

PROVIDE ENGAGING AND EFFECTIVE E-LEARNING SOLUTIONS FOR FOOTWEAR MANUFACTURING STUDIES



The Erasmus+ Digital FabLab Project, implemented by partners from Belgium, Cyprus, Italy, Poland, Portugal, Romania and Spain, has officially ended. Launched in March 2021, under the outreach of the Covid pandemic, the project aimed to contribute to the rapid transformation of digital education in order to make possible the learning of practical topics. The footwear industry can rely now on an attractive e-learning solution for students and teachers in the footwear sector based on augmented (AR) and virtual reality (VR) tools.

Among the project outcomes, partners developed a free Digital FabLab that includes joint, international learning-by-doing training units using AR and VR tools, which will facilitate learning by doing in footwear manufacturing. The Digital FabLab is already available on the project [website](#) for teachers and student to try!

To complete the 4th newsletter on the piloting process in Portugal and Spain, available [here](#), this final newsletter focuses on the piloting evaluations in Poland and Romania and will offer you an introduction to the Digital FabLab scanning tool!

We wish you a pleasant reading and invite you to learn more about the project on our social media ([Facebook](#)) and our [website](#)!

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Piloting Process in Poland – Institute of Leather Industry (IPS)

The piloting event in Poland took place at the Institute of Leather Industry (IPS) facilities in July and gathered teachers and trainers. The first part of the event was devoted to the methodology created during the development of the project. IPS presented the content created during the past months and explain the creative process, i.e. a more interactive content, trying to overcome traditional passive content.

IPS pointed out that the material has been developed by the partners with the aim of creating a common set of tools that could be used by trainees and trainers from all the member countries of the consortium. Available free of charge on the project website, it was created under the supervision of experts from the participating countries.

To complete the presentation, IPS asked two questions to the participants:

- Do you think it is easy to use Augmented Reality for training?
- Do you think that methodologies that encourage the use of practice and experimentation have a long life or is it a passing fad?

The participants' responses showed that they were mostly interested in using AR for learning. However, some of them pointed out that it could be difficult to find content adapted to these methods.

In addition, here are a few quotes from the participants on the use of AR for learning:

- "I think this solution has potential"
- "There's still work to be done, but I know there's a future for it"

In order to obtain the most honest opinion from students and trainers on the quality and usefulness of the content, IPS initiated an in-depth conversation looking back at each learning units presented. Following this conversation, the participants were asked to complete a questionnaire on the overall impressions of the content. The results showed that the content presented at the event was very well received. In terms of innovation in the results obtained, the participants highlighted the great potential of this material for the use AR in the future.



To conclude the event, IPS asked the participants what they thought of AR in a more general context:

- Do you think augmented reality has a future in the field of training?
- What aspects do you consider to be the most relevant when incorporating Augmented Reality into the training methodology?

The majority answered that they thought AR had a future in training; moreover, they also mentioned the fact that augmented reality encourages learning, makes it more enjoyable and avoids damaging professional equipment or injuring oneself while learning.



Piloting Process in Romania – Georghe Asachi Technical University of Iasi (TUIASI)

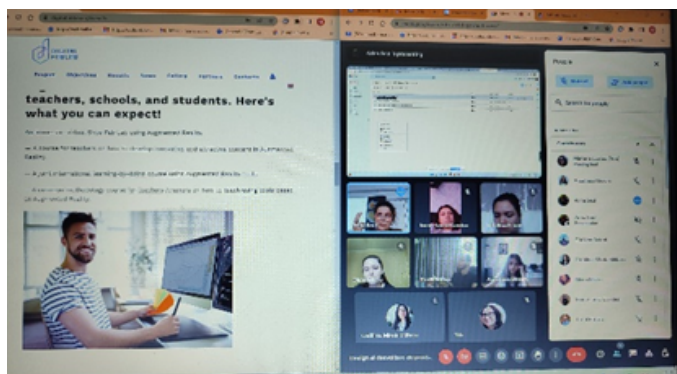
The Digital FabLab Piloting Session of ULOs organised by TUIASI received positive feedback not only from both students and teachers, but also from the members of the footwear industry. In total, twelve representatives of various institutions attended the hybrid event, held at the Gheorghe Asachi Technical University of Iasi, during which they were introduced to two ULOs developed as part of the project.



Teachers were very pleased with the activity, as it gave them access to fresh, contemporary material to enhance their teaching sessions. The use of an experiential approach, rather than relying solely on rote memorisation, resulted more engaging and interesting for all participants.



Participants found AR for training easy to use and affordable, and they praised its effectiveness in improving learning outcomes. The interactive and immersive nature of AR was evaluated positively, as it facilitates the understanding of complex topics. Overall, attendees strongly recommended integrating AR into training programmes.



According to the comments received, methodologies encouraging practice and experimentation are likely to have a long life and not to be simply a fad. The majority of the participants said that integrating these methods into their work would make their jobs much easier. Nevertheless, even those who recognise the value of digital tools agree that practice and experimentation remain essential elements of their processes. This indicates that the combination of traditional approaches and digital tools creates a powerful and sustainable approach to problem-solving and learning.

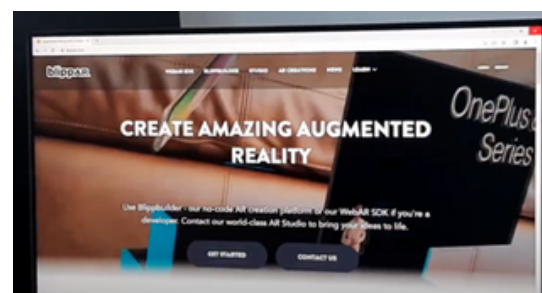
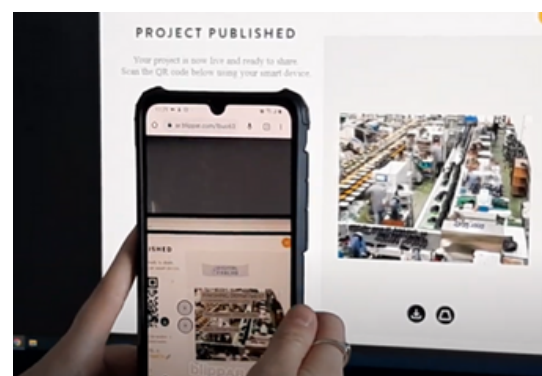
In general, the attendees had positive impression of the content of the sewing and pre-sewing, assembly and finishing departments. They found the material informative, well-structured and relevant to their role. The content was appreciated for its clarity and effectiveness in conveying key concepts. In addition, the participants acknowledged the innovative perspective of the content, notably in the pre-stitching department. The training material was seen as forward-thinking, incorporating modern techniques and technologies to enhance the learning experience. This innovative approach was well received and helped increase engagement and interest in the training process.



Piloting Process in Romania – Georghe Asachi Technical University of Iasi (TUIASI)

All the participants were convinced that AR has a bright future in the field of training. They unanimously welcomed the potential of AR to revolutionise learning experiences by providing interactive and immersive content. The participants mentioned also, as key benefits, the ability of AR to simulate real-world scenarios and enhance skills development. Finally, they were enthusiastic about the potential of AR to engage learners, make complex concepts more understandable and deliver practical training in a cost-effective and scalable way.

Based on the participants' feedback, the integration of AR into the training methodology is highly appreciated for three main reasons. Firstly, 41.7% of the participants stressed the importance of the interactive and realistic practical component of AR training: this feature allows trainees to gain practical experience in simulated real-world scenarios, without the risk of damaging machines or injuring themselves. Then, half of the participants appreciated that AR makes learning enjoyable and engaging: its immersive nature encourages active participation, which makes it easier to retain and understand the training content. Finally, 8.3% of the participants highlighted the safety benefits of AR: it offers the trainees a safe environment in which to practise and experiment, which minimises the risk of accidents or damage during training. Overall, the participants agreed that hands-on interactivity, increased engagement, and safety benefits are key factors that make AR a relevant and valuable tool in training methodologies.



The appreciation of this approach to new training methodologies is clear, as the participants recognised the potential of technology to optimise learning systems. Their positive experiences with augmented reality-based training led them to suggest further integration of new technological methodologies in education and training.

Introduction to the scanning tool – Footwear Technology Centre of Portugal (CTCP)

The scanning tool is an electronic software that gathers information on training needs in terms of skills and knowledge related to footwear manufacturing and designs. It can design a possible training pathway, tailored to each user: in fact, this tool provides the user with a map of skills and corresponding progress, and guides them towards a training path based on their needs, motivations and interests.

You can find the scanning tool here: [DIGITAL FABLAB !](#)

The central element of this analysis tool consists of a questionnaire built on the relations between: "profile activities", "necessary skills", "existing skills" and "orientation towards the unit of learning outcomes".



Introduction to the scanning tool – Footwear Technology Centre of Portugal (CTCP)

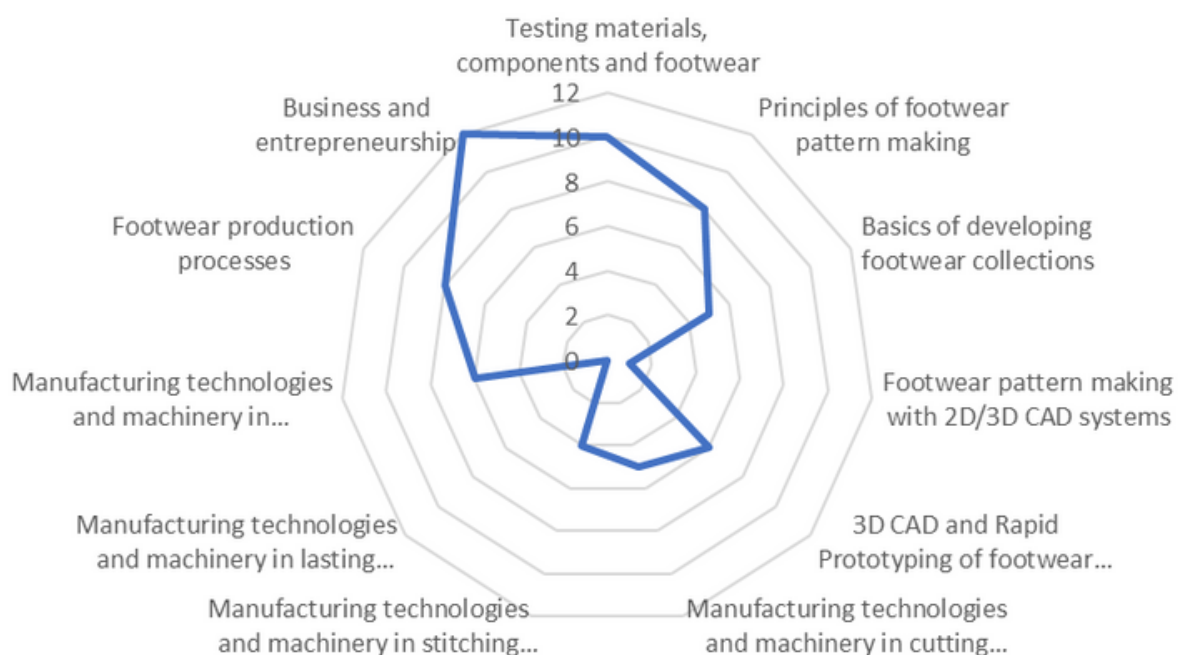
When the user fills in the questionnaire, the tool focuses on the specific learning outcomes linked to the related training units. The questions appear in the following quadrants, linked to learning outcomes and training units:

- Testing materials, components and footwear
- Principles of footwear pattern making
- Basics of developing footwear collections
- Footwear pattern making with 2D/3D CAD systems
- 3D CAD and Rapid Prototyping of footwear components (insole, sole, heels)
- Manufacturing technologies and machinery in cutting department
- Manufacturing technologies and machinery in stitching department
- Manufacturing technologies and machinery in lasting department
- Manufacturing technologies and machinery in assembling and finishing department
- Business and entrepreneurship

Each question has a score, as suggested below. The answer selected by the user corresponds to a value. The sum of the 4 questions answered per each quadrant corresponds to a value, ranging from 0 to 12, which will be marked on the spiderweb diagram below.

After completing and submitting the completed questionnaire, the tool provides an alert on the need for action in each of the quadrants within the spiderweb diagram.

Example of the spiderweb diagram:



The diagram contains indications of how to act in the future and to take advantage of the results/products of the project.

So, according to the report:



Introduction to the scanning tool – Footwear Technology Centre of Portugal (CTCP)

- If you score less than 5 points, you need to develop these skills. They can be developed by studying the training units or by acquiring knowledge.
- If you score between 5 and 10 points, training can reinforce existing skills and help you acquire new knowledge.
- If you score higher than 10 points, the training will complement the already acquired skills and knowledge and increase possibility for professional growth.

Results of the example above:

UNITS	SCORE	RESULTS
Testing materials, components and footwear	10	Training can reinforce existing skills and help acquire new knowledge
Principles of footwear pattern making	8	Training can reinforce existing skills and help acquire new knowledge
Basics of developing footwear collection	5	Training can reinforce existing skills and help acquire new knowledge
Footwear pattern making with 2D/3D CAD systems	1	Need to raise the level thanks to dedicated the training unit
3D CAD and Rapid Prototyping of footwear components (insole, sole, heels)	6	Training can reinforce existing skills and help acquire new knowledge
Manufacturing technologies and machinery in cutting department	5	Training can reinforce existing skills and help acquire new knowledge
Manufacturing technologies and machinery in stitching department	4	Need to raise the level thanks to dedicated the training unit
Manufacturing technologies and machinery in lasting department	0	Need to raise the level thanks to dedicated the training unit
Manufacturing technologies and machinery in assembling and finishing department	6	Training can reinforce existing skills and help acquire new knowledge
Footwear production processes	8	Training can reinforce existing skills and help acquire new knowledge
Business and entrepreneurship	12	The training will complement the skills already acquired as well as potential knowledge



Introduction to the scanning tool – Footwear Technology Centre of Portugal (CTCP)

The tool should be used with the guidance of the trainer or teacher, and the results analysed with the trainee or student, in order to design the most appropriate training pathway together. The trainer's role is crucial when the user does not want or need to follow the entire course/qualification.

The tool redirects the user to a page where all the modules are described, so that they understand what they can find in the Digital FabLab content.



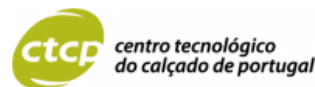
In conclusion, the consortium strongly hopes that their work and efforts will help provide engaging experiences for VET students and teachers, and equip them with the skills they need to produce quality footwear anywhere in Europe. We call for any interested education centres, trainers, students, employees and managers to try the FabLab and provide their feedback [HERE](#). This collaboration is essential to be certain that the new learning tool represents an attractive and efficient learning path to respond to the needs of companies in terms of skills, so that it can support the production of quality footwear anywhere in Europe.



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SOLUTIONS
HANDS ON KNOWLEDGE



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ERASMUS+ Digital FabLab

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