



Integrating Companies in a Sustainable Apprenticeship System

Project 2017-1-DE02-KA202-004174

Intellectual Output 5

Experience and SWOT from piloting Work Based Learning in Romania

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1. Introduction

The Report on Experience and SWOT from piloting Work Based Learning in Romania serves as "apparent good practice" for other footwear companies.

WBL pilot of apprenticeship is based on a Locally Develop Curriculum (LDC), named „Footwear manufacturing technologies“ and developed by “Ion Holban” Technical College of Iasi (Educational Institution), SC Angela International SRL – Papucei (Economic operator), and “Gheorghe Asachi” Technical University of Iasi (Public institution - consultant) according to all Romanian Regulations.

WBL pilot programme in Romania was implemented at Papucei footwear company, lasted one year, starting from October 2018, and involved three apprentices from “Ion Holban” Technical College of Iasi.

The apprentices faced real work processes specific to the main spheres of activity of industrial footwear manufacturing:

- Core spheres (582h): Cutting, Pre-stitching, Stitching, Pre-lasting, Lasting, Assembly and Finishing;
- Peripheral sphere (72h): Technical Development, Production planning, design and Quality Assurance.

The apprentices' achievements were evaluated by the responsible tutors and their progress was documented and to further improve the WBL activity, the apprentices were asked to answer to a set of questions during an open interview to evaluate the atmosphere of the learning process.

The results of implementing WBL in Romania were shared and analysed during a workshop that gathered representants from TUIASI, Papucei, “Ion Holban” Highschool and CNDIPT (Romanian National Center for the Development of Vocational and Technical Education). The experts shared their opinions regarding the implementation of WBL, the progress made by trainees, benefits and future collaborations. The results of the WBL pilot were evaluated through a SWOT analysis and are presented in the final chapter of this report.

2. Locally developed curriculum for WBL

The curriculum design for VET is a process regulated by national legislation and the related set of methodologies approved by the Ministry of National Education Order (OMEN).

The ICSAS project proposes a solution for footwear companies that are facing a gap in terms of recruiting qualified workforce, especially young graduates of VET schools by implementing a Work Based Learning (WBL) program based on Locally Developed Curriculum (LDC) those learning outcomes are designed for the footwear manufacturing. LDC is the curricular provision specific to each vocational and technical education establishment and it is delivered in partnership with the economic operators.

The designed curriculum, named „Footwear manufacturing technologies” involved “Ion Holban” Technical College of Iasi (Educational Institution), SC Angela International SRL – Papucei (Economic operator), and “Gheorghe Asachi” Technical University of Iasi (Public institution - consultant).

The hereby LDC curriculum for WBL, designed within the framework of the ICSAS project, complies with all Romanian national regulations, was checked and validated by the project Advisory Board (RO) and approved by the **County School Inspectorate of Iasi**.

This curriculum was studied during a school year and goes through a total of 654 hours (9 weeks x 5 days x 6 hours = 270 hours/year and 32 weeks x 2 days x 6 hours = 384 hours/year) at the economic operator during practical training sessions.

To proceed with the WBL piloting, an official LDC Agreement was signed between **School** and **Papucei** company.

3. Selection of apprentices

Apprentices engaged in the Work Based Learning have a background in Textile and Clothing and were selected from “Ion Holban” Technical High School from Iasi in collaboration with Papucei and TUIASI. Apprentices were evaluated in three stages: theoretical knowledge in the field, practical skills and interviews. From an initial number of six apprentices, the top three were selected based on their total score, as presented in Figure 1.

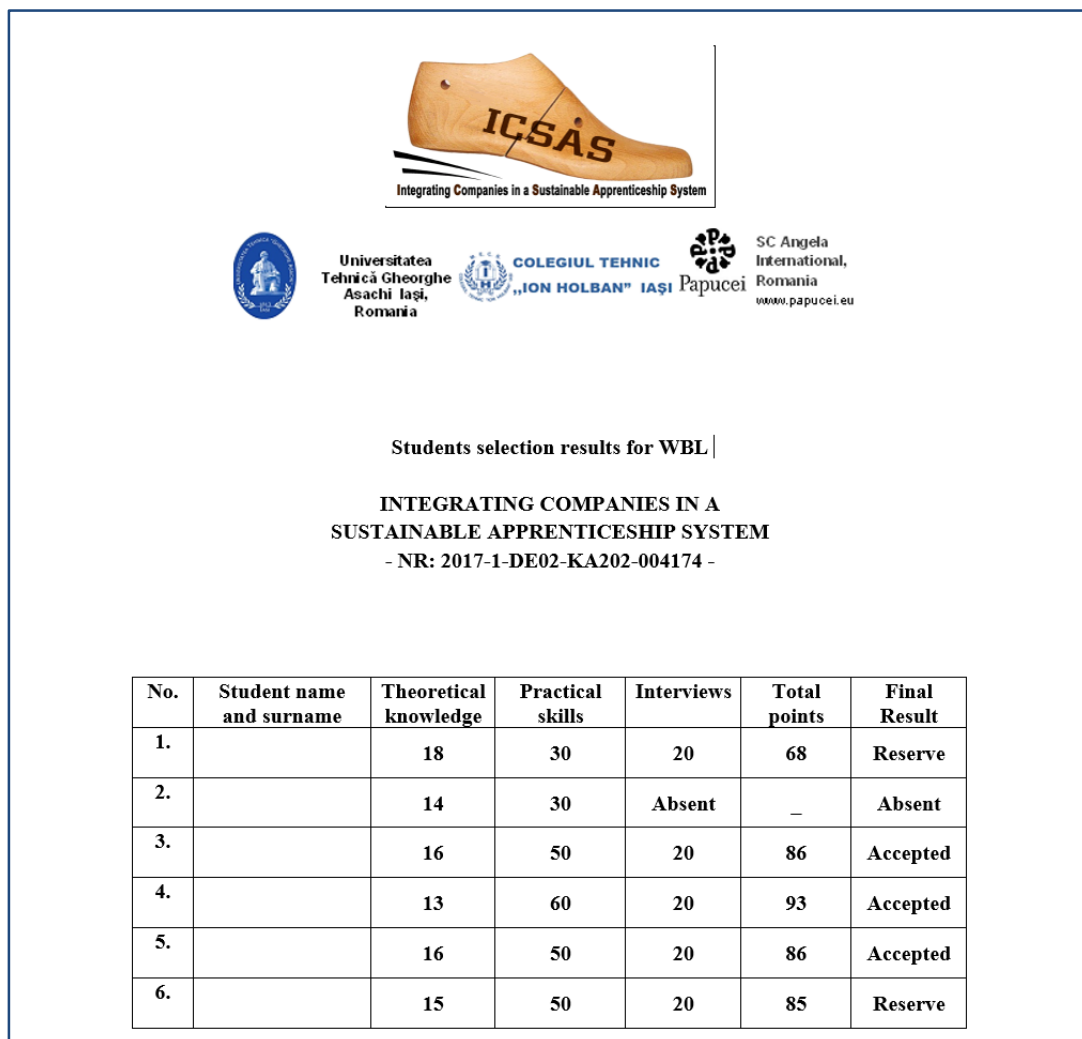


Figure 1: Apprentices selection results for WBL piloting in Romania

4. WBL Pilot planning

The piloting phase had a duration of one year, scheduled during October 2018 - October 2019. The apprentices passed through all spheres of activity and started on 22nd October 2018. Considering learning-teaching activities of each sphere, Papucei and TUIASI decided on the following distribution (Table1):

Learning spheres	Learning content	Time distribution	Total hours
Core Spheres	Cutting	October - November 2018 5 weeks, 5 days/week, 6 h / day	150
	Pre-stitching	November – December 2018 3 weeks, 5 days/week, 6 h / day	90
	Stitching	December 2018 - February 2019 1 week, 5 days / week, 6 h / day + 7 weeks, 2 days / week, 6 h / day	115
	Pre-lasting and lasting	March - April 2019 7 weeks, 2 days/week, 6 h / day	84
	Assembly	June 2019 8 weeks, 2 days/week, 6 h / day	96
	Finishing	July 2019 4 weeks, 2 days/week, 6 h / day	48
Peripheral spheres	Design Technical development Quality assurance Production planning	September - October 2019 6 weeks, 2 days / week, 6 h / day	72

Table 1: Spheres distribution for piloting WBL

The detailed schedule of the WBL is presented in the following table (Table 2):

Sphere	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	January-February 2019	March-April 2019	May-June 2019	July 2019	September-October 2019
No of hours	5x6=30	5x6=30	5x6=30	5x6=30	5x6=30	5x6=30	5x6=30	5x6=30	5x6=30	6 hours/day* 2days/week* 7weeks=84	6 hours/day* 2days/week* 7weeks=84	6 hours/day* 2days/week* 8weeks=96	6 hours/day* 2days/week* 4weeks=48	6 hours/day* 2days/week* 6weeks=72
Period	22-26 Oct	29 Oct- 2 Nov	5-9 Nov	12-16 Nov	19-23 Nov	26-30 Nov	3-7 Dec	10-14 Dec	17-21 Dec	Monday and Thursday	Monday and Thursday	Monday and Thursday	Monday and Thursday	Monday and Thursday
Cutting														
Pre-stitching														
Stitching														
Pre-lasting and Lasting														
Assembly														
Finishing														
Technical Development														
Production Planning														
Design														
Quality Assurance														

Table 2: WBL pilot schedule in Romania

5. Tutors training Workshop on WBL

The role of tutors is at the heart of apprenticeship programmes:

- passing on practical skills alongside with theoretical know-how
- tutoring = internal knowledge management (& transfer) system
- coaching apprentices = social responsibility
- dealing with emotional ups and downs of teens

Before the start of WBL pilot program in Romania, Tutors from Papucei footwear company were trained by representatives from TUIASI regarding the role of the tutors, the aim of the pilot activity, Train the Trainers manuals, Learning-Teaching Exercises, spheres of activity and WBT planning and coordination (Figure 2).

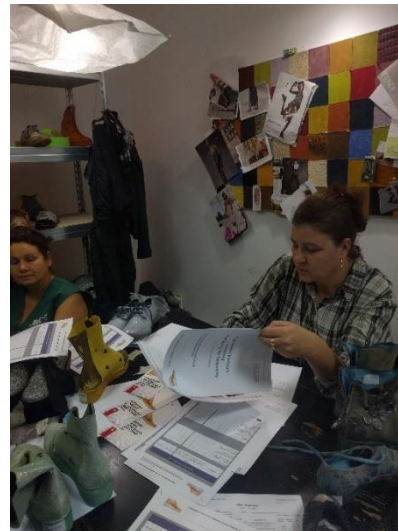


Figure 2: Train the Tutor workshop in Romania

6. WBL pilot implementation

According to the agreed WBL pilot program and guided by tutors from Papucei and TUIASI the apprentices followed all the Core Spheres and the Peripheral spheres specific to footwear industrial manufacturing.

Core spheres – 582 h

Cutting, Pre-stitching, Stitching, Pre-lasting, Lasting, Assembly and Finishing



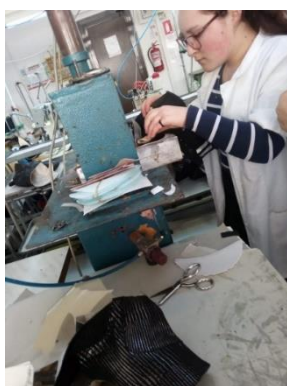
Cutting



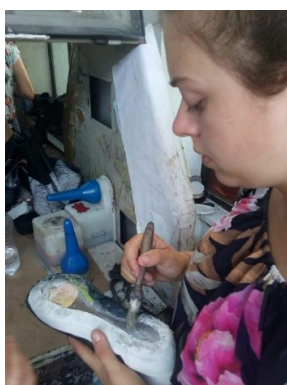
Pre-stitching



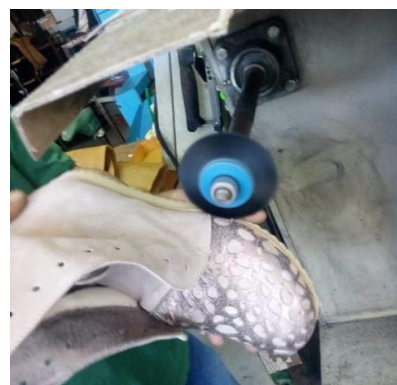
Stitching



Pre-lasting and Lasting



Lasting



Finishing

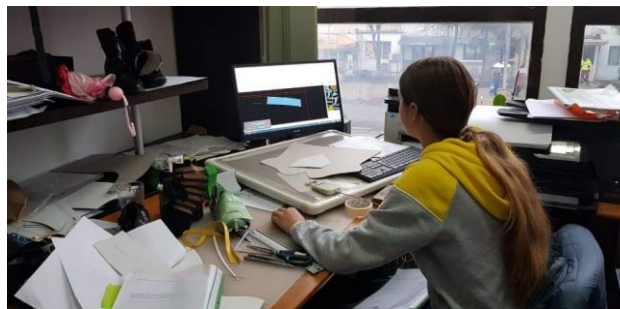
Figure 3: Apprentices' during Core spheres WBL at Papucei

Peripheral spheres – 72 h

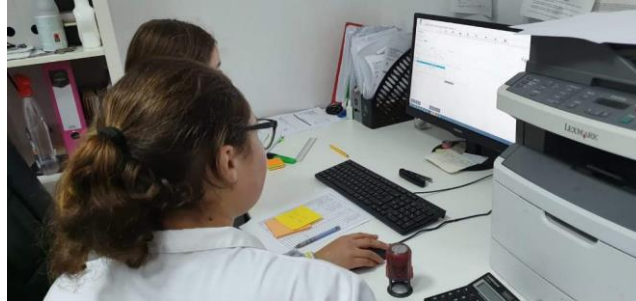
Technical Development, Production planning, design and Quality Assurance



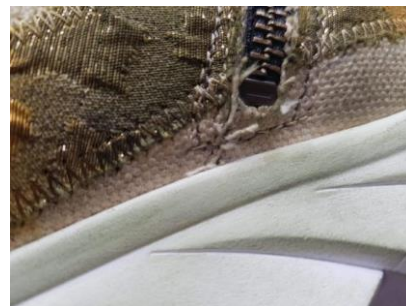
Design



Technical development



Production planning



Quality Assurance

Figure 4: Apprentices' during Peripheral spheres WBL at Papucei

Regular Work meetings at TUIASI



Figure 5: Apprentices' during meetings at TUIASI

Apprentices notebooks

Additionally, the apprentice` documented all their work in individual notebooks containing drawings, samples explanations and observations.



Figure 6: Apprentices notebooks and footwear prototypes

7. Formative Quality Assurance

7.1. Learning Outcomes feedback

For each sphere of activity, at the end of the training in that sphere, the apprentices' achievements were evaluated by the responsible tutors from TUIASI and PAPUCEI by using the Matrices found in the Manuals developed by ICSAS to support tutors involved in WBL process.

For all learning spheres, the apprentices need instruction or supervision to perform the respective work tasks. None of the apprentices managed to receive the highest possible rating "Can perform all work tasks (almost) independently". This is justified by the age of the apprentices (16-17 years old), their learning pace in an actual work environment being slower compared with the one of an adult, and their limited theoretical knowledge in the field of Footwear industrial manufacturing. Therefore, it is recommended to adapt the number of allocated hours for WBL according to the age of the students and their theoretical knowledge. An example of filled matrices is presented in Figure 7.



5. Formular de Evaluare / Feedback

Domeniul de activitate: Croirea reperelor

Etapă de lucru	Evaluare				Locație	Data	Semnătură
	Necesită asistență	Necesită instruire	Necesită supraveghere	Independent			
Croire manuală			✓		PAPUCEI	8.11.2018	[Signature]
Croire semiautomată - prese de croit		✓			PAPUCEI	16.11.2018	[Signature]
Croire automată - mașini CAD-CAM	✓				PAPUCEI	19.11.2018	[Signature]
Egalizare							
Citirea și înțelegerea comenzii de lucru							
Pregătirea materialului [-]							
Solicitarea de sprijin (dacă este necesar)							
Cunoașterea desenei materiale							
Colaborarea cu colegii							
Verificarea și marcarea reperelor croite							
Stampilarea / marcarea			✓		PAPUCEI	22.11.2018	[Signature]

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9. Formular de evaluare/ feedback

Domeniul de activitate: Finisare

Evaluare				Locație	Data	Semnătură
Întărit	Necesită instruire	Necesită supraveghere	Independent			
		✓		PAPUCEI	22.11.2018	[Signature]
		✓		PAPUCEI	22.11.2018	[Signature]
	✓			PAPUCEI	22.11.2018	[Signature]
	✓			PAPUCEI	22.11.2018	[Signature]
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	✓			PAPUCEI	22.11.2018	[Signature]
	✓			PAPUCEI	22.11.2018	[Signature]

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Figure 7: Example of filled matrices from Cutting and Finishing

The main findings of the Romanian apprentices learning outcomes assessment are presented in the following table:

Learning sphere	Findings
Cutting	All apprentices need instructions and supervision for performing the requested tasks for manual cutting and die-cutting and that they need assistance for automatic cutting.
Pre-stitching	Apprentices can read and understand work orders independently need additional instructions and supervision for making the adjustments on the skiving and splitting machines and that they need to be supervised during performing the majority of the pre-stitching operations.
Stitching	Apprentices need additional instructions and supervision for performing the majority of the stitching operations.
Pre-lasting and lasting	Apprentices can read and understand work orders independently, can perform the majority of operations independently or under supervision but need more practice to achieve the required quality. Regarding Lasting, do to the high complexity in operating the lasting machines the apprentices need further training in operating those machines.
Assembly	Apprentices can perform the majority of operations under supervision;
Finishing	Apprentices can perform the majority of operations but need supervision and additional practice to achieve the required quality.
Design Technical development Quality assurance Production planning	Allocated time was only sufficient to understand the main principles, therefore, apprentices need additional training in peripheral departments.

Table 3: Learning outcomes feedback main findings

7.2. Interviews with the apprentices

To further improve the WBL activity, after their stay at each learning station, the apprentices were asked to answer a set of questions during an open interview to evaluate the atmosphere of the learning process.

The following questions were used during the interviews:

- Which LS (Learning Station) have you just completed?
- How long did you stay there?
- Was the time frame adequate or rather too long or too short? If it was not adequate, why?
- Do you feel proficient at this LS now? If not, why?
- Did you feel well prepared for this LS? If not, what was missing?
- Do you think that the entire learning potential of the LS was used? If not, why?
- Did the tutor support you in an adequate way? If not, why?

- Do you think that communication with colleagues was cooperative? If not, why?
- Were you part of a team or were you working on your own?
- Would you recommend your learning experience at this LS to other learners? Why?
- What could be improved?
- What was the most difficult task at this learning station?
- Were you able to put your theoretical knowledge from vocational school into practice at this LS? Did this LS help you to reinforce your understanding of theoretical knowledge?

Main findings:

- All learning spheres were recommended as being dynamic and interesting;
- Tutors provided adequate support and explained in detail all the operations;
- Allocated time was considered sufficient to learn main operations;
- More time to be allocated for exercising activities with a higher degree of complexity;
- Additional training and practice regarding machinery setup;
- The practice helped them to improve their understanding of theoretical knowledge;
- Experienced colleagues were always open to provide support and assistance.

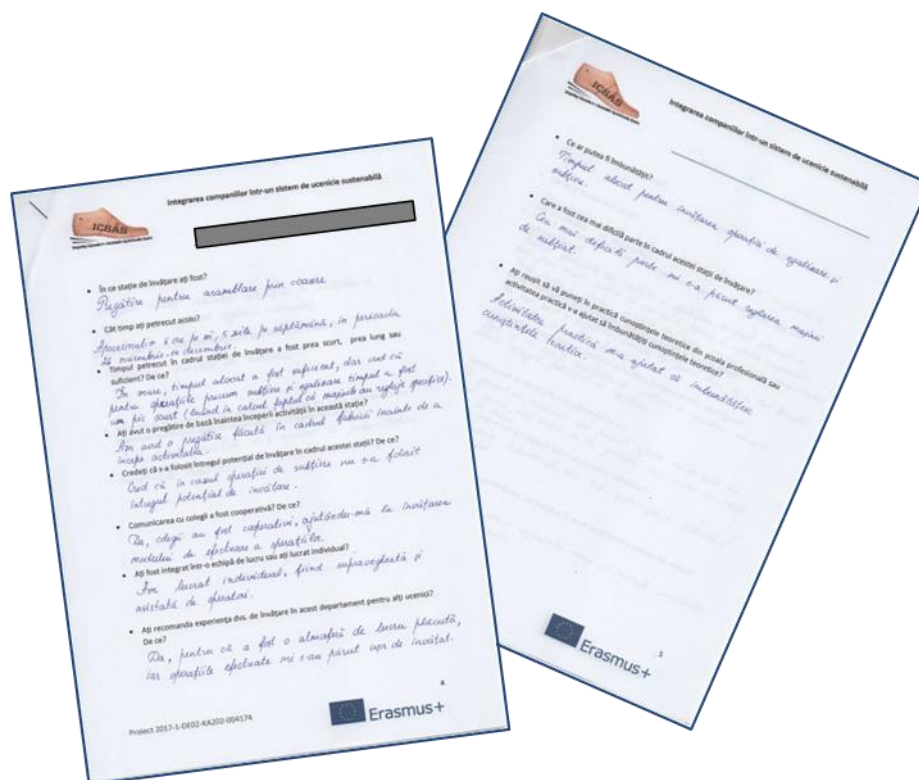


Figure 8: Example of Interview with apprentices

8. SWOT analysis of WBL in Romania

The implementation of WBL in Romania was analysed during a workshop that gathered 12 representants from TUIASI, Papucei, “Ion Holban” Highschool and CNDIPT (Romanian National Center for the Development of Vocational and Technical Education) that shared their opinions regarding the implementation of WBL, the progress made by trainees, benefits and future collaboration. The results of the SWOT analysis made during the workshop is presented in the following table:

Strengths
<ul style="list-style-type: none"> • CDL objectives were achieved (CDL – locally developed curriculum, a component of National Curriculum, includes allocated hours for the development of school-specific curriculum in partnership with private companies) – the CDL was developed and implemented successfully, the trainees followed and passed all WBL spheres of activity and can be employed in a footwear company; • The project facilitated the collaboration between Technical school - Industry - University • Training Manuals and Learning-Teaching manuals have great value, both for the company and the school; • Portfolios elaborated by the trainees have didactic use; • Social impact: comparison between school ateliers and factory; integration in work teams, contact with workers from the company. • Students learn how to follow a schedule, respect hierarchy, to be punctual, to communicate with colleagues, to follow work tasks; • The training program and manuals are very useful for both school and companies.
Weaknesses
<ul style="list-style-type: none"> • Estimated and allocated hours for some of the departments: too many or too few hours; for example: were too many hours for the cutting and stitching departments while for the lasting department more hours would be required; The main explanation for this is represented by differences in the degree of difficulty between departments and the age of the trainees (very young, 15-16 years old). The maximum number of hours imposed by the national legislation has to be respected but hours can be reallocated between departments; • Peripheral spheres: just a general introduction on these departments should be made, with few hours and the remaining hours should be allocated to the other departments. For example, to be proficient in Footwear Design or Technical development, a lot more hours are needed.
Opportunities
<ul style="list-style-type: none"> • The WBL programme can be successfully implemented in other footwear companies and technical schools from other regions from Romania. • Papucei and “Ion Holban” Highschool will continue to develop and strengthen their collaboration in the next years; • “Ion Holban” Highschool will use the project results to promote their educational offer to attract students from secondary school;
Threats
<ul style="list-style-type: none"> • Changes in Romanian legislation are unpredictable; • The DUAL Romanian education system is not fully functional; • The motivation of the young Romanian generation is generally low and their interest is hard to capture and maintain;

Table 4: Learning outcomes main findings

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