CREATIVE TRANSFER OF SKILLS AND COMPETENCE IN 3D FOOTWEAR CAD

Authors: Aura Mihai, Mariana Costea, Bogdan Sârghie, Esperanza Almodóvar Falcó, Rosana Pérez, Amaya San Martín, Carlos Férriz Carlos V. Carvalho, Cláudia Azevedo, Lili Pavlinova Pavlova, Fablio Molinas Cossu, Christopher Nester, Anita Williams, Antonio Miralles, Manuel Gómez

Presenting author: Prof. dr. Aura MIHAI
‘Gheorghe Asachi’ Technical University of Iasi, Romania
amihai@tex.tuiasi.ro

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www.uitic-congress.cleindia.org/

‘Gheorghe Asachi’ Technical University of Iasi, Romania
Faculty of Textile, Leather and Industrial Management

www.tptmi.tuiasi.ro
- Identified **skill gaps** - future skill needs
- **Small companies** cannot create internal training departments
- Lack of teaching materials
- Ageing teachers/tutors
- Attractiveness for young generation

**Projects aimed to develop innovative e-learning tools**

- Virtual Training Centre for Shoe Design (2007-2009)
- International Integrated Training Plan for the Footwear Sector (2011-2013)
- **Creative Transfer of Competence in 3D Footwear CAD to VET Professionals** (2013-2015)
- **Knowledge Platform for Transferring Research and Innovation in Footwear Manufacturing** (2015-2018)
- **STEP TO SUSTAINABILITY - How to Implement Sustainable Manufacturing in Footwear** (2013-2016)
- **Fit to Comfort – Skills Alliance for comfort & healthy footwear manufacturing** (2015-2017)
EU funded project within the framework of the Lifelong Learning Programme/ Leonardo da Vinci in footwear sector

• **AIM:** to transfer and to extend the icad3d+ innovative software solutions and the 3D technologies for footwear CAD

• **Partners:**

  ROMANIA - ‘Gheorghe Asachi’Technical University - Coordinator  
  SPAIN - INESCOP-Instituto Tecnologico del Calzado  
  PORTUGAL - Virtual Campus, Lda  
  SPAIN - IED Istituto Europeo di Design  
  UK - University of Salford  
  SPAIN - RED 21 SL
EU funded project within the framework of the Lifelong Learning Programme in footwear sector

OBJECTIVES:

• to transfer the INNOVATION from Spain to other countries, namely Romania, Portugal, and UK

• to develop skills and competencies in 3D Footwear CAD. Target group - VET professionals: teachers, trainers and tutors

• to develop new training content and supportive e-learning tools based on units of learning outcomes

• to set up an Online Learning Platform
Why Icad 3D+ software solution as basis for INGA 3D project?

- Icad 3D+ was developed by INESCOP and RED 21 (Spain) within the framework of several EU funded research projects.
- Detailed and accurate visualization of footwear prototypes in a virtual space.
- Immediate feedback both to teacher and to student/trainee.
- Learning by doing - Knowledge and skills are transmitted in a dynamic and effective way.
**AIM:** To analyse needs for skills and competencies in footwear CAD

**Methodology:**
- Peer learning and peer teaching - Literature review
- Desk research on the Skills and Competence - available training courses and study programs
- Field research - Questionnaires and Interviews

**Findings:**
- Directions for further developments of the INGA 3D curriculum and training content
- Competence mapping and designing the matrices of skills for 4 training modules
http://www.inga3d.eu/reports/
INGA 3D RESULTS

Training program in Footwear CAD

MODULE I: FOOTWEAR CAD BY ICAD3D+ SOFTWARE
http://www.inga3d.eu/site/assets/files/1012/r3_training_program_module_i.pdf

MODULE II: 3D CAD – APPLICATIONS TO BASIC FOOTWEAR CONSTRUCTIONS
http://www.inga3d.eu/site/assets/files/1012/r3_training_program_module_ii.pdf

MODULE III: 3D CAD - APPLICATIONS TO ORTHOPAEDIC FOOTWEAR
http://www.inga3d.eu/site/assets/files/1012/r3_training_program_module_iii.pdf

MODULE IV: 3D CAD- APPLICATIONS TO FASHIONABLE FOOTWEAR
http://www.inga3d.eu/site/assets/files/1012/r3_training_program_module_iv.pdf

Figure - Matrix of skills
**Module I**

**FOOTWEAR CAD BY ICAD3D+ SOFTWARE**

**Objectives**
- to operate with various features of Icad3D+ specific software;
- to create footwear prototypes on virtual lasts, including accessories and components;
- to obtain accurate virtual models using the rendering software and to prepare technical sheets.
Objectives

- to apply the 3D CAD technology powered by Icad3D+ software for designing basic footwear constructions types;
- to practice the 3D modelling process to a range of different footwear styles, characteristics and features which are compatible with design requirements and expectations;
- to develop skills and competences in producing detailed virtual models of women’s, men’s and children’s footwear.
Objectives

- to apply knowledge of 3D CAD technology powered by Icad3D+ software in order to select orthopaedic lasts appropriate for the specific foot pathology;
- to practice the 3D modelling process to a range of different footwear styles, therapeutic features and modifications which are compatible with the specific foot pathology and users expectations;
- to develop the skills and competences to produce virtual models of women’s and men’s orthopaedic footwear designs.
Objectives

- to apply 3D CAD technology powered by Icad 3D+ software for fashionable footwear through collection development;
- to practice the 3D modelling process to a range of different styles, characteristics and features which are compatible with design specifications of the fashionable footwear;
- to design footwear collections mainly focused on operating with various materials, footwear components, trimmings and ornamentations.
INGA 3D RESULTS

Footwear CAD Handbook

- 4 volumes, more than 900 pages
- Effective educational approach to modules and units of learning outcomes: Knowledge, Skills and Competences
- 4 languages: EN, ES, PT, RO

Sample content available at:
http://www.inga3d.eu/results/
58 tools developed by INGA 3D projects for teachers and trainers:

- **Training Program**: Description, Methodology, Objectives, Learning Outcomes - Skills, Competences and Knowledge, Number of hours, ECVET etc)
- **Guide** for Navigating on INGA Online Learning Platform
- **Presentations** of each lesson
- Multimedia resources - **Videos**
- **Assessment Tests**
- **Examples** of projects/ study cases
12 complete units that include 40 lessons have been transformed into e-learning format, being enriched with more than 50 videos

http://www.inga3d.eu/demo-lesson/
Identification of groups (VET professionals)
Definition of implementation plan/strategy
Alfa testing on group of trainers (9). Beta testing on group of trainees (5)

Piloting Sessions- 45 teachers/tutors/trainers
✓ RO: 4 sessions
✓ ES: 2 sessions
✓ UK: 1 session
✓ PT: online course at international level

On line feedback questionnaire at each stage for improvements of training contents (lessons), OLP and tools
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• ‘The course has been pleasant to be part of a really great experience as my knowledge of this software is non existent. I feel I have learnt a great deal of information in regards to the use of the software ‘( participant in UK)

• About 80% of the participants think the course got enough aids and materials delivered, they think too that the teacher aids was good. Nearly all participants feel they have gained skills to use the program and the necessary knowledge of the program which they used for their work. (Spain)

• ‘For me this course presented an interesting experience. Even my field of interest is completely different, it was quite easy to follow this course. The contents support the learning objectives and the media used are understandable and well displayed’ ( participant Romania)
• To up-skill teaching staff for:
  • adding new 3D CAD technology to the traditional education in footwear in order to create a link between education and industry
  • introducing new teaching/training e-tools in schools
  • adopting training methodologies and contents that meet the expectations of new generation of students/learners

• To train staff from footwear companies for performing training/tutoring activities in Footwear CAD technologies toward their own employees

• To produce training/teaching content for creating Knowledge, Skills and Competences = Learning Outcomes

INGA 3D project— an example of successful partnership in Romania, Spain, UK and Portugal
To experiment various learning scenarios in order to maximize the number of potential users

To contribute at increasing the attractiveness of the VET study/training programs in the field of footwear design and technology

To encourage and to motivate VET teachers, trainers and tutors in stimulating innovative thinking and creativity among their students/trainees

To motivate university graduates for choosing a career as teacher in VET schools
What next?

ICAD 3D+ software
INGA 3D Handbooks
INGA 3D Online Learning Platform

http://inga3d-store.virtual-campus.eu/
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Find out more at http://www.inga3d.eu/