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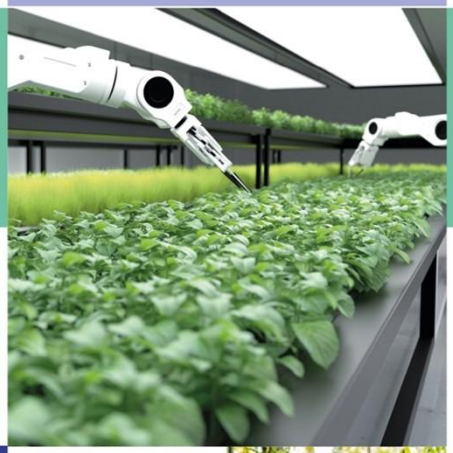

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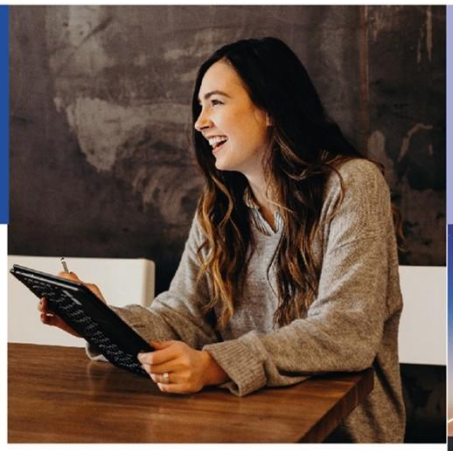

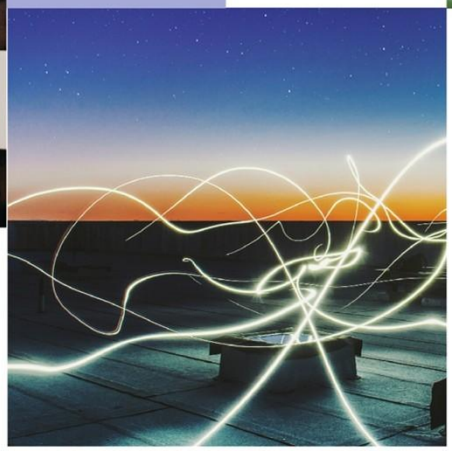

Guide for Teachers & Trainers

Validation and Recognition Framework

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EntreComp for transition

1 About the EntreComp4Transition Project

EntreComp 4 Transition aims at developing new, innovative, multidisciplinary approaches to teaching and learning paving the way for the future Green Transition Facilitator by fostering an entrepreneurial mindset, facilitating co-creation, and ensuring recognition of learning outcomes.

It relies on country clusters forging innovative alliances to support teachers, trainers, businesses, and end users in the learning path. Activities include an in-depth analysis of skills gaps, the development of dual blended methodology with innovative learning content delivered via a MOOC in line with ECVET and EQAVET frameworks, pilot sessions, a mobility scheme, and the creation of open badges to support HE/VET and enable businesses to verify acquired competences.

The project has also produced a sustainable AI-based tool to support companies in identifying skill gaps and raise their competitiveness. More than 30.000 stakeholders across the EU ranging from businesses, HEIs, VET providers, public authorities, civil society, and students will be involved and directly benefit from the project in the short-term and/or long-term.

Thanks to its well-defined governance at national level, the EntreComp 4 Transition project is designed to gather actors together in a strong alliance for innovation, the results of which will bring benefits to each of them, to different contexts and beyond in the long-term.

1.1 Validating and recognising learning

This is a key component of the EntreComp4Transition project focusing on ensuring that the knowledge, skills and competences acquired throughout the initiative are formally recognised by relevant stakeholders. This aspect of the project addresses the essential need for validating and recognising learning outcomes, enhancing their value for learners, educators and institutions.

The primary goal is to establish a comprehensive framework for the validation and recognition of learning outcomes, with particular emphasis on the green and digital transitions to ensure that the competences developed throughout the project are acknowledged by employers, educational institutions and policymakers, thus supporting the sustainability and wider adoption of the learning paths.

The milestones guiding the development of this project component were:

- **User-focused research**
  This was in-depth research to explore how to maximise the value and relevance of validation and recognition for all stakeholders. The research identified the needs of learners, educators, education providers, employers and industry sectors to ensure

alignment with European frameworks such as ECVET, EQAVET and EC TS, facilitating the adoption of the validation paths across diverse contexts.

1. **Validation and recognition matrix**
   The EntreComp4Transition validation and recognition matrix offered a practical guide for recognising learning outcomes with open badges. These badges are awarded to those who complete each Learning Path. The matrix recognises target audiences and a milestone approach to validation. This matrix is a key instrument in tracking and celebrating achievements, reinforcing the project's commitment to green and digital transitions.

- **Guide for Trainers**
  The current guide is developed to help trainers effectively integrate validation and recognition into their teaching practices, offering clear instructions on how to use validation paths to enhance the visibility and relevance of learning outcomes and provide valuable insights into how these processes can be leveraged for greater impact.

2. **Final set of open badges**
   The final task involved the creation and launch of a complete set of open badges available on the EntreComp Community platform. These badges formally recognise the achievements of students, teachers and institutions, ensuring that learning outcomes are accessible and meaningful across various educational and professional contexts.

The validation and recognition process is central to ensuring that the EntreComp4Transition project delivers tangible and widely recognised outcomes. By focusing on this area, the project aims to provide learners with valuable credentials that not only acknowledge their acquired competences but also enhance the long-term sustainability of the learning paths. This recognition can make the green and digital transition skills gained through the project more visible and relevant in both educational and professional environments.

1.2 Guide purpose and methodology

This guide supports educators in understanding and implementing validation and recognition processes essential to the EntreComp4Transition project. As key facilitators of learning, you play a vital role in equipping students with the skills and knowledge needed for the green and digital transitions. This guide provides the tools and insights necessary to ensure that learners' achievements are formally recognised and valued.

Effective validation and recognition of learning outcomes enhance the visibility and credibility of the skills and competences gained through any learning process or programme. By aligning with key European frameworks such as ECVET, EQAVET, and ECTS, this process ensures that learners' progress is acknowledged by employers, educational institutions and policymakers.

This guide is directly connected to the design and implementation of learning paths, and it includes an overview of evaluation and validation outcomes based on feedback from teachers and students involved in the project's pilot phase.

Main objectives and content of this guide

The main objective of the guide is to enhance the relevance, value, and visibility of EntreComp4Transition learning paths through validation and recognition while also informing the development of the Validation and Recognition Framework.

Its main sections include:

- **Validation and recognition paths**: a structured approach to understanding key frameworks and their role in formalising learning outcomes.
- **Competence validation approaches**: validation methods used in different countries.
- **Open Badges and Micro-credentials for recognition**: insights into how digital badges and micro-credentials can be used to certify and validate entrepreneurial competences and validate student achievements, teacher professional development and institutional efforts in integrating sustainability and digitalisation into curricula.
- **Practical implementation strategies**: actionable guidance for educators on integrating validation and recognition into their teaching practices.
- **Case studies and best practices**: real examples of how the trainers involved in the piloting of the EntreComp4 Transition learning paths in the project partner organisations recognised and validated them.
- **Recommendations for future development**: strategies to enhance the recognition of entrepreneurial skills globally.

By applying the approaches outlined in this guide and drawing insights from the EntreComp4Transition project's experiences and best practices, you will not only support learner development but also contribute to the long-term impact and sustainability of competence-based education. Recognised learning outcomes provide individuals with meaningful credentials that enhance their employability and mobility across educational and professional contexts.

This guide also presents a research-based overview of validation and recognition paths, linking them to a structured methodology, including open badges for micro-credentialing within the project's blended learning and MOOC framework.

1.3 Overview of EntreComp4Transition Learning Paths

Learning Path 1: Sustainability practitioner

Learning Path 1 is designed to equip learners with the knowledge and skills needed to navigate the green transition and implement sustainable practices in business. This learning path covers key topics such as understanding current environmental challenges, valuing sustainability and how businesses can adapt to remain competitive while benefiting the planet. Supported by the GreenComp Framework, the Sustainability Practitioner Learning Path will help participants identify and leverage opportunities in the green transition, preparing them to become a successful sustainability practitioner who can drive meaningful change in today's evolving business landscape.

Learning Path 2: Digital transformation practitioner

Learning path 2 is designed to guide you through the dynamic world of digital transformation and its impact on modern industries. This path provides foundational knowledge and strategic insights needed for companies to navigate the 'twin transition', integrating digital innovation with sustainable practices. By leveraging the DigComp Framework, participants learn to recognise and seize digital transformation opportunities, helping businesses become more efficient, resilient and responsible. This learning journey empowers students, entrepreneurs and business owners and employees to understand the principles and applications of digital transformation, equipping them to drive innovation and stay competitive in today's rapidly evolving market.

Learning Path 3: Entrepreneurship practitioner

Learning path 3 is designed to provide a comprehensive understanding of different entrepreneurial perspectives, whether it is pursuing an opportunity, developing a service, creating a design or improving a process. It focuses on cultivating an entrepreneurial mindset, and the ability to act on opportunities and ideas and transform them into value for others. By leveraging the EntreComp Framework, participants will explore the essential skills needed to become successful entrepreneurship practitioners and develop strategies to drive the entrepreneurial twin transition within their organisations. This path empowers students, entrepreneurs, business owners and employees to initiate change and stay competitive in today's dynamic market by recognising and using key entrepreneurial competences.

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Learning Path 4: Green transition facilitator

Learning path 4 is designed to equip individuals with the skills and knowledge needed to guide organisations through the complex process of transitioning to a sustainable, digital and entrepreneurial future. This path emphasises integrative learning, where participants compare, understand and synthesise diverse perspectives to tackle the interconnected challenges of green, digital and entrepreneurial transitions. Learners gain the ability to assess a business's current sustainability, digitalisation and entrepreneurship status and develop innovative strategies that align with these goals while effectively measuring their impact. Through practical simulations and scenario development, this path prepares future Green Transition Facilitators to navigate and lead real-world transitions from a fossil-based economy to a green, service-oriented one.

2. Definition of entrepreneurship education

Entrepreneurship education refers to the process of equipping individuals with the knowledge, skills, attitudes and behaviours necessary to identify and pursue opportunities, create and manage ventures and drive innovation. It aims to foster an entrepreneurial mindset, empowering learners to think creatively, take risks, solve problems and contribute to economic and social development.

Entrepreneurship education can take place in formal settings (such as schools, universities and vocational institutions) as well as in non-formal or informal contexts (like workshops, incubators or online courses). The scope of entrepreneurship education includes not only the technical aspects of starting and managing a business but also the broader competences needed to succeed in the ever-evolving global economy.

The key aspects of Entrepreneurship Education

Entrepreneurship education goes beyond business know-how as it cultivates a mindset for innovation, adaptability and impact and empowers individuals to recognise opportunities, take strategic risks and turn ideas into reality.

- **Spotting and seizing opportunities** – Identifying gaps in the market and transforming them into viable ventures (*"Spotting opportunities"*)
- **Crafting business plans and mastering financial literacy** – Building solid foundations for sustainable growth (*"Financial and economic literacy"*)
- **Navigating entrepreneurial ecosystems and networks** – Leveraging resources and forging connections (*"Mobilising resources" and "Mobilising others"*)
- **Understanding ethical, legal and social responsibilities** – Ensuring businesses operate with integrity and sustainability (*"Ethical and sustainable thinking"*)
- **Strategic business planning and execution** – Turning vision into action with structured strategies (*"Planning and management"*)
- **Financial management and budgeting** – Making informed decisions to drive profitability and stability (*"Financial and economic literacy"*)
- **Marketing and sales mastery** – Engaging customers and driving business success (*"Mobilising others"*)
- **Innovation and product development** – Creating ground-breaking solutions that meet evolving needs (*"Creativity" and "Vision"*)
- **Leadership and team empowerment** – Inspiring and guiding teams toward shared goals (*"Working with others"*)
- **Networking and negotiation skills** – Building strong partnerships and securing opportunities (*"Mobilising others" and "Taking the initiative"*)
- **Proactivity and initiative** – Driving change rather than waiting for it (*"Taking the initiative"*)
- **Resilience and adaptability** – Bouncing back from setbacks and thriving in uncertainty (*"Coping with uncertainty, ambiguity and risk"*)
- **Smart risk-taking** – Making bold yet calculated decisions (*"Coping with uncertainty, ambiguity and risk"*)
- **Creativity and innovation** – Thinking outside the box to shape the future (*"Creativity"*)
- **Ethics and social responsibility** – Embedding sustainability and fairness in business practices (*"Ethical and sustainable thinking"*)
- **Collaboration and teamwork** – Achieving more by working together (*"Working with others"*)
- **Agility and continuous learning** – Adapting strategies based on real-world feedback (*"Learning through experience"*)

There are different types of entrepreneurship education and each one shapes the journey of an entrepreneur.

- **Education for entrepreneurship**: this is all about the theory behind entrepreneurship and is like learning the blueprint of what makes entrepreneurs tick: understanding concepts, strategies and the fundamentals that drive successful ventures. It is often a core part of business studies and provides the solid foundation for everything that comes next.
- **Education about entrepreneurship**: this type of education focuses on building the skills necessary to start and grow a business, being about developing the practical abilities, like problem-solving, leadership and financial management, that help individuals turn their entrepreneurial dreams into reality.
- **Education through entrepreneurship**: this is a hands-on type of education, and it is all about learning by doing. Through experiential learning and project-based activities, learners get the opportunity to create and run real ventures, putting theory into practice and gaining real-world insights while managing the ups and downs of entrepreneurship.

Each type plays a vital role in shaping the next generation of entrepreneurs, offering a well-rounded approach to learning and growing in the entrepreneurial world.

Value creation through Entrepreneurship Education

Entrepreneurship Education fosters value creation across multiple levels by equipping individuals with the necessary competences to generate economic, social and environmental impact.

- At **individual level**, it empowers individuals to become job creators rather than just job seekers by fostering creativity, adaptability and problem-solving skills. Learners develop an entrepreneurial mindset that enables them to recognise and create value in evolving markets, including through digitalisation and green innovation.
- At **economic level**, it drives innovation, economic growth and the digital transformation of industries. Entrepreneurs create new products and services, establish sustainable and tech-driven business models and contribute to job creation and industry evolution. By integrating green and digital solutions, entrepreneurship education ensures long-term economic resilience and competitiveness.
- At **social and environmental level,** it encourages social entrepreneurship and sustainable business practices that address pressing societal and environmental challenges. Through ethical and sustainable thinking, learners develop solutions that promote inclusivity, reduce carbon footprints and leverage technology for positive social impact. This fosters a culture of responsible entrepreneurship that aligns with the twin transition towards a greener and more digital economy.

Entrepreneurship and the twin transition

Entrepreneurship plays a crucial role in driving the twin transition (digital and green transformation) by fostering innovative solutions that contribute to environmental sustainability and technological advancement. Through entrepreneurship education, individuals develop competences that empower them to:

- **create value through sustainable business models and circular economy practices** ("Ethical and sustainable thinking"), ensuring long-term environmental responsibility and resource efficiency.
- **leverage digital tools and platforms** to enhance productivity, streamline operations and expand market reach ("Mobilising resources" and "Creativity"), fostering digital transformation across industries.
- **identify and capitalise on opportunities** to integrate sustainable and digital innovations into business strategies ("Spotting opportunities"), accelerating the transition to a low-carbon, tech-driven economy.
- **develop and implement innovative solutions** to reduce carbon footprints, promote environmental responsibility and address global sustainability challenges ("Ethical and sustainable thinking" and "Coping with uncertainty, ambiguity and risk").

Entrepreneurship education, aligned with EntreComp, ensures that individuals and businesses are equipped to lead and support the twin transition, fostering a sustainable, innovative and competitive future.

3. Integration of the HE and VET learning offer

European policy support

The European Union has introduced several recent policies and initiatives to bolster entrepreneurship education, aligning with the European Skills Agenda and the Competitiveness Compass.

- **European Skills Agenda**: this five-year plan aims to enhance individuals and businesses' skill sets, emphasising the development and effective use of competences. It underscores the importance of lifelong learning, digital proficiency and fostering entrepreneurial mindsets to navigate the evolving economic landscape.
  Further information.
- **Competitiveness Compass**: launched in January 2025, the Competitiveness Compass provides a strategic framework to guide the EU's efforts in becoming a leader in future technologies, services and sustainable products. It emphasises innovation, decarbonisation and security as core areas, advocating for the integration of entrepreneurship education to drive technological advancements and sustainable economic growth.
  Further information.
- **Erasmus+ Programme**: continuing its support, the Erasmus+ programme funds projects that promote entrepreneurial skills across EU member states and facilitates collaborations between educational institutions and businesses, aiming to instil innovation, creativity and risk-taking abilities in learners.
  Further information.

These initiatives collectively aim to embed entrepreneurship within educational systems, equipping individuals with the competences needed to launch new ventures and foster innovation within existing organisations.

Higher Education and Entrepreneurship

- **Curriculum integration**: many European universities have incorporated entrepreneurship into their curricula, offering courses that cover business fundamentals, creative thinking, risk management and venture development. A comprehensive analysis of these developments is provided in the paper "Entrepreneurship Education in European Higher Education Institutions (HEIs): Development, Issues & Scope."
  Further information.
- **Start-up incubators and accelerators**: universities are increasingly establishing incubators and accelerators to support student entrepreneurs. The European

Institute of Innovation and Technology (EIT) and its Knowledge and Innovation Communities (KICs), such as EIT Digital, offer mentorship and resources to aspiring entrepreneurs. More information on these initiatives can be found on the European Commission's website.
Further information.

- **Entrepreneurial mindset**: There is a growing emphasis on fostering an entrepreneurial mindset, including leadership, adaptability and risk management, beyond traditional business management knowledge. The Eurydice report on "Entrepreneurship Education at School in Europe" discusses these trends in detail.
Further information.

Vocational Education and Training (VET)

- **Curriculum Innovation in VET**: VET institutions in Europe are integrating entrepreneurial learning into their programs, offering practical skills such as problem-solving, teamwork and financial management alongside business-specific courses. The report "Entrepreneurship competence in vocational education and training in Europe" by Cedefop provides an in-depth analysis.
Further information.
- **Work-based Learning**: many VET systems focus on experiential learning, providing students with hands-on experience in businesses or simulated entrepreneurial environments. The European Commission highlights the role of work-based learning in promoting entrepreneurial thinking.
Further information.
- **Collaboration with Industry**: VET institutions collaborate with local businesses, startups and entrepreneurial networks to immerse students in the entrepreneurial ecosystem. These partnerships ensure that education aligns with industry demands, as discussed in the Cedefop report mentioned above.

Cross-sector Partnerships

- **Collaboration between Higher Education and VET**: in some European countries, there is an increasing trend of connecting higher education and VET through joint programs, resource exchange and mutual learning, fostering entrepreneurship education in both sectors. The European Forum of Technical and Vocational Education and Training (EfVET) discusses such initiatives in their projects.
Further information.
- **Public-private Partnerships**: both higher education and vocational institutions are strengthening relationships with the private sector, particularly within entrepreneurship and innovation ecosystems. The European Commission supports several projects to improve, promote and assess the impact of entrepreneurship education in Europe. Further information.

Challenges and opportunities

- **Challenges**: despite the growing focus on entrepreneurship education, challenges remain, including limited resources, inconsistent program quality and differences in national educational systems.
- **Opportunities**: Opportunities for improvement include increasing digital literacy, embracing global entrepreneurship, cultivating entrepreneurial mindsets across all academic disciplines and enhancing cooperation between higher education, vocational education and industry to ensure curriculum relevance. The European Commission's initiatives on entrepreneurship education aim to address these opportunities.
  Further information.

Best practices across Europe

- **Finland**: Finland is renowned for its comprehensive integration of entrepreneurship education across all education levels. The Finnish National Agency for Education has created a framework that supports entrepreneurship education throughout the national curriculum.
  Further information.
- **Denmark**: Denmark's Entrepreneurship Academy offers students the opportunity to engage in real-world business projects, promoting entrepreneurial thinking, especially in solving societal challenges.
  Further information.
- **Germany**: Germany has strong ties between vocational education and industry, particularly in sectors like engineering. Programs like GründerWungswoche Deutschland (Start-up Week) encourage entrepreneurship among students at all levels.
  Further information

Entrepreneurship competences for the green and digital transition

Entrepreneurship education, as outlined in EntreComp, is strengthened by the integration of the European Skills Agenda, the Competitiveness Compass and the DigComp and GreenComp frameworks. These frameworks collectively provide a comprehensive approach to fostering entrepreneurial mindsets that drive sustainability and digital transformation.

- **EntreComp and value creation**: this framework defines key entrepreneurial competences that support innovative thinking, opportunity recognition and responsible decision-making, enabling individuals to create value in green and digital markets.

- **DigComp for digital entrepreneurship**: this framework highlights essential digital skills for entrepreneurs, such as data management, cybersecurity and digital marketing, ensuring competitiveness in an increasingly digitalised economy.
- **GreenComp for sustainable entrepreneurship**: this framework provides a foundation for integrating sustainability into business models, promoting circular economy practices, responsible resource management and climate-conscious decision-making.

By embedding these frameworks within entrepreneurship education, individuals and businesses can lead the twin transition, creating long-term value for society and the economy.

4. Integration with EQAVET, ECVET, ECTS frameworks

Understanding the value of validation and recognition

To ensure that the EntreComp4Transition learning paths hold tangible value and relevance, the project consortium conducted focused research into validation and recognition frameworks. This research aimed to explore how acquired entrepreneurial, digital and green competences could be effectively validated, recognised and aligned with European qualification frameworks.

Research approach and methodology

Based on a structured research plan, the project EU partner organisations mapped existing national formal and non-formal educational courses across Belgium, Austria, Spain, Türkiye and Italy. The objective was to identify key characteristics of training initiatives relevant to the three competence areas of the project. The study focused on:

- Target learner groups, including HE students, educators, VET institutions, employers and SMEs.
- Needs addressed by the courses (educational or employability-focused).
- Course objectives, learning outcomes and any associated micro-credentials.
- Duration and schedule of training programs.
- Application of European validation and recognition frameworks (ECTS, ECVET, EQAVET).
- Types of certification awarded (e.g., open badges, formal certification and academic credits).
- Reference links and sources for course validation.

Key findings

The research categorised the findings into four learning paths: entrepreneurial, green skills and digital skills and the analysis revealed several significant trends:

- Most courses identified are **non-formal** in nature.
- Most courses target **general learners and HE students**.
- Educational purposes are the **primary focus**, though employability is also a relevant factor.
- European validation frameworks are **rarely applied**, with the **ECTS system** being the most referenced.

- Most courses issue **certifications or digital open badges** as proof of learning.

Furthermore, the research highlighted that many training programmes provide nationally recognised certifications, university or VET institution-issued certificates, certificates of attendance and in some cases, conformity assessment certifications. A notable example is Austria, where training programs across all three competence areas allow learners to obtain **ÖNORM EN ISO/IEC 17024**—a personal competence certification recognised under international standards.

Implications for EntreComp4Transition

The findings underscore the need for a structured approach to integrating validation and recognition within the EntreComp4Transition learning paths. The key takeaways include:

- **ECTS presents the strongest potential for alignment** between EntreComp4Transition learning paths and European qualification frameworks.
- **Educational objectives dominate**, but employability remains a critical aspect.
- **Digital open badges and certifications** are widely used, reinforcing the importance of accessible and flexible recognition mechanisms.

This research provides a foundation for enhancing validation and recognition strategies, ensuring that learning outcomes are meaningful and recognised across diverse educational and professional contexts. The insights gathered will inform the development of a comprehensive validation framework, maximising the impact of the EntreComp4Transition initiative.

EQAVET, ECVET and ECTS frameworks in the European entrepreneurship education

Integrating entrepreneurship education with the EQAVET, ECVET, and ECTS frameworks in Europe ensures that entrepreneurial competences are recognised, standardised and aligned with European educational and qualification systems. These frameworks play a crucial role in shaping the delivery, recognition and transfer of educational outcomes across different education systems. Here is how entrepreneurship education can be integrated within each framework:

EQAVET (European Quality Assurance in Vocational Education and Training)

EQAVET is a European framework aimed at improving the quality of Vocational Education and Training (VET) through common indicators, standards and quality assurance processes.

- **Quality assurance in entrepreneurial competences**: Entrepreneurship education in VET can align with EQAVET by ensuring that programmes teaching entrepreneurial skills meet established quality standards. These standards assess competences such as innovation, creativity, risk management and problem-solving.
- **Assessment of learning outcomes**: EQAVET promotes a learner-centred approach by focusing on defined learning outcomes. By integrating entrepreneurship education, VET curricula can include competences like

recognising business opportunities or managing projects, ensuring they are measurable and part of quality assurance processes.

- **Feedback and continuous improvement**: EQAVET supports continuous feedback mechanisms, which can assess the effectiveness of entrepreneurship education and help refine curricula to align with industry demands and trends.
- **Work-based learning (WBL)**: given VET's emphasis on practical experience, entrepreneurship education can be integrated through internships, apprenticeships and real-world projects, allowing students to apply entrepreneurial concepts in a business setting.

ECVET (European Credit System for Vocational Education and Training)

ECVET facilitates the transfer, recognition and accumulation of assessed learning outcomes in VET across different countries and sectors.

- **Transferable entrepreneurial skills**: through ECVET, entrepreneurship education becomes more flexible and portable. Skills such as business planning, marketing and financial management can be defined as learning outcomes, making them transferable across countries and supporting international mobility for VET learners.
- **Modular structure for entrepreneurial learning**: ECVET's modular approach enables entrepreneurship education to be structured into specific competence-based units. These units can be easily transferred between institutions and countries, allowing students to progressively build their entrepreneurial skills.
- **Validation and recognition**: ECVET facilitates the recognition of entrepreneurial learning outcomes across borders, ensuring that students' entrepreneurial skills gained in one country are validated in another, enhancing mobility and learning opportunities.
- **Assessment of competence**: entrepreneurial competence under ECVET can be assessed through practical experiences, such as launching a business or managing a project, alongside theoretical knowledge, ensuring a balance between academic and applied learning.

ECTS (European Credit Transfer and Accumulation System)

ECTS is primarily used in higher education to facilitate the transfer and recognition of study periods abroad, ensuring that learning achievements are comparable across European universities.

- **Entrepreneurship as an academic discipline**: ECTS allows entrepreneurship education to be formally recognised within university curricula. Courses on business creation, innovation and management can be assigned ECTS credits, reinforcing their academic value.
- **Learning outcomes and credit allocation**: ECTS structures learning around defined outcomes and workload, making it possible to allocate credits for

entrepreneurship education in areas like financial literacy, market analysis and leadership.

- **Interdisciplinary approach**: entrepreneurship is inherently interdisciplinary, combining business, technology and social sciences. ECTS facilitates the integration of entrepreneurship courses with other disciplines, offering students a broader and more flexible learning experience.
- International recognition: as ECTS is widely recognised across European universities, students can transfer entrepreneurship-related credits between institutions, promoting international exposure and collaboration.

Micro-Credentials for the Validation of Entrepreneurial Competences

Micro-credentials have emerged as a flexible and targeted means of recognising entrepreneurial competences, complementing existing qualification frameworks. These credentials validate specific skills and learning outcomes acquired through short, competency-based courses, workshops or work-based experiences.

- **Integration into Higher Education and Training providers**: universities, vocational training institutions and professional development programs can integrate micro-credentials within their curricula, allowing learners to gain formal recognition for entrepreneurial skills.
- **Stackable and portable learning paths**: micro-credentials offer a modular learning approach, enabling learners to accumulate recognised competences that contribute to broader qualifications, such as degrees or certificates.
- **Alignment with EQAVET, ECVET and ECTS**: by ensuring that micro-credentials adhere to quality assurance principles, credit transfer mechanisms and defined learning outcomes, they can be effectively integrated into existing European qualification frameworks.
- **Industry recognition and employability**: micro-credentials provide a bridge between education and the labour market, allowing entrepreneurs and learners to demonstrate their competences to employers and investors in a validated and structured manner.

Alignment across the frameworks

- **Competence-oriented learning outcome**s: all three frameworks emphasise defining clear and measurable learning outcomes. Entrepreneurship education can align by specifying competences such as business opportunity identification, business plan drafting and financial management.
- **Flexibility and transferability**: ECVET and ECTS allow students to accumulate and transfer credits between countries and institutions, while EQAVET ensures quality assurance, making entrepreneurship education more accessible and recognised across Europe.
- **Work-based and experiential learning**: these frameworks support experiential learning in entrepreneurship. In VET, this includes apprenticeships and internships; in higher education, business incubators and start-up accelerators provide hands-on experience.

- **Recognition of entrepreneurial skills**: by embedding entrepreneurship into these frameworks, students can earn credits for their entrepreneurial skills, ensuring national and international recognition of their competences.

Implications for EntreComp4Transition

Given the findings from previous research on validation and recognition, the integration of EQAVET, ECVET and ECTS into entrepreneurship education within the EntreComp4Transition project can provide multiple benefits:

- **ECTS presents the strongest alignment potential** between EntreComp4Transition learning paths and European qualification frameworks.
- **Education objectives dominate, but employability remains crucial**, requiring a balance between academic and applied learning.
- **Digital open badges and certifications** can serve as accessible and flexible recognition mechanisms for entrepreneurial competences.
- **Micro-credentials offer an additional path** for learners to validate entrepreneurial skills and gain recognition across educational institutions and the labour market.

By embedding these frameworks into entrepreneurship education, EntreComp4Transition ensures that learners gain recognised, transferable and high-quality entrepreneurial skills that enhance both educational and professional mobility.

5. EntreComp4Transition Validation Matrix and Digital Badge approach

EntreComp4Transition recognises learners, and future Twin-Transition practitioners at two levels:

1. **Individual Learners**: Any Learners or HE/VET learners, Educators, SME or business professionals, Entrepreneurs
2. **Organisations**: Education and training organisations, SME or business

EC4T Recognition Framework – The Matrix

The EntreComp4Transition matrix is divided in two sections. The first one helps understand why, how and who can earn each badge, and the second part shows which competences are developed, and what will learners be able to do after completing each learning path.

EC4T Matrix 1

Why		Learning Path 1 completed	Learning Path 2 completed	Learning Path 3 completed	Learning Path 4 completed	All 4 Learning Paths completed
What	*Name of Badge*	Sustainability Practitioner Award	Digital Transformation Practitioner Award	Entrepreneurship Practitioner Award	Green Transition Facilitator Award	Twin Transition Champion Award
Who	*Individual learner or organisation*	who have done the LP1 course. Issued based on completion information	who have done the LP2 course. Issued based on completion information	who have done the LP3 course. Issued based on completion information	who have done the LP4 course. Issued based on completion information	who have done learning paths 1, 2, 3 and 4
How	*Individual learner or organisation*	Claim after completing all activities and/or final evaluation	Claim after completing all activities and/or final evaluation	Claim after completing all activities and/or final evaluation	Claim after completing all activities and/or final evaluation	Automatically issued by system when all previous badges have been claimed

Individuals and organisations that complete the entire learning journey proposed by EntreComp4Transition will develop competences enabling them to assess the current state of a business or organisation. Consequently, they will be able to design and implement strategies that guide entrepreneurs and SMEs in transforming innovative ideas into actionable plans, with a strong emphasis on promoting environmental sustainability and digital innovation. Their contributions will not only support the green and digital transitions but also ensure value creation, financial viability, and a positive impact on the broader ecosystem.

However, each learning path offers unique opportunities to develop specific competences and allows learners to gain expertise in particular activities. Ultimately, this enhances their ability to contribute to the development of a strategic plan for entrepreneurial green and digital transformation.

The following table shows the specific gains from each learning path.

EC4T Matrix 2

LP1 Sustainability Practitioner
Being a Sustainability Practitioner allows learner to: • Define 'valuing sustainability' and the main topics in sustainable systems. • Describe sustainability from a systems perspective and become more aware of the sustainability ecosystem. • Understand causality, describe causal relations in systems thinking, and identify stakeholders and actors of a system. • Be aware of the difference between 'system' and 'non-system', and design simple and multiple causal relations. • Understand loops in systems thinking, systems behaviour analysis, and construct systems loops. • Understand the leverage points in systems change and define the output of a system loop. • Describe low carbon economy and the drivers of low carbon economy. • Describe the process of decarbonisation and explain approaches to decarbonise business processes. • Define and understand the pros and cons of each renewable resource and discuss the key international regulations and measures motivating the use of renewable resources. • Identify the general framework of United Nations Sustainable Development Goals and European Green Deal Principles. • Understand the ways to use money to fight climate change through sustainable investment strategies. • Understand the principles of circular economy and compare the difference between linear and circular economy using causal loop diagrams. • Understand the evolution of sustainability in education in the EU and the importance of sustainability competences in sustainability education.
Learning path 1 facilitates the development of the following competences:

LP1 Sustainability Practitioner

- GreenComp - **Valuing Sustainability**: Understanding the framework of sustainability and nonlinearity in various contexts including low carbon economy.
- GreenComp - **Promoting Nature**: Awareness of the sustainability ecosystem and its international significance.
- GreenComp - **Systems Thinking**: Mastery over systems thinking applied to sustainability, including defining systems, causal relations, causality, and understanding change management.
- GreenComp - **Critical Thinking**: Focused on leveraging renewable energy at the business level and enhancing understanding of complex sustainability challenges.
- GreenComp - **Adaptability**: Learning to adapt strategies and operations in response to decarbonisation and broader environmental challenges.
- GreenComp - **Exploratory Thinking**: Exploring alternative futures and system models to enhance strategic foresight in sustainability.
- GreenComp - **Political Agency**: Understanding the political and regulatory environment influencing sustainable practices and green certification.
- GreenComp - **Collective Action**: Emphasising collaboration and collective efforts in the adoption of renewable resources and the elimination of waste.
- GreenComp - **Individual Initiative**: Encouraging personal responsibility and initiative in investing for impact, utilising renewable energy in business, and supporting circular economy principles.

LP2 Digital Transformation Practitioner

Being a Digital Transformation Practitioner allows learner to:

- Understand the DigComp Framework and its use to achieve the digital transition.
- Know the structure of the module and its contents.
- Browse, search, and filter data, information, and digital content.
- Evaluate data, information, and digital content.
- Manage data, information, and digital content.
- Use digital tools effectively for online communication and collaboration.
- Interact through digital technologies.
- Share data, information, and digital content through digital technologies.
- Understand netiquette and manage digital identity.
- Identify needs and technological responses.
- Identify digital competence gaps.

LP2 Digital Transformation Practitioner
• Know AI is used in different contexts and integrate these insights for business benefit. • Avoid downsides of AI uses in work. • Develop digital content. • Integrate and re-elaborate digital content.

Learning path 2 facilitates the development of the following competences:
• DigComp **- Information and Data Literacy**:
  ○ Browsing, searching, and filtering data, information, and digital content.
  ○ Evaluating data, information, and digital content.
  ○ Managing data, information, and digital content.
• DigComp - **Communication and Collaboration**:
  ○ Interacting through digital technologies.
  ○ Sharing information and content through digital technologies.
  ○ Collaborating through digital technologies.
  ○ Managing digital identity and engaging in digital citizenship.
• DigComp - **Problem Solving**:
  ○ Identifying needs and technological responses.
  ○ Identifying digital competence gaps.
• DigComp Digital - **Content Creation**:
  ○ Developing digital content.
  ○ Integrating and re-elaborating digital content.
  ○ Understanding copyrights and licenses.
  ○ Engaging in programming.
• DigComp - **Safety**:
  ○ Protecting personal data and privacy.

LP3 Entrepreneurship Practitioner

Being an Entrepreneurship Practitioner allows learner to:

- Explore Entrepreneurial Practices.
- Understand the principles and strategies of entrepreneurial practices.
- Reflect on what being entrepreneurial and having an entrepreneurial mindset mean.
- Innovate and Design.
- Understand how innovation, design thinking, and effective entrepreneurial competences are crucial to transform ideas into action.
- Get familiar with the key principles and methods of design thinking.
- Learn 'by doing' through the different five steps of a design thinking cycle and adapt its tools in real-life scenarios.
- Assess Opportunities.
- Spot and assess business opportunities.
- Create business models.
- Understand the impact of asking the right questions to assess and recognise the viability, feasibility, and utility value of opportunities.
- Develop Business Models.
- Acquire basic knowledge on the preparation and presentation of the Business Model Canvas.
- Focus on customers, value propositions, channels, and relationships with potential clients.

Learning path 3 facilitates the development of the following competences:

- EntreComp - **Self-awareness**: Understanding personal strengths and areas for growth.
- EntreComp - **Valuing ideas**: Recognising and developing valuable ideas.
- EntreComp - **Taking the initiative**: Acting proactively and taking leadership.
- EntreComp - **Learning through experience**: Gaining skills and knowledge from direct participation.
- EntreComp - **Planning and management**: Organising and directing efforts efficiently.
- EntreComp - **Working with others**: Collaborating and managing interpersonal relationships.
- EntreComp - **Vision**: Developing and pursuing a clear and compelling vision.
- EntreComp - **Creativity**: Generating innovative and effective solutions.

LP3 Entrepreneurship Practitioner

- EntreComp - **Financial and economic literacy**: Understanding and applying economic principles and financial knowledge.
- EntreComp - **Mobilising resources**: Gathering and managing resources effectively.

LP4 Green Transition Facilitator

Being a Green Transition Facilitator allows learner to:

- Understand Green Transition.
- Assess the current state of the business concerning sustainability, digitalisation, and entrepreneurship.
- Craft innovative strategies that align with sustainability, digitalisation, and entrepreneurship goals, while effectively measuring their impact.
- Develop Crucial personal and professional Competences.
- Engage in integrative learning by comparing, understanding, and synthesising information.
- Apply learning practically to life, spot biases, grasp contextual intricacies, and embrace systems thinking to tackle problems comprehensively.
- Navigate Assessment and Data Collection.
- Understand indirect assessment methods like surveys and focus groups to construct profiles of green, digital, and entrepreneurial statuses.
- Draw an "as-is" scheme of company processes and collect additional data to obtain a more integrated and detailed picture of the company's status.
- Translate Learnings into Actions.
- Formulate new ideas and utilise the opportunity canvas to recognise the value-creating potential of ideas.
- Investigate quality dimensions (feasibility, scalability, desirability) of an idea and make priority choices.
- Develop a comprehensive Twin Transition Strategy for a given business or organisation

Learning Path 4 facilitates the development of the following competences:

- EntreComp Competences:

LP4 Green Transition Facilitator

  - Learning by experience: Learn together with others from successes and failures.
  - Self-awareness and self-sufficiency: Identify and assess strengths and weaknesses.
  - Spotting opportunities: Use imagination to identify opportunities for value creation.
  - Valuing ideas: Recognise and maximise the value-creating potential of an idea.
  - Creativity, vision, ethical and sustainable thinking, motivation and perseverance, taking the initiative, mobilising others.
- DigComp Competences:
  - Evaluating data, information, and digital content.
  - Interacting through digital technologies.
  - Sharing through digital technologies.
  - Managing digital identity, copyright and licenses, and the use of digital tools to create canvas.
- GreenComp Competences:
  - Valuing sustainability and systems thinking.
  - Critical thinking and problem framing.
  - Adaptability and political agency.

EC4T Digital Badges Approach

Completion of each of EntreComp4Transition Learning Paths 1, 2, 3 and 4 is recognised with a **digital badge** issued through Open Badge Factory, a well-established digital badge accreditation platform. The digital badges can be easily shared online, on professional profiles and in email signatures and downloaded as a PDF certificate. When completing all the four Learning Paths, learners will additionally receive a special Completion Badge recognising them as a Twin Transition Champion which translates into meaningful learning from across all learning paths, in real-world contexts relevant to the aspiring facilitator. This whole journey should prepare the learner to design a comprehensive strategy for entrepreneurial, sustainability and digital transformation enabling a real Twin Transition.

How are the badges awarded?

At the final step of each learning path learners are asked to complete a simple **badge application form**, here, learners must enter their name, email address, country, professional status and confirm that they have completed all learning content.

Once completed, the learner will automatically receive an automated and instant email with their badge, however learners should check their spam box if it is not received within a few minutes. In this email, learners can access the digital badge as an image or PDF and are also instructed on how to share via social media or add to their LinkedIn profile. Sharing the badges on social media helps to boost dissemination of the project and learning paths.

Badge criteria

Learning Path 1: Sustainability Practitioner	
Introduction	Designed to equip learners with the knowledge and skills needed to navigate the green transition and implement sustainable practices in business. This learning path covers key topics such as understanding current environmental challenges, valuing sustainability, and how businesses can adapt to remain competitive while benefiting the planet. Supported by the GreenComp Framework, the Sustainability Practitioner Learning Path will help participants identify and leverage opportunities in the green transition, preparing them to become a successful sustainability transitioner who can drive meaningful change in today's evolving business landscape.
Badge	
Learning Goals	• Define 'valuing sustainability' and the core elements of sustainable systems, including causal relationships and systems thinking. • Describe sustainability from a systems perspective, including the identification of stakeholders and actors, and the construction and analysis of systems loops. • Recognise international sustainability goals and regulations and understand the criticality of sustainability visions for businesses. • Understand the principles of a low carbon economy and decarbonisation methods and assess their implications for businesses. • Identify the benefits of renewable resources, their impact on sustainability, and related global trends and regulations.

Learning Path 1: Sustainability Practitioner	
	• Analyse the value of green certifications, the United Nations Sustainable Development Goals, and the European Green Deal Principles for companies. • Apply principles of circular economy to extend product use, improve recycling, and evaluate the importance of sustainability education and competences within the EU.

Content Covered	Aligned with the EU recognised competence framework: GreenComp, this Learning Path covers:
	• Valuing Sustainability
	• Systems Thinking for Sustainability
	  • Causality and Relations
	• Managing Transitions
	  • Change Management in Loops
	  • Leverage Points for Transitions
	• Envisioning Future
	  • Thinking in Models
	  • Mapping a Future Scenario
	• Sustainability in Business
	• Sustainability Strategy and Transformation
	  • Risk, Adaptation, and Resilience
	  • Decarbonisation
	• Renewable Resources in Business
	  • Global Trend towards Renewable Resources
	  • Renewable Energy
	  • Green Certifications
	• Sustainable Finance and Investing
	  • Invest for impact to create value and a better world
	  • Ways to use money to fight climate change
	• Circular Economy
	  • Eliminate waste and pollution
	  • Circulate products and materials
	  • Sustainability Competences for Entrepreneurs

Learning Experience and Assessment	The Sustainability Practitioner learning experience is a flexible self-paced journey that develops hands-on skills to prepare learners for real-world challenges. It has a flexible and innovative approach allowing to adapt content to different realities. It includes: Interactive video lessons Reading materials and articles Updated and visionary information Interesting additional Resources Quizzes to test understanding

Learning Path 1: Sustainability Practitioner	
Awarding Criteria and Estimated Effort	This credential is awarded for the successful completion of all activities and evaluations included in Learning Path 1. The participant who receives this credential has completed approximately 16 hours of dedication. Additional resources for introducing paths in the classroom are also provided.

Learning Path 2: Digital Transformation Practitioner	
Introduction	Designed to guide you through the dynamic world of digital transformation and its impact on modern industries. This path provides foundational knowledge and strategic insights needed for companies to navigate the "twin transition"—integrating digital innovation with sustainable practices. By leveraging the DigComp Framework, participants learn to recognise and seize digital transformation opportunities, helping businesses become more efficient, resilient, and responsible. This learning journey empowers students, entrepreneurs and business owners and employees to understand the principles and applications of digital transformation, equipping them to drive innovation and stay competitive in today's rapidly evolving market.
Badge	
Learning Goals	• Understand the concept and significance of digital transformation. • Learn about the DigComp Framework and the development of key digital competences. • Identify the key drivers, technologies, and challenges of digital transformation. • Explore real-world examples and case studies of digital transformation across various industries. • Learn about the role of AI and data analysis in driving digital transformation. • Explore with online collaboration and communication.

Learning Path 2: Digital Transformation Practitioner	

Content Covered	Aligned with the EU recognised competence framework: DigComp, this Learning Path covers:
	• Introduction to DigComp
	  • The DigComp Framework
	  • DigComp Online Testing Tool
	  • DigComp Implementation Guides
	  • Digital Skills and Digital Transformation
	• Online Collaboration and Communication
	  • Achieving Goals in a Digital Environment
	  • Application and use of diverse digital tools
	  • Assessing new media forms for productivity, efficiency and decision making
	• Artificial Intelligence and Data
	  • Introduction to AI
	  • AI in Business
	  • AI Tools
	  • The recipe of AI
	  • Introduction to Data Analysis
	  • What for and how?
	  • Data Protection
	  • Data is Power

Learning Experience and Assessment	The Digital Transformation Practitioner learning experience is a flexible self-paced journey that develops hands-on skills to prepare learners for real-world challenges. It has a flexible and innovative approach allowing to adapt content to different realities. It includes: • Interactive video lessons • Reading materials and articles • Downloadable EU official docs related to digital transformation • Case studies highlighting successful digital transformation initiatives • Self-assessment online testing tool • Links to a wide variety of digital tools • Self-reflection questions • Interesting additional Resources • Quizzes to test understanding
Awarding Criteria and Estimated Effort	This credential is awarded for the successful completion of all activities and evaluations included in Learning Path 2. The participant who receives this credential has completed approximately 16 hours of dedication. Additional resources for introducing paths in the classroom are also provided.

Learning Path 3: Entrepreneurship Practitioner	
Introduction	Designed to provide a comprehensive understanding of different entrepreneurial perspectives—whether it's pursuing an opportunity, developing a service, creating a design, or improving a process. It focuses on cultivating an entrepreneurial mindset, and the ability to act on opportunities and ideas and transform them into value for others. By leveraging the EntreComp Framework, participants will explore the essential skills needed to become successful entrepreneurship practitioners and develop strategies to drive the entrepreneurial twin transition within their organisations. This path empowers students, entrepreneurs, business owners and employees to initiate change and stay competitive in today's dynamic market by recognising and utilising key entrepreneurial competences.
Badge	
Learning Goals	• Explore the principles and strategies of entrepreneurial practices. • Understand the role of innovation, design thinking, and entrepreneurial competences in transforming ideas into action. • Learn to identify and evaluate business opportunities and develop effective business models. • Develop an entrepreneurial mindset and understand what it means to be entrepreneurial. • Reflect on key entrepreneurial competences outlined in the EU EntreComp framework. • Learn to ask the right questions to assess the viability, feasibility, and value of opportunities. • Gain foundational knowledge in creating and presenting a Business Model Canvas using a simple, visual approach.

Content Covered	Aligned with the EU recognised competence framework: EntreComp, this Learning Path covers:
	• Opportunities, Creativity and Innovation
	  • Opportunity Discovery Canvas
	  • Entrepreneurial Skills
	  • EntreComp Framework

Learning Path 3: Entrepreneurship Practitioner	
	• The Value of opportunities • Creative Opportunities Discovery Canvas • Tools for Creation, Co-creation and Innovation • Design Thinking • Application of tools and practical templates for the Empathise, Define, Ideate, Prototype and Test phases. • The Business Model Canvas • What is a BMC? How to use it? • Applications of Value Proposition, Costumers, Channels, Customer relationships, Revenues, Costs, Key Activities, Resources & Partners • Examples of applications of the BMC in large companies
Learning Experience and Assessment	The Entrepreneurship Practitioner learning experience is a flexible self-paced journey that develops hands-on skills to prepare learners for real-world challenges. It has a flexible and innovative approach allowing to adapt content to different realities. It includes: • Interactive video lessons • Reading materials and articles • Real-World Case Studies for Reflection • Analysis of real large Companies' Business Model Canvases • Templates to develop a Design Thinking process • Business Model Canvas templates to develop and apply • Quizzes to test understanding
Awarding Criteria and Estimated Effort	This credential is awarded for the successful completion of all activities and evaluations included in Learning Path 3. The participant who receives this credential has completed approximately 16 hours of dedication. Additional resources for introducing paths in the classroom are also provided.

Learning Path 4: Green Transition Facilitator	
Introduction	Designed to equip individuals with the skills and knowledge needed to guide organisations through the complex process of transitioning to a sustainable, digital, and entrepreneurial future. This path emphasises integrative learning, where participants compare, understand, and synthesise diverse perspectives to tackle the interconnected challenges of green, digital, and entrepreneurial transitions. Learners gain the ability to assess a business's current sustainability, digitalisation, and entrepreneurship status and develop innovative strategies that align with these goals while effectively measuring their impact. Through practical simulations and scenario development, this path prepares future Green

Learning Path 4: Green Transition Facilitator	
	Transition Facilitators to navigate and lead real-world transitions from a fossil-based economy to a green, service-oriented one.
Badge	
Learning Goals	• Develop integrative learning skills by comparing, understanding, and synthesising diverse information. • Apply learnings to real-life situations, evaluate different perspectives, identify biases, and understand contextual complexities. • Learn to navigate and adapt to changing situations using a systems thinking approach, considering time, space, and context. • Assess a business's current position in sustainability, digitalisation, and entrepreneurship. • Develop innovative strategies that align with sustainability, digitalisation, and entrepreneurship objectives. • Learn to effectively measure the impact of sustainability, digitalisation, and entrepreneurial strategies.

Content Covered	Aligned with the EU recognised competence frameworks: EntreComp, GreenComp and DigComp, this Learning Path covers:
	• Green, Digital, and Entrepreneurship Assessment
	  • Introduction to assessment, why and how to assess?
	  • Self-assessment tool for SMEs
	  • Setting up an AS IS – TO BE Profile
	• The Entrepreneurial Twin Transition Strategy Development
	  • The Twin Transition
	  • Business Resilience
	  • Spotting Opportunities
	  • Valuing Ideas
	  • Reflection Journey Scenarios
	  • The Twin Transition Strategy Canvas

Learning Experienc	The Green Transition Facilitator learning experience is a flexible self-paced journey that develops hands-on skills to prepare learners for real-

Learning Path 4: Green Transition Facilitator	
e and Assessment	world challenges. It has a flexible and innovative approach allowing to adapt content to different realities. It includes: • Interactive video lessons • Reading materials and articles • Case Studies • Templates to assess business situations • Canvases for opportunity discovery and valuing ideas • Twin Transition Strategy Canvas for design and implementation • Quizzes to test understanding • Self-Assessment tools
Awarding Criteria and Estimated Effort	This credential is awarded for the successful completion of all activities and evaluations included in Learning Path 4. The participant who receives this credential has completed approximately 25 hours of dedication. Additional resources for introducing paths in the classroom are also provided.

Twin Transition Champion	
Introduction	The EC4T Twin Transition Champion has successfully completed the whole EntreComp4Transition learning journey. This comprehensive programme is designed to equip them with the essential and up-to-date knowledge and skills needed to navigate the interconnected challenges of sustainability, digital transitions, and entrepreneurship, to drive innovation and competitiveness in today's evolving business landscape. Participants have learnt to understand and implement sustainable practices, integrate digital innovations, and develop entrepreneurial mindsets, enabling them to identify opportunities, create value, and adapt to change. By leveraging frameworks such as GreenComp, DigComp, and EntreComp, they are prepared to assess a business's sustainability, digitalisation, and entrepreneurship status, craft innovative strategies, and lead transitions towards a more sustainable, digital, and resilient future. Through practical learning and a twin transition strategy development, this programme empowers learners to drive meaningful change across various industries.
Badge	

Twin Transition Champion	
Learning Goals	• **Develop Strategies for Sustainable Transformation**: Understand the principles of sustainability, including low carbon economies, renewable resources, circular economy, and green certifications, to design and implement strategies that drive sustainable business practices and align with global sustainability goals and regulations. • **Integrate Digital Transformation for Competitive Advantage**: Learn the key drivers, technologies, and challenges of digital transformation, including AI and data analysis, to develop strategies that enhance business efficiency, resilience, and innovation in alignment with the DigComp Framework. • **Cultivate an Entrepreneurial Mindset**: Understand the principles of entrepreneurship, including innovation, design thinking, and the EntreComp Framework, to identify and evaluate business opportunities, develop effective business models, and transform ideas into value. • **Assess and Analyse Business Status for Twin Transition**: Gain the ability to assess a business's current position regarding sustainability, digitalisation, and entrepreneurship to identify strengths, weaknesses, and opportunities for the green and digital transitions. • **Design Change for Innovation and Competitiveness**: Develop integrative skills to synthesise knowledge from sustainability, digital transformation, and entrepreneurship, enabling the creation of comprehensive strategies that drive change, innovation, and competitiveness. • **Develop and Apply Change-Maker Strategies using the Twin Transition Strategy Canvas**: Learn to utilise the Twin Transition Strategy Canvas to strategically align digital and sustainability goals, map out integrated solutions, and identify key leverage points to effectively drive the green and digital transformation of businesses, ensuring scalable impact and long-term growth. • **Measure the Impact of Strategic Initiatives**: Understand methods to effectively measure and evaluate the impact of sustainability, digitalisation, and entrepreneurial strategies, ensuring they align with business objectives and promote long-term growth and competitiveness.
Content Covered	• **LP1 Sustainability Practitioner**: introduces key concepts and strategies needed to become an effective sustainability practitioner, exploring the principles of sustainable practices, learning how to value sustainability, and understand how to apply these principles to drive sustainable change in business.

Twin Transition Champion	
	• **LP2 Digital Transformation Practitioner**: explores methods and tools to collaborate effectively in the digital world, including the use of artificial intelligence software for data collection. aspects of digitalisation, understanding its meaning, challenges, and opportunities while embracing its importance, complexities, and potential. • **LP3 Entrepreneurship Practitioner**: Introduces different entrepreneurial perspectives, from pursuing opportunities and services to developing designs and processes, while cultivating an entrepreneurial mindset. Explores principles and strategies of entrepreneurial practices, including innovation, design thinking, and key competences as crucial for transforming ideas into action, while developing effective business models. • **LP4 Green Transition Facilitator**: Integrates the knowledge acquired in previous paths to develop a comprehensive twin transition strategy that combines sustainability and digital transformation. Design change for innovation and competitiveness, assess and analyse a business's status for the twin transition, and gain the key concepts needed to become a successful Green Transition Facilitator by consolidating insights from sustainability, digitalisation, and entrepreneurship.
Learning Experience and Assessment	The EntreComp4Transition full learning experience is a flexible self-paced journey that develops hands-on skills to prepare learners for real-world challenges. It has a flexible and innovative approach allowing to adapt content to different realities. It includes: • Interactive video lessons • Reading materials and articles • Downloadable EU official documents related to digital transformation • Case studies highlighting successful digital transformation initiatives • Self-assessment online testing tool • Self-reflection questions • Interesting additional resources • Quizzes to test understanding • Updated and visionary information • Real-world case studies for reflection • Analysis of real large companies' Business Model Canvases • Business Model Canvas templates to develop and apply • Templates to develop a Design Thinking process • Templates to assess business situations • Canvases for opportunity discovery and valuing ideas • Twin Transition Strategy Canvas for design and implementation • Links to a wide variety of digital tools

Twin Transition Champion	
Awarding Criteria and Estimated Effort	This credential is awarded for the successful completion of all four Learning Paths, including all evaluations. The participant who receives this credential has completed approximately 73 hours of dedication. Additional resources for introducing paths in the classroom are also provided.

6. Assessment and recognition in formal and non-formal entrepreneurship education

The **EntreComp4Transition project** already demonstrates a significant step in the integration of its 4 **validated learning paths** into the European education landscape, validated through digital badges. These learning paths, based on the EU competences frameworks (EntreComp, DigComp and GreenComp) and aligned with European qualifications such as **EQAVET, ECVET and ECTS**, offer a unique opportunity for both higher education (HE) and vocational education and training (VET) institutions across Europe to implement an effective and validated system for developing and recognising entrepreneurial competences.

One of the most significant goals of this initiative is the incorporation of entrepreneurial competences into the curricula of educational institutions. This can be done either through EU competence frameworks or alternative methods that align with recognised standards. By doing so, educational institutions ensure that students not only gain essential entrepreneurial skills but also have these skills formally validated, thereby opening paths to qualifications and credentials that enhance employability.

Approaches to assessment and recognition

Work-based learning

Work-based learning plays a pivotal role in bridging theoretical knowledge with practical experience. Through partnerships with local businesses and industry experts, educational institutions can provide students with opportunities to apply their entrepreneurial skills in real-world settings. This hands-on approach allows students to develop essential entrepreneurial competences such as innovation, problem-solving and project management.

Key methodologies and recognition means for work-based learning.

1. **Internships and industry placements**
    - **Method**: provide students with opportunities to work in real business environments, where they can apply their theoretical knowledge to practical tasks.
    - **Benefits**: help students gain hands-on experience, build professional networks and develop industry-specific skills.
    - **Recognition**: successful completion can be recognised through digital badges, certificates or formal reports from industry partners, showcasing the student's acquired competences.

2. **Project-based learning**
   - **Method**: students collaborate on real-world projects, either within a company or in partnership with local businesses, where they address actual business challenges.
   - **Benefits**: encourages problem-solving, teamwork and creativity while providing students with a concrete portfolio of work.
   - **Recognition**: projects can be assessed and recognised through micro-credentials for specific skills, such as project management, innovation or problem-solving.
3. **Cooperative education**
   - **Method**: combines academic coursework with full-time work experience in the industry, where students alternate between classroom learning and periods of work.
   - **Benefits**: students earn academic credit while gaining practical experience, making them more competitive in the job market.
   - **Recognition**: completion of these programmes can lead to official academic credit, certificates of completion or workplace performance evaluations that validate the student's industry readiness.
4. **Industry mentorship programmes**
   - **Method**: experienced industry professionals provide guidance and feedback to students throughout their learning process.
   - **Benefits**: provide personalised insight, support career development and help bridge the gap between academic learning and industry requirements.
   - **Recognition**: mentorship success can be formally recognised through letters of recommendation, endorsements or accreditation of learning outcomes linked to industry standards.
5. **Work-integrated learning**
   - **Method**: an umbrella term for various work-based learning activities that integrate professional work experience with academic study.
   - **Benefits**: enhances learning through direct application in real work settings, improves job readiness and strengthens industry links.
   - **Recognition**: micro-credentials or digital badges are awarded for the successful application of key competences such as communication, leadership or technical skills in real-world contexts.
6. **Virtual internships and remote collaborations**

- **Method**: students gain work experience through remote internships or virtual collaborations with companies, offering flexibility while still working on real industry projects.
- **Benefits**: provide access to international or remote opportunities, broaden students' exposure and develop digital communication and self-management skills.
- **Recognition**: completion of virtual internships can be recognised with online badges or digital certificates, validating skills such as remote work management and cross-cultural collaboration.

7. **Workplace simulations**
    - **Method**: students engage in simulated work environments, such as mock-up business settings or role-playing scenarios, which mimic real-world challenges.
    - **Benefits**: prepare students for the complexities of real-world business without the associated risks.

- **Recognition**: performance in simulations can be recognised with certificates or badges for specific competences demonstrated during the simulation.

Collaboration with industry partners

Collaboration with industry partners ensures that the entrepreneurial competences being taught align with the current market needs. This connection enables the recognition of student learning through micro-credentials, which are often tied to industry standards. These micro-credentials not only enhance the credibility of the learning outcomes but also support students' transition from education to entrepreneurship or employment.

Key methodologies and recognition means for collaboration with industry

1. **Start-up incubators and accelerators**
    - **Method**: institutions partner with start-up incubators or accelerators to help students launch and develop their own businesses, with access to resources such as mentoring, funding and networking opportunities.
    - **Benefits**: encourage entrepreneurial thinking, innovation and real-world business development skills.
    - **Recognition**: success in an incubator or accelerator program can be recognised with certificates of completion and the opportunity to earn micro-credentials in entrepreneurship, business management and innovation.
2. **Competence-based learning**
    - **Method**: focuses on assessing students based on their ability to demonstrate specific, measurable skills relevant to the industry, such as leadership or project management.
    - **Benefits**: provides a clearer picture of a student's competences, making learning more flexible and tailored to industry needs.

- **Recognition**: micro-credentials and digital badges can be awarded for demonstrating mastery of specific competences, offering a tangible and recognisable proof of skills.

3. **Collaborative innovation challenges**
    - **Method**: students work alongside industry partners to develop creative solutions to real-world problems, often in the form of hackathons or innovation sprints.
    - **Benefits**: encourage creativity, problem-solving and teamwork while fostering strong industry-academic partnerships.
    - **Recognition**: successful participation in these challenges can be recognised with industry-backed digital badges or certificates for innovation and problem-solving skills.
4. **Service learning**
    - **Method**: students engage in community-based projects that address real-world challenges, often working with non-profit organisations or social enterprises.
    - **Benefits**: promotes civic responsibility, teamwork and the development of problem-solving skills in social or business contexts.
    - **Recognition**: achievements in service-learning projects can be recognised through community service certificates or badges that showcase social entrepreneurship and civic engagement.
5. **Peer-to-peer learning and peer review**
    - **Method**: students engage in collaborative learning by reviewing and providing feedback on each other's work or co-working on projects.
    - **Benefits**: foster a deeper understanding of content, improve communication and critical thinking skills and promote collaborative problem-solving.
    - **Recognition**: peer-reviewed work and collaborative contributions can be acknowledged through peer feedback systems, badges or certificates for teamwork and communication skills.
6. **Micro-credentials and digital badges**
    - **Method**: collaboration with industry partners to award micro-credentials or digital badges for completing industry-relevant projects or mastering specific skills.
    - **Benefits**: these credentials provide tangible proof of students' competences, enhancing employability and bridging the gap between education and industry expectations.

- **Recognition**: these digital credentials offer a verifiable, industry-recognised way to showcase achievements, such as innovation, leadership or technical expertise in specific fields.

These methodologies ensure that students not only gain practical, industry-relevant experience but also receive formal recognition of their achievements. Micro-credentials, digital badges, certificates and endorsements are used to acknowledge the skills and competences developed, enhancing students' employability and supporting their professional transitions.

Approaches to recognition and validation of learning paths

The EntreComp4Transition project emphasises the importance of recognising and validating entrepreneurial competences to ensure that learning outcomes are both meaningful and transferable across different educational and professional settings. It helps individuals showcase their learning achievements in ways that are recognised by employers, educational institutions and industry partners alike.

It is essential that various non-formal and formal learning environments offer clear paths for students to gain recognition for their achievements, ensuring that their skills are transferable and acknowledged across different contexts.

Methods for validating learning outcomes

1. **Formal recognition through credit systems**. The ECTS and ECVET frameworks provide a structured approach to recognising academic credits and competences, making them portable across institutions and borders. These systems ensure that entrepreneurial competences gained through formal learning are fully recognised and transferable.

   Recognition: students can earn credits that reflect their entrepreneurial competences, allowing them to progress in their education or career.

2. **Recognition of prior learning** allows students to gain formal recognition for skills and knowledge acquired through prior work or informal learning. This inclusive method ensures that individuals who have acquired entrepreneurial skills outside traditional education can still benefit from formal recognition.

   Recognition: learners can submit portfolios or undergo assessments to have their prior learning validated, earning credits or qualifications in the process.

3. **Competence-based validation**. This approach moves away from traditional exams, instead assessing students on their ability to demonstrate specific entrepreneurial competences in practical settings. By focusing on real-world application, competence-based validation ensures that students are ready to face the challenges of the entrepreneurial world.

   Recognition: students are awarded micro-credentials or digital badges for demonstrating skills such as problem-solving, leadership and innovation.

4. **Micro-credentials and Digital Badge**s offer a flexible and modern way to validate entrepreneurial competences. These certifications are increasingly recognised by employers, offering students a tangible proof of their skills and are

particularly useful in the context of rapid technological advancements, where employers value verified skills over traditional qualifications.

Recognition: badges and micro-credentials can be shared on platforms like LinkedIn, making them easily accessible and recognised in global job markets.

5. **Portfolio-based assessment** allow students to compile and showcase their work, demonstrating a range of competences acquired throughout their education. This method offers a holistic view of a student's learning journey, highlighting their entrepreneurial development.

   Recognition: portfolios are formally recognised through certification or industry validation, giving students the opportunity to showcase their achievements to potential employers.

In conclusion, by integrating formal and informal validation methods like competence-based assessment and micro-credentials, educational institutions, employers and industry partners can better support entrepreneurial learners in their pursuit of lifelong learning and career development. These approaches not only recognise a broad range of learning experiences but also ensure that learners are equipped with the necessary competences to thrive in dynamic entrepreneurial environments.

7. Different validation and recognition approaches in partner countries

The future implementation of competence validation is crucial for enhancing learning paths and ensuring that learners' achievements are formally recognised across Europe.

This section provides insights from partner organisations and their trainers in Italy, Austria, Belgium, Spain and Türkiye, sharing feedback from their pilot experiences. It highlights their planned methods for validating competences, alongside strategies for ensuring the sustainability and scalability of these approaches. Additionally, it showcases the innovative techniques they are adopting to validate competences, with a focus on empowering learners to acquire verifiable skills and knowledge that are recognised both nationally and internationally.

Austria represented by:

- WKÖ, the Austrian Federal Economic Chamber, a public-law corporation representing Austrian businesses.
- WIFI International, the international branch of WIFI, Austria's largest training provider for adults and businesses.

Belgium represented by:

- Thomas More UAS, a university of applied sciences in Belgium, offering bachelor's and master's degree programmes in various fields.

Italy represented by:

- IFOA, a not-for-profit, private body established by the Chamber of Commerce and appointed as national training centre by the Italian Ministry of Labour.
- t2i, the innovation agency promoted by the Chambers of commerce of Treviso – Belluno, Venezia – Rovigo and Verona.
- Unioncamere, the Italian Union of Chambers of Commerce, Industry, Craftsmanship and Agriculture, representing Italian businesses at the national and regional levels.

Spain represented by:

- Junta de Extremadura, is the public authority responsible for regional policies related to entrepreneurship and SMEs competitiveness, innovation and digital transition.

Türkiye represented by:

- TOBB University of Economics and Technology, a private non-profit university established by the Union of Chambers and Commodity Exchanges of Türkiye (TOBB).

Report analysis of competence validation outcomes per country

Introduction

Competence validation plays a crucial role in assessing and developing the entrepreneurial skills of students and professionals across different countries. This report provides an analysis of the feedback provided by the trainers across all partner countries on how competence validation has been implemented highlighting the methods used, challenges faced and key takeaways from each country's approach.

By comparing different validation strategies, the report identifies best practices and areas for improvement to enhance the effectiveness of competence assessment in education and training.

The findings presented here are based on real-case implementations from various training organisations, offering insights into how entrepreneurial competences are recognised, measured, and applied in different educational and professional contexts. The final section consolidates overall trends and recommendations for better integration of competence validation into learning paths.

Italy

Trainers' organisations: IFOA, t2i, UNIONCAMERE

During the piloting phase in Italy, competence validation methods included trainer evaluations and practical demonstrations, used by both IFOA and t2i. Unioncamere, however, added a layer of innovation by incorporating digital badges secured through block chain technology. These evaluations were supported by standardised frameworks and rubrics, with IFOA and t2i using the Atlante delle Professioni and Repertorio Regionale delle Professioni (Emilia Romagna Region and Veneto Region), while Unioncamere applied a broader range of frameworks, such as the Atlas of Labour and Qualifications, DigComp, EntreComp and GreenComp.

A key challenge faced during the pilot was aligning technical frameworks and language with industry expectations. Additionally, ensuring the relevance and applicability of entrepreneurial competence validation for students, while addressing the mismatch between high school graduates' skills and labour market needs, posed significant hurdles.

To overcome these challenges, solutions were implemented that included the incorporation of real-world case studies and business scenario simulations. The EntreComp4Transition project provided practical tools that enhanced the entrepreneurial competence validation process. Additionally, the standardisation of skill descriptions through digital tools and structured templates helped ensure consistency.

The main takeaway from this process was the increased student awareness of the importance of validating entrepreneurial competences. The mapping of competences through key performance indicators (KPIs) aligned with EntreComp proved effective. Moreover, strengthened collaboration between industry and training providers resulted in

some students applying the validation models in their own study projects or entrepreneurial ventures, illustrating the practical benefits of the validation approach.

Austria

Trainers' organisations: WKÖ / WIFI International

In Austria, competence validation was primarily carried out through self-assessment and feedback questionnaires, although specific standardised frameworks or rubrics were not mentioned. One of the challenges encountered was the limited time students had to fully engage with the validation process, compounded by the fact that Learning Paths were introduced too late to be effectively integrated into the existing curriculum.

Despite these challenges, no major adjustments were made, and students were encouraged to complete the Learning Paths independently, with support available when needed.

Key takeaways from the experience highlight the need for future improvements, particularly in embedding Learning Paths into regular coursework to facilitate smoother integration. Feedback from students was overwhelmingly positive, with many noting significant improvements in areas such as problem-solving, teamwork, strategic thinking, sustainability awareness and digital transformation. Additionally, tools like the Business Model Canvas were especially appreciated for helping to structure business ideas, underscoring their value in providing practical, hands-on learning experiences.

Belgium

Trainers' organisation: Thomas More UAS

During the piloting phase in Belgium, competence validation was carried out primarily through trainer evaluation, although no standardised frameworks or rubrics were specified. One of the challenges faced was the extensive scope of the Learning Paths, which required significant persistence from the students. As a result, they tended to engage selectively with the sections most relevant to their assignments.

To address this challenge, a structured approach was implemented. Students began by focusing on sustainability, followed by entrepreneurship and concluded with digitalisation within problem-based projects.

The key takeaway from this experience is that Learning Paths should be flexible and adaptable to better align with students' needs and project goals. This would ensure more effective engagement and support students in achieving the desired learning outcomes.

Spain

Trainers' organisation: Extremadura

Competence validation during the piloting phase in Spain involved self-assessment, trainer evaluation, digital badges and direct observation, though no specific standardised frameworks or rubrics were mentioned. A key challenge faced was the difficulty in fully integrating the Learning Paths into the formal education curricula.

To address this, a selective incorporation approach was used, focusing on the most relevant tools and knowledge areas to enhance applicability for the students.

The main takeaway from this experience is that Learning Paths should be integrated flexibly within structured curricula. This would maximise their impact, ensuring that they align with both academic requirements and students' learning needs.

Türkiye

Trainers: TOBB University of Economics and Technology

The validation of competences during the piloting phase in Türkiye involved a mix of self-assessment, trainer evaluation and digital badges. Trainers focused on explaining key concepts, presenting case studies and guiding trainees through problem-solving exercises using Miro boards. These activities were designed to encourage collaborative learning, where trainees worked in groups to solve real-world cases related to the learning paths. After completing the exercises, trainees presented their solutions to trainers, who evaluated their performance based on several key criteria, such as problem-solving, teamwork, time management, crisis resolution and decision-making.

A significant challenge faced during the pilot was that some trainees were unfamiliar with the digital tools, specifically the Miro boards, used for competence validation. To address this, trainers integrated Miro boards into the training sessions, allowing students to become comfortable with the platform before they were assessed on it.

The key takeaway from this experience is the effectiveness of case-based learning in bridging theory and practice. The use of digital tools not only enhanced engagement but also facilitated peer collaboration through group work, which helped trainees overcome difficulties and learn from one another. This approach highlights the importance of integrating practical tools and fostering teamwork in the learning process.

Report analysis of future implementation of competence validation per country

Introduction

The future implementation of competence validation is crucial for enhancing learning paths and ensuring that learners' achievements are formally recognised across Europe. This section presents feedback from various training partner organisations in Italy, Austria, Spain, and Türkiye, highlighting their planned methods for validating competences and their strategies for implementation, sustainability, and scalability. The organisations discussed—IFOA, t2i, UNIONCAMERE, WIFI International, EXTREMADURA, and TOBB University of Economics and Technology—are adopting innovative approaches to competence validation, aiming to empower learners with verifiable skills and knowledge that are acknowledged both nationally and internationally.

Italy

Organisations: IFOA, t2i, UNIONCAMERE

Planned validation methods

In Italy, the planned methods for validating competences within future learning paths include micro-credentials, certification, portfolio-based assessment and block chain-based skills badges. These validation approaches are being adopted by various organisations to recognise both formal and informal learning experiences.

Micro-credentials and certification are central to the validation process, while portfolio-based assessments are implemented by t2i to assess learners' progress. Unioncamere is also leveraging block chain technology to issue skills badges that provide a secure and verifiable record of competences.

Organisations such as IFOA, t2i and Unioncamere are collaborating with regional and national systems to ensure these methods are effectively integrated. The validation processes are connected with external validation, when necessary, especially in regions like Regione Veneto, where third-party certification is required to issue certifications and block chain-based badges. This ensures that the validation methods meet both local and national standards for skills recognition.

Implementation strategy

Competence validation is being integrated through strong connections with regional and national repositories, enabling a solid framework for competence recognition and validation. The integration of these methods aligns with both formal and non-formal learning systems across Italy. Trainers will require additional support, especially in developing their skills in assessing, recognising and validating competences according to national and regional guidelines.

Organisations like IFOA and t2i emphasise the importance of linking local competences to regional and national systems and they are providing tailored support to trainers for this purpose.

Sustainability and scalability

Italy is swiftly developing a comprehensive national and regional system for recognition, validation and assessment of competences, supported by various organisations like IFOA and t2i. The use of digitised tools, such as block chain-based skills badges (Unioncamere), ensures the sustainability of these processes long-term. This system's growth and expansion are fostered by the strong support from national institutions like the National Chambers of Commerce System and regional educational bodies.

As the infrastructure for competence recognition and validation continues to expand, Italy is poised to scale these processes for broader use, making them adaptable to different educational and professional settings across the country. Recognition from the Ministry of Education and Merit could further promote the adoption of these systems by more schools, as seen with Unioncamere's badge system, which is currently on a voluntary basis.

Key insights for future implementation

Italy is advancing rapidly toward establishing a comprehensive system for validating competences. The integration of external validation, the use of digital tools like block chain for certification and alignment with national and regional repositories are central to these

efforts. As validation methods evolve, there will be a heightened focus on training and supporting trainers, ensuring consistency, scalability and sustainability in the long term.

The collaboration between organisations such as IFOA, t2i, and UNIONCAMERE highlights Italy's commitment to creating a robust, adaptable system for validating competences that meets both national and international standards.

Austria

Organisation: WIFI International

Planned validation methods

WIFI International plans to validate competences for future learning paths through a combination of micro-credentials, challenge-based assessments, portfolio-based assessments and certification. These methods are specifically designed to enable learners to showcase their practical skills and progress in areas such as digitalisation, entrepreneurship and sustainability. The emphasis on flexibility and adaptability ensures that the validation process can be customised to align with the evolving demands of both industries and learners.

By incorporating micro-credentials, challenge-based assessments and portfolio-based evaluations, WIFI International provides learners with multiple ways to demonstrate their competences. Certification will further validate their achievements. These approaches are aimed at ensuring that learners' accomplishments are recognised not only in Austria but across the EU, boosting their mobility and employability within the European labour market.

External validation

External validation will play a key role in ensuring the credibility of the competence validation process. WIFI International is exploring collaboration with Austrian accreditation bodies to align the validation methods with the National Qualifications Framework (NQR). The organisation is also considering partnerships with industry players to validate competences based on current market needs, with the aim of enhancing recognition both domestically and across Europe.

Implementation strategy

Competence validation will be integrated into the module-based learning paths already developed at WIFI International. Competences will be validated at specific stages within these paths and learners will receive certificates or micro-credentials upon meeting certain criteria. Digital tools, such as EduSkills and the Austrian Learning Portal, will be used to track progress and issue certificates, ensuring transparency and reliability throughout the process.

To effectively implement the new validation methods, trainers will require comprehensive support. This support will include the provision of digital platforms that will enable them to track and issue badges and certificates, simplifying the validation process. Additionally, trainers will receive training and resources to ensure they are equipped with the knowledge and skills necessary to use the new tools and frameworks effectively in their

teaching practices. Furthermore, establishing partnerships with industry experts will be essential to ensure that challenge-based assessments are relevant and reflective of current industry trends, thereby ensuring their effectiveness. This combination of resources and expert collaboration will ensure that trainers can deliver these new validation methods in a way that maximises their relevance and impact.

Sustainability and scalability

To ensure long-term sustainability, the validation process will be regularly updated in alignment with Austria's broader educational and professional development strategies. Feedback from industry partners and learners will be gathered to ensure the process remains relevant and adaptable to changes in key areas such as digitalisation, entrepreneurship and sustainability.

For scalability, WIFI International plans to explore further integration with Austria's National Qualifications Framework (NQR) and promote the use of digital validation tools across other institutions. Engaging with business associations and European stakeholders will help expand the reach of the system and ensure wider adoption and recognition of the validation process.

Additional Comments and Suggestions

By incorporating flexible validation methods, WIFI International aims to provide learners with a transparent and widely recognised way to showcase their competences. This approach will support learners' mobility and employability, both within Austria and across Europe, making the validation process a vital tool for lifelong learning and career advancement.

Belgium

Organisation: Thomas More UAS, Eurochambres AISBL

Planned validation methods

In Belgium, future competence validation for learning paths will be implemented through micro-credentials and challenge-based assessments. These approaches will provide learners with a structured way to demonstrate their acquired skills, particularly within problem-based learning contexts. The Learning Paths will continue to function as a flexible toolbox, allowing learners to engage with content that best aligns with their specific needs and assignments. While external validation or accreditation is not currently planned, these methods will ensure that competences are effectively recognised within the learning process.

Implementation strategy

Competence validation will be integrated as part of the general evaluation process, ensuring that the skills acquired through the Learning Paths are assessed in a meaningful way. Trainers will require additional support to effectively implement these validation methods, which will be provided through dedicated training sessions, either online or face-to-face. The structured approach followed during the pilot phase – prioritising sustainability, followed by entrepreneurship and digitalisation – will continue to serve as a foundation for competence validation within problem-based learning projects.

Sustainability and scalability

To ensure long-term sustainability, competence validation will be embedded within general evaluation processes, maintaining consistency while allowing flexibility for adaptation based on project needs. By integrating validation into existing learning and assessment practices, the approach will remain scalable and adaptable to different educational and professional contexts. EUROCHAMBRES will play a key role as a liaison between the chambers of commerce in Belgium, engaging businesses and training providers to promote these validation methods as part of lifelong learning initiatives, extending their recognition and adoption across various sectors.

Additional comments and suggestions

Exploring external recognition opportunities with educational institutions and industry partners could enhance credibility. Introducing digital badges as interim validation would provide learners with verifiable proof of their skills. Ensuring Learning Paths remain adaptable to industry needs will further strengthen their relevance and impact.

Spain

Organisation: EXTREMADURA

Planned validation methods

EXTREMADURA plans to validate competences for future learning paths using micro-credentials and certification. These methods will formally recognise the skills and knowledge acquired by learners through the completion of educational programs, particularly those delivered through Massive Open Online Courses (MOOCs). By offering badges, EXTREMADURA intends to provide learners with verifiable proof of their competences, enhancing their ability to showcase their achievements. These validation methods aim to acknowledge the progress made by learners, ensuring that the competences they have acquired are recognised both within the educational and professional sectors.

Implementation strategy

Competence validation will be integrated into the educational system by collaborating with VET and higher education providers, both public and private. These institutions will help put value and recognition on the competences gained by taking the MOOC. The main tool for this recognition will be the badges awarded through the MOOC, which will serve as verifiable indicators of acquired skills.

Sustainability and scalability

The sustainability of the validation process will be supported by the collaboration with VET and higher education providers, ensuring long-term recognition of competences. The badges offered by the MOOC will continue to be a key element in validating and showcasing the learners' acquired skills.

To scale the validation process for wider use, EXTREMADURA plans to engage employment services, chambers of commerce and employers' organisations. These

stakeholders, by promoting lifelong learning for their employees, will help extend the recognition and adoption of these validation methods.

Additional comments and suggestions

It would be ideal to incorporate these training paths as part of cross-curricular subjects in VET, university studies or job training programs. This would allow the validation of competences to be seamlessly integrated into existing educational frameworks, ensuring a broad and inclusive recognition of acquired skills.

Türkiye

Organisation: TOBB University of Economics and Technology

Planned validation methods

TOBB University of Economics and Technology (TOBB ETU) plans to validate competences for future learning paths through micro-credentials and certification. These methods are designed to formally recognise the skills and knowledge learners gain, enhancing their employability and industry recognition. The certification will specifically be awarded by the TOBB ETU Continuous Education Center (ETU SEM).

By offering formal certification, TOBB ETU aims to increase the recognition of the competences learners acquire through the university's training programmes, ensuring that their achievements are acknowledged both in the academic and professional spheres.

Implementation strategy

Competence validation will be integrated into TOBB ETU's CAMPUSONLINE platform, which will serve as the central online learning environment. Learners will be required to meet predefined learning criteria, and certification will be granted once these requirements are fulfilled. Trainer evaluations and digital assessment tools will support this process, ensuring accurate tracking and validation of learners' progress.

Sustainability and scalability

The validation process will be sustained in the long term by embedding it within the ETU SEM framework, ensuring consistency and alignment with the university's existing educational structure. The use of digitised assessment tools will allow for automated tracking of learners' competences, ensuring continuous and efficient validation.

To scale the validation process for wider use, TOBB ETU will leverage digitised assessment tools to accommodate a larger number of learners. Additionally, the certification process can be integrated with formal university degree programmes, enabling certificates to be converted into academic credits. This will increase the scalability of the system, allowing it to reach more learners and have a broader impact.

Conclusion on competence validation and future implementation approaches in partner countries

The analysis of competence validation outcomes across different countries has highlighted key trends and challenges that need to be addressed to enhance the effectiveness of validation methods in aligning with the needs of both learners and the job market.

Through the diverse approaches adopted by countries such as Italy, Austria, Spain and Türkiye, it is evident that there is a growing recognition of the importance of competence

validation. These include the use of standardised frameworks such as the Atlante delle Professioni, DigComp and GreenComp, alongside digital tools like block chain-based badges and business scenario simulations, which are helping bridge the gap between theoretical knowledge and practical skills.

However, several challenges persist across these countries. A common issue remains the difficulty in aligning competence frameworks with employer expectations, particularly as market demands rapidly evolve. Furthermore, the integration of Learning Paths into formal curricula has proven challenging due to time constraints, which has led to selective engagement among students. The adoption of digital tools, while growing, still faces resistance from some trainees who are unfamiliar with these platforms, slowing down the overall validation process.

To address these challenges, several solutions have already been implemented across countries. For example, countries have started integrating more flexible Learning Paths that are selectively implemented to ensure they meet the specific needs of learners. Real-world case studies, problem-based learning and improved trainer support through structured templates and guided evaluations have been successful in encouraging practical application. Additionally, the introduction of digital tools into training sessions has helped familiarise students with the technology ahead of their assessments, ensuring smoother validation.

Looking to the future of competence validation, the analysis of future implementation strategies highlights several key areas for improvement. Across countries, the move towards micro-credentials, digital badges and scalable digital tools is seen as a major opportunity to increase the mobility and employability of learners. These digital methods will contribute to the portability of competences, making it easier for learners to present their validated skills across borders and different sectors, thus enhancing their employability.

8. Recommendations

Competence validation plays a pivotal role in shaping learners' skills and ensuring their alignment with both educational goals and industry demands. To achieve this, a comprehensive and multi-faceted approach should be adopted, strengthening the overall impact and sustainability of these practices.

Strengthening collaboration among stakeholders

A key recommendation for the future is to foster stronger, more dynamic collaboration among educational institutions, industry partners and certification bodies. This partnership will ensure that competence validation methods stay aligned with the evolving needs of the job market. By working closely with industry, educational stakeholders can update and adapt validation frameworks to reflect emerging trends and skill requirements, ensuring that learners acquire the relevant competences needed to succeed.

Supporting trainers through ongoing professional development

Equally crucial is the need for enhanced support for trainers. To equip them with the tools and expertise necessary for effective competence validation, ongoing professional development should be prioritised. This should focus on digital tools, assessment methods and the integration of new validation techniques. By doing so, trainers will be better equipped to meet the growing demands of learners and industries. Continuous development in this area will improve the consistency, effectiveness and overall quality of validation practices, ensuring they remain relevant across diverse educational contexts.

Integration with National and Regional Frameworks

For competence validation to have credibility and recognition beyond local contexts, greater integration with national and regional frameworks is vital. Connecting validation methods with established systems, such as Austria's National Qualifications Framework (NQR), or similar frameworks in other countries, will ensure that validated competences are recognised across borders. This integration will make it easier for learners to showcase their skills in different contexts, thus increasing the portability and value of their qualifications and enhancing their employability.

Enhancing Skill Validation Through Chamber of Commerce Engagement

Chambers of Commerce play a crucial role in validating skills through open badges, bridging the gap between education and labour market needs. By acting as trusted issuers, chambers can validate competences gained through formal education, informal learning, and work experience, while creating industry-specific micro-credentials that address key sector needs such as green skills and digital transformation. Structuring badges into stackable credentials will enhance employability, ensuring that educational programs align with market demands through competency frameworks co-created with businesses. Chambers can also leverage labour market data to identify emerging skill gaps and adapt training programs accordingly. Furthermore, engaging SMEs to define real-world challenges and promote work-based learning, while validating these skills

through badges, will help simplify career matching by providing digital resumes. By adopting this approach, chambers will expand the recognition and impact of open badges, ensuring their value both locally and internationally.

Promoting awareness and adoption of Micro-credentials and Digital badges

The awareness and adoption of digital tools like micro-credentials, certifications and block chain-backed badges should be actively promoted. Educational institutions, employers and learners should be educated about the value of these digital tools in recognising skills. Awareness campaigns are critical in driving the acceptance of these methods across sectors. As more employers and educational institutions recognise the value of these validation methods, their adoption will increase, contributing to greater recognition and integration into existing educational and professional systems.

Developing scalable and accessible solutions

The future of competence validation also hinges on developing scalable, accessible solutions that can adapt to various educational and professional contexts. The use of digital platforms and tools will enable competence validation methods to reach a broader audience, including those in remote or underserved regions. By developing scalable solutions, competence validation can become more inclusive, ensuring that learners from all backgrounds, regardless of geographic location, have access to the tools they need to validate and showcase their competences.

Encouraging work-based and experiential learning

Competence validation is most effective when learners can apply their skills in real-world or simulated environments. Trainers are encouraged to integrate work-based and experiential learning into their validation practices. This could include designing internships, business simulations or service-learning projects. These hands-on experiences not only validate learners' skills but also provide valuable opportunities to apply theoretical knowledge in real business contexts, strengthening their employability.

Ensuring long-term impact through sustainability

Lastly, a well-designed competence validation system must be sustainable and scalable. Trainers should consider creating modular assessment models that can be expanded across various programmes, ensuring long-term impact. AI-driven assessment platforms can help automate parts of the validation process, making it more efficient while maintaining the rigor and credibility of the assessment. Establishing partnerships with credentialing organisations can further enhance the recognition and portability of the credentials awarded.

9. Conclusion

In conclusion, while significant progress has been made in the analysis and implementation of competence validation practices across countries, continued efforts are needed to enhance collaboration, support trainers and integrate with national frameworks. Promoting scalable and accessible solutions will ensure that competence validation remains relevant and effective, meeting the evolving needs of both learners and the job market. By adopting these recommendations, countries can create a more capable, agile workforce, ready to face the challenges of the future.

10. Bibliography

European Commission. EntreComp: The European Entrepreneurship Competence Framework.

https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework_en

This framework defines the entrepreneurial competences in the EU, guiding their integration into educational systems.

European Commission. DigComp: The Digital Competence Framework.

https://joint-research-centre.ec.europa.eu/scientific-activities-z/education-and-training/digital-transformation-education/digital-competence-framework-citizens-digcomp/digcomp-framework_en

The DigComp framework supports digital competences, which tie into broader competency frameworks like EntreComp.

European Commission. GreenComp: The Green Competence Framework.

https://joint-research-centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en

GreenComp complements the entrepreneurial and digital frameworks, helping integrate sustainability into entrepreneurial education.

European Commission. EQAVET: European Quality Assurance in Vocational Education and Training.

https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/working-together/eqavet-european-quality-assurance-vocational-education-and-training_en

EQAVET ensures quality assurance for work-based learning, aligning with the EntreComp4Transition project's objectives.

European Commission. ECVET: European Credit System for Vocational Education and Training.

https://efvet.org/european-credit-system-for-vocational-education-and-training-ecvet/

ECVET provides a framework for the transfer, recognition and accumulation of credits in vocational education, aiding the recognition of entrepreneurial competences.

European Commission. ECTS: European Credit Transfer and Accumulation System.

https://education.ec.europa.eu/education-levels/higher-education/inclusive-and-connected-higher-education/european-credit-transfer-and-accumulation-system

ECTS serves to recognise and validate academic achievements, including entrepreneurial competences, across different institutions and countries.

OECD. Micro-credential Innovations in Higher Education.

https://www.oecd.org/en/publications/micro-credential-innovations-in-higher-education_f14ef041-en.html

This paper offers empirical evidence on the current offer of micro-credentials across OECD jurisdictions, providing insights into their role in education.

European Training Foundation. Guide to Design, Issue and Recognise Micro-Credentials.

https://www.etf.europa.eu/sites/default/files/2023-05/Micro-Credential%20Guidelines%20Final%20Delivery.pdf

This guide aims to accelerate the flexibility and responsiveness of learning systems within the European Training Foundation's partner countries, providing guidance on the design, issue and recognition of micro-credentials.

Digital Promise. The Relationship Between Digital Badges and Recognise Micro-Credentials.

https://digitalpromise.org/2023/04/13/the-relationship-between-digital-badges-and-micro-credentials/

This article explores how digital badges are used as micro-credentials to recognise competence in a skill, highlighting their role in education and employment.

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