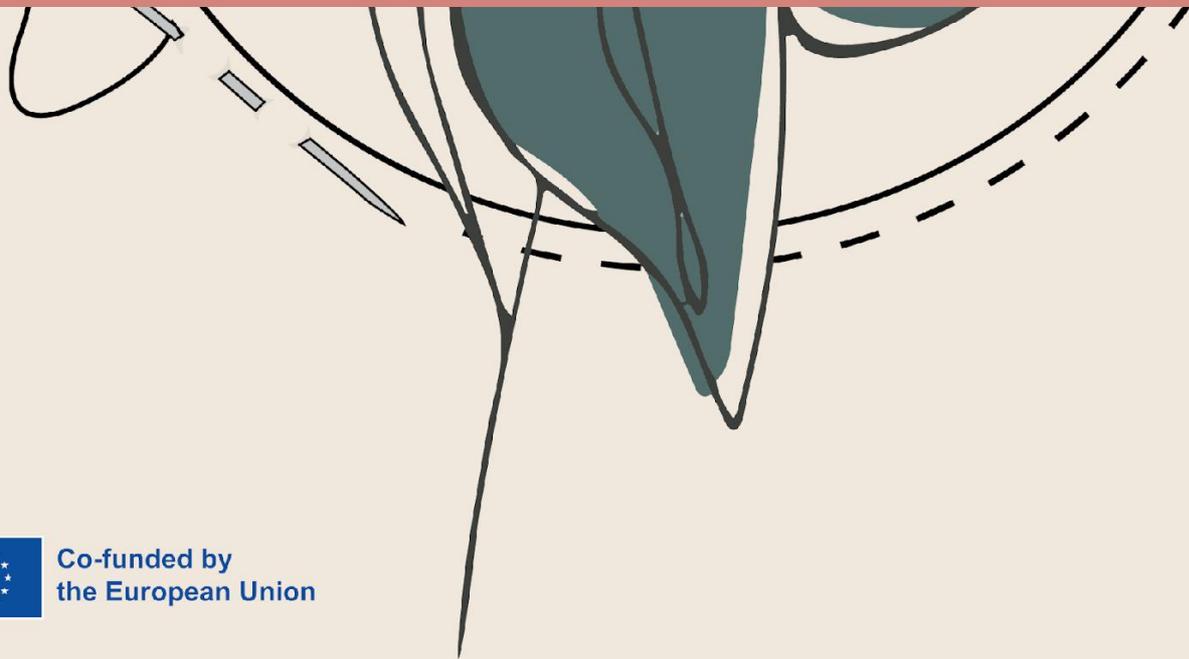




ReFashion – VET job competency profile and training card



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1. Introduction

The fashion & textile industry is the second largest polluter in the world. Boosting the sustainability of the sector and addressing the challenges brought about by the COVID-19 crisis are the EU wide concerns, in which the stakes in terms of cross border pollution effects and impact on the internal market are high. The changes proposed by the new EU Textiles Directive will be enforced starting next year, pressing businesses in the textile sector to change their operations and products. However, since the changes required are drastic, many businesses will be affected due to the lack of specialized education and preparation, especially in the small and medium size enterprises (SMEs). To comply with the new legal and market demands, businesses will have to train their employees on sustainable fashion and textiles (SF&T), with specialized training that involves high costs, endangering the small business world that may not have residual funds for such training.

Currently, in Europe the training alternatives include few bachelor's and master's programs that require a high degree of involvement and cost and several charged online courses, making the options for education very limited. It is vital for SMEs to gain knowledge on SF&T, meet the sustainability criteria and stay on the EU market.

The European apparel market revenue is worth €422,003mil in 2021 and it is projected to keep growing by 5.24% annually until 2025. The volume of the total EU apparel market is expected to reach 37,892m pieces by 2025, with an average of 40.6 pieces/person/year. Out of the yearly 26 kgs of consumed textile clothing, the average European throws away 11 kgs, which usually ends up landfilled or incinerated. The full environmental impact is ~ 36 to CO₂/€1mil of textile and leather products produced.

In Romania, such VET courses do exist; however, there is no academic one that meets these criteria. SMEs are far from applying sustainability criteria. As a nationwide policy, there is an obligation to separate and collect textile waste and in the absence of recycling companies' textiles waste is incinerated or



landfilled. Still, there are few initiatives in fashion, such as Reginnova (associate partner), Sustainable Lifestyle, Maneca din Canepa (NGOs), Lara & Leah, handling topics such as creating clothes from sustainable materials, upcycling products, collecting textile waste, etc.

For Italy, as the world's biggest luxury fashion producer, sustainability is an important issue and it is seeking to promote the green transition of SMEs, directly by providing for fiscal incentives, that became more relevant during the pandemic when attention to climate change crises rose. National authorities published a Manifesto for the sustainability in Italian Fashion, as the starting point for the (r)evolution of the fashion industry in Italy. Guidelines concerning many different aspects of the fashion industry supply chain, thus from its beginning up to the retail phase have been published.

Slovenia is leading the way in developing a circular economy society, with fashion as one of the key areas for innovation. Growing awareness of circular fashion has been driven by the rapid advancement in material innovation, particularly focused on sustainable alternatives for materials and the implementation of new and innovative fashion business models, focused mostly on secondary materials and renting. Obstacles are perceived in client's unsustainable consumption and the lack of competencies in SF&T and how to employ bankable and financially sustainable fashion products.

The Greek Apparel & Textile sector has undergone significant changes over the past decade. These have been caused by systemic changes on the international stage, through globalization, the liberalization of textiles trade and the resulting increase in competition. Sustainability initiatives are very few, coming from small fashion companies and NGOs, while the textile waste has no systemic solutions.

The project aims to help SMEs and consumers to cope with the expected legal and market challenges in the fashion and textiles industry, by increasing their capacity and knowledge through awareness and education. In this respect, our approach is envisaging both sides of the economic sector: textiles design and manufacturing on one hand and textiles consumption on the other hand.



The new educational program in ReFashion will be tailored on the SMEs needs and will be offered for free, by making use of innovative digital practices, while the ReFashion Consumer Guide, available at one click, in an attractive and easy to understand format, will support consumer to get the right information and be able to change their consumption habits and preferences.

With this project we will fill a gap in the VET education dealing with sustainability knowledge and competences in the fashion and textiles sector, develop green sectoral skills and prepare the learners, companies' staff, and consumers, to become agents of change, enabling behavioral changes and more sustainable production and consumption patterns.

In doing so, the project set the following specific objectives:

1. Developing a new VET educational programme and creating work-based learning opportunities in line with the need for green skills and digital transition, expected in the fashion and textile industry.
2. Increase cooperation between educational institutions and businesses aimed at promoting work-based learning in all its forms and supporting VET learners in acquiring and developing skills and key competences in fashion and textiles sustainability, fostering employability in the sector.
3. Introduce open education and innovative digital practices, making education available for all and facilitating new and innovative learning methods, by developing the ReFashion online educational program and a new learning source, the ReFashion Guide that will enable behavioral changes for individual preferences, will contribute to change consumption habits, and lifestyles.



2. Methods and approaches

In this section we present the process of job competency profile development and its content creation for the VET training of the ReFashion project.

A competency profile is the collection of relevant competencies at specific proficiencies, which define the requirements for a job in concrete, measurable terms¹. A competency profile can include several layers. For example, all jobs in an organization may share common core competencies that embody the key values and behaviors that everyone needs to have. But individual jobs within the same family can be quite different; and for this, there are job-specific competencies -- the most individually oriented competencies on a competency profile, which is a case in our ReFashion project. The specific mix of competencies and proficiency levels is what makes competency profiles unique to individual jobs, and an important tool to define the behaviors and skills needed for success. Competency profiles must be clear and focused.

In our job competency profile, we also defined:

- the knowledge and skills that are expected from VET students to learn
- the learning objectives the VET students are expected to meet
- the units and lessons that VET students will be taught
- the assignments and projects given to VET students
- materials of different types used in a training
- and the tests, assessments, and other methods used to evaluate VET student learning.

¹ Competency profile: <https://www.competencies.co/competencies/competency-profiles>



In job competency development, we will follow a traditional approach of creation using competency profiling process. This is a multi-step process:

- a) knowledge and skills questionnaire to define the VET learner's knowledge and skills gaps, real-world needs

2.1 Process of a job competency profile development

In the online meetings held in February and March 2022, partners agreed how to carry out this process of job competency development. In Table 1, the dates of the online meetings took place are presented, as well as the main content and decisions about the topics, outline, and partner's tasks.

Meeting date	Meeting content
1. 3. 2022	Partner and project introduction took place, KOM preparation
4. 5. - 5. 5. 2022	MIITR represented methodology, draft questionnaire, and job competency draft document – a discussion took place
25. 5. 2022	Finalization of the questionnaire that will be translated and send out – it will represent the basis for the development of training curricula
16. 6. 2022	PR2 discussion (e-learning platform)
20. 7. 2022	Methodology for state-of-the-art finalized; national reports, SPSS analysis and educational gaps identification to be done
13. – 14. 10. 2022	Final state-of-the-art report, final competencies report, development of training materials and course content

Table 1: Meeting distribution for A1.1.



The first step is to identify the gaps in the knowledge and skills of the countries covered by the project, since the preparation of topics in this job competency profile is closely related to the knowledge, skills, and competences to be gained to improve those gaps. For this, the questionnaire has been developed to analyze the existing competencies, where all partners will identify the knowledge and competencies lacking.

SPSS analysis of questionnaire results has been conducted to identify the fundamental variables or factors that explain any correlation patterns within a set of observed variables.

	Initial	Extraction
V1	1,000	0,741
V3	1,000	0,811
V4	1,000	0,715
V5	1,000	0,799
V6	1,000	0,758
V7	1,000	0,842
V8	1,000	0,840
V9	1,000	0,763
V10	1,000	0,758
V11	1,000	0,755
V12	1,000	0,746
V13	1,000	0,778
V14	1,000	0,744
V15	1,000	0,790
V16	1,000	0,776
V17	1,000	0,836
V18	1,000	0,809
V19	1,000	0,746
V20	1,000	0,719
V21	1,000	0,812
V22	1,000	0,754
V23	1,000	0,782
V24	1,000	0,717
V25	1,000	0,748
V26	1,000	0,805
V27	1,000	0,680
V28	1,000	0,840
V29	1,000	0,848
V30	1,000	0,815
V31	1,000	0,767
V32	1,000	0,787
V33	1,000	0,760
V34	1,000	0,742
V35	1,000	0,698
V36	1,000	0,798
V37	1,000	0,743
V38	1,000	0,811
V39	1,000	0,859
V40	1,000	0,771
V41	1,000	0,698
V42	1,000	0,654
V43	1,000	0,726



V44	1,000	0,793
V45	1,000	0,785
V46	1,000	0,821
V47	1,000	0,754
V48	1,000	0,787

V49	1,000	0,790
V50	1,000	0,833
V51	1,000	0,812
V52	1,000	0,827

Extraction Method: Principal Component Analysis.

Table 2: Communalities of the variables.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	
1	22,674	44,458	44,458	22,674	44,458	44,458	10,323
2	4,234	8,302	52,759	4,234	8,302	52,759	10,991
3	3,003	5,888	58,648	3,003	5,888	58,648	9,741
4	1,846	3,620	62,268	1,846	3,620	62,268	7,014
5	1,656	3,247	65,515	1,656	3,247	65,515	11,780
6	1,438	2,819	68,334	1,438	2,819	68,334	6,118
7	1,311	2,570	70,904	1,311	2,570	70,904	8,510
8	1,230	2,411	73,315	1,230	2,411	73,315	1,717
9	1,089	2,134	75,450	1,089	2,134	75,450	8,111
10	1,064	2,086	77,536	1,064	2,086	77,536	7,514

Table 3: Total variance explained.

Identified factors (F)	Aggregated factors (AF)	Variance explained (in %)
F1: knowledge about BAT in F&T F3: knowledge about textile fibers	AF1: education and awareness raising	50.34



F2: Social issues in F&T	AF5: social issues	8,30
F5: missing knowledge on sustainability F9: missing knowledge of microplastics and environmental impacts	AF2: lack of knowledge	5,38
F6: educational background F8: age	AF3: age and educational background	5,23
F4: digitalization	AF4: digitalization	3,62
F7: implementing sustainable fashion behavior in daily life	AF4: sustainable behavior	2,57
F10: waste management and CE	AF6: waste management, LCA and CE	2,08

Table 4: Identified and aggregated factors.

A closer analysis of these factors revealed that some of them intersect, whether in content or semantics, e.g., education and educational background, awareness raising. Grouping these factors into six overarching themes allows to better identify and explain competencies, gaps, and topics which need attention during the development of the educational materials. Thus, the emphasis should be given to the following:

- Education and awareness raising
- Social issues in F&T, especially considering work related issues
- Age and higher educational degree represent factors to improve more sustainable behavior
- Digitalization
- Sustainable behavior and lifestyle
- Waste management, LCA and CE

During the transnational project meeting, the partnering organizations finalized the development of curricula and course breakdown, which was based on the results of the competencies gap report and national state-of-the-art reports. The course has been broken down into 3 main modules, including **textiles**,



After the final improvements of the job profile and training card, carried out by all the working partners, a quality check will be performed by the IO leader and the project quality manager.

Job competency profile and training card for the VET level consists of various up-to-date topics that will allow students to execute circularity and sustainability in the fashion and textile related businesses, as well as understand and appropriately respond to the needs of their local communities, create valuable products and sustainable practices and be a much-needed change-makers.

2.2 Added value of ReFashion job profile

Based on a thorough need analysis of the target group, ReFashion job profile offers a further development of existing skills, knowledge, and competencies in the sustainable development of the fashion industry. After studying the educational materials on the ReFashion platform, individuals of the target group will improve efficiency when it comes to producing sustainable pieces of clothing, as well as submit high-quality and environmentally friendly products.

With textile industry technology constantly evolving, keeping up with the latest technologies, techniques, and methods is an asset in one's employment and career. With the use of the ReFashion job profile, employees in the textile and fashion industry will be able to identify gaps in their knowledge and get an insight into the current sustainable trends of the textile industry. Having specialized knowledge will increase one's contribution to a company, as well as the contribution to a sustainable future of the fashion industry.

2.3 Bloom's taxonomy

Bloom's taxonomy has been applied to create the learning objectives and outcomes in the job profile and the VET training card. Bloom's Taxonomy was created in 1956 by the leadership of educational psychologist Dr Benjamin



Bloom in order to promote higher forms of thinking in education, such as analyzing and evaluating concepts, processes, procedures, and principles, rather than just remembering facts (rote learning). It is widely used as a template for creating curriculums learning objectives and outcomes as it is a convenient way for describing the extent to which we want for the students to understand and use concepts, to demonstrate particular skills, and to have their values, attitudes, and interests covered.

There are a three domains educational activities or learning (Bloom, et al. 1956) which were revised by Anderson and Krathwohl (2001) and are today used, as such:

- Cognitive: mental skills (knowledge)
- Affective: growth in feelings or emotional areas (attitude or self)
- Psychomotor: manual or physical skills (skills)

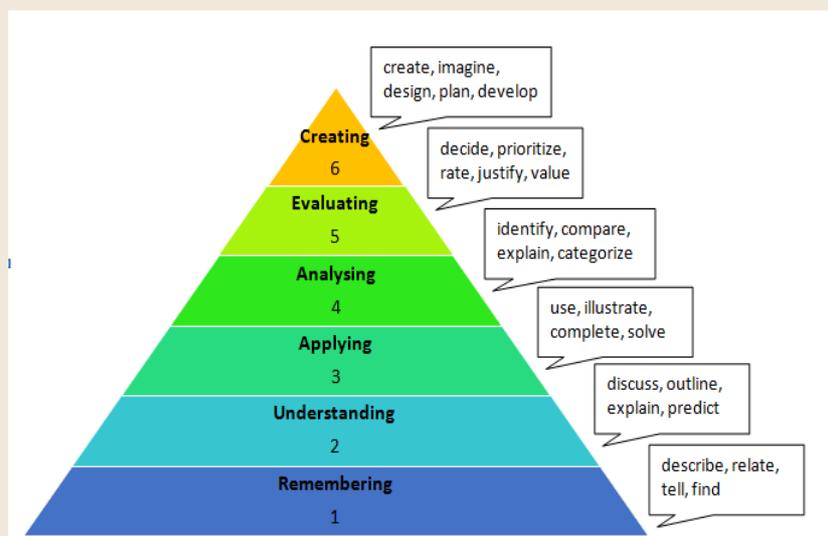


Figure 2: Bloom Taxonomy of Educational Objectives hierarchy (Ref.)²

² Ref: Bloom, B. S. (ed.). Taxonomy of Educational Objectives. Vol. 1: Cognitive Domain. New York: McKay, 1956.



The cognitive field involves the knowledge and development of an individual's intellectual abilities, which involves recalling or recognizing certain facts, procedural patterns, and concepts that serve to develop intellectual skills and abilities. Bloom (1956) formed six levels within this category and assumed that the higher level cannot be obtained until the lower levels of learning and teaching are acquired, Fig. 1. We have used these levels of education to serve us as a support in curriculum design and evaluation, as suggested by Forehand (2008). Updated terms and their definitions of cognitive levels in the Bloom taxonomy, according to Anderson and Krathwohl (2001):

- **Remembering**: renew, recognize, recall knowledge from memory;
- **Understanding**: design meaningful oral, written or graphic messages with explanation, case studies, classification, summaries, conclusions, comparison and explanations;
- **Applying**: carry out procedures;
- **Analyzing**: break down into individual parts and determine the connections of individual parts into a complete composition, by distinguishing organizing or defining a function;
- **Evaluating**: make judgments based on criteria and standards by examination and criticism;
- **Creating**: assemble elements in such a way that they form a comprehensive useful set, recognize elements into something new, a new structure, by designing or producing new knowledge.

Current research reveals the widespread use of the Bloom's taxonomy in various fields (e.g., from chemical engineering to medicine). Bloom's improved taxonomy has fostered those educational concepts that related to problem solving and to creative and critical thinking, through the integration and use of information and communication technology (Ferguson, 2002).



For the preparation of the curriculums for higher education as well as secondary level we followed the improved Bloom's taxonomy as creative approaches and critical thinking are of utmost importance in the circular economy, and (social) entrepreneurship education as well as establishing cooperatives and generating new business ideas.

3. Job Competency profile and training card

The Re-Fashion Job competency profile and the training card for VET level training Re-Fashion aim to create a baseline for innovative and up-to-date content structure with practical and learner-friendly topic development. It is divided into following information areas:

1. basics;
2. prerequisites;
3. learning objectives;
4. learning outcomes;
5. method of learning outcomes evaluation;
6. course content;
7. methods of teaching;
8. marks;
9. literature;
10. hour structure.



3.1 Basics

Name of course/training: Re-Fashion: Education for Sustainable Fashion		Exam (Yes/No): No
Field of study: Sustainable Fashion	Study profile: EQF level 4: <i>either graduates in fashion topics or non-graduates with at least 6 months of experience in the fashion field</i>	
Specialization: Sustainable Fashion		Language: English, Slovenian, Romanian, Italian, Greek
Number of hours: Study hours (presentations + embedded exercises): 32.4 hours Self-study hours: 32.4 hours Assignments: 16.2 hours		Number of ECVET points: 3 81 study hours
Level of study: VET – EQF level 4		



3.2 Prerequisites

- Factual and theoretical knowledge in broad contexts within the textile and fashion industry field.
- Cognitive and practical skills required to generate solutions to specific problems in textile and fashion industry field.
- Self-management within the guidelines of work or study contexts that are usually predictable but are subject to change.
- Taking responsibility for the evaluation and improvement of work activities.

The person has to be either a graduate in the fashion field of a non-graduate with at least 6 months of experience in the fashion field.

3.3 Learning objectives

A learning objective is one's purpose for creating and teaching a course. These are specific questions that the lecturer wants their course to raise. Learning objectives are the basis of the design and execution of the course as well as the assessment. Objectives show the learners what they are expected to learn during this course.

O1	Learners understand the source of different types of natural and synthetic fibers and know which is the most sustainable or most unsustainable and why.
O2	Learners learn about new age sustainable fibers, but also about more traditional replacements for unsustainable fibers.
O3	Learners understand the steps needed in the production process of regular textiles and the impact of each step.
O4	Learners are able to identify which steps of their own production are having the most negative impact.
O5	Learners learn about ways to improve textile circularity through textile design.



O6	Learners learn about new solutions to improve garment production, including digital innovations.
O7	Learners understand the steps that a garment goes through within production, and which ones have the most negative impact.
O8	Learners understand the importance and influence the design stage can have on the business model, product, and costs.
O9	Learners understand circular design strategies employed in fashion.
O10	Learners learn about circular strategies to enhance the product durability and improve the garment lifecycle.
O11	Learners acquire information about the main end-of-life strategies and how to implement them.
O12	Learners are presented with successful and unsuccessful examples of organizations that applied sustainability and circularity principles and strategies in their business model and supply chain.

3.4 Learning outcomes

Learning outcomes describe specific and applicable outcomes that students should understand, acquire and be able to use at the end of the learning process. We prepared actionable outcomes, divided into the fields of knowledge, skills, and competencies.

KNOWLEDGE	
K1	Learners know the EU legislative background and the general European context in which the fashion sector is being developed.
K2	Learners identify the origin and the environmental impact of the main natural and artificial fibers.
K3	Learners define sustainable and innovative fibers.
K4	Learners describe steps of the production process of traditional textiles.



K5	Learners describe steps of the yarn production process and its environmental impact.
K6	Learners distinguish between knitting and weaving processes and know their environmental impact.
K7	Learners explain the negative environmental impact of dyeing and finishing processes.
K8	Learners list the sustainable methods for yarn production, finishing and dyeing.
K9	Learners describe environmental impact of textiles in a certain design phase.
K10	Learners explain the different steps garments go through to be designed, produced, and commercialized.
K11	Learners describe the role of designers within the whole production process and their influence on the garments supply chain.
K12	Learners know the main circular design principles that can be applied in the design phase.
K13	Learners list some relevant and inspiring examples of circular design principles and strategies applied in fashion companies.
K14	Learners know the main end-of-life strategies that can be applied in the fashion and textile industry.
K15	Learners know the importance of waste management practices and its steps.
K16	Learners define the cradle-to-cradle approach.

SKILLS	
S1	Learners produce sustainable and innovative fibers.
S2	Learners apply sustainable methods for yarn production, finishing and dyeing in their own production process.



S3	Learners use sustainable principles and circular strategies in their textile design activities.
S4	Learners apply basic solution to reduce the negative impact of garment production and modify all steps of their supply chain.
S5	Learners use innovative solutions to reduce the negative impact of garment production and modify all steps of their supply chain.
S6	Learners implement circular strategies to reduce the negative environmental impact of garments supply chain.
S7	Learners use digital technologies during the design stage.
S8	Learners develop a strategy that includes circular design principles in the production process and can implement it.
S9	Learners implement others' best practices concerning the production of circular goods.
S10	Learners develop, implement, and monitor and end-of-life strategy.
S11	Learners implement the cradle-to-cradle approach in their business.

COMPETENCIES	
C1	Learners rearrange their business model and supply chain in a way that they replace the unsustainable fibers with sustainable ones.
C2	Learners evaluate production processes of different fashion fabrics and justify the negative environmental consequences.
C3	Learners analyze and evaluate the negative impact of each step of the garment supply chain and can identify the most negatively impacting phases.
C4	Learners interpret the role and influence of designers on the production process and supply chain and evaluate its environmental impact.



C5	Learners organize and adapt their circular business model to be more cost efficient.
C6	Learners aim to improve the product's sustainability and durability.
C7	Learners evaluate successful and unsuccessful examples of sustainability and circularity principles and strategies in their business model and supply chain.



3.5 Method of learning outcomes evaluation

For a final note:

5 multiple choice quizzes, 2 interactive exercises per unit, 1 assignment per unit

3.6 Course content

Course content is divided into 3 modules, which are further divided into 12 training units. Stated learning objectives and outcomes are added accordingly. Methods of learning outcomes are designed as various e-learning innovative practices that allow students to scale up their knowledge, skills, and competencies in order to use them as a part of a lifelong learning asset.

Modules	Training units	Method of learning outcomes evaluation
1. Textiles	Origin and impact of raw materials	e-learning
	Circular sustainable fibers	
	Impact of fashion fabric production and supply chain	
	Circular opportunities for textile production	
	Circular textile design principles	
2. Garments	Garments supply chain	e-learning
	Circular opportunities in garment production	
	Impact of the garment design stage	



	Circular garment design principles	
3. Circular fashion in practice	Enhancing product durability and garment lifecycle	e-learning
	End-of-life management	
	Circularity and sustainability practices in TCLF industries	

3.7 Methods of teaching

Presentations, self-study assignments, multiple choice quizzes, interactive exercises.

3.8 Marks

Mark	0-49%	50-74%	75-90%	91-100%
Criteria	No response or very limited knowledge of the content of the training. Student does not know the basic issues discussed.	Knowledge of training content limited to the minimum necessary. Student knows the basic issues discussed and their solutions.	Satisfactory or good knowledge of the content of the training. Student knows and understands the solution to the problems.	Very good knowledge of the content of the training or beyond the program standards. Student has deep knowledge of the problems and their solutions.



3.9 Literature

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3.10 Hour structure

Type of Activity	Number of hours
Study hours	32,4
Self-study hours	32,4
Assignments & self-assessment	16,2
Total hours	81
Number of ECVET points	3



4. Conclusion

ReFashion online educational program aims to fill the gap in the VET education dealing with sustainability knowledge and competences in the fashion and textiles sector, develop green sectoral skills and prepare the learners, fashion experts and students, SMEs employees or managers, fashion designers and technicians to become agents of change, enabling behavioral changes and more sustainable production and consumption patterns.

We believe that the content and materials we offer will fill the knowledge gaps of workers in the textile and fashion industry; furthermore, our plan is to awaken interest through innovative didactic methods, in particular the e-learning method. The ReFashion job profile serves as a summary of the content that will be offered and developed as part of the ReFashion education platform.

Job competency profile and training card for the VET level consists of various up-to-date topics that will allow learners to execute circularity and sustainability in the fashion and textile related businesses, as well as understand and appropriately respond to the needs of their local communities, create valuable products and sustainable practices and be a much-needed change-makers.



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