DIGITAL FABLAB

ERASMUS+ DIGITAL FABLAB
FOOTWEAR VIRTUAL LEARNING BY DOING
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DIGITAL FABLAB: "LEARNING-BY-DOING" IN FOOTWEAR VET STUDIES

The use of digital technologies and information and communications technology (ICT) has rapidly increased for education and learning purposes since the Covid-19 pandemic appeared in early 2020. Not only they have found, but also, they are an interesting tool to attracting younger generations across the world.

Indeed, one of the major challenges for the footwear sector remains to attract motivated and qualified young talents. To address such problem, the Erasmus+ Digital FabLab project consortium works on incorporating a "learning-by- doing" methodology that engages students and workers more efficiently to learn about the latest footwear innovations. FabLabs are shared workshops where students can access equipment and technologies to design and create footwear products, components, or accessories. Thus, this methodology relies on simulations and experiential learning, allowing students to apply knowledge learned in classrooms to real world-situations.

WHAT TO FIND IN THE NEWSLETTER

The Erasmus+ project is in addition offering a joint international course, certified at national level and recognised at EU level, for the development of practical skills for footwear students and other people interested in joining the sector. Furthermore, the project partners will develop a common methodology for Augmented Reality intended for footwear VET teachers. This will ensure that teachers can learn how to master the programme and fully incorporate the digital FabLab into their regular curricula in a compelling way for their students.

The first phase of the project is now complete and enables the partners to move forward. Take this opportunity to discover more!

Overview of European CAD software for footwear (by TUIASI)

ICad3D+ , developed in Spain, is the first software for footwear design and pattern engineering that integrates into a single programme two different environments, 3D designs and 2D patterns, which work in parallel and simultaneously. In this way, ICad3D+ is presented as the best virtual alternative to the traditional process of design and pattern engineering, reducing the time spent as well as the materials and human resources of the company.
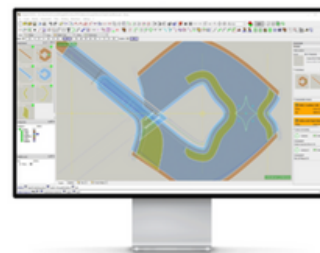
Source: https://www.icad3dplus.com/

Source: https://mindtech.pt/
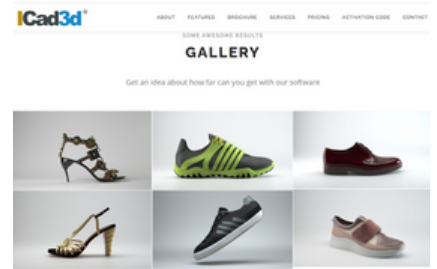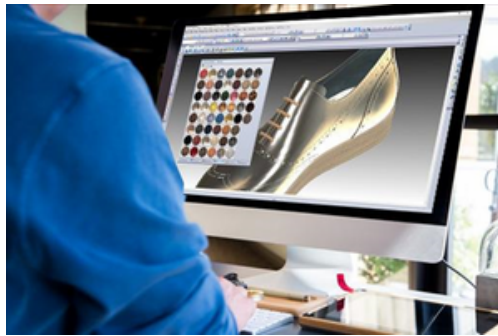
MindCAD, developed in Portugal. It provides complete 2D/3D CAD solutions for the design, development, and engineering of industry-specific products. MindCAD is a solution for the product designer and engineer, offering a balanced mix of creative and technical 2D and 3D CAD tools. The unique and innovative features of MindCAD solutions contribute decisively to your effectiveness and productivity.

Source: https://comelz.com/nsite/en/caligola-4/

**Caligola 4,** developed in Italy. This software is compatible with any CAD / CAM system ; interactive and unlimited. Flexible, intuitive, and modern. Customizable and constantly updated. Comelz's fourth-generation CAD is a benchmark software for the footwear industry.

PRAGMA is based on parametric geometry. It is used to import and edit blocks. NAXOS 2D design application, model creation, production preparation, cost management, and sales support. Software developed in Italy.

Source: https://teseo.com/en/

Shoemaster. It can be used for the design and manufacture of all types of footwear, elegant, casual, sports, children's, protective, orthopaedic, and custom. Nowadays the Shoemaster platform offers an innovative range of 3D and 2D CAD/CAM systems for shoe design, control of production and costs, custom made shoe engineering, as well as solutions for the leather goods market. Since 2016 Shoemaster has belonged to the Atom Group, a worldwide leader in the shoe-making industry in the fields of cutting systems and machinery for lasting and injection moulding.

Source: https://atom-shoemaster.com/en/
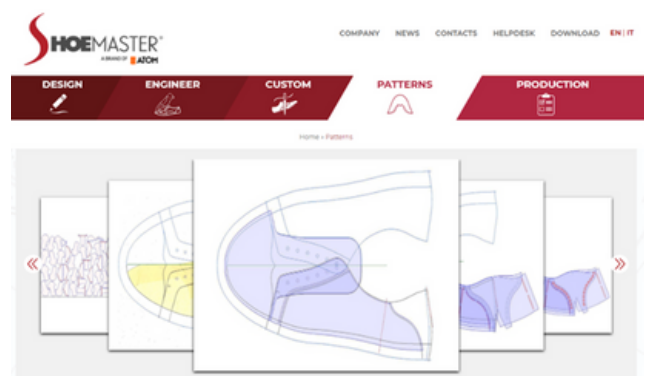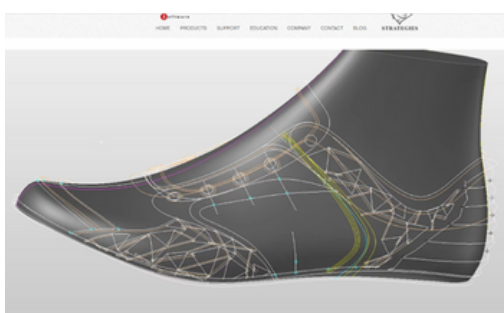
Romans CAD, developed in France It is a precise programme dedicated to the footwear industry. It is based on the cloud, which allows teams to work much faster and improve their efficiency. Indeed, it is a great way to facilitate communication between designers and manufacturers.

Source: https://www.romans-cad.com/

Micro-credentials for training courses on footwear manufacturing (By Gheorghe Asachi Technical University of Iasi - TUIASI)

At present, many tools and experiences are emerging from the collaboration within the EU and the Bologna process (Standards and Guidelines for Quality Assurance in the European Higher Education Area, European Qualifications Framework, European Credit Transfer and Accumulation System, Diploma Supplement, Europass, digitally signed credentials, etc.). These European tools can contribute to transparency in solutions, but they may need to be updated to facilitate the integration of micro-credentials (Katos et al., 2020).

Most countries offer micro-credentials in the format of short course units within a degree programme and particular purpose awards. In other cases, micro-credentials are offered in the framework of postgraduate education or described as stackable/standalone modules, short life-long learning courses, and adult training. In general, a micro-credential can have several assigned/estimated ECTS (European Credit Transfer and Accumulation System) in different countries; the range in the number of ECTS credits varies from 1 to more than 100 (Microbol, 2021).

As Shizuka Kato from OECD - Organisation for Economic Co-operation and Development explains in her paper (Kato et al., 2020), a relatively new term, "alternative credentials", is starting to be used. The authors define the "alternative credentials" as credentials that are not recognised as standalone formal educational qualifications by relevant national education authorities. So far, the alternative credentials offered at the post-secondary or tertiary education level are certificates, digital badges, and micro-credentials.

The Consortium MicroHE, co-funded under ERASMUS+, proposes a new definition of micro-credentials based on a literature review and multi-stakeholder interviews: "A micro-credential is a sub-unit of a credential that could accumulate into a larger credential or a degree or be part of a portfolio. Examples are Digital Badges, Verified credentials, MicroMasters, Nanodegrees" (MicroHE Consortium, 2019).

As OECD defines it, micro-credential is a sub-unit of a credential or credentials, which converses a minimum of 5 ECTS points and could accumulate into a larger credential or be part of a portfolio (Kato et al. 2020).

Data shows that the majority of countries do not have micro-credentials referred to their National qualifications' framework. Therefore, for most countries, the biggest challenge is the applicability of the tools to micro-credentials, but the implementation at the national level and the awareness of the tools in general still represents a challenge.

The micro-credential requires three fundamental elements:

- **The issuer is the organisation (s) or institution that awards the micro-credential to the users or earners;**
- **The user is the educator who earns micro-credentials;**
- **The recogniser is the school, district, Institution of Higher Education (IHE), or state Department of Education, Office of Superintendent of Public Instruction, or other state agency that oversees certifications.**

Co-funded by the Erasmus+ Programme of the European Union

Micro-credentials for training courses on footwear manufacturing
(By Gheorghe Asachi Technical University of Iasi - TUIASI)

Digital technology should be harnessed to facilitate flexible, accessible learning opportunities, including for adult learners and professionals, helping them re-skill, upskill or change careers. More ambitious efforts are needed in the areas of digital education content, tools, and platforms11. These efforts should encourage the uptake, quality assurance, validation, and recognition of courses and learning opportunities in all education and training sectors. As such, the micro-credentials capture the learning outcomes of short-term learning. In this regard, the Commission is developing a European approach for micro-credentials.

The Commission to the European Parliament 6 stated that "automatic recognition of qualifications and study periods abroad for further learning, quality assurance of joint transnational activities. Furthermore, the recognition and portability of short courses leading to micro-credentials would allow the Member States to go deeper and faster in their cooperation, as compared to what they can do now in the context of the Bologna process".

The lack of a shared definition and common approach makes employers feel unsure about what micro-credentials are and which ones to trust. Recognition of prior learning is the most appropriate method currently to recognise micro-credentials for further studies.

European MOOC (Massive Open Online Course) platforms launched a Micro-credential framework fitting into the European Qualification Framework for Lifelong Learning, which combines learning outcomes in higher education and professional training. The key criteria are associated with learning outcomes, workload (4-6 ECTS or 100 to 150 hours), and level. A micro-credential should comply with the descriptors of the European Qualifications Framework (levels 6, 7, or 8, with options for Levels 4 and 5, in combination with ECTS) and the equivalent levels in the national qualifications framework of the concerned higher education institution.

Internationalisation is a key topic: together with the discussion at the national level, the aspect of co-constructing micro-credentials with a transnational approach must be considered and taken into account.

In the case of footwear, there are Moodle (Modular Object-Oriented Dynamic Learning Environment) and MOOCs developed by the present consortium, with European funding, that can benefit from the implementation of the micro-credentials, such as Sciled (https://sciled.eu/en/), Skils4Smart TCLF Industries 2030 (https://s4tclfblueprint.eu/), Knowledge4Foot (https://knowledge4foot.eu/), Fit2Com (https://www.fit2comfort.eu/), DiaShoe (https://diashoeproject.eu/).

Are you still curious about micro-credentials? Read the full article on the Digital FabLab's website !

Focus on: School in time of COVID (By CEC)

With the outspread of the Covid-19 pandemic in 2020, home schooling turned itself from a niche practice to a consolidated reality for millions of youngsters all around the world. From the beginning of this experience, it was evident that the classical teaching methods were not fit for virtual learning, meaning that teachers and trainers struggled to develop more efficient approaches to their subjects by exploiting all their knowledge and coping with the limited resources in their possess.

The Vocational Education and Training system was more impacted by the pandemic mobility restrictions than Higher Education due to the limitation of work-based learning opportunities and the necessity to shape ad-hoc school-based activities. In February 2021, the OECD encouraged its Member Governments to provide guidance and teaching resources to VET schools to facilitate the redesign of curricula and teaching methods, including the implementation of innovative pedagogical approaches and new technologies.

We have indeed experienced a swift transformation of virtual teaching since the start of the pandemic. In September 2019, the European Footwear Confederation, partner of the Erasmus+ project SciLed, produced a research study on different learning tools and methods. Three years later, the entries included in the report are rather seen as everyday practices than as cutting-edge methods.

If you are interested in learning more about the research study and augmented reality as a learning tool, read the full article on the Digital FabLab's **website** !

KEEP FOLLOWING OUR ACTIVITY ON THE PROJECT WEBSITE AND THE SOCIAL MEDIA DO NOT HESITATE TO CONTACT THE CONSORTIUM FOR ANY INFORMATION!

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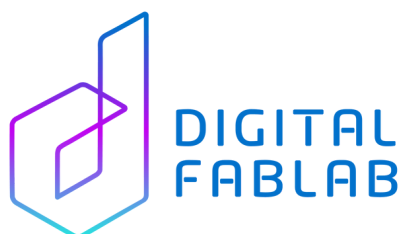121 S. João da Madeira (Portugal)

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