics that should be considered when defining the training strategy and implementing the educational program:

a) **Digital Proficiency**: New learners are proficient in the use of digital technologies and online platforms. They use all kinds of social networks and virtual collaboration tools to seek information and communicate. This constant digital presence demands that educators adopt an interactive, dynamic, and agile approach.

b) **Constant Exposure to Stimuli:** Due to the numerous stimuli the new learner community is exposed to, educators are required to use active, dynamic, and innovative learning methodologies.

c) **Awareness for the Development of Soft Skills:** With the growing investment in training in behavioural areas, modern learners are beginning to show critical thinking skills and the ability to solve problems and conflicts. They are becoming capable of independently researching, analysing, evaluating, and synthesizing information efficiently, applying these skills to later resolve conflicts in various areas. Additionally, new learners are quite innovative and creative, with their ability to think outside the box being a recognized competence.

d) **Collaboration and Communication:** New learners are proponents of collaborative and team work. They prefer to work in networks on interdisciplinary projects, making individual dynamics unappreciated, even demotivating and ineffective. Along with these plural dynamics, communication is also a highly refined skill.

e) **Global Awareness, Intercultural Sensitivity, and Sustainability:** The new learner community operates in a global context, being very aware and conscious of all issues related to interculturality and sustainability. They place great importance on sustainable practices and the promotion of equality, justice, and social inclusion.

6. Skills to be encouraged

In the current labour landscape, characterized by rapid technological evolution and the growing need for innovation, and in light of the challenge of introducing Industry 5.0 in the industrial sector, the **development of transversal skills** has become essential to ensure the competitiveness and success of organizations. According to the **World Economic Forum (WEF) Future of Jobs Report 2023**, the most sought-after skills by employers for this decade include **critical thinking, complex problem-solving, and creativity and digital literacy.**

These skills are crucial not only to **face the challenges of digital transformation** but also to **seize the opportunities offered by new technologies**. As these skills enable professionals to **tackle complex problems**, **make informed decisions**, and innovate continuously, they are highlighted as top training trends for the next five years, according to the **WEF Future of Jobs Report 2023**.

The qualification of workers in these skills aligns with the principles of Industry 5.0, which **aims for personalized and creative workplaces** where employees feel comfortable consciously contributing their input.

6.1 Problem Solving

Problem-solving refers to the ability to **identify**, **analyse**, and **resolve issues** in an **effective and efficient manner**. It encompasses a series of stages, beginning with the **recognition and accurate framing of the problem**, followed by the **development of potential solutions.** This process continues with the **evaluation and selection of the most viable**

alternatives, the **implementation of the chosen solution**, and culminates in the **assessment of the solution's effectiveness.**

In Industry 5.0, problem-solving assumes a crucial role due to the **increasing complexity of processes** and the **integration of advanced technologies**. The ability to **solve problems quickly** and **creatively** is vital in business environments where **constant change is the norm**, and where the need for employees to deal with disruptions is a daily reality. A structured approach to problem-solving not only helps to **avoid resource waste** but also enables the **development of sustainable solutions** that can be **adapted and scaled as needed.**

Strategies to Encourage Problem-Solving

- **Design Thinking Method**

One of the most effective approaches to problem-solving is Design Thinking. This method involves five stages: empathy, definition, ideation, prototyping, and testing. During the empathy stage, learners are encouraged to deeply understand the needs and challenges of a particular situation. In the definition stage, the problem is clearly identified and articulated. In the ideation stage, efforts are focused on generating innovative and creative ideas to solve the identified problem. During the prototyping stage, simple and functional models of the proposed solutions are developed, which are then tested in the final stage. This iterative cycle promotes continuous innovation and the improvement of proposed solutions.

- **Use of Problem Analysis Tools**

There are numerous problem analysis tools that aid and enhance the skill of problem-solving, namely Root Cause Analysis (RCA), the 5 Whys Presentation, and the Ishikawa Diagram. Root Cause Analysis (RCA) helps identify the underlying causes of a problem, allowing for a more targeted and effective approach to its resolution. The 5 Whys technique involves repeatedly asking "why?" until reaching the root cause of the problem, promoting a deeper understanding of its origins. The Ishikawa Diagram, also known as the fishbone diagram, visualizes the potential causes of a problem, helping to systematically organize and analyse information.

- **Facilitating Experiential Learning Environments**

To promote problem-solving in a practical and engaging manner, considering the existing technological accessibility, it is essential and recommended to create experiential learning environments. This can be achieved through training with interactive components such as educational games, simulation scenarios, and innovation labs. Tools like Augmented Reality (AR) and Virtual Reality (VR) are particularly effective in providing learners with practical and concrete experience in solving real-world problems. These environments allow learners to experiment, fail, and learn in a controlled setting, better preparing them to face challenges in the real world.

6.2 Critical Thinking

In line with problem-solving and informed decision-making, critical thinking emerges as a fundamental skill. In a world where the amount of available data is endless, the ability to **filter relevant information**, **analyse it critically**, and **make data-based decisions** has become increasingly valuable. To encourage the development of critical thinking, it is important to **create environments that stimulate analysis and reflection.**

Promoting debates and **relevant discussions on a specific topic** is one of the most effective methods for fostering critical thinking. During these sessions, in a **judgment-free environment**, learners should be encouraged to **present evidence-based arguments** and **constructively question** others' ideas. This process not only strengthens the **ability to think critically** but also improves **learners' communication and argumentation skills**. Structured debates can help develop an **open and analytical**

mind, where learners learn to consider **multiple perspectives** before reaching a conclusion.

Another effective strategy is the use of **case studies**. By **analysing real cases**, **learners are challenged** to apply their **critical thinking skills** to **evaluate different scenarios** and **propose solutions based on data and evidence.** This method provides **practical and contextualized experience,** helping learners **develop a deeper understanding** of the complexities involved in real-world decision-making.

Additionally, creating an **organizational culture of questioning and curiosity** is fundamental. Encouraging learners to **ask questions** and **seek to understand the "why"** behind facts, procedures, and results can stimulate a more investigative and critical approach. Tools like the "5 Whys" technique, previously mentioned, which involves repeatedly asking "why?" until reaching the root cause of a problem, can be particularly useful in this context.

The **implementation** of advanced technologies such as **augmented reality (AR)** and **virtual reality (VR)** can once again **enrich the learning environment.**

6.3 Creativity

Creativity is a crucial skill in Industry 5.0. The ability to **generate new and useful ideas**, **think outside the box**, and **find innovative solutions** is vital to maintaining **competitiveness** and **relevance** in the market.

Creativity not only facilitates the **resolution of complex problems** but also promotes a **stimulating and collaborative work environment**. Companies that **encourage creativity** tend to be more **agile, adaptable, innovative,** and **capable of responding quickly** to **market changes** and **customer needs**. Additionally, creativity can lead to the

development of new products, **services,** and **processes**, **generating value** for all stakeholders

To foster creativity, it is essential to **use innovative pedagogical techniques**, **implement advanced technologies**, and **create work environments** that stimulate **innovation** and allow employees to **explore new ideas** without fear of failure.

In the realm of using innovative pedagogical tools, **design thinking**, **brainstorming**, and **mind mapping** prove to be invaluable. **Brainstorming** is a technique aimed at **generating a large number of ideas** in short periods of time. **Mind maps** help **visually organize ideas** and reveal the connections between concepts and facts.

The **use** of advanced technologies such as **AR** and **RV** can create **highly realistic immersive learning environments** that **stimulate creativity** without the risks associated with real-world experimentation. In this context, the use of online project management platforms can also facilitate creative collaboration among training or work teams.

Creativity not only **enhances effectiveness and innovation,** promoting market differentiation, but also improves employee satisfaction and well-being.

6.4 Digital Literacy

Digital literacy or **digital proficiency** is also one of the most relevant and valued skills in today's job market. According to the **"Future of Jobs 2023"** report by the World Economic Forum (WEF), digital literacy refers to the ability to **effectively use and interact** with digital technologies, while understanding **their impact on work processes and decision-making.** This encompasses skills that go **beyond the simple use of**

technological devices, including **understanding how these technologies work,** their **applicability** in daily tasks, their **impact** on professional activities, and their **ethical and responsible** use.

In the context of Industry 5.0, digital literacy takes on even greater importance, as the **integration of technology with human intervention** becomes increasingly central. Key elements of this competence include:

- **Use of Digital Tools and Software:**

Proficiency in the use of digital tools such as management software, collaboration platforms, and industry-specific applications is essential to optimize processes and ensure efficiency.

- **Understanding Artificial Intelligence (AI) and Automation:**

With automation and AI playing an increasingly significant role, people must be able to collaborate with these technologies, understand their mechanisms, and use them to improve organizational performance.

- **Cybersecurity**:

Digital literacy also involves understanding good practices in cybersecurity. With the rising number of digital threats, it is crucial for professionals to know how to protect sensitive information and follow appropriate procedures to mitigate risks.

- **Data Management:**

As big data and data analysis continue to expand, the ability to collect, interpret, and apply insights from digital data is a critical skill for making informed decisions.

In **Industry 5.0**, where collaboration between humans and machines is enhanced to **create personalized** and **sustainable solutions**, digital literacy is fundamental for driving **efficiency, innovation**, **and growth.** To foster this competence, are recommended:

- **Practical workshops** on new digital tools and technologies.

- **Simulations and immersive learning environments** using technologies such as Virtual Reality (VR) and Augmented Reality (AR), allowing trainees to practice with cutting-edge technologies in a safe environment.
- to ensure that professionals stay updated with the latest technological innovations.

7. What you (the trainers) can find in Shoe5.0 learning materials?

The Shoe 5.0 project focuses on developing **relevant training content** to enhance competencies, facilitating the integration of Industry 5.0 concepts in the footwear industry. The project aims to empower workers, managers, and SME leaders with knowledge to **implement new technologies, processes, and systems for optimal company performance**, advancing sustainability and efficiency.

Taking into account these objectives and the diversity of professional profiles within this sector, a set of 15 **Units of Learning Outcomes (ULOs)** has been designed, which are grouped into training paths based on the professional profile that each user currently holds or aims to occupy.

Before diving into the personalized training plan, we present the ULOs (Units of Learning Outcomes) that trainers can find in the training program proposed by the project:

Unit of Learning Outcomes Designation (ULOs)

1. Management of Human Resources for Industry 5.0
2. Programming using Block Language
3. Big Data in Footwear Industry 5.0
4. Networking & Coworking
5. Product Traceability & Supply Chain for Industry 5.0
6. Artificial Intelligence (AI) in Footwear Industry 5.0
7. Manufacturing i5.0
8. Co-innovation 5.0
9. Corporate Social Responsibility for Footwear Industry 5.0
10. Ergonomics and Digital Anthropology
11. Bio-Inspired Materials and Technologies
12. Wellbeing in Industry 5.0
13. Circular Design, Smart Materials and Innovative Processes in Footwear Industry 5.0
14. Management for Technological Changes
15. Ultra and Mass Customization

Figure 9 – ULOs Designation

Each ULO is divided into 4/5 lessons. Each lesson portrays a micro-content associated with the main content and appears in the form of presentations.

ULO 1 - Management of Human Resources for Industry 5.0 **L1.1** People Management in the Age of Innovation **L1.2** Communication and Empathy **L1.3** Emotional Intelligence **L1.4** Problem Solving **L1.5** Leadership in Industry 5.0	**ULO 2 - Programming using Block Language** **L2.1** Introduction to SNAP! **L2.2** Work with Projects **L2.3** SNAP! Exercises **L2.4** Block Programming in the Footwear Industry: Practical Example and Applications
ULO 3 – Big Data in Footwear Industry 5.0 **L3.1** Introduction to Big Data Analytics for Footwear Industry 5.0 **L3.2** Data-driven Awareness in Consumers' Preferences **L3.3** Big Data Analytics in Footwear Industry 5.0 and Sustainability **L3.4** Big Data Analytics in Footwear Industry 5.0 and Production Optimization	**ULO 4 – Networking and Coworking** **L4.1** The Importance of Relationships **L4.2** Introduction to Networking **L4.3** Explore the Coworking **L4.4** Meeting Management

L3.5. Big Data Analytics and Supply Chain Management	
ULO 5 – Product Traceability & Supply Chain for Industry 5.0 **L5.1** Introduction to Traceability and Sustainability in the Footwear Industry **L5.2** Traceability Technologies in the Footwear Industry **L5.3** Sustainable Supply Chain Management **L5.4** Sustainability Practices in Footwear Production **L5.5** Informed Decision-Making and the Future of the Footwear Industry	**ULO 6 – Artificial Intelligence (AI) in Footwear Industry 5.0** **L6.1** Introduction to Artificial Intelligence (AI) **L6.2** Artificial Intelligence (AI) in Footwear Design and Prototyping **L6.3** Artificial Intelligence (AI) Application in Footwear Production Processes **L6.4** Application of Artificial Intelligence (AI) in Business Models
ULO 7 – Manufacturing i5.0 **L7.1** Introduction to Manufacturing 5.0 **L7.2** Digitalisation and Internet of Things in Manufacturing **L7.3** Energy Efficiency in Manufacturing **L7.4** Lean Robotics and Collaborative Robotics	**ULO 8 – Co-Innovation 5.0** **L8.1** Paving the Way for Co-Innovation **L8.2** Open-Source Resources **L8.3** Identify Collaboration Challenges between companies, sector, industries **L8.4** Apply Collaboration Tools and Techniques
ULO 9 – Corporate Social Responsibility for Footwear Industry 5.0	**ULO 10 – Ergonomics and Digital Anthropology** **L10.1** Introduction to Ergonomics and Workplace Design

L9.1 Introduction to CSR for Footwear Industry 5.0 **L9.2** Ethical Considerations in Footwear Industry 5.0 **L9.3** Transparency Considerations in Footwear Industry 5.0 **L9.4** Openness, Collaboration, and Responsible Innovation **L9.5** Integration of CSR in Organizational Practices	**L10.2** Digital Anthropology and Work-Related Digital Interactions **L10.3** Technology Integration and Human-Centred Work Environments **L10.4** Culture of Occupational Health and Safety in Footwear Manufacturing
ULO 11 – Bio-Inspired Materials and Technologies **L11.1** Introduction to Bio-Inspired Materials & Technology in Footwear Industry **L11.2** Biomimetic Design **L11.3** Bio-Inspired Materials for Footwear **L11.4** Bio-Based Materials and Bio-Inspired Structures for Footwear Components **L11.5** Biomimetic Advanced Technologies in Footwear Manufacturing	**ULO 12 – Wellbeing in Industry 5.0** **L12.1** Wellbeing at Work **L12.2** Physical Wellbeing **L12.3** Psychological Wellbeing **L12.4** Emotional Wellbeing
ULO 13– Circular Design, Smart Materials and Innovative Processes in Footwear Industry 5.0. **L13.1** The Environmental Impact of the Footwear Industry	**ULO 14– Management for Technological Changes** **L14.1** Introduction to Industry 5.0 and Its Impact on Footwear

L13.2 Circular Design **L13.3** Introducing Smart Materials in Footwear Production **L13.4** Introduction of Innovative Processes in the Footwear Sector	**L14.2** Assessment and Adoption of Technologies in the Footwear Sector **L14.3** Leadership in Footwear Digital Transformation **L14.4** Best Practices and Innovation Culture in the Footwear Industry
ULO 15– Ultra and Mass Customisation **L15.1** Introduction to Product Mass and Ultra-Customisation **L15.2** Technologies for Ultra-Customisation **15.3** Artificial Intelligence for Customisation **15.4** Automation and Robotics for Customisation	

Figure 10 - Composition of the ULOs

Each of these ULOs has the following supporting materials:

- **4/5 presentations** (the number varies depending on the number of lessons) – theoretical exposition of the content;
- **Explanatory videos** – these videos, created with Artificial Intelligence, aim to present each ULO and briefly cover the content addressed within them. There is a video for each ULO;
- **Infographics** – Schematic visual representations of the ULOs' content. There´s na infographic per ULO;
- **Knowledge validation exercises**– at the end of each ULO, users will find exercises to validate the knowledge acquired. These exercises include Augmented Reality for a more immersive and realistic experience.

These 15 ULOs were designed considering an intensive study, conducted during the initial phase of the project, on the European Footwear Sector, where the current and future **footwear workforce professional profiles** were analysed, as well as the respective **training needs** for the correct and effective implementation of Industry 5.0.

The following **training paths** emerged from the cross-checking of information between the profiles identified and the ULOs:

Footwear Technical Manager

- ULO 1- Management of Human Resources for Industry 5.0
- ULO 4 - Networking and Coworking
- ULO 7 - Manufacturing
- ULO9 - Corporate Social Responsibility for Footwear Industry 5.0
- ULO 14 - Management for Technological Changes

Footwear Manufacturing Operator

- ULO 7 - Manufacturing i5.0
- ULO 14 - Management fot Tecnhological Changes

Footwear Designer / Pattern Maker

- ULO 5 - Product Traceability & Supply Chain for Industry 5.0
- ULO 6 - Artificial Intelligence (AI) in Footwear Industry 5.0
- ULO 8 - Co-innovation 5.0
- ULO 11 - Bio-Inspired Materials and Technologies
- ULO 13 - Circular Design, Smart Materials and Innovative Processes in Footwear Industry 5.0
- ULO 15 - Ultra and Mass Customisation

Maintenance Technician

- ULO 2- Programming using Block Language
- ULO 3 - Big Data
- ULO 7 - Manufacturing

I5.0 Footwear Architect

- ULO 2- Programming using Block Language
- ULO 3- Big Data
- ULO 4 - Networking and Coworking
- ULO 5 - Product Traceability & Supply Chain

Alongside these training paths, it may also be relevant for the profiles identified to complement the pre-defined training with the following ULOS:

Footwear Technical Manager

- [ ] ULO 6 - Artificial Intelligence (AI) in Footwear Industry 5.0
- [ ] ULO 10 - Ergonomics and Digital Anthropology
- [ ] ULO 12 - Wellbeing in Industry 5.0

Footwear Manufacturing Operator

- [ ] ULO 4 - Networking and Coworking
- [ ] ULO 6 - Artificial Intelligence (AI) in Footwear Industry 5.0
- [ ] ULO 10 - Ergonomics and Digital Anthropology
- [ ] ULO 12 - Wellbeing in Industry 5.0

Footwear Designer / Pattern Maker

- [ ] ULO 4 - Networking and Coworking
- [ ] ULO 7 - Manufacturing i5.0
- [ ] ULO 9 - Corporate Social Responsibility for Footwear Industry 5.0
- [ ] ULO 10 - Ergonomics and Digital Anthropology
- [ ] ULO 14 - Management for Technological Changes

Maintenance Technician

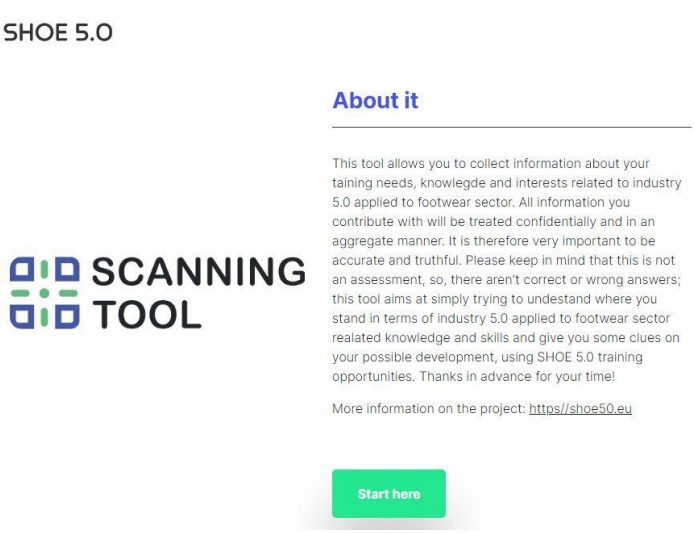
- [ ] ULO 4 - Networking and Coworking
- [ ] ULO 6 - Artificial Intelligence (AI) in Footwear Industry 5.0

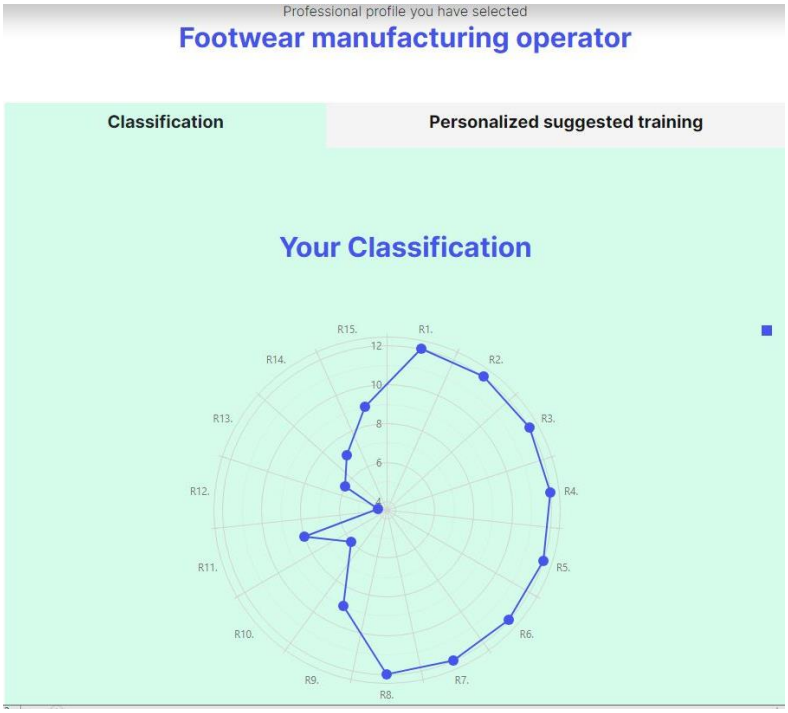
I5.0 Footwear Architect

- [ ] ULO 1 - Management of Human Resources for Industry 5.0
- [ ] ULO 10 - Ergonomics and Digital Anthropology
- [ ] ULO 11 - Bio-Inspired Materials and Technologies
- [ ] ULO 13 - Circular Design, Smart Materials and Innovative

In order to further customize training to learners' real needs, users of the project's materials also have at their disposal a tool for diagnosing training needs, the **Scanning Tool.**

This tool allows users to collect information on their training needs, knowledge and interests. Once the questionnaire has been completed, the user will have access to a **spider graph** showing their level of knowledge on the subjects in question and a **suggested training path.**





Your personalized suggested training

Training essential for the selected profile

Management for Technological Changes

Training very recommended for the selected profile

Ergonomics and Digital Anthropology
Wellbeing in Industry 5.0

Training will complement already existing skills

Networking & Coworking
Artificial Intelligence (AI) in Footwear Industry 5.0
Manufacturing i5.0

Training will complement already existing skills

Networking & Coworking
Artificial Intelligence (AI) in Footwear Industry 5.0
Manufacturing i5.0

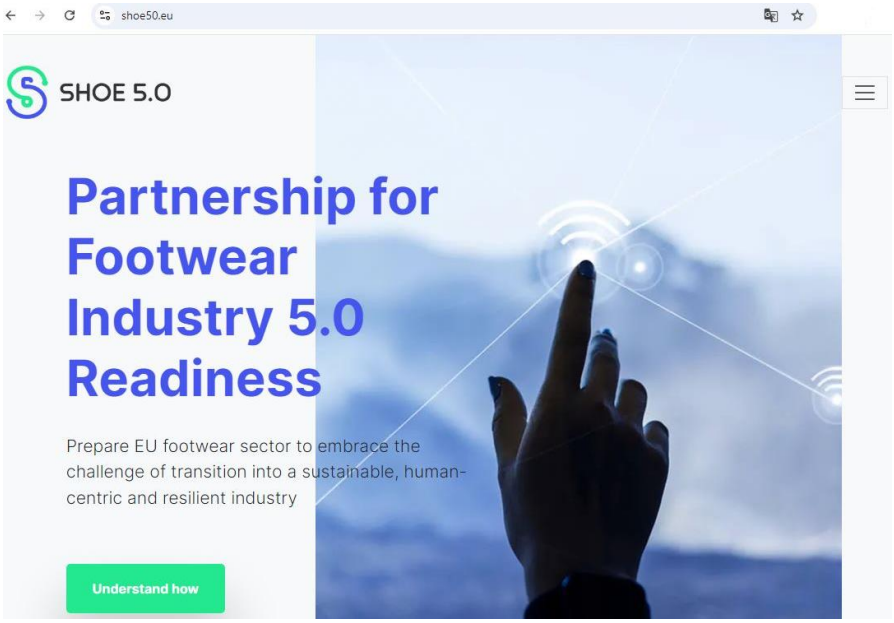
Not relevant for the selected profile

Management of Human Resources for Industry 5.0
Programming using Block Language
Big Data in Footwear Industry 5.0
Product Traceability & Supply Chain for Industry 5.0
Co-innovation 5.0
Corporate Social Responsibility for Footwear Industry 5.0
Bio-Inspired Materials and Technologies
Circular Design, Smart Materials and Innovative Processes in Footwear Industry 5.0
Ultra and Mass Customisation

Nevertheless, trainers and students can access ULOS other than those suggested in the pre-designed training plan if they wish to acquire and/or improve their knowledge in other areas of competence.

These are all learning materials that the trainer can use to provide personalised training to the project's various target audiences.

All the information about the project and its contents, **Study on Industry 5.0 Applied to the Footwear Industry In Europe; Key Profiles For Future Footwear Industry Workforce; Scanning Tool and Unit Of Learning Outcomes ULOS** (full training materials (lessons, artificial intelligence videos, infographics and AR exercises)) can be found on the official project website https://shoe50.eu/



8. Assessment and Training Evaluation

In order to assess the content covered in the ULOs, challenges were designed using Augmented Reality. Below is a description of the assessment tools:

ULO	AR EXERCISE TYPE	OBJECTIVE
ULO 1 – Management of Human Resources for I.5.0	Complete Sentences	To solve the exercise, the trainee will have to correctly complete the sentences presented with the options provided.
ULO 2 - Programming using Block Chain	Puzzle	To complete the exercise, participants need to programme using blockchain, coding for Loop with If else condition and print command.
ULO 3 - Big Data in Footwear I.5.0	Decision Making	There will be factory operators at their workstations, and using information associated with demand, trends and big data, they will have to decide which of the 5 possible shoes to produce, controlling production based on big data.

ULO 4 - Networking & Coworking	Quiz - multiple choice	In a production scenario with problems in the water pipe network, participants will have to answer the displayed questions correctly in order to retain the maximum amount of water.
ULO 5- Product Traceability & Supply Chain for I.5.0	Quiz- multiple choice	To finish the exercises, participants have to choose the right options
ULO 6 - Artificial Intelligence in Footwear I.5.0	Correspondence	In a production scenario, there will be 3 groups: Humans, Machines and Both. The participant will have to associate with each of these groups the tasks that can be carried out by each of them.
ULO 7 - Manufacturing I.5.0	Correspondence	A collaborative robot will be presented to the user, who will have to identify its main parts
ULO 8 - Co-Innovation I.5.0	Correspondence	Given a scenario/map of an industrial area inhabited by companies from different industrial sectors, and through exposure to various problems, the student should be able to identify opportunities for co-creation and identify practices that can help/contribute to solving the problem.

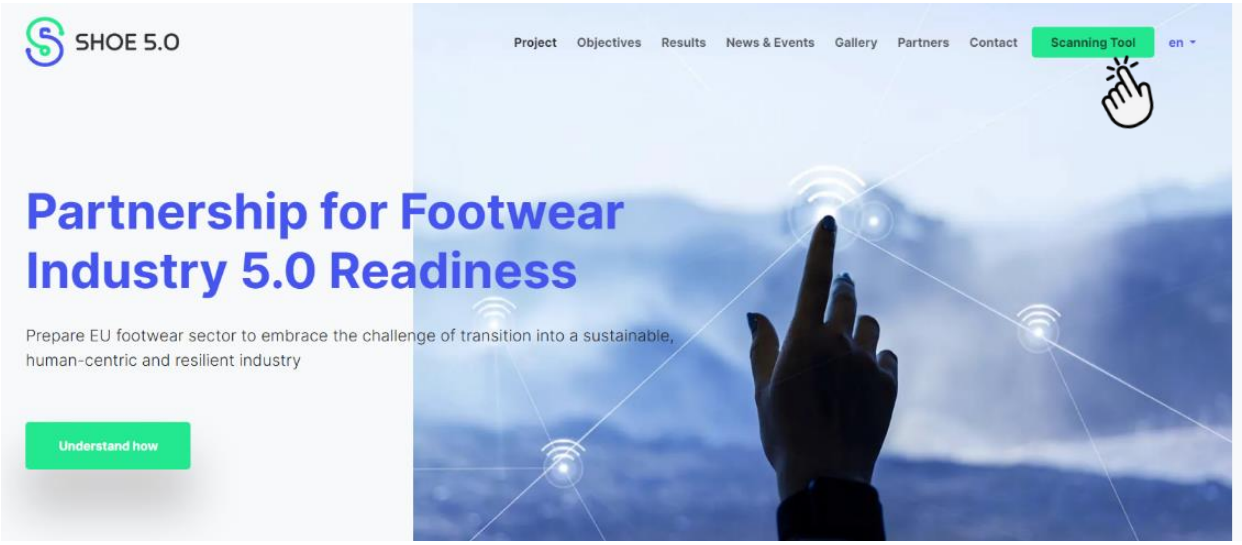
ULO 9 - Corporate Social Responsibility for F.I. 5.0	Decision Making	The user will be exposed to various issues to which they will have to respond from the point of view requested: environmental, ethical, philanthropic and economic responsibility.
ULO 10- Ergonomics and Digital Anthropology	Decision Making	Faced with a workstation, the user must select the objects that enhance the ergonomics of the workplace.
ULO 11 - Bio-Inspired Materials and Technologies in F. I. 5.0	Memory Card game	A number of products/materials will be presented to the user, to which he will have to associate the source of inspiration.
ULO 12 - Wellbeing in I.5.0	Correspondence	Three groups will be identified: Psychological Wellbeing, Emotional Wellbeing and Physical Wellbeing. Attitudes and objects will appear which the user has to associate as contributing to one of the 3 dimensions of wellbeing.
ULO 13 - Circular Design, Smart Materials and Innovative Processes in F.I. 5.0	Quiz - multiple choice/true/false	In a shoe production scenario, users will have to respond appropriately to the questions that will appear to charge the environmental battery.

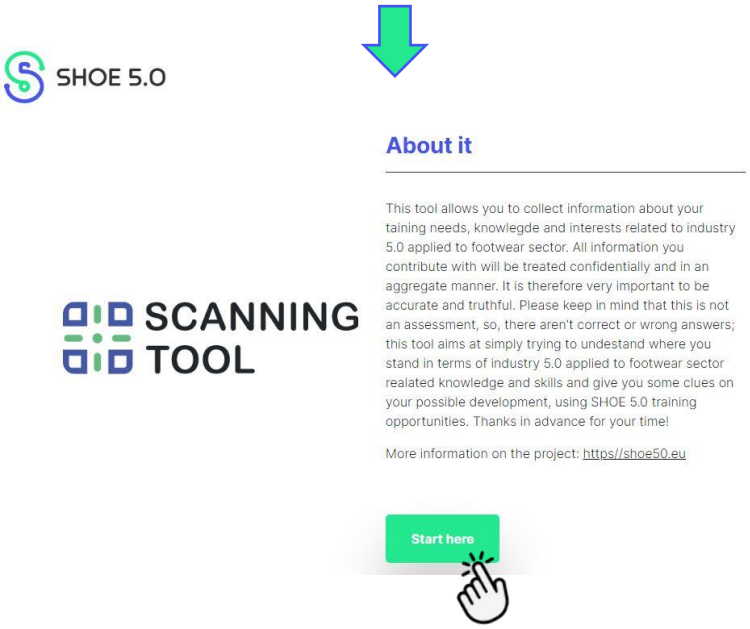
ULO 14 - Management for Technological Changes	Decision Making	The aim of the activity is to make the right decisions to ensure that the factory works correctly. If decisions are made that are harmful to the company, problems will arise in its operation.
ULO 15 - Ultra and Mass Customisation	Sliding Puzzle	The aim of the activity is to customise shoes according to the conditions presented.

9. How to access the Training Package

The first stage of the Shoe 5.0 training process, as previously mentioned, is the Scanning Tool. To begin the training journey, participants must access the Shoe 5.0 website and diagnose their trainee profile and training needs using the Scanning Tool.

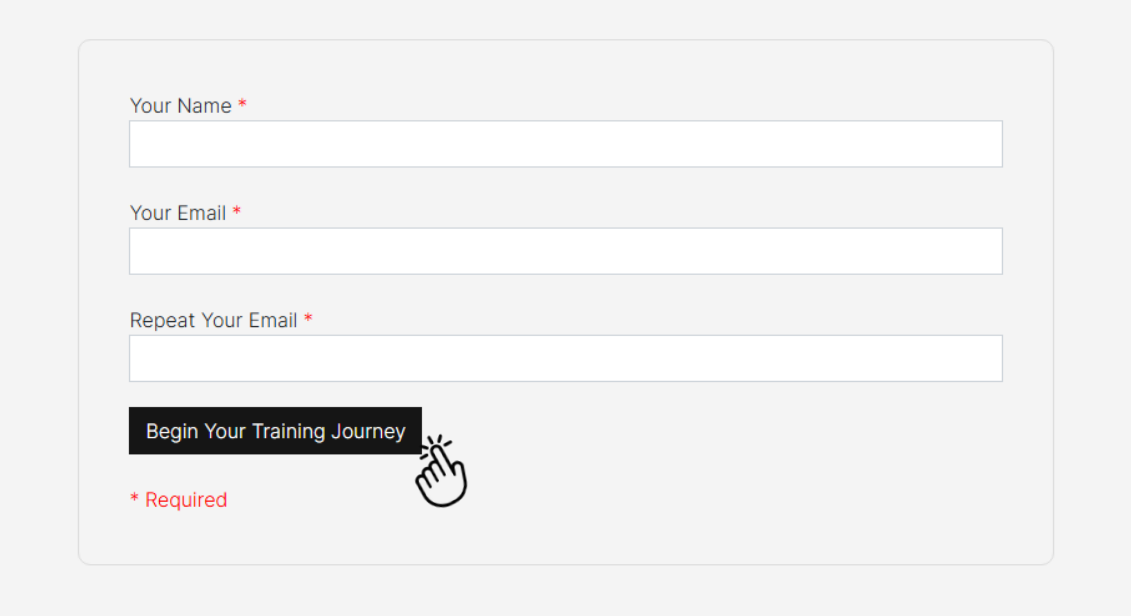
1º Step: Scanning Tool





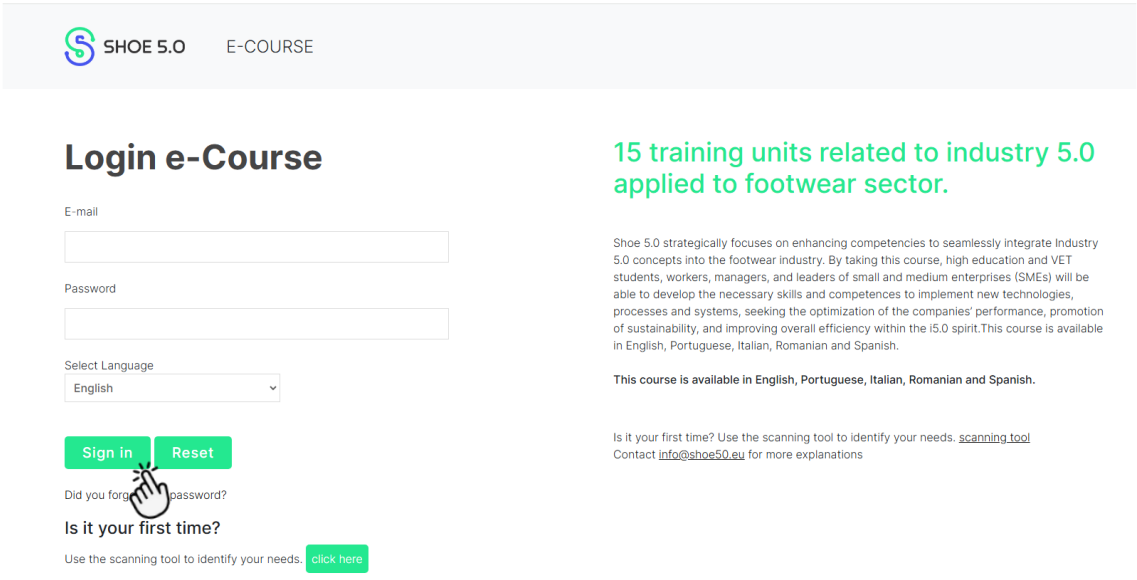
At the end of the diagnosis, and after the presentation of the training pathway, each trainee is required to register on our training platform using a Registration Form:

2º Step: Registration Form



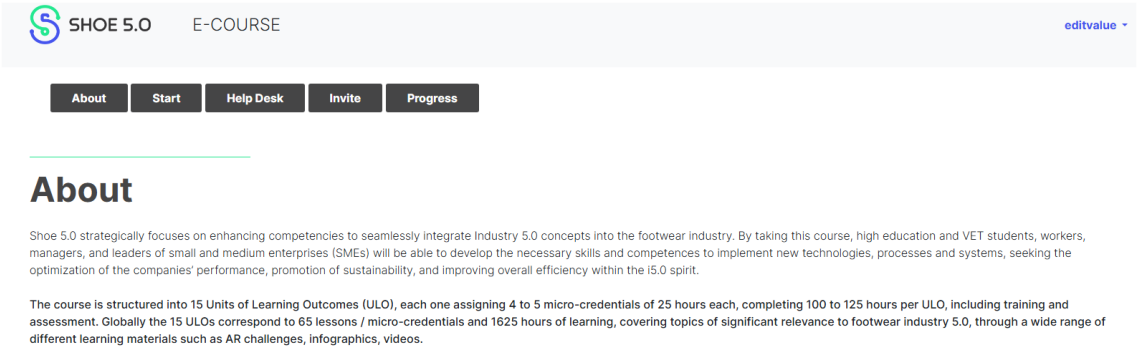
After registration, an activation and profile confirmation link will be sent to the email provided. The trainee must click on the link and access his/her profile, logging in with their credentials.

3º Step: Login



We highlight that if a participant accesses this section initially, they will be invited to complete the Scanning Tool to ensure all required steps are followed.

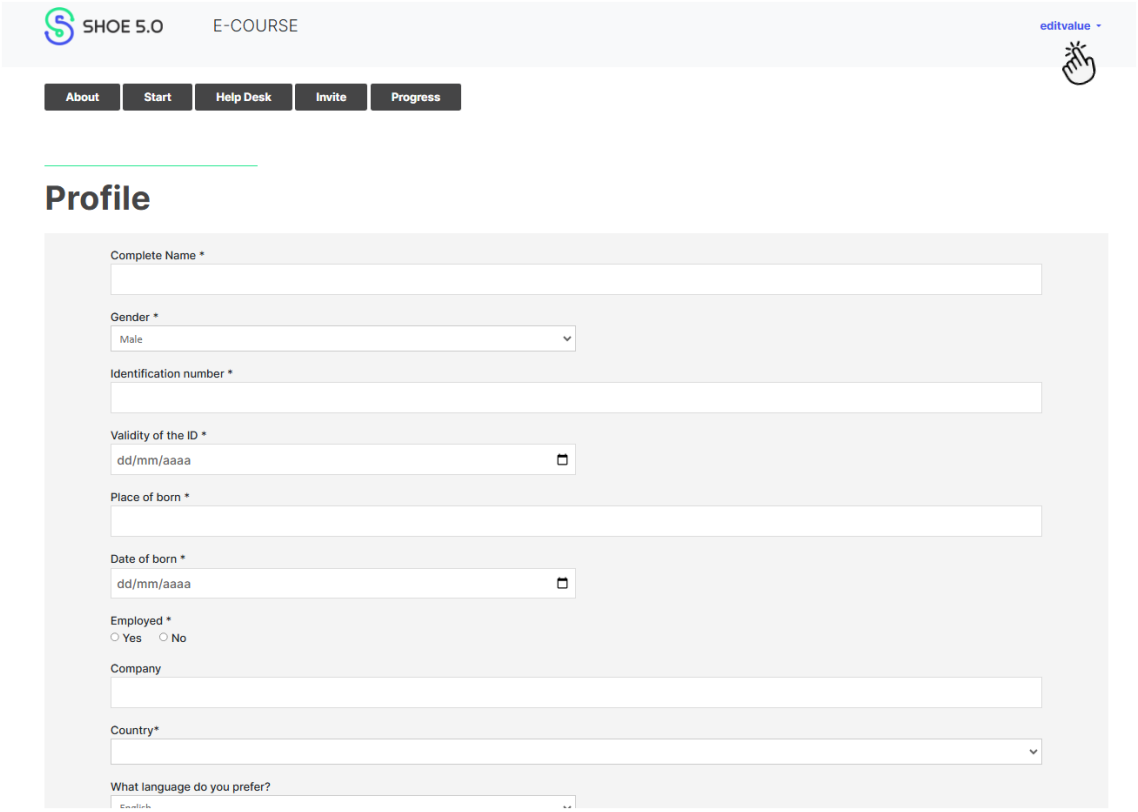
4º Step: Exploring



After logging into their profiles, trainees will have access to a homepage with all the platform's features:

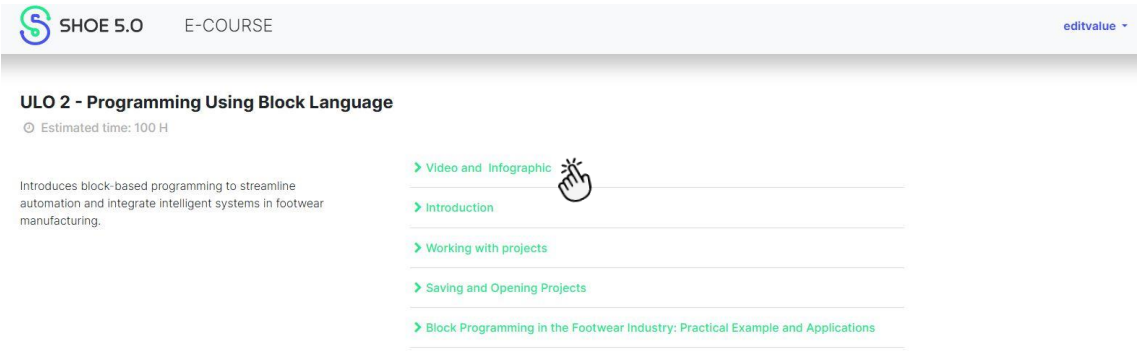
- Home - displays general information about the project and the training content;
- Start – contains the training materials;
- Help Desk – includes contact details for reporting system anomalies, bugs or requesting training support;
- Invite – allows participants to invite others to join the Shoe 5.0 training program;
- Progress – enables participants to track their training progress

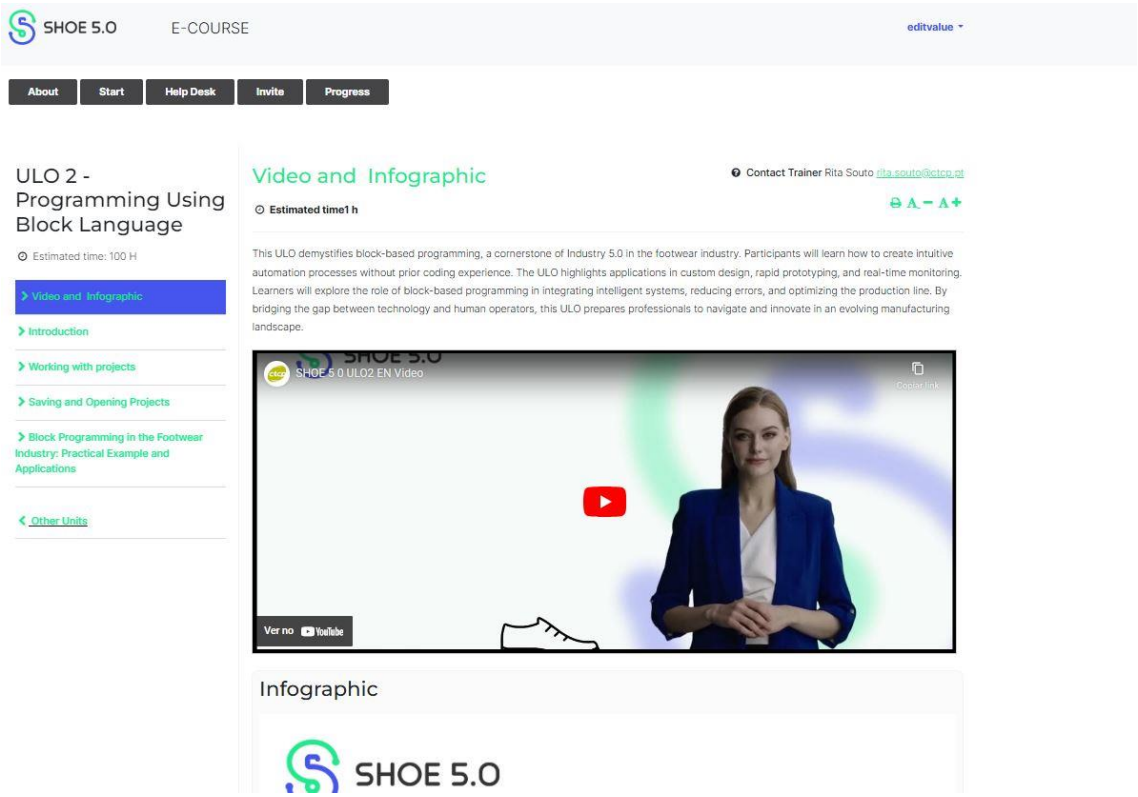
At any time, participants can access their profile to complete or update their information:



5º Step: Execute the Content

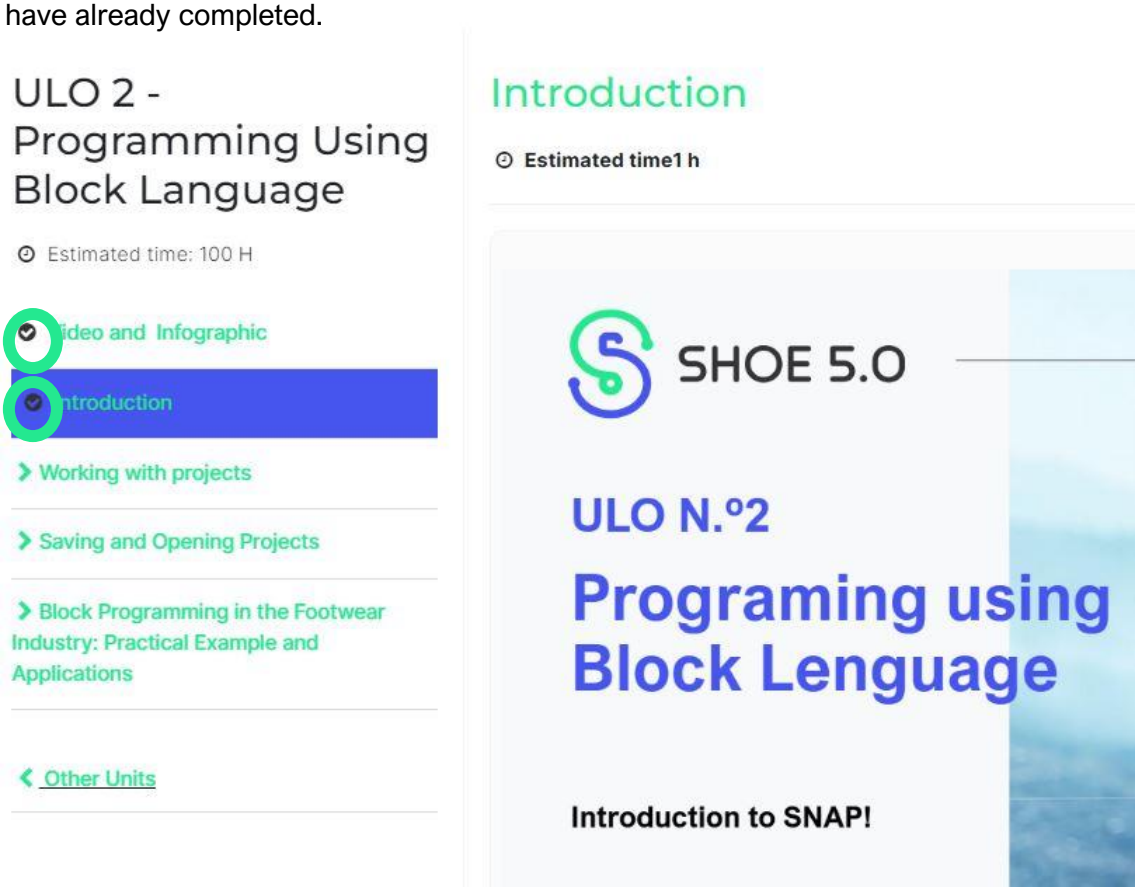
To execute the content, trainees must access the 'Start' tab, where they will find all the ULOs with their respective Lessons, Summary Infographics and AI-generated Summary Videos.

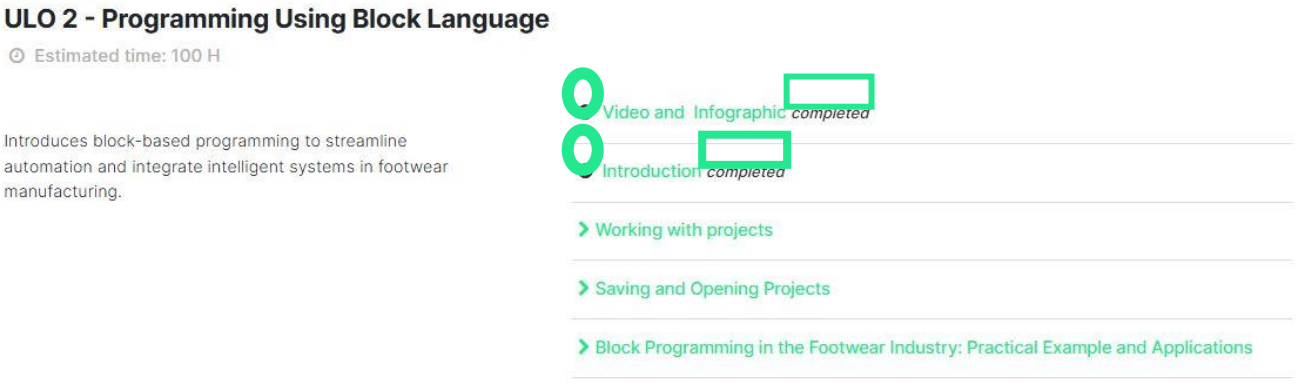


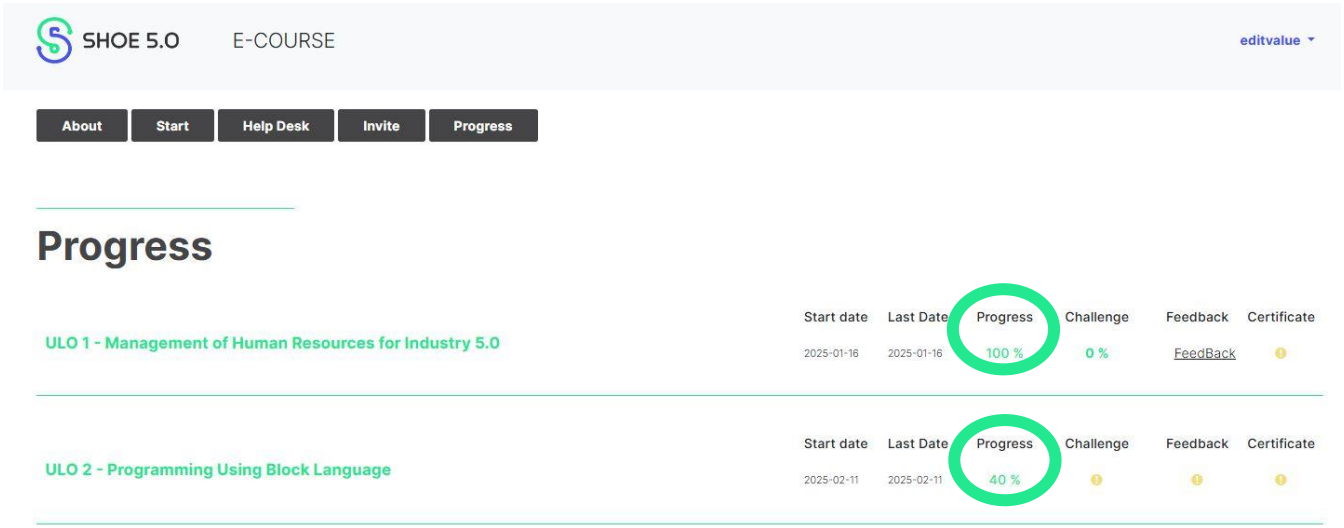


As the trainees complete the reading of the lessons, they are required to confirm completion to record their progress.

By recording progress, participants can always keep track of the training content they have already completed.

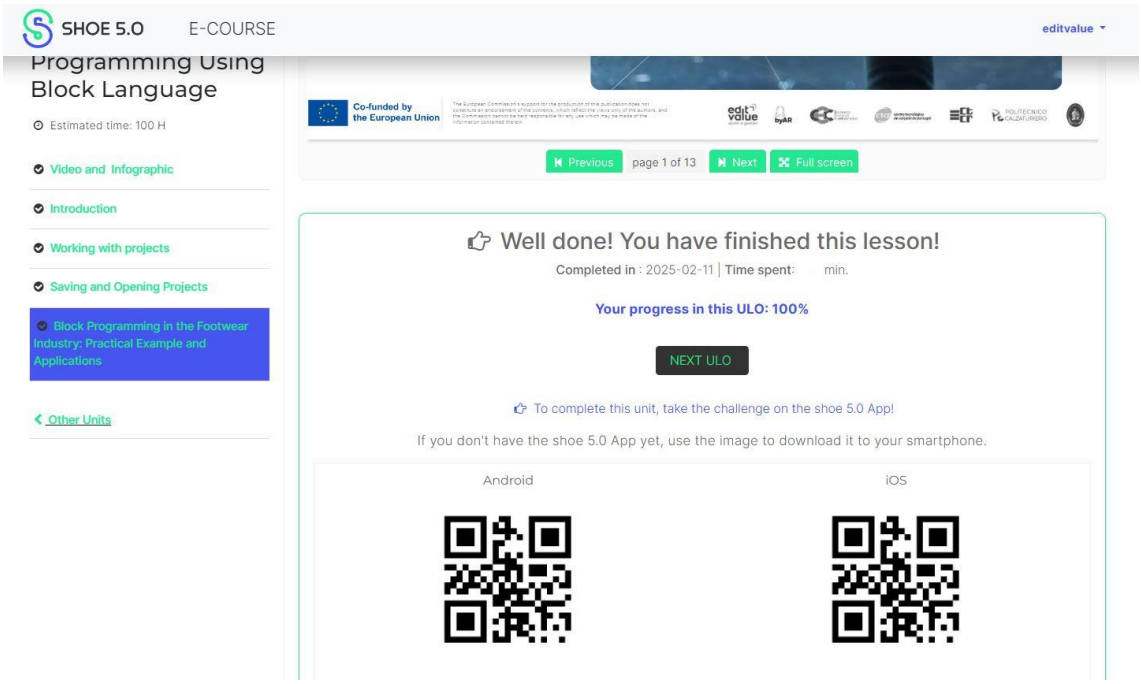




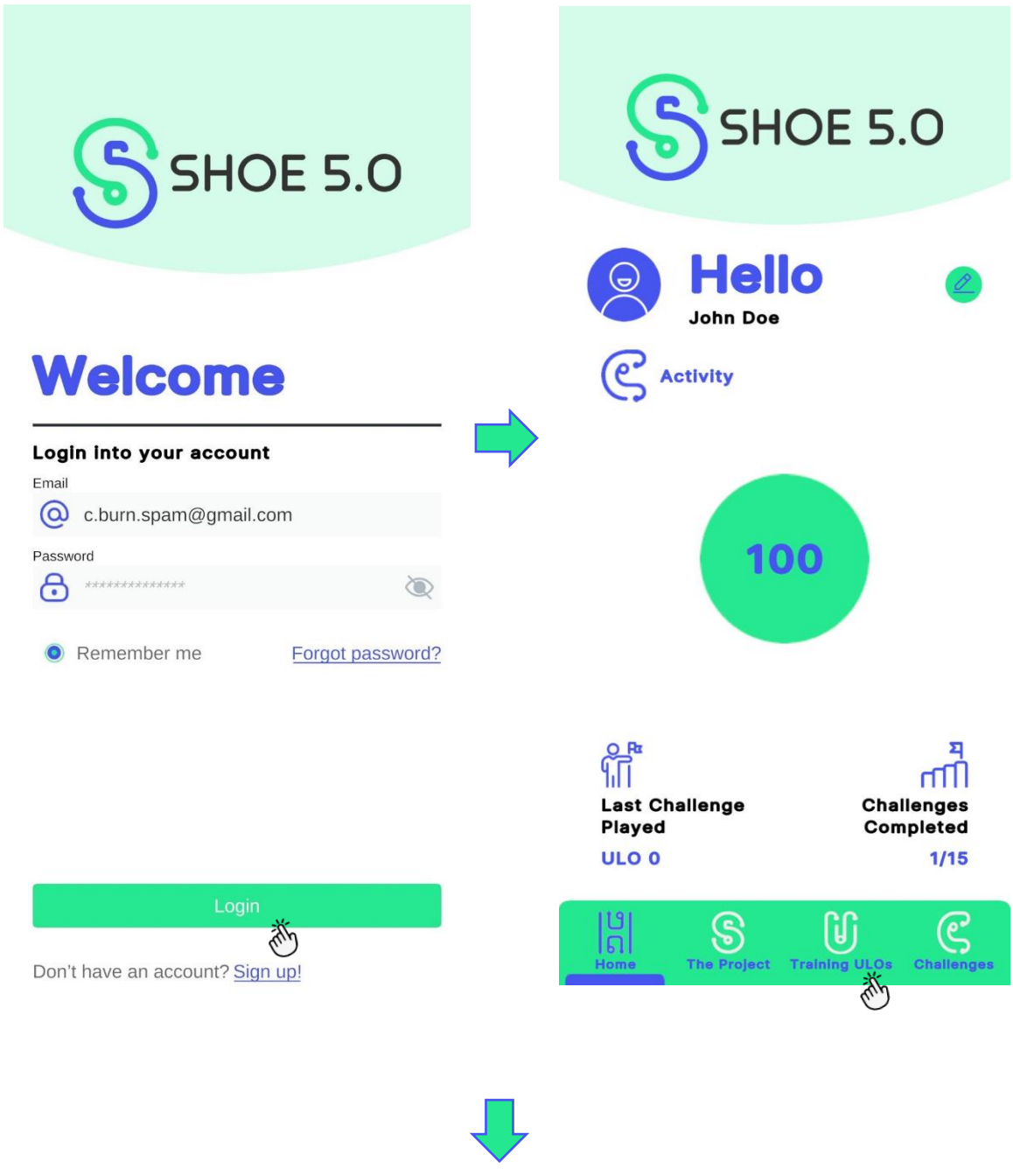


6º Step: Complete the Exercises

After reading all the content, the trainees are invited to test the acquired knowledge through augmented reality exercises. To do so, participants must install the application available on the QR code at the bottom of the last lesson's page



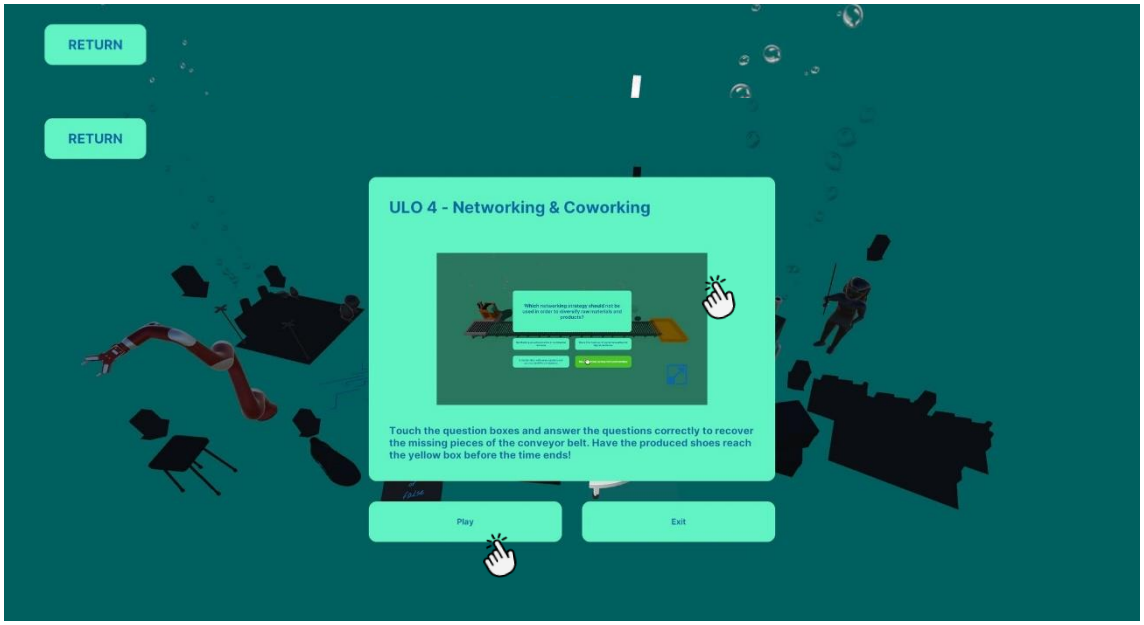
Once the application is installed (available for iOS and Android), participants are required to log in using the same credentials as the platform.

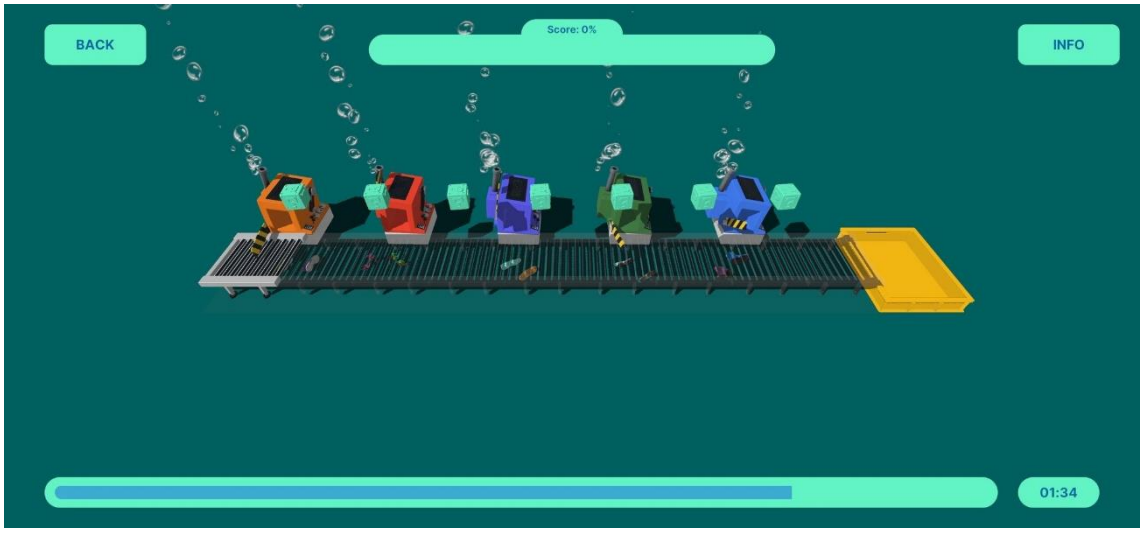


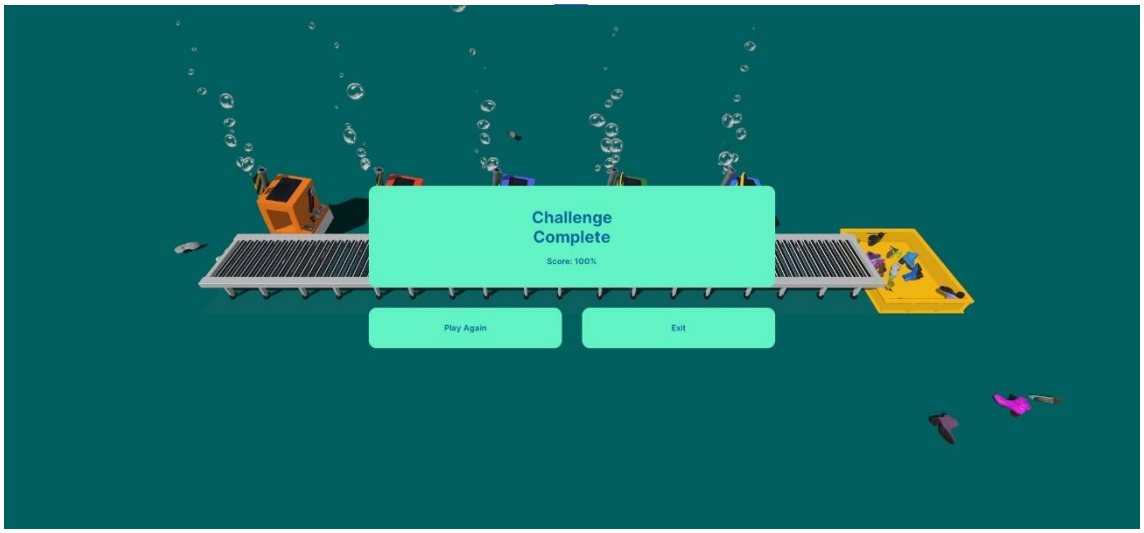
ULOs

The training are structured into 15 Units of Competence (UC)/ Units of Learning Outcomes (ULO).

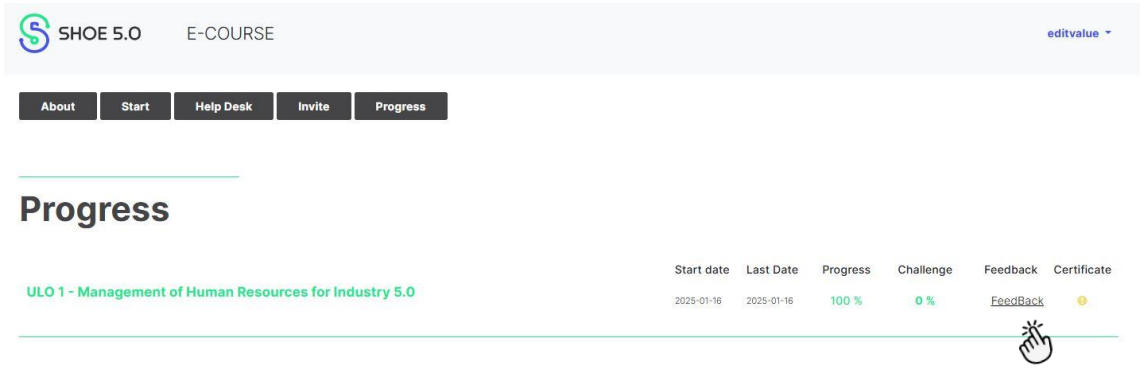
With 64 lessons covering topics of significant relevance to Footwear Industry 5.0, each UC/ULO isassigned 4 micro-credentials, equivalent to 100 hours, including training and assessment.


RETURN
RETURN
ULO 4 - Networking & Coworking
Touch the question boxes and answer the questions correctly to recover the missing pieces of the conveyor belt. Have the produced shoes reach the yellow box before the time ends!
Play
Exit

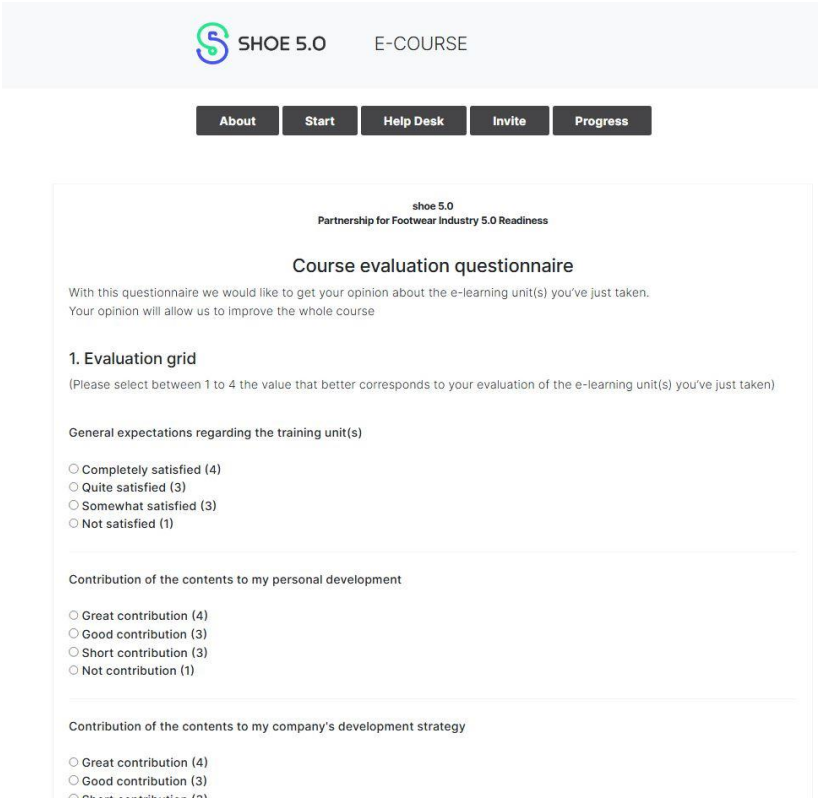

BACK
Score: 0%
INFO
01:34



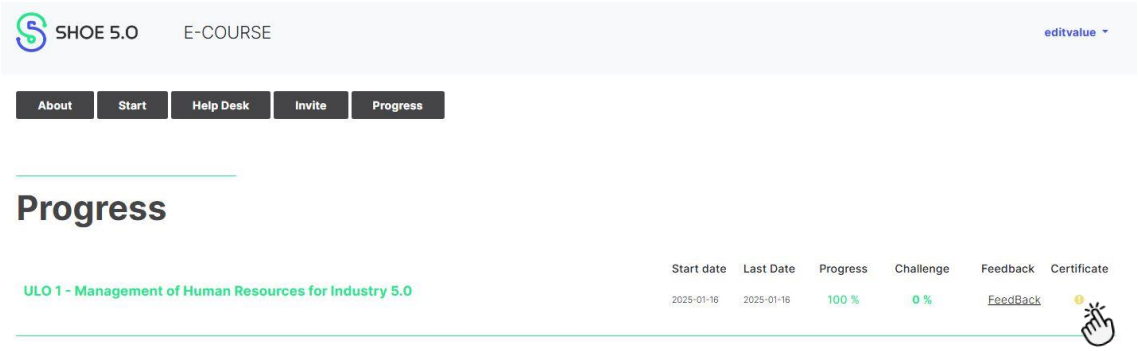
After successfully completing the challenge, the trainee should go to the 'Progress' section of the platform, where they can see the status of all training plan activities and complete the training evaluation.



7º Step: Evaluate Trainning



After completing the survey, the trainee will have access to their certificate in the 'Progress' tab.



.

SHOE 5.0

ERASMUS+ SHOE 5.0

SHOE 5.0 - PARTNERSHIP FOR FOOTWEAR INDUSTRY 5.0 READINESS

(REF: 2022-1-PT01-KA220-VET-000088122)

CERTIFICATE OF ATTENDANCE

We certify that

Miguel M. .....

Identification number **44444555454545** .....

Successfully finished the e-learning module **ULO 1 - Management of Human Resources for Industry 5.0**

Conclusion date **2025-01-22** .....

Duration (hours) **125** .....

21 of February of 2025

(Generated electronically requires neither a signature nor a stamp)

Co-funded by
the European Union

To obtain the certificate, trainees must read all lessons and infographics, watch the AI-generated video, successfully complete the exercise, fill out the evaluation form, and ensure their profile data is fully completed

8º Step: Assess the Impact of the Training

One month later, the trainee will receive a final questionnaire by email, which they must complete to evaluate how the training has impacted their performance.

Bibliography:

McCall, M., Lombardo, M., & Eichinger, R. (2010). *The Career Architect Development Planner*. Minneapolis: Lominger International.

Training Industry, Inc. (2022*). Updating 70-20-10 for the 21st Century*. Retrieved from https://www. trainingindustry.com.

Kajewski, K., & Madsen, V. (2012). *Demystifying 70:20:10 White Paper*. Centre for Workplace Leadership.

Training Industry. (n.d.). *The 70-20-10 model for learning and development*. Training Industry. Retrieved in 15/07/2024 from https://trainingindustry.com/wiki/content-development/the-702010-model-for-learning-and-development/.

Training Industry. (n.d.). *The OSF (On-the-job, Social, Formal) ratio*. Training Industry. Retrieved in 15/07/2024 from https://trainingindustry.com/wiki/content-development/the-osf-on-the-job-social-formal-ratio/.

PBLWorks. (n.d.). *What is PBL?* Retrieved in 15/07/2024 from https://www.pblworks.org/

Boston University Center for Teaching & Learning. (n.d.). *Project-based learning: Teaching guide*. Retrieved in 15/07/2024 from: https://www.bu.edu/ctl/ctl_resource/project-based-learning-teaching-guide/#introduction

Gregory, D. (2023). *Interactive Learning with Technology: Advantages and Real-Life Applications*. i3-Technologies. Retrieved in 17/07/2024 https://www.i3-technologies.com/en/blog/stories/education/interactive-learning-with-technology-advantages-and-real-life-applications/

Glenister, N. (2020). *8 Benefits Of Interactive Training In The Workplace. eLearning Industry. Retrieved in 17/07/2024* https://elearningindustry.com/benefits-interactive-training-in-workplace

Neendoor, S. (2024). *7 Benefits of Interactive Corporate Training. KITABOO. Retrieved in 17/07/2024* https://kitaboo.com/7-benefits-of-interactive-corporate-training/

NextThought. (2024, January 11). *How to use video for effective employee training and development*. NextThought. Retrieved in 18/07/2024 https://www.nextthought.com/blog/how-to-use-video-employee-training-and-development

Direção-Geral da Educação. (n.d.). *What is Blended Learning (b-learning) and Electronic learning (e-learning)*?. Apoio às Escolas. Retrieved in 24/07/2024 https://apoioescolas.dge.mec.pt/faq/4-o-que-e-o-blended-learning-b-learning-e-o-electronic-learning-e-learning

Liimatainen, H. (2023, February 6*). E-learning vs. blended learning — definitions, differences & use cases.* Howspace. Retrieved in 24/07/2024https://howspace.com/blog/e-learning-vs-blended-learning/

Gupta, D. (2022, September 14). *What is peer-to-peer learning in the workplace? (+Examples).* Whatfix. Retrieved in 24/07/2024 https://whatfix.com/blog/peer-to-peer-learning/

Gupta, D. (2022, October 24*). What is microlearning? Examples, benefits, best practices.* Whatfix. Retrieved in 24/07/2024 https://whatfix.com/blog/microlearning-examples/

Gupta, D. (2023, April 28). *What is on-the-job training? (+Advantages, best practices, & types)*. Whatfix. Retrieved in 25/07/2024 https://whatfix.com/blog/on-the-job-training/

Nottrodt, J. (2023, August 7). *Employee cross-training: 8 benefits you can't afford to miss.* HRMorning. Retrieved in 26/07/2024 https://www.hrmorning.com/articles/employee-cross-training/

Gupta, D. (2022, July 15). *The benefits of a cross-training employee program.* Whatfix. Retrieved in 26/07/2024 https://whatfix.com/blog/cross-training-employee/

Continu Team. (2024, March 7). *Cross-training employees: Benefits & best practices. Continu.* Retrieved in 26/07/2024 https://www.continu.com/blog/cross-training-employees

Gupta, D. (2023, February 3). *Gamification in corporate training in 2024 (+Benefits, examples).* Whatfix. Retrieved in 26/07/2024 https://whatfix.com/blog/gamification-in-training/

Scavify Team. (2024, February 1*). 8 best examples of gamification in corporate training in 2024*. Scavify Retrieved in 26/07/2024. https://www.scavify.com/blog/gamification-corporate-training

Kaikhosroshvili, K. (2024, January 5). *Gamification in training: A guide to engaging corporate learning.* Zavvy. Retrieved in 26/07/2024 https://www.zavvy.io/blog/gamification-training

Andreev, I. (2024, July 10). *What is gamification? Examples and best practices in eLearning*. Valamis. Retrieved in 26/07/2024 https://www.valamis.com/hub/gamification

Karpenkova, A. (2022, December 19). *How to implement role-based training (+benefits, examples)*. Whatfix. Retrieved in 29/07/2024 https://whatfix.com/blog/role-based-training/

Ford, P. (2023, July 25). *Guide to implementing role-based training: Tips and benefits*. Edstellar. Retrieved in 29/07/2024 https://www.edstellar.com/blog/guide-to-implementing-role-based-training

Workshopper. (n.d.). *8 Essential Facilitation Skills: Becoming a Good Facilitator*. Workshopper. Retrieved in 29/07/2024 https://www.workshopper.com/post/facilitation-skills

Gupta, D. (2023, September 4). *The Role of a Training Facilitator (Types, Responsibilities).* Whatfix. Retrieved in 29/07/2024 https://whatfix.com/blog/training-facilitators/

Facilitation First. (2023, September 1). *Top 10 Characteristics of an Excellent Group Facilitator.* Retrieved in 29/07/2024 https://facilitationfirst.com/top-10-characteristics-of-an-excellent-group-facilitator/

McFee, A. (n.d.). *Top 10 Qualities of the Best Facilitators.* EHL Insights. Retrieved in 29/07/2024 https://hospitalityinsights.ehl.edu/resources/all-resources/10-qualities-best-facilitators-infographic

Organisation for Economic Co-operation and Development. (n.d.). *OECD Future of Education and Skills 2030*. Retrieved in 30/07/2024 from https://search.oecd.org/education/2030-project/

World Economic Forum. (2023, April 30). *The Future of Jobs Report 2023*. Retrieved in 30/07/2024 https://www.weforum.org/publications/the-future-of-jobs-report-2023/

Terada, Y. (2020, August 13). *Frameworks for Fostering Skills Learners Need for the Future*. Edutopia. Retrieved in 30/07/2024 https://www.edutopia.org/article/frameworks-fostering-skills-learners-need-future

Panorama Education. (n.d.). *A Comprehensive Guide to 21st Century Skills*. Retrieved in 30/07/2024 https://www.panoramaed.com/blog/comprehensive-guide-21st-century-skills

Soffel, J. (2016, March 10). *Ten 21st-century skills every learner needs*. World Economic Forum. Retrieved in 31/07/2024 https://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-learners/

Kharbach, M. (2023, December). *10 characteristics of 21st-century learners*. Educators Technology. Retrieved in 31/07/2024 from https://www.educatorstechnology.com/2023/12/characteristics-of-21st-century-learners.html