



Innovative VET Scalable Micro-Credential Solutions that Engage, Explore, Explain, Elaborate and Evaluate

D3.2

Baseline guideline containing the user requirement specification for micro courses applying CUs leading to MCs, and MQs that are recognized by industry and VET providers

High-level user specifications for
Initial- and Continuing VET micro courses

<https://www.stimuli2.no/project/five>

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Assessment & Work-Based Practices

Baseline Guideline for Micro Courses

A Harmonized Framework supporting the Digital Wallet System Solution



five

D3.2

Guideline with user specifications for Initial- and Continuing VET Micro Courses



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Framework for Micro Courses applying Competence Units, leading to Micro Credentials

Micro Credentials (MCs) offer a flexible and targeted way for individuals to build the knowledge, skills, and competences needed for personal and professional growth. **Each MC should clearly document the learning outcomes achieved after a defined volume of learning, with those outcomes assessed against transparent and measurable standards.** This European approach to MCs offers a shared definition that applies across all sectors of education and the labour market. It reflects the mission of educational and training institutions, ranging from higher education and vocational education and training (VET) providers to non-formal learning organizations, as well as employers and labour market actors. MCs are intended to certify the learning outcomes of short-term learning experiences, such as courses or training activities.

Harmonized standards for delivery are secured by applying micro courses that are structured into harmonized Competence Units (CUs). **Each CU is built around standardized Learning Outcomes (LOs) descriptions,** which define:

- **Knowledge** – what the learner is expected to understand and be familiar with.
- **Skills** – what the learner will be able to perform or apply in practice.
- **Competence** – what the learner should be capable of achieving by integrating knowledge and skills in real contexts.

The minimum standard with key reference points

This baseline guideline outlines and describes a minimum standard with key reference points that organizations, projects, or individuals should agree to follow when designing, developing and providing micro courses leading to micro credentials. It will serve as the foundation upon which improvements, adaptations, or stricter rules can be built.

In practice, this baseline guideline

- Sets the minimum acceptable requirements,
- Ensures consistency across different providers, teams or practices,
- Acts as a benchmark for measuring progress, compliance and performance,
- Provides flexibility to go beyond the baseline, while guaranteeing that no one falls below it.



Micro-Courses: Transparency and Learning Outcomes



In VET a baseline guideline should be used to define the minimum competence outcomes every micro course must achieve. Such a baseline guideline establishes the minimum requirements for the design, delivery, assessment, and recognition of MCs in VET and Higher VET, as well as the possible combination of **a number of MCs into a Micro-Qualification framework by issuing an IMiS Diploma**. It provides a shared foundation for providers while allowing flexibility to adapt and expand according to specific contexts. It applies to:

- VET and Higher VET providers considering to issue MCs,
- Learners and employees earning MCs,
- Employers and stakeholders using MCs for recognition and validation.

The core principles include:

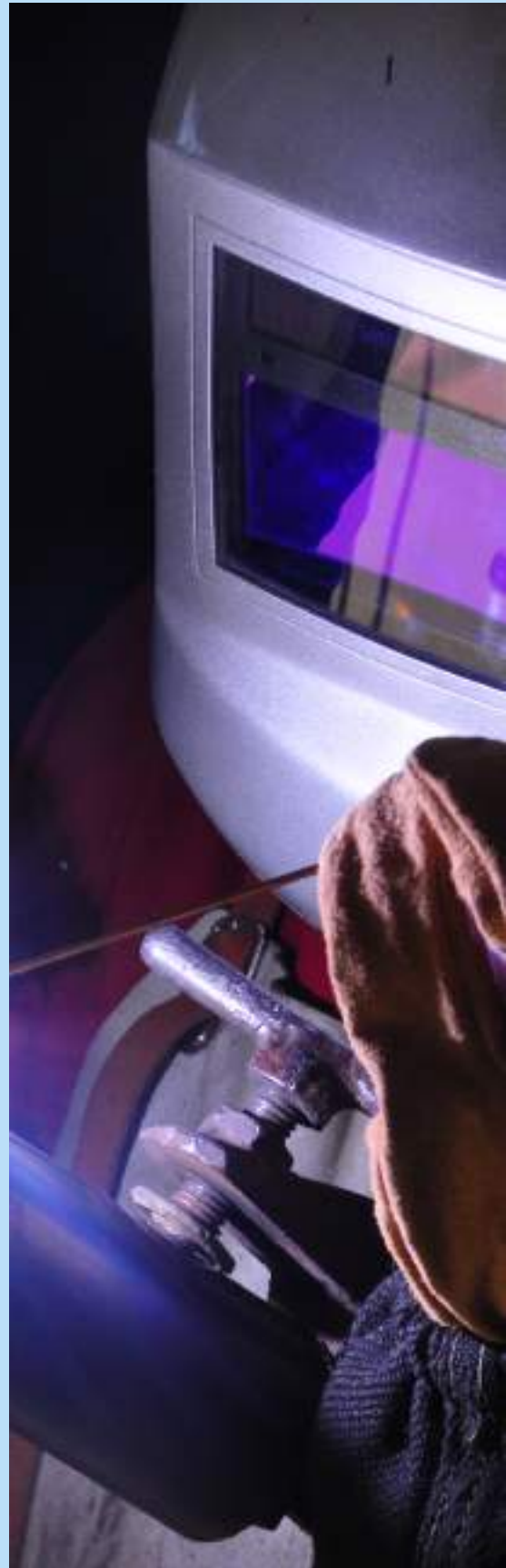
- **Transparency of Learning outcomes (LOs)** that must be clear, measurable, and aligned with competence frameworks,
- **Portability of MCs** should be recognized across different VET providers and sectors,
- Flexibility with respect to training paths must allow **stacking of MCs toward larger micro qualifications leading to a micro specialization**,
- Quality assurance of the learning and evaluation processes must meet minimum quality standards, both internally and externally,
- Accessibility of learning opportunities must be inclusive and digitally accessible.

The structure of **micro course should be organized into competence units (CUs)**. Each CU specifies **Learning Outcomes (LOs)** covering:

- **Knowledge** – what the learner should understand,
- **Skills** – what the learner should be able to do,
- **Competences** – what the learner should be capable of achieving in practice.

Each CU must include work-based training components as an option where possible.

The assessment process requires that each CU includes at least one micro-test linked to its LOs. The assessment must be transparent, fair, and aligned with agreed standards. The combination of continuous assessment together with an optional mini-exam, may be applied.



The baseline for objective assessment principles is critical tools, services and methods for tracking learner development in an objective and transparent way.



Assessment and micro courses, competence units and micro credentials

The certification after a successful completion of a micro courses with its CU, results in a Micro Credential (MC). Each MC will include: Title and description, learning outcomes (Knowledge, Skills, Competences), level of reference (e.g. EQF, NQF), workload/credits, Issuer details, and date of issue and expiry (if applicable). The certificate Issued as a digital credential stored in the learner's European Digital Wallet.

MCs must be stackable toward larger qualifications (National Qualification, International Diploma, or sector certification). The validation of MCs across VET and Higher VET providers should follow harmonized standards.

Providers must apply internal quality assurance aligned with national/EU frameworks. External quality assurance could include and review provider performance and effectiveness of their QA processes. Learner and peer feedback could be collected systematically.

Learners are expected to actively engage in their training, provide feedback, and make use of digital wallets. VET providers are responsible for designing, delivering, and assessing micro-credentials in line with baseline standards. Employers play a key role in supporting the recognition and integration of MCs into staff development. Authorities and networks are tasked with monitoring and ensuring alignment with national and European frameworks.

The baseline guidelines should be considered to be reviewed every two to three years. Updates should take into account changes in industry needs, qualification frameworks as well as digital credentialing standards.

The baseline for objective assessment principles (compare with D3.1) is critical tools and methods for tracking learner development in an objective and transparent way. A combination of methods usually ensures that students learning progressions are measured fairly and consistently.

- **Pre- and post-assessment** with diagnostic tests at the start and end of training provide a clear comparison of learner growth in knowledge, skills, and competences.
- **Standardized learning outcome descriptions** secure that assessments are aligned with predefined outcomes in knowledge, skills, and competences, ensuring that progression is measured against transparent benchmarks.
- **Performance-based tasks** help learners demonstrate their abilities in real or simulated work environments. Structured rubrics and checklists support an evaluation process with focus towards accuracy, efficiency and safety objective.
- Inclusion of **continuous assessment methods** with application of regular quizzes, assignments, and micro-tests allow progress to be tracked as an ongoing trajectory rather than a single result.
- For **competence frameworks and levels**, the results can be mapped to various frameworks such as the European (or National) Quality Framework, showing advancement from one level of competence to another.
- **Digital tracking and analytics** with intensive usage of learning management systems and e-portfolios in blended learning approaches, record data on task completion, scores, and skills development, providing measurable evidence of progress.
- **External moderation and peer review** involving external assessors or peers, help reducing bias and ensure fairness and consistency in assessment outcomes.

Standardized descriptions of learning outcomes help securing that assessments are aligned with predefined outcomes in knowledge, skills and competences.



Online Objective Assessment of Knowledge, Skills and Competences in VET.



Together, these approaches make it possible to measure learner progression in an objective, systematic, and transparent way by balancing theoretical evaluation with practical, work-based demonstrations of knowledge, skills and competences.

Online objective assessment system solutions

through learning management systems have clear value, but also limitations when it comes to evaluating practical skills and competences. Hands-on demonstration is often required to accurately assess work-based training activities. For this reason, integrating objective testing with complementary assessment methods improves both the validity and reliability of evaluations, ensuring a more comprehensive measure of learner performance.

Objective tests are suited for micro courses delivered fully online or through blended learning. However, to effectively evaluate practical skills and work-based competences, assessment methods must go beyond traditional tests and allow learners to demonstrate their abilities in real-world or simulated settings.

Objective Testing - The Litmus Test

Examples of testing include

1. **Direct observation and demonstrations** where learners are assessed in real time by a supervisor, mentor, or trainer, demonstrating their skills and competences in authentic workplace situations.
2. **Practical exams** where learners' complete specific tasks under controlled conditions, showcasing their abilities. Self- and peer-assessment can be added, encouraging learners to reflect on their own and others' performance.
3. **Project-based assessment** lets candidates work on real-world assignments requiring them to plan, execute, and present practical solutions to workplace challenges.
4. **Portfolio-based assessment**, on the other hand, lets learners compile evidence of their work-based learning, such as reports, projects, videos, photos, or other documentation that demonstrates outcomes and achievements.

Together, these approaches ensure that assessments capture both the explicit knowledge tested through objective methods and the skills and competences demonstrated through practice.

Capturing and documenting knowledge, skills and competences

In this way, **work-based learning equips learners with the knowledge, skills, and competences they need to thrive in real workplaces**. It blends technical, technological, social, and economic capabilities into practical training directly linked to industry demands. To measure true competence and readiness for work, assessments must go beyond theory by using hands-on tasks, observation, and structured evaluation. These methods not only validate efficiency and performance but also motivate learners to sharpen and elevate their abilities. Impact is best shown by comparing progress before and after training, demonstrating how workplace learning drives measurable growth.

The **VET adapted micro courses** must be built on endorsed units of competency or on modules like CUs, specifically developed for inclusion in the course. Each accredited micro course should incorporate both skills and knowledge components, expressed through a unit of competency or module in the description of the CU. Competence units should be structured to reflect the skills and knowledge expected of a competent worker in the workplace, rather than focusing on how training providers will deliver or assess them. The emphasis on workplace outcomes must remain clear throughout each unit of competency description. They should be developed in close collaboration with industry practitioners and technical experts from the VET sector.

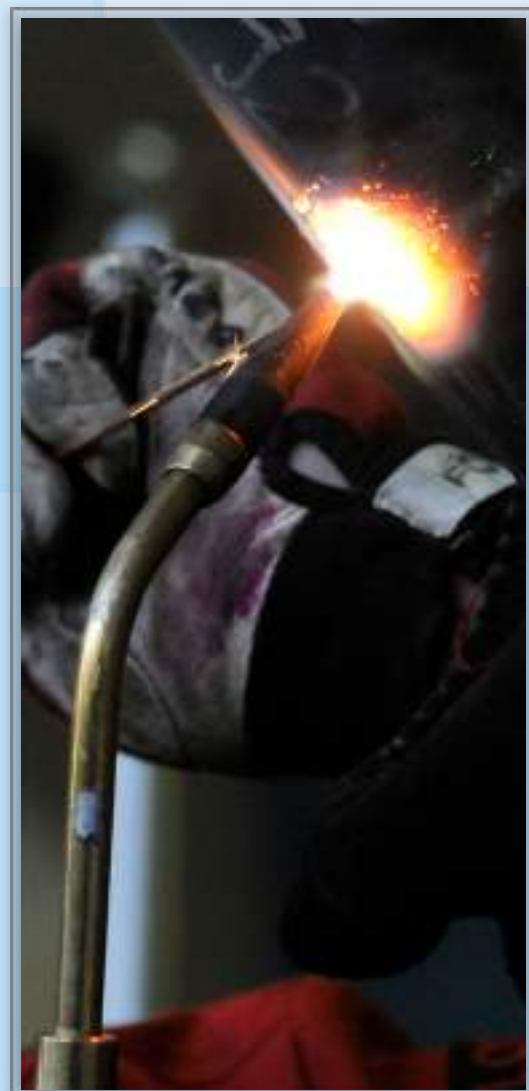
Each competence unit should specify the work activity to be performed, the standard of performance expected in the workplace, and the assessment requirements. This includes the evidences needed to demonstrate competency and the conditions under which assessment must occur. It should also outline any additional forms of evidence that can support assessors in making fair and accurate judgments of learners' knowledge, skills and competences.

The **initial VET micro courses** refers to formal education and training programs aimed at young learners or individuals entering the workforce. These programs provide foundational technical skills, industry-specific knowledge, and practical training to prepare learners for specific occupations or career pathways. An initial VET micro course should apply harmonized building blocks consisting of a competence unit and a test leading to a Record of achievement and the MCs. Several MCs may be combined into a micro qualification.

The **purpose of a micro qualifications** are to provide a focused, flexible, and recognized way for learners to acquire and demonstrate specific skills and competences. Unlike full degrees or long programs, micro qualifications are smaller, targeted, and designed to respond quickly to labor market or personal learning needs, leading to an international micro specialization with the proposed IMiS diploma that will contain a number of MCs.

A micro qualifications focus on one specific area of knowledge, skill, or competence needed for a job, career change, or personal growth, while it offers shorter, modular learning opportunities that can fit around work, family, or other studies. Learners should be allowed to "stack" multiple micro-qualifications over time toward a extended micro qualification

**Initial VET: Where
knowledge meet practice!**





Initial VET Micro Courses should provide knowledge and skills, leading to competence through work-based training.

Initial VET education courses are typically comprehensive programs lasting three to four years, leading to a National Qualification or an International Diploma issued by e.g. the European Welding Federation (EWF). These programs combine theoretical instruction with work-based training, delivered either through partnerships between public institutions and industry or through the EWF's private, harmonized education system, supported by Europe's metal-joining industry. **In Northern and Central Europe, the National Qualification (NQ) approach is well established, while in Southern and Eastern Europe, the private, harmonized EWF system holds a stronger position.**

The training pathways for Initial VET micro-courses that are modularized, such that they still could lead to a National Qualification or an International Diploma, follow the sequence

Knowledge → Skills → Competence.

- **The basis for the description is the syllabus**, which is transferred to LOs.
- The knowledge description describes what the student should have knowledge of.
- The description of the skills includes what the student will be able to do.
- Finally, the description of the competence addresses what the student should be able to do.
- The micro course ends with a micro courses test, which after completion is leading to a Record of Achievement.
- Finally, several MCs may be put together into an International Micro Specialization (IMiS) Diploma representing a micro qualification (MQ).
- Students may receive several International Micro Specialization Diploma, and use those micro specializations to take a final exam that is leading to either a national qualification, or an international diploma.

The IMiS diploma is awarded through a series of harmonized and standardized micro courses based training activities, applying standardized Competence Units (CUs) designed to support targeted skill and competence development. Passing the exam at each CU results in a issuing a micro-credential (MC), which is easily understood and recognized by industry, employers, employees, learners, as well as VET and higher VET institutions.

The **VET delivery methodologies include transforming a curriculum into micro courses by applying a competence-oriented syllabus** that:

- Integrate competence measures that is adapt the curriculum into a syllabus that emphasizes competence development.
- Define Learning Outcomes (LOs):
 - **General Learning Outcomes** (GLOs): Broad, concise, and measurable statements that describe expected achievements in Knowledge – Skills – Competences.
 - **Special Learning Outcomes** (SLOs): Operational-level outcomes that refine the GLOs into specific Competences – Knowledge – Skills.

Initial VET: Building Skills, Shaping Futures

- Enable collaboration by establishing a system that allows VET and Higher VET providers to jointly **develop, share, and use harmonized digital libraries** built around standardized Competence Units (CUs).
- Develop outcome-writing skills by **training staff to formulate GLOs and SLOs** that clearly define
 - Knowledge: What students should know.....
 - Skills: What students will be able to do.....
 - Competences: What students should be capable of achieving by applying their knowledge and skills.....
- **Integrate work-based practices** that combines blended on-site training with online learning, using both synchronous and asynchronous video to enable flexible, cost-effective communication, cooperation and collaboration.
- **Structure micro courses** by applying harmonized and standardized CUs, and organize each CU with a micro course tests that lead to MCs and the issuing of a Records of Achievement.
- **Assessment pathways** combine continuous assessment through micro course tests with optional mini-exams as steps toward the MCs, and the extension that will combine MCs into micro specializations with the IMiS Diploma.
- The final qualification prepares the learners for a **concluding a traditional exam** leading either to a National Qualification or an International Diploma.
- The quality assurance applies external quality methods, focused on **evaluating providers** and the effectiveness of their internal quality assurance systems.
- **Feedback loops** collect continuous feedback from learners and peers throughout the learning process to refine and validate the MCs.
- **Transparent standards** assess all MCs against clear and transparent criteria to guarantee credibility and recognition.
- **Enable flexible learning pathways** that allow learners to stack, validate, and recognize MCs across different VET and Higher VET providers.
- **Use and apply digital wallets** with the new emerging European digital wallets for storing and sharing MCs securely and seamlessly.



Continuing VET Micro Courses should address which competences that are needed

Continuing VET refers to training programs for adult learners, workers, and professionals seeking to upgrade their skills, re-skill for new roles, or adapt to industry changes. These programs help individuals stay competitive in the labour market, respond to evolving industry demands, and meet professional regulations.

Continuing VET education courses provide workers and staff with opportunities to gain new skills, strengthen competences, and advance their careers. As a formal component of professional development, continuing VET focuses on staying up to date with industry regulations, adopting new technologies, and enhancing workplace expertise. Professional development, more broadly, encompasses all the different ways employees can acquire and refine skills for their roles.

Continuing education options range from self-paced online courses and programs offered by professional organizations to degree programs provided by VET institutions, higher VET colleges, and universities. Employees often pursue continuing education to qualify for new roles or earn promotions, while others engage in courses for personal enrichment and lifelong learning.

Continuing VET education enables staff to expand their professional networks, increase their earning potential, boost creativity and confidence, and acquire new skills and competences. These newly gained abilities are then carried back into the workplace, benefiting both the individual and the organization.

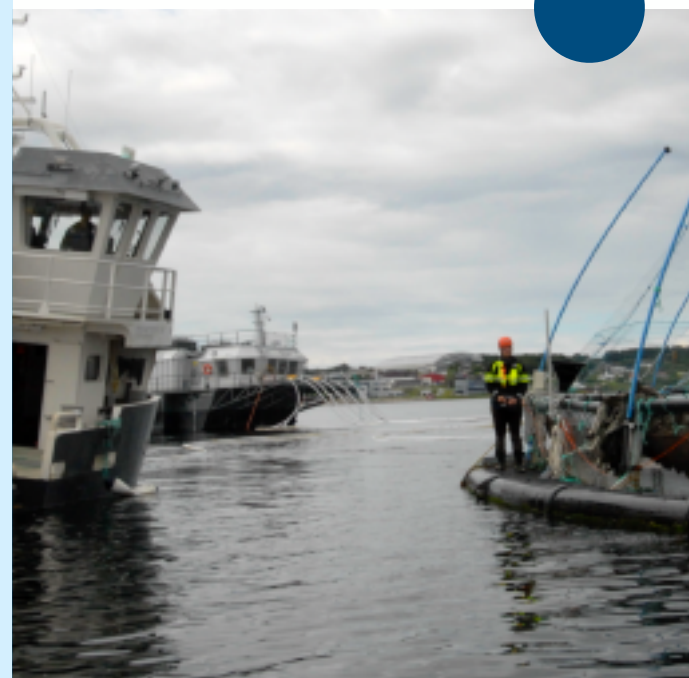
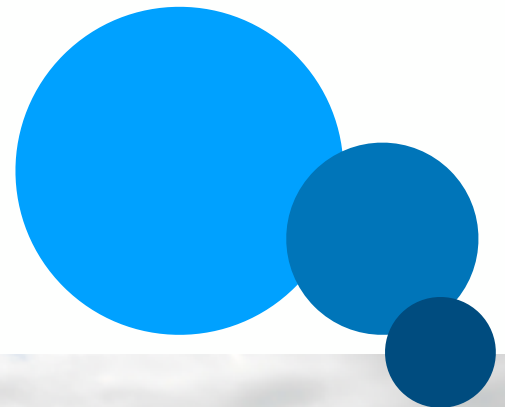
In-company training pathways for continuing VET micro courses follow this sequence:

Identify the required competence

→ **Provide the necessary knowledge and work-based skills**

→ **Enable staff to acquire that competence.**

- The **basis for the description is the syllabus**, which is transferred to LOs.
 - The knowledge training should provide sufficient theoretical training
 - The skills training must provide sufficient work-based training
- The micro course ends with a **micro courses test**, that will be part of the CU, which after completion is leading to a Record of Achievement and a MC.
- Finally, several MCs may be put together into an International Micro Specialization Diploma (IMiS) representing a **micro qualification (MQ)**.
- Students may study and receive several International Micro Specialization (IMiS) Diploma, and use those to take a final exam that is leading to either a national qualification, or an international diploma.



Continuing VET: Keep Learning, Keep Growing.

The delivery of Continuing VET micro-courses should be guided by **harmonized minimum standards**, with clear specifications on how to transforming a curriculum into a competence-oriented syllabus.

- **Emphasize competence** by adapting the curriculum into a syllabus that highlights competence development as a central measure.
- **Define Learning Outcomes (LOs):**
 - **General Learning Outcomes (GLOs):** Concise, measurable statements that specify the required competences, supported by descriptions of the necessary knowledge and skills.
 - **Special Learning Outcomes (SLOs):** Operational-level outcomes that translate GLOs into detailed requirements for competences, supported by corresponding knowledge and skills.
- **Enable collaboration and cooperation** by providing a system solution that allows VET and Higher VET providers to jointly develop, share, and apply harmonized digital libraries built around standardized micro courses with competence units (CUs).
- **Develop outcome-writing skills** by training the educators to formulate GLOs and SLOs that clearly define:
 - Competences: What students should be able to achieve.
 - Knowledge: What students should understand.
 - Skills: What students will be able to perform.

It includes **designing blended learning courses with work-based training practices** that:

- **Integrate work-based practices** by combining on-site training with online courses, using both synchronous and asynchronous video to support flexible, cost-effective communication, cooperation, and collaboration.
- **Structure micro courses into CUs**, and organize courses by applying standardized CUs, each including micro course tests that lead to MCs and the issuing of Records of Achievement
- **Assessment for progression** combines continuous assessment by applying micro course tests with optional mini-exams as steps toward awarding the IMiS Diploma for a micro specialization.
- The **final qualifications** prepare learners for a concluding exam leading to either a National Qualification or an International Diploma.



Continuing VET: Learning That Works for You! Upgrade Your Skills, Advance Your Future!

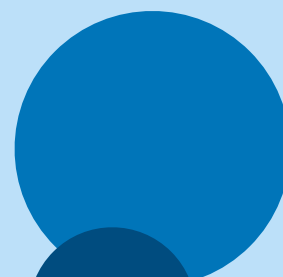
Continuing VET: Turning Experience into New Opportunities !

- **The quality assurance** applies external quality assurance focused primarily on provider assessments and the effectiveness of their internal quality assurance systems.
- **The feedback loops** continuously collect feedback from learners and peers throughout the learning experience to strengthen the value of the MCs.
- **Transparent standards** should be applied to assess MCs against clear and transparent benchmarks to ensure credibility and recognition.
- Human resource (HR) engagement is secured by keeping HR managers informed to help them design CU-based training plans that support both company development and staff career progression.
- The proposed system solution **enables flexible learning pathways** that will allow learners to stack, validate, and recognize MCs across different VET and Higher VET providers.
- **Leverage digital wallets** that use the new emerging European Digital Wallet system solution to securely store and seamlessly share MCs.

A Continuing VET micro course applies harmonized building blocks that are adapted to basic- and advanced levels.

- At the basic level the competence unit include a test 1 leading to a Record of achievement and the MCs.
- At the advanced level the competence unit include a test 2 leading to a Record of achievement and the MCs.

Several MCs at the basic- or advanced levels, may be combined into a micro qualification.



The EU Digital Identity Wallet - Framework and status.



The EU Digital Identity Wallet is going to be a secure mobile application enabling EU citizens, residents, and businesses to store and share digital documents, verify their identity for online services, and perform electronic signatures. It is designed to give users full control over their personal data, strengthen privacy and cybersecurity, and support seamless cross-border access to both public and private services across Europe.

The Digital Identity Wallet offers a secure and versatile solution for EU citizens, residents, and businesses. It enables users to prove their identity both online and offline without oversharing personal information, while storing a wide range of digital documents, from official IDs like mobile driving licenses to transport passes and academic credentials like micro credentials. With full control over data, users decide what to share and with whom, ensuring stronger privacy than traditional methods. The wallet also supports binding electronic signatures and seals, allowing documents to be authenticated and signed digitally. Designed for cross-border use, all stored identities and documents are recognized across EU Member States, creating a trusted and interoperable system for everyday and professional needs.

The Digital Identity Wallet delivers benefits across society, whereby citizens gain easier, more secure access to services like banking, education, and travel while keeping control of their data. Businesses will enjoy streamlined customer authentication, lower administrative costs, stronger cybersecurity, and access to cross-border markets. Public administrations benefit from better fraud prevention and more efficient delivery of digital services.

The European Digital Identity Framework Regulation, which entered into force in May 2024, requires all Member States to provide at least one EU Digital Identity Wallet to their citizens, residents, and businesses by the end of 2026. To prepare for this rollout, large-scale pilot programs have been carried out across Europe, gathering feedback from users, businesses, and public administrations.

These pilots are helping ensure that the wallet is secure, user-friendly, and effective, laying the groundwork for a trusted digital identity solution available to everyone in the EU.

The **Digital Wallet** may be discovered at:

<https://ec.europa.eu/digital-building-blocks/sites/spaces/EUDIGITALIDENTITYWALLET/pages/694487738/EU+Digital+Identity+Wallet+Home>

The EU Digital Identity Wallet: **A Beginner's Guide** is available from here: <https://www.dock.io/post/eu-digital-identity-wallet>

The digital wallets will play a vital role in supporting the use of micro credentials (MCs), which are portable, verifiable records of skills owned by the learner. Stored securely within these applications, MCs can be easily managed and shared, giving learners full control over their achievements. Through blockchain technology, employers and institutions can verify the authenticity of each credential against an immutable record, ensuring trust and legitimacy. By offering flexible access, storage, and sharing options, digital wallets empower learners to take ownership of their lifelong learning and career development.

MCs will better support lifelong learner like students just starting their journey to experienced workers looking to advance, by providing recognized, verifiable proof of their educational achievements. These flexible credentials give learners the opportunity to build and showcase specific skills as they progress, helping them stay relevant in a changing job market. By making learning achievements visible and portable, MCs empower individuals to pursue their professional ambitions with confidence, whether that means securing employment, advancing in their careers, or transitioning into

**Your Skills, Your Competences,
Your Wallet, Your Future!**

Thus, in VET, micro credentials serve as a way to recognize and validate specific skills and knowledge gained through focused training programs. They provide learners with targeted, industry-relevant training that can be completed more quickly and at a lower cost than traditional degree programs.

They are expected to gain increasing popularity in VET as a flexible way to acquire specialized skills and knowledge in a shorter timeframe than traditional VET degree programs. More focused than full qualifications, they can be delivered through a variety of providers, including online platforms, professional organizations and universities. Despite this potential, many VET institutions have been cautious about adopting and issuing MCs. One of their **greatest advantages lies in portability**: unlike traditional degrees, which are often tied to a specific institution or location, VET micro credentials can be earned from multiple sources and are widely recognized across industries and regions.

The portability of VET micro-credentials will be supported through digital certificates and digital wallets, which securely record the skills and knowledge learners have acquired.

These electronic credentials can be easily shared online and showcased on social media profiles, professional websites, or other digital platforms, enabling employers and stakeholders to quickly verify a learner's achievements.

It is expected that the portability of micro credentials is going to be especially valuable in today's fast-changing job market, where individuals must quickly adapt to new technologies and emerging fields. Through the earning micro credentials from diverse VET providers, learners can showcase their ability to acquire and apply new skills, strengthening both their employability and career opportunities.

Short learning experiences and episodes, such as courses structured into Competence Units (CUs) that issue micro credentials, enable targeted skill and competence development tailored to a rapidly changing society and labor market. Their purpose is not to replace traditional national qualifications or international diploma, but to complement them.

Micro Credentials made portable, secure and recognized.



The FivE approach to VET micro credentials seeks to establish a clear definition and European standards, ensuring that the learning goals and outcomes of these short learning experiences are easily recognized, understood, and compared by employers, learners, and education and training institutions.

To achieve this, FivE adopts a bottom-up model through **Skills Foresight Forums (SFF)**, which serve as platforms where stakeholders meet regularly to develop, guide, and agree on principles for designing and issuing high-quality micro courses leading to micro-credentials and micro qualifications. The aim of each SFF is to ensure that the workforce acquires the skills and knowledge required to meet the evolving demands of the economy at local, regional and national levels.

Developing common approaches to micro-credentials at the EU level will strengthen national efforts by improving their quality, transparency, cross-border comparability, recognition, and portability. Such alignment also helps build trust in micro credentials, benefiting learners, employers and education and training institutions alike.

Micro Credentials: Earn them, Store them and Share them, in a Digital Wallet supporting Lifelong Learning.



This Five project provides a holistic approach to designing, developing, delivering, validating, and maintaining VET courses, structured into a series of standardized modules based on agreed protocols. Each module consists of a Competence Unit (CU), which issues a micro-credential (MC) once the learner successfully completes an end-of-unit test or exam. CUs are designed for flexible delivery, making use of methods such as e-learning, blended learning, and video-based training.

The proposed Skills Foresight Forums (SSFs), established at local, regional, and national levels, will act as bottom-up hubs for coordinating activities by aligning industry skill needs with the training responses of VET providers. Using this approach, the project explores how the development and implementation of the new CUs, that are going to lead to micro credentials (MCs) can support and advance the green transition. In addition, the project creates specifications for designing, developing, and validating the portability of MC certificates, an essential requirement in today's rapidly changing job market, where individuals must quickly adapt to emerging technologies and new fields.

Across sectors such as fin-fish production and the mechanical industries specializing in material joining, there is a growing need for a more flexible VET system that reduces time away from work while improving national qualification attainment rates. Work-based learning models are developed or strengthened to better support unqualified entrants, many of whom lack confidence. At the same time, skilled husbandry operatives and welding specialists require clear pathways to higher VET levels, enabling them to progress into more advanced roles such as site managers or inspectors.

Industry leaders across sectors are increasingly promoting collaboration both within companies and between them, recognizing that their most pressing challenges require coordinated, industry-wide action.

Examples include effective sea lice control achieved in parts of Norway and the Aker Group's use of advanced robotic welding in tubular structures to gain a competitive edge. To support this collaborative vision, a more flexible and better harmonized VET system is needed—one that fosters learner mobility and builds a culture of knowledge exchange and continuous learning. With frameworks such as ECVET and the European Skills Agenda, learning outcomes achieved abroad can be recognized and validated. On a technical level, such a future-oriented, work-based VET system will enable progressive members of the workforce to gain deeper expertise in specialized and advanced production methods.

VET providers will adapt their work-based delivery systems and curriculum content to meet current industry needs, ensuring alignment with the standards endorsed by leading European producers and technology suppliers, while remaining responsive to future demands.

Verified Skills at Your Fingertips



How did the European Credit Transfer and Accumulation System develop within higher education in Europe?



The origin

The European Credit Transfer System (ECTS) was first introduced in 1989 to facilitate the recognition of credits earned by students in the Erasmus exchange program across different European universities. Launched in 1999, the Bologna Process sought to establish a European Higher Education Area by enhancing the comparability and transparency of academic degrees and qualifications. ECTS emerged as a key element of the Bologna Process, evolving from a basic transfer mechanism into a comprehensive credit transfer and accumulation system. To foster harmonization, ECTS principles were revised to account not only for student workload but also for learning outcomes—what students are expected to know and be able to do—when awarding credits. This marked a shift from a time-based framework to a student-centered model.

Harmonization through the Bologna process

As a result, the ECTS points were standardized through their adoption and adaptation in the Bologna Process, launched in 1999 as a collective effort by European countries to build a unified higher education area that promotes student mobility and recognition. Initially designed for credit transfer, ECTS later developed into an accumulation system, connecting credits to both student workload and learning outcomes, thereby enabling easier comparison and transfer of qualifications and studies across borders.

Mechanisms for credits

Today ECTS is a widely used student-centered system in Europe that allocates credits based on the overall workload of a study program rather than solely on contact hours in the classroom. By quantifying both learning outcomes and student efforts, it ensures standardized academic recognition across Europe, allowing credits earned at one institution to be applied toward a degree at another institution. Typically, one ECTS credit corresponds to 25–30 hours of student work, with a full academic year equivalent to 60 ECTS credits.

ECTS at the operational level

- ECTS credits are **workload based** and allocated according to the estimated student workload, which includes lectures, assignments, practical activities, independent studies and exam preparation.
- One academic year corresponds to 60 ECTS credits, providing a **unified and standardized measure** for comparing study programs and supporting academic recognition and mobility across Europe.
- ECTS **enables credit transfer** with the official recognition of study periods abroad or credits earned at other institutions, simplifying the transfer of studies between higher educational institutions.
- Students can **accumulate credits** by collecting ECTS credits from different modules and courses, which together count toward the total credit requirements of their qualification degrees, e.g. BSc. (180 ECTS) , MSc. (+120 ECTS) or PhD (+180 ECTS).

The benefits with ECTS

ECTS **facilitates student mobility** by ensuring that credits earned abroad are recognized by the home institution, thereby supporting cross-border study opportunities. It **enhances the transparency** of study programs, making them easier to understand and compare across different higher education systems. Furthermore, by providing a common framework, ECTS simplifies the **recognition of academic qualifications** and study periods for both students and institutions. At the same time, it **promotes flexibility** within study programs, fostering a more student-centered approach to higher education.

ECTS are connecting learning
across Europe.

ECTS is currently one system with many opportunities within higher education.



The impact from ECTS has become a World Standard for higher education

The harmonized ECTS framework has significantly enhanced student and **staff mobility by ensuring mutual recognition** of studies and qualifications across participating European countries. At the same time, it has improved **transparency and inclusivity** by making study programs clearer and more comparable, thereby broadening access to higher education for both local and international students.

The role of the ECTS within VET is, however, still limited, as it is applied mainly at the higher levels of VET, particularly from European Quality Framework (EQF) level 5 onwards. ECVET previously served as the primary instrument for VET, emphasizing units of learning outcomes to support mobility across all levels. Since the discontinuation of the ECVET in favor of the 2020 recommendation, its core principles and tools have instead been integrated into the new Council Recommendation on VET, where they continue to promote flexible learning pathways.

The key aspects of the 2020 Council Recommendations include letting VET play a crucial role in advancing sustainable competitiveness by equipping individuals with the skills required for a fair, green and digital economy.

At the same time, it promotes social fairness by ensuring that training remains high-quality, effective and accessible to all, with particular attention to vulnerable groups.

Furthermore, resilient VET systems are essential, as they must be able to adapt to evolving economic conditions while supporting recovery and long-term growth. It introduces targeted measures to develop professional skills for the green and digital transitions while also strengthening the training of VET staff. In doing so, it aligns with the objectives of the Digital Education Action Plan and the European Climate Pact, supporting citizens in acquiring the competencies needed to navigate and contribute to a sustainable and digitally driven future.

The modernization of VET systems, however, should ensure they remain responsive to the needs of an evolving economy. This process focuses on equipping learners with the relevant skills required to meet current labor market demands while also preparing them for future economic and technological transformations.

Thus, ECTS has become a standardized and transparent framework in Europe for assigning academic credits in higher education courses that last one or two semesters.

Micro courses for in-company re- and up-skilling processes

At the other end of the scale are delivery of micro courses that provides short, focused learning episodes with focus dedicated learning experiences. A micro courses could last from half a day until one day, and include pre- and post assignments work such that the total workload for such a courses are around 25 hours. This is approximately the same amount like an ECTS point in a higher education course.

This type of courses have been part of in company training for many years and is used in both re-skilling and up-skilling processes. An in-company micro courses could include an exam that the staff must pass. For larger companies like for instance the global aquaculture producer Salmar Farming, this exam is linked to the company quality management system. The site managers during their operations, select staff that has documented their skills and competences by passing the relevant micro courses exams. They will due to this, have got a «green light» in the quality management system for Salmar Farming. Thus, this system with micro courses is providing detailed, comparable information to their customers buying the fish, their employers and the education providers of the micro courses. The staff, however, don't have any ownership to the results of the exams, whereby the exam results are not portable transferable for staff that start working in another farming company.

Micro Credentials - Your VET future, anywhere in Europe

Micro courses and micro credentials

Micro credentials (MCs) are an emerging new element of lifelong learning, designed to equip learners with specific knowledge, skills and competencies. They could be issued as a record of achievement after passing a micro course exam. Furthermore, they could also be increasingly connected to the ECTS, which would help quantify workload, and enhance their portability and recognition.

Currently, a central idea is that MCs should be supported by robust quality assurance mechanisms of the providers, and commonly agreed standards to guarantee their relevance and credibility to employers as well as their staff. This includes focusing on providing detailed, comparable information to the employers, their staff and the education providers. A key aim is to ensure that MCs, typically stand-alone but potentially stackable, are supported by quality assurance and recognized within a wider digital credentialing ecosystem like the emerging European digital wallet.



The intention with MCs should be to document specific knowledge, skills, and competencies gained through short, targeted learning experiences that are provided and delivered as micro courses. They should be learner owned, making them portable and easily shareable, often as part of a broader digital credentialing ecosystem. Designed for flexibility and portability, MCs allow individuals to up-skill or re-skill at their own pace and can be combined into larger professional portfolios containing a number of MCs into a micro qualification (MQs).

Micro credentials and the role of ECTS in VET

The ECTS quantifies student workload by assigning numerical values to the effort required to achieve specific learning outcomes, with one ECTS typically representing 20–30 hours of work. This could be a workload that equivalent to a one day long micro course, when pre- and post studies are structured and included in the workload.

Beyond measuring workload, ECTS will enable the transfer and accumulation of credits across education institutions providing micro courses with a MC, thereby supporting mobility actions as well as the recognition of qualifications.

In addition, the framework increasingly aligns with MCs, ensuring that their workload and notional effort are clearly described, standardized and comparable.

The Five project proposes in order to better achieve this, to structure each micro course such that they will contain a minimum number of key compulsory components:

Step 1 - The before training component includes descriptions of content, general learning outcomes, specific learning outcomes and the access conditions.

Step 2 - The during training component includes descriptions for how the teacher should use the materials in the micro course, how the students should explore them during their various learning progression activities, learning materials including descriptions of work-based learning and training activities, assignment materials related to a micro course exam, and finally, recognition of prior learning which lets individuals and groups gain recognition of their knowledge, skills and competences.

Breaking Borders, Building Futures with ECTS in Micro Courses



Step 3 - The after training component includes a record of the learning outcomes a learner has achieved through a small, structured volume of learning experiences structured and organized similarly to the standardized competence unit. These learning outcomes should be assessed against transparent and clearly defined open standards. It uses the micro-credential(s) to document a learner's educational development, based on ten mandatory elements and a set of optional components.

This stage culminates into a framework that formally records the credits assigned to specific levels of learning achievement, ensuring that knowledge skills, and competences are acquired and recognized at both national and European levels.

Step 4 - The beyond training in the labour market component includes the certification scheme with an issued certificate that has a validity period. The certification scheme validates the required professional qualifications, by addressing and specifying the knowledge, skills and competences.

Industry recognition should be achieved by supporting companies seeking compliance with industrial standards like EN, ISO, among others.

Indeed, MCs are a rapidly growing (global) trend, which currently are increasingly promoted by higher education institutions, technology companies, and industry. Within Europe, their development is guided by the Council Recommendation on a European approach to micro-credentials for lifelong learning and employability, which encourages their alignment with both ECTS and the European Qualifications Framework (EQF). To ensure their relevance and credibility, MCs are expected to be supported by robust quality assurance processes and commonly agreed standards.

At the same time, efforts are being made to establish a common language for describing them through tools such as the European Skills, Competences, Qualifications and Occupations (ESCO) framework and the updated Europass, both of which strengthen recognition in education and the labor market.



Skills Foresight Forums help specifying and recognizing the skills and competences that match with needs of tomorrow, by providing micro credentials counting today!



Development and implementation of skills foresight forums (SFFs) help identifying and recognizing emerging workforce needs, guiding the design of relevant MCs that equip learners with verifiable, specialized certifications on high-demand skills and competences. These MCs not only enhance employability and support lifelong learning, but also enable employers to adopt more effective skills based hiring practices. Together, SFFs and MCs form essential pillars of a responsive vocational education and training systems in an evolving labor market.

The role of SFFs

Thus, SFFs serve as physical platforms where experts, businesses, and policymakers come together to anticipate shifts in the labor market and identify future skill needs. The insights generated from these discussions guide educational institutions and training providers in designing relevant curricula and programs that respond to emerging demands. By proactively addressing skill and competence gaps, these forums play a crucial role in aligning vocational education and training opportunities with both current and future workforce requirements.

The role of MCs

MCs provide a formal means of recognizing and documenting specific skills and competencies that are valuable to employers, thereby enhancing employability through specialized, “small bite-sized” qualifications that make it easier for individuals to acquire in-demand skills for career entry or advancement. As a key tool for lifelong learning, they enable learners to up-skill and re-skill at their own pace, ensuring continued relevance in a rapidly changing workforce. For employers, MCs facilitate more precise skills and competence based hiring by verifying candidates’ actual competences, which is particularly beneficial for entry-level positions or career transitions. At the same time, they promote flexible and targeted learning pathways, offering accessible opportunities through micro qualifications that are gathering MCs that can be adapted to diverse needs and busy schedules.

Synergies

SFFs generate strategic insights into the future workforce needs, while MCs provide a practical means of developing and validating those skills. Together, they ensure an adaptable workforce by enabling individuals to rapidly acquire the targeted qualifications required to succeed in an evolving labor market. MCs certify specific, targeted skills gained over a short period, supporting lifelong learning and workforce adaptability through flexible, cost-effective, and modular learning opportunities. They will help closing the skill gaps, enhance employability by showcasing industry recognized competences, and provide a practical pathway for both professionals and students to remain competitive in a rapidly evolving labor market.

The focus on targeted skill acquisition by equipping learners with specific knowledge, skills, and competencies aligned with labor market needs, enabling them to gain expertise in a shorter timeframe than traditional degrees. By certifying industry recognized competencies, they enhance employability, strengthen professional profiles and give learners a competitive advantage. At the same time, MCs support career flexibility by facilitating up-skilling and re-skilling, allowing individuals to transition between industries, pursue new career paths, or adapt to emerging job demands without long-term commitments. As a key tool for lifelong learning, they also promote continuous professional development, helping individuals remain current with new technologies, production processes and market trends in an evolving global economy.

**Micro Qualifications (MQs)
gather a multiple of MCs:
From Learning to Earning -
Skills and Competences You
Can Show !**



Thus MCs and MQs could play a vital role in bridging skills and competence gaps by offering targeted training that addresses specific shortages in the workforce, enabling rapid responses to labor market needs. The intention and scope is to complement formal education by adding practical, industry-relevant skills and competences to traditional degrees, thereby increasing their value to employers. Recognized by companies and production industries as reliable indicators of verified competences, they enhance employability and support more effective recruitment practices.

At the same time, they promote social inclusion by making education and training more accessible to a broader range of learners, including disadvantaged groups. With their modular and scalable structure, MCs and MQs provide flexible learning pathways that can be tailored to individual needs, supporting both initial vocational education and ongoing continuing professional development. The principles of ECVET, such as the use of learning outcomes, modular structures that enable flexible learning pathways and support mobility actions, and the quantification of workloads, should be prolonged into VET, drawing on, prolonging and adapting practices that are well implemented and successfully established in higher education in Europe. Thus, one MC could be equivalent to 1 ECTS credit, corresponding to a total workload of 25–30 hours, which includes both training in classes, individual studies and work-based practices.

- Completing **a single micro credential** results in a (digital) certificate that verifies the specific skills and competences acquired.
- By **completing multiple MCs within the same sector into a MQ**, learners can earn a **sector specific International- or National Micro Specialization (IMiS/MiS) Diploma**.
- By **completing multiple MCs from several sectors into a MQ**, learners can earn an **interdisciplinary International- or National Micro Specialization (IMiS/MiS) Diploma**.

Micro Courses, Micro Credentials and Micro Qualifications

Micro Courses should use a standardized minimum format applying harmonized competence units and micro tests. The workload descriptions should apply ECTS to simplify the recognition and comparison of micro courses delivered by various VET providers.

Micro Credentials certify specific, targeted skills gained over a short period, empowering individuals to pursue lifelong learning and adapt to workforce needs through flexible, affordable and modular learning opportunities.

Micro Qualifications combine a number of MCs into an International Micro Specialization (IMiS) Diploma, or a Micro Specialization Diploma (MiS) at national level.



Micro Learning with Macro Impact



Example of Micro Courses leading to Micro Qualifications

Mechanical production and repair industries in Mid-Norway are undergoing a major transformation driven by technological innovation, sustainability goals and shifting consumer expectations. As products and systems become more complex, traditional manufacturing repair methods are no longer sufficient. Workers need to continually upgrade their skills to stay effective, efficient, and employable. Modern production methods increasingly involves digital tools, sensors, automation and smart diagnostics. Thus, staff must learn to interpret data, use advanced testing equipment, and interact with digital systems integrated into vehicles, machines and electronic devices.

Furthermore, with a growing emphasis on extending product lifecycles and reducing waste, production and repair professionals play a vital role in the circular economy. Upgrading skills in sustainable repair practices, recycling, and refurbishment helps reduce environmental impact and supports resource efficiency.



Emerging materials such as composites, alloys and high-performance polymers require new production methods as well as repair techniques applying specialized knowledge, skills and competences. Due to this, workers need continuous training to safely and effectively handle these materials.

Since customers demand faster turnaround times, higher quality and transparency, both production and repair staff must enhance both technical and soft skills. This is including communication skills, problem-solving competences and customer service.

Many experienced manufacturing staff are approaching retirement, creating a need to transfer their silent knowledge, skills and competencies to younger workers. Structured training, mentorship, and introduction of micro-credentials can help bridge this gap and preserve valuable expertise.

Upgrade the skills, advance the future!

The integration of new digital platforms, remote diagnostics and augmented reality in production, maintenance and repair operations demands a high level of digital literacy and adaptability from the professionals. Modern repair environments increasingly rely on interconnected systems and data-driven tools that monitor performance, detect faults, and even predict maintenance needs before breakdowns occur. Staff in mechanical manufacturing and repair industry must therefore not only know how to operate and interpret these technologies, but also understand how digital systems operates together with mechanical components. In many cases, they are also expected to train colleagues or clients in using these tools effectively. Mastering these digital solutions enhances efficiency, reduces downtime, and supports safer, resulting in more sustainable manufacturing and repair practices.

As technology continues to evolve, continuous up-skilling will be essential to ensure that professionals remain proficient and confident in working with smart systems.

Turn experiences into opportunities.



Thus, continues upgrading skills and competences in the mechanical production and repair industry is essential to remain competitive, ensure safety and quality, meet sustainability targets and respond to rapid technological changes and deployments. Continuous lifelong learning delivered as targeted micro courses for on-the-job training, including state of the art digital up-skilling, is the key to building a resilient and future-ready mechanical industry and repair workforce.

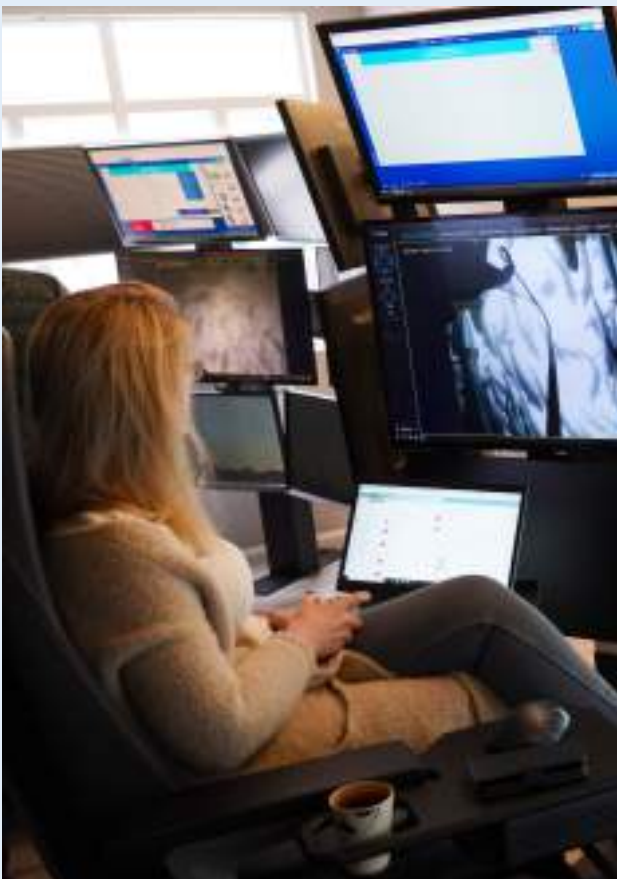
Implementation this type of micro course provisions will require **harmonized procedures** for how to:

- **structure, organize and develop content** (in the competence units), that could be applied in a micro course and lead to a micro credential,
- set up a **system solution leading to procedures for recognition of the MCs**, and finally at the end receive the acceptance and approval by the industry and their staff for new skills and competence pathways.

Relevant **up- and re-skilling micro courses for mechanical industry manufacturing companies in Mid-Norway** could target and address the following areas:

- **European standards for the manufacturing and assembly of steel and aluminum products and processes, e.g. by applying the NS 1090 standard.**
- **Specialized Gas Tungsten Arc welding processes.**
- **Metal Inert/Active Gas welding processes**
- **Metal Active Gas welding.**
- **Hot work involving open flames, heat and sparks.**

The next Lifelong Learning stage starts with a Micro Course.



The benefits of receiving micro courses:

Staff gain up-to-date, industry-relevant skills aligned with European and international standards such as NS 1090, which governs the manufacturing and assembly of steel and aluminum structures. They learn to apply specialized welding techniques (TIG, MIG/MAG) correctly and safely, improving workmanship and quality control.

Because these micro courses align with European standards, the acquired skills and competences are formally recognized and transferable across borders. Learners receive micro credentials that serve as verified proof of their expertise, enhancing career mobility within the EU and internationally.

Certified knowledge, skills and competences of standardized manufacturing practices and advanced welding processes opens access to higher-level positions and specialized roles.

Staff become eligible for promotions, pay increases, or expanded responsibilities in areas like quality assurance, supervision, or project management.

Empower the career with
Micro Courses leading to MCs.

Learning is continuous,
whereby feedback on
students learning
progression should be too.



Continuous feedback on students learning progression

Continuous feedback on students' learning progressions is essential because it helps both teachers and students understand where learners are in their educational journey, and what steps they need to take next. By providing regular, specific feedback linked to clear progression goals, students gain a better understanding of their current level of achievement and what is required to move forward.

This clarity promotes metacognition, allowing students to take greater ownership of their learning and set realistic goals for improvement. For teachers, ongoing feedback serves as valuable formative assessment data that can inform instructional decisions, enabling them to identify misconceptions early and adjust teaching strategies to meet individual needs.

Moreover, continuous feedback fosters a growth mindset by framing learning as a process rather than a one-time event, encouraging students to view mistakes as opportunities for improvement rather than signs of failure. Ultimately, this consistent exchange of information transforms assessment into an integral part of learning, creating a continuous cycle of reflection, adjustment, and growth that enhances both student engagement and long-term understanding.

Learning Management System (LMS) assessment design can play a major role in supporting continuous feedback on students' learning progressions by making the feedback process more systematic, timely, and personalized. Well-designed LMS assessments can be aligned with specific learning progression steps, allowing students to clearly see which concepts or skills they have mastered and where they need further development. Automated features, such as instant grading, rubrics, and targeted feedback comments, give learners immediate insights

into their performance rather than waiting for delayed evaluations. This immediacy helps students reflect on their understanding while the learning experience is still fresh.

In addition, LMS platforms can provide data analytics that track student performance over time, enabling both teachers and students to visualize growth along a progression. Teachers can use this information to identify patterns, tailor instruction, and offer differentiated support based on individual needs. Discussion boards, peer review tools, and formative quizzes within the LMS also foster ongoing dialogue about learning, promoting collaboration and self-assessment. By integrating assessment seamlessly with learning activities, LMS design turns feedback into a continuous, interactive process rather than a final judgment.

Overall, thoughtful LMS assessment design enhances transparency, responsiveness, and engagement, which are key components for supporting students' progression and long-term learning success. It can distribute evaluations throughout the courses, for instance by splitting CU tests into several milestone exams focusing on knowledge check, skills stimulations and micro tests. This let learners progress in smaller increments and maintain engagement while providing trainers real-time analytics on learner performance.

Furthermore, smaller examinations enable the teachers to have continuous tracking of their students learning progression, and adapt the examination difficulty based up in the performance data.

Creating a coherent and engaging learning journey



Progressive learning pathways enhances students learning

Progressive learning pathways play a vital role in guiding and supporting students' development by clearly outlining how knowledge, skills, and understanding deepen over time. These pathways describe the step-by-step progression learners typically follow as they move from foundational concepts toward more complex and sophisticated levels of thinking. By making the learning journey explicit, progressive pathways help students and teachers visualize not only where learning begins, but also where it is headed and how to get there.

For students, progressive learning pathways provide a sense of direction and purpose. They clarify expectations, showing learners what success looks like at each stage and helping them recognize their own growth. This transparency builds confidence and encourages self-regulated learning, as students can monitor their progress, set goals, and take responsibility for advancing to the next level.

For teachers, these pathways serve as a roadmap for instruction and assessment. They help educators design lessons and feedback that are developmentally appropriate, targeted, and sequential. Teachers can identify where each student is on the continuum, tailor support accordingly, and ensure that learning activities build on prior knowledge rather than jumping ahead too quickly or repeating what students already know.

Thus, ultimately progressive learning pathways transform education from a series of disconnected tasks into a coherent, continuous process of growth. They emphasize learning as a journey that values progress, reflection, and improvement, ensuring that every student moves forward with clarity, confidence, and purpose.

LMS course sequencing can create dynamic «MC chains», where completion of MCs unlocks access to more advanced, interlinked MCs or full MQ pathways. This structured progression allows learners to move seamlessly from foundational to more complex content, ensuring that each stage of learning builds on prior achievements. For instance, learners completing three interconnected micro courses (with their associated CUs) within the EN 1090 course could automatically qualify to progress toward a micro specialization diploma. This approach not only formalizes progression but also motivates learners by making the connection between effort, mastery, and credentialing visible and attainable. This structure supports deeper learning, encourages active engagement, and ensures that knowledge is consolidated before moving forward.

During one micro course additional topics could be «chained» together, to increase the learner engagement and ensure mastery based progression. Such chains are highly course and topic dependent, because different chains, levels or courses might require different understanding of specific topics in the chain. Therefore, effective LMS sequencing should be adaptable, allowing instructors and curriculum designers to tailor the chain structure according to the cognitive demands and learning objectives of each program.

When implemented thoughtfully, dynamic MC chains transform the LMS from a static content delivery platform into an intelligent learning ecosystem that supports personalized, progressive and competency-driven education.

Connecting experience to opportunity through smart learning systems.



Recognition of Prior Learning (RPL) personalizes the learning journey

Recognition of Prior Learning (RPL) plays a crucial role in supporting and personalizing students' learning by acknowledging the knowledge, skills, and experiences they have already acquired. This includes through formal education, work-based experiences, or even life experiences. Rather than requiring learners to start from the same point, RPL provides a mechanism for assessing what they already know and can do, allowing them to gain credit, bypass redundant content, or accelerate their learning pathway.

From a learner's perspective, RPL validates their prior achievements and affirms the value of their existing competencies. This recognition can boost confidence, motivation, and engagement, as students see their experiences meaningfully connected to formal learning outcomes. It also makes education more flexible and inclusive, particularly for adult learners, professionals, or those re-entering study after time in the workforce.

By reducing unnecessary repetition, RPL allows students to focus on acquiring new skills and knowledge, making their learning journey more efficient and personally relevant. For educators and institutions, RPL provides a way to create individualized learning pathways within programs or qualifications. It helps ensure that teaching and assessment are targeted at genuine learning needs, rather than a "one-size-fits-all" model.

When integrated effectively into curriculum design and LMS systems, RPL can work alongside progressive learning pathways and micro-credential frameworks to support competency-based education, where advancement is based on mastery rather than time spent in class.

Thus in essence, RPL bridges the gap between informal experience and formal education, enabling a more equitable, flexible and learner-centered approach that honors what students bring to their studies while guiding them toward higher levels of achievement.

LMS platforms may play a pivotal role in supporting and including RPL modules that streamline the evaluation and accreditation of learners' existing skills and knowledge, by letting learners upload evidence like certificates, portfolio entries, previous assessments etc. that are mapped towards the learning outcome descriptions of a given course or micro-credential. Teachers, trainers and assessors can validate these within the LMS to automatically grant credit or exceptions toward specific micro courses and MCs. This digital process not only ensures transparency and traceability but also reduces administrative workload while maintaining academic integrity.

There is also an option for RPL through LMS in shorter examinations that assess specific parts of the knowledge needed for the completion of a micro course. Additionally, LMS-enabled RPL can extend beyond documentary evidence to include targeted challenge assessments or shorter diagnostic examinations, designed to verify learners' mastery of specific competencies. It may further increase the flexibility and the efficiency of students training pathways by enabling personalization of their learning journey. It allows learners to focus their time on areas that require development rather than repeating content they have already mastered. A LMS platform can dynamically adjust each learner's study plan based on validated prior achievements, creating individualized learning journeys that recognize experience as a foundation for further growth, thus supporting a competency-based education model. That reduces barriers to the learning progression.

Peer and self assessment, empowering learners to own their learning progression

Peer and self assessment in students learning pathways

Integrating peer and self-assessment into the learning process plays a critical role in developing students' autonomy, reflection, and deeper understanding of both content and quality standards. These forms of assessment move students beyond passive participation by engaging them as active contributors to their own and others' learning.

Through self-assessment, learners are encouraged to critically reflect on their performance, identify strengths and weaknesses, and set goals for improvement. This process builds metacognitive skills, helping students become more aware of how they learn and how to regulate their own progress. By comparing their work against clear criteria or exemplars, students internalize quality standards and develop a stronger sense of accountability and ownership over their learning journey.

Peer assessment, on the other hand, creates a collaborative learning environment where students evaluate and provide feedback on one another's work. This practice not only deepens understanding of the subject matter but also cultivates important skills such as critical thinking, communication, and constructive feedback. Evaluating peers' work exposes students to diverse perspectives and problem-solving approaches, which can inspire reflection on their own methods and performance.

When effectively integrated into the curriculum, often supported through digital platforms or LMS tools, peer and self-assessment contribute to a formative assessment culture. They encourage continuous dialogue about learning, promote mutual responsibility, and align assessment more closely with authentic, real-world evaluation practices. These approaches empower students to become independent, reflective, and collaborative learners, capable of guiding their own improvement and supporting the learning of others.

An LMS environment can effectively facilitate structured peer- and self-assessment by incorporating standardized rubrics that are closely aligned with the learning outcomes defined within each micro-course. These rubrics ensure consistency, transparency, and fairness in evaluation while helping learners understand the specific criteria that define quality performance. Within this framework, students can assess both their own work and that of their peers in activities such as project-based tasks, case studies, or virtual simulations, adding a collaborative and reflective dimension to the development of core competencies.

This process not only enhances learners' subject understanding but also fosters critical thinking, analytical judgment, and constructive communication that are essential skills for professional and workplace contexts. By reviewing peers' work, students engage in comparative evaluation, deepening their appreciation for different approaches and standards of performance. Simultaneously, self-assessment encourages them to reflect on their progress, recognize areas for improvement, and take responsibility for their own learning trajectory.

Integrating peer and self-assessment within the LMS also strengthens metacognitive skills, enabling students to think about *how* they learn, not just *what* they learn. It encourages them to set goals, monitor their understanding, and adjust strategies for continuous improvement. Moreover, this approach mirrors authentic workplace evaluation methods, where collaboration, feedback exchange, and reflective practice are integral to professional growth.

Supported by LMS analytics and feedback tools, these assessment processes can generate valuable insights for both learners and instructors. Educators can monitor participation, identify common misconceptions, and provide targeted guidance, while learners benefit from a richer, more interactive feedback ecosystem. Ultimately, the integration of peer and self-assessment within an LMS promotes a culture of shared responsibility, continuous reflection and professional readiness.

Insight through analytics, excellence through learning



Learning analytics and use of LMS solutions

Learning analytics refers to the systematic collection, measurement, and analysis of data about learners and their interactions within a LMS. Its primary purpose is to understand and improve both learning and the environments in which it occurs. When embedded effectively in an LMS, learning analytics becomes a powerful tool for visualizing and supporting students' learning progression. That addresses how learners move through different learning progression stages of knowledge, skills and competence over time.

Through data such as course engagement, quiz performance, time spent on activities, discussion participation, and assessment results, the LMS can generate detailed insights into each student's progress. These analytics allow educators to identify patterns and trends, such as where students excel, struggle, or disengage, enabling timely and targeted interventions. For instance, if analytics show that a learner is consistently underperforming in certain modules, instructors can provide additional support or resources before the gap widens.

For students, learning analytics create opportunities for self-monitoring and reflection. Dashboards and progress indicators within the LMS can visually represent learning trajectories, helping learners understand their strengths, track completed milestones, and set goals for improvement. This transparency encourages self-regulated learning and fosters a sense of ownership and accountability for one's educational journey.

At an institutional level, aggregated learning analytics can inform curriculum design, assessment strategies and resource allocation, ensuring that learning pathways are both data-driven and student-centered. When aligned with frameworks like micro-credentials or mastery-based progression, analytics can even automate advancement allowing learners to unlock new

content or micro courses once specific competencies are demonstrated.

Due to this the integration of learning analytics into LMS environments transforms data into actionable insight. It supports personalized learning, enhances teaching effectiveness, and strengthens the feedback loop between learning, assessment, and improvement. By making student progress visible and measurable, learning analytics empowers both educators and learners to make informed decisions that lead to more meaningful, efficient, and continuous learning experiences.

LMS analytics can automatically adjust the sequence or difficulty of modules based on learner performance. For example, students struggling in one micro course receive additional micro content, while those excelling will fast track toward higher level MCs.

LMS analytics dashboards can provide aggregated data on students learning progression, completion rates and assessment outcomes per micro course or MC. This supports evidence based internal quality assurance and external audits, aligning with EU requirements for transparency and comparability.

This data-driven approach strongly supports evidence-based internal quality assurance processes by providing measurable indicators of student performance, retention, and competency attainment. Moreover, it facilitates external quality reviews and audits by supplying transparent, verifiable evidence of learning outcomes and institutional effectiveness. In the European context, such analytics contribute directly to compliance with EU frameworks and standards, particularly those promoting transparency, comparability, and accountability in higher education and vocational training, such as the European Qualifications Framework (EQF) and European Credit System for Vocational Education and Training (ECVET).

Self-regulated learning are the heart of intelligent and smart education



The role of self regulated learning and intrinsic motivation when using LMS solutions

Self regulated learning (SRL) refers to the process by which students take active control of their own learning through goal setting, self-monitoring, strategic action, and self-reflection. When supported by a LMS, SRL becomes a dynamic and data-informed process that empowers learners to plan, manage, and evaluate their learning more effectively.

In an LMS environment, students can access personalized dashboards, progress indicators, and performance analytics that make their learning trajectory visible. These tools help learners set clear goals, monitor their achievements, and identify areas that require further attention. Features such as automated feedback, reminders, and adaptive learning paths encourage continuous reflection and help students adjust their study strategies to improve performance. For example, if analytics indicate that a student is struggling with a particular concept, the LMS may recommend supplementary resources, practice quizzes, or peer discussion forums to support improvement.

Self regulated learning in a LMS framework promotes autonomy and intrinsic motivation. Learners are encouraged to take initiative, choosing when, how, and at what pace to engage with materials. This flexibility is especially valuable in modular micro courses or micro-credential-based study programs, where students can tailor their learning sequence based on personal needs, prior knowledge, or professional goals.

A LMS may facilitates reflective activities such as self-assessment tasks, journaling, or portfolio submissions, enabling learners to document progress and articulate their learning strategies. Combined with peer and instructor feedback, these tools foster metacognitive awareness, the ability to think about one's own

thinking, which is central to developing lifelong learning skills.

From an institutional perspective, integrating SRL principles into LMS design enhances both engagement and achievement. By combining learner autonomy with data-driven feedback and structured support, LMS-based self-regulated learning cultivates independent, reflective, and adaptive learners who are capable of managing their learning in both academic and professional contexts.

Thus, the intrinsic motivation and self-regulated learning are deeply interconnected, forming the foundation of effective, independent and sustained learning. Intrinsic motivation refers to the internal drive to engage in learning because it is personally rewarding, driven by curiosity, interest, or a desire for mastery rather than by external rewards or pressures. SRL on the other hand, involves the processes learners use to set goals, plan strategies, monitor their progress, and reflect on outcomes. Together, they create a mutually reinforcing cycle: motivation fuels self-regulation, and successful self-regulation strengthens motivation.

Learners who are intrinsically motivated are more likely to take initiative in their studies, set challenging yet achievable goals, and persist through difficulties. This is all hallmarks of self-regulated learning. Their engagement stems from an authentic desire to understand, explore, and improve, which makes them more inclined to use effective learning strategies such as goal-setting, self-monitoring, and reflection. In turn, self-regulated learning supports intrinsic motivation by giving learners a sense of autonomy, competence and purpose, which are the three psychological needs identified by **Self-Determination Theory**:

When students experience

- control over their learning (**autonomy**),
- see evidence of their own progress (**competence**),
- and connect their efforts to meaningful goals (**purpose**), their intrinsic motivation naturally increases.

LMS-powered self-regulation help shaping reflective, resilient learners.



Self regulated learning through powerful feedback loops

This reciprocal relationship creates a powerful feedback loop where the intrinsic motivation drives learners to self-regulate, while self-regulated learning experiences reinforce intrinsic motivation through feelings of success, ownership, and self-efficacy. Over time, this synergy promotes deeper engagement, resilience and lifelong learning habits.

In digital or LMS-supported environments, this connection can be further enhanced through features that support autonomy by applying flexible pacing, personalized pathways. They may support competence by applying real-time feedback and progress tracking. In addition reflections are supported through self-assessment tools and learning journals.

By designing learning environments that nurture intrinsic motivation, educators simultaneously strengthen students' capacity for self-regulated learning, thus creating learners who are not only capable but genuinely eager to learn.

The reciprocal relationship between intrinsic motivation and self-regulated learning creates a powerful feedback loop that continuously reinforces student growth and engagement. For instance, a learner who genuinely enjoys creative writing may set personal goals, monitor progress, and seek feedback, finding that each improvement strengthens their confidence and deepens their motivation to continue refining their skills. Similarly, students using LMS dashboards to track progress in subjects such as data analysis gain a visible sense of achievement that enhances both their self-efficacy and curiosity to learn more. In collaborative projects, peer and self-assessment activities encourage learners to reflect on their contributions and communication, leading to feelings of competence and belonging that further boost intrinsic motivation.

Within mastery-based micro-courses, learners who self-regulate by setting milestones and practicing deliberately experience autonomy and satisfaction as they achieve each milestone, reinforcing their desire to keep advancing. Finally, reflective journaling within the LMS helps students recognize patterns of progress over time, cultivating self-belief and renewed motivation to set higher goals. Across these scenarios, intrinsic motivation fuels self-regulation, while successful self-regulated learning experiences strengthen intrinsic motivation, creating a continuous cycle of confidence, ownership and lifelong learning.

Examples of self regulated learning in usage of LMS, includes

- Students goal setting and achievements
- Progress tracking motivated by curiosity
- Peer- and self assessment in assignments
- Mastery based progression in micro courses
- Students reflection and self efficacy growth

In each of these cases, motivation and self-regulation continually reinforce one another: **intrinsic motivation initiates active engagement and goal setting, while successful self regulated learning experiences generate satisfaction, confidence, and purpose.**

All of these skills and competences deepen intrinsic motivation. Over time, these cycles cultivate independent, lifelong learners who find genuine meaning and fulfillment in the learning process itself.

LMS technology empowers the self-driven learner.