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

D4.2

Operational guidelines for Micro-Credentials and portable digital wallet system solutions

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

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Recognition & Credentialing

MCs as digital credentials

Micro-Credentials - Modular learning that is unitised



five

D4.2

Guideline with the operational framework for MCs and digital wallet solutions

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Unitisation of learning and micro activities inside a world codified as fast changing.

Micro-Credentials (MCs) may be understood as compact, modular micro-learning units akin to smaller components of a diploma or certificate. They are specifically designed to support rapid re-skilling and up-skilling processes. Their flexible, targeted nature should allow learners and organisations to respond efficiently to emerging skills demands. This is making them particularly well suited to a world characterised by constant and to some extent fast technological, economic and social changes. By focusing on clearly defined competences that can be earned, combined and updated over time, MCs provide an agile alternative to traditional, longer-term qualifications. They are enabling the workforce to remain relevant and adaptable in fast-changing environments.

Related concepts include terms like micro-learning and more specifically granular, unbundled or on-demand modular learning that are unitised. This new approach will break a traditional macro-learning course into smaller, self-contained units or modules organised and structured like micro-courses. Those may learners engage with independently and at their own pace if necessary. A separate micro-course module will typically focus on a clearly defined set of skills that are specified by a set of learning outcomes and includes a limited number of targeted assignments and learning episodes with appropriate learning activities. Upon successful completion, the learner's work is formally assessed and achievement is recognised through the award of an MC. Collectively, these credentials can stand alone as evidence of specific competences or they may be stacked over time. The assumption is that they will demonstrate broader expertise, offering flexibility, personalisation and greater responsiveness to individual learning needs and labour-market demands.

Within these perspectives:

- **Up-skilling** refers to the continuous enhancement and refinement of an individual's existing skills, expertise and knowledge. An individual should remain relevant and effective in the face of evolving industry standards, technologies and job requirements. It involves building upon what professionals already know by deepening technical capabilities, strengthening of soft skills and acquiring new competences that align with changing organisational needs and market trends. Rather than preparing for an entirely new role, up-skilling focuses on enabling individuals to perform their current roles more effectively, adapt to new tools or processes and respond proactively to emerging challenges. As industries increasingly experience rapid transformation, up-skilling processes play a critical role in maintaining workforce competitiveness. The idea is to help supporting career progression, ensuring that both individuals and organisations can sustain long-term growth and innovation.

- **Re-skilling** is the deliberate process of gaining new or different skills that enable an individual to transition from their current job role into a new or significantly changed one. It goes beyond incremental skill updates by preparing workers for entirely different responsibilities, functions or career paths. It is often in response to technological change, organisational transformation, or shifting labour market demands. Re-skilling empowers individuals to remain employable and adaptable by equipping them with capabilities that align with emerging roles, industries, or ways of working. It should help organisations redeploy talent effectively rather than relying solely on external hiring.

- **Credentialing** refers to the formal recognition of an individual's skills, expertise, or knowledge through the completion of short-term education and training programs. These MCs may validate newly acquired competences, or formally acknowledge and update existing ones, ensuring they align with current industry standards and professional practices. Credentialing processes often result in certificates to be stored inside the emerging European digital wallet, or other recognised attestations that signal proficiency to employers, professional bodies and their peers. By offering flexible, targeted learning opportunities, the idea is that credentialing will better support continuous professional development and workforce mobility. It should better support lifelong and life-wide learning, enabling individuals to adapt to evolving job requirements and emerging fields.



MCs can be most succinctly described as short, competence based and industry-aligned certified units of micro-learning that focus on the acquisition and validation of specific skills or knowledge areas. Designed to be flexible, targeted and outcome-oriented, they differ from traditional qualifications by emphasising demonstrable competences rather than extended periods of study. In this sense, MCs represent a direct and pragmatic response to the rapid digital transformation of the workplace. Here will evolving technologies, shifting job roles and emerging skill demands require continuous up-skilling and re-skilling. By aligning closely with industry needs and offering timely certification, MCs enable learners to adapt more quickly to changing labour market conditions. They will help providing employers with clearer signals of workforce capabilities.

MCs are increasingly envisioned as agile mechanisms for addressing emerging skills gaps and for providing targeted professional certification in bottleneck occupations that arise from rapid industrial innovation. While their initial development was largely driven by organizational demand for specific, job-ready competences, particularly in response to technological change, their role is recently broadening considerably. Today a growing range of professions are adopting MCs as flexible tools for continuous professional development, workforce up-skilling and improved occupational efficiency. This expansion extends beyond the narrow scope of digital transformation in the workplace, reflecting a wider recognition of MCs. Mentioned are adaptable, timely and practice-oriented forms of learning that will better respond to evolving professional standards, regulatory requirements and sector-specific needs across diverse fields.

In this way, lifelong learning could today be referred to as incremental credentialing that will be understood as a model of education centred on granular, certified learning experiences that are directly shaped by evolving market demand. Rather than relying solely on infrequent, high-stakes degrees, this approach emphasises smaller, stackable credentials that validate specific skills and competences as they are acquired. These credentials enable individuals to respond in real time to technological change, shifting industry standards and emerging workforce needs. By supporting continuous up-skilling and re-skilling across the lifespan, lifelong and life-wide learning empowers learners to remain relevant, mobile and resilient in dynamic economic and professional environments. This is obtained while providing employers with clearer signals of current, job-ready capabilities, though it leads to learning and occupation fragmentation.

It contributes to the growing marketisation of both education and skills policies, in which learning is increasingly framed as a private investment rather than a public good. Within this logic, universities and VET providers are encouraged to compete, prioritise employability metrics and align curricula closely with short-term labour market demands. As a consequence, higher education risk becoming commodified. Both national and international qualification degrees, as well as private international diploma degrees risk being reduced to transactional macro-credentials, rather than markers of broad intellectual development. This process ultimately leads to the devaluation of long-term study degrees, as their symbolic, cultural and social value is undermined by possible oversupply, credential inflation and the narrowing of educational aims to immediate economic returns.

> Micro-learning for a world in fast motion, applying unitised learning for continuous adaptation and maximum agility that is delivered through modular learning targeting rapidly evolving skills.



Building skills, one unit at time, for a world that never stands still.

It is worth noting that the increasingly market-driven nature of the MC landscape effectively reframes education and skills policy, domains that have traditionally fallen within the remit of national governments and democratic political processes. It is to some extent replaced through the logic and language of the market. In doing so, responsibility for navigating education, employability and skills development is progressively displaced from collective public institutions onto individuals. Learners are positioned not merely as citizens entitled to structured educational pathways and social protection, but as self-managing actors operating within competitive labour markets. This shift leaves it to the individual learner to interpret fluctuating market signals and use this to select and finance appropriate MCs. Learners are expected to continuously use this new framework to update their skill sets in response to economic change. As a result, education becomes less a shared societal investment and more a personal obligation, cultivating an expectation of constant and lifelong readiness and duty to adapt. Due to this, ongoing re-skilling and up-skilling is framed as a "moral" and economic responsibility born primarily by the individual, rather than by the state or the employers.

The emergence of MCs represents a profound shift in the education and training landscape. It poses significant challenges to established systems of accreditation, which have traditionally fallen within the remit of national accreditation authorities and are largely designed around full qualifications and long-form programs. At the same time, MCs disrupt the long-standing dominance of higher education and training providers by enabling a more fragmented, flexible and diversified ecosystem of learning. New actors, such as industry bodies, private companies and digital platforms, are increasingly able to design, deliver and certify learning outside conventional institutional frameworks. As a result, questions start arising about the quality assurance processes and the recognition and portability of learning outcomes. The questions will in addition address who holds authority and legitimacy in defining valuable knowledge and skills in contemporary education and labour markets.

When learning becomes modular, recognition must evolve and accreditation must be redefined for a Micro-Credential and skills driven Europe, through a system level transformation applying flexible recognition.



MCs - Flexible, Complementary, Recognised

Complementary and alternative forms for credentialing, the MC

A prominent perspective and strand within the European policy framework positions MCs as a direct alternative to traditional three- and five-year European degree programs. From this perspective and viewpoint, MCs are frequently framed not merely as complementary learning options, but as a disruptive and innovative force with the capacity to fundamentally reshape and potentially replace, existing and established models of education and training. Advocates of this position argue that alternative forms of certification, such as MCs, digital badges and other industry recognised qualifications, offer a more agile and responsive approach to skills development than conventional degrees and programs. In particular, these types of credentials are often characterised as being faster to obtain, more closely aligned with current labour market needs and significantly more affordable. As a result, they are seen as especially attractive to learners seeking targeted up-skilling or re-skilling opportunities. They are in addition attractive to employers prioritising demonstrable, job-ready competences over broader, longer-term educational qualifications.

Thus, MCs are typically designed to be completed in significantly shorter timeframes, allowing learners to acquire specific, targeted skills more quickly than through conventional degree pathways. In addition, such credentials are often portrayed as more immediately relevant to employers, as they tend to focus on practical, job-ready competences rather than broad academic curricula. Cost is also a central element of this argument, with MCs frequently described as a more affordable option for learners, reducing both financial barriers and opportunity costs associated with long-term study. Collectively, this body of work suggests that MCs have the potential to challenge the dominance of traditional degrees by offering a faster, more flexible and economically accessible route to skills development and workforce participation.

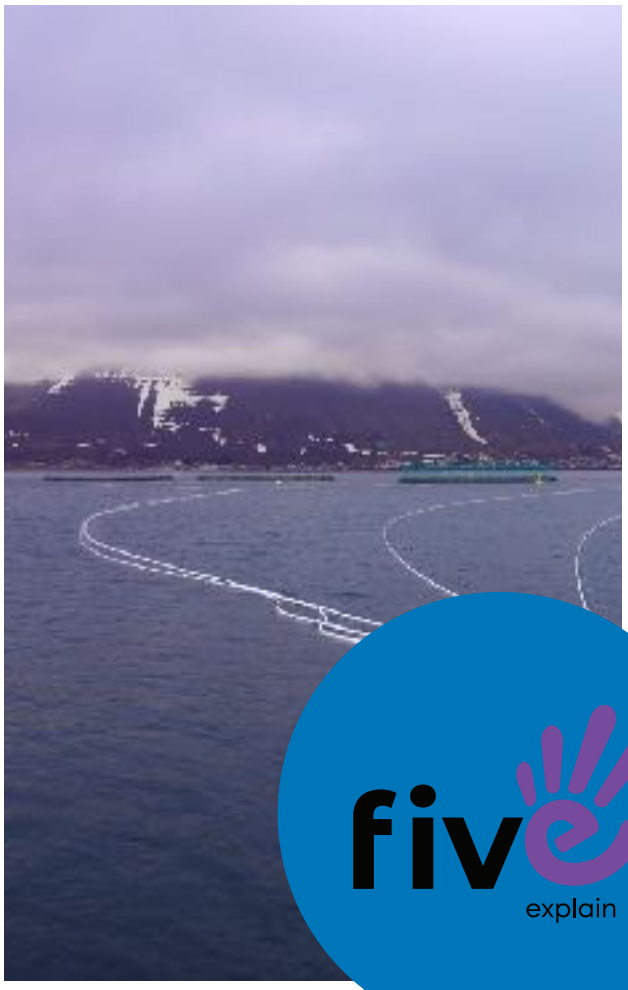
Part of the ongoing confusion arises from the widespread misconception that MCs are simply short courses. Massive Open Online Courses (MOOCs) provide a useful illustration of this distinction. While MOOCs offer an affordable, flexible and often on-demand means for learners to acquire new knowledge and develop specific skills, they are generally designed as standalone learning experiences. As a result, they typically lack formal recognition within accredited education frameworks and do not provide a clearly defined progression pathway toward credentialed and stackable higher qualifications. In contrast, properly designed MCs are intended to be formally assessed, quality-assured and aligned with national or institutional qualification frameworks. This will be enabling learners to build toward larger, recognised credentials over time rather than participating in isolated episodes of learning.

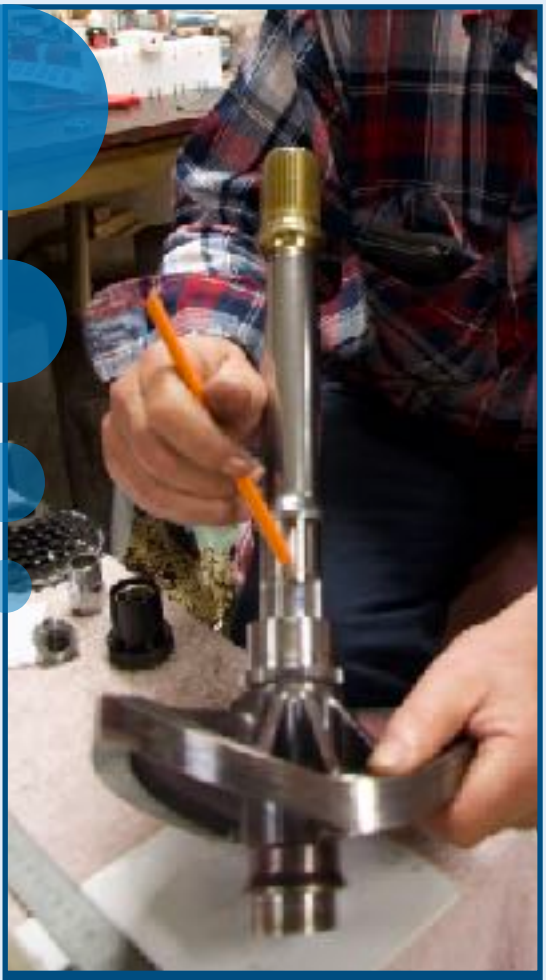
In practice, this more or less serves as a downward pressure on traditional degree programs. It stands in stark contrast to the continuing reluctance among institutions, employers and policymakers to attribute comparable value to MCs. Despite growing evidence of their flexibility, responsiveness to labour-market needs and potential to widen participation, MCs are still frequently regarded as supplementary or inferior to larger, traditional qualification types. As a result,

- while conventional degree programs face increasing scrutiny over cost, duration and return on investment,
- alternative forms of credentialing remain constrained by limited recognition, uneven quality assurance frameworks and uncertainty about their long-term credibility.

This tension highlights a misalignment between evolving learner and workforce demands and entrenched perceptions of educational value within the VET and higher education systems.

MCs offer alternative pathways to skills recognition.







While definitions and delivery formats of MCs vary across institutions, industries and regions, there is broad agreement on their defining characteristic. They represent a form of credentialing that is intentionally smaller, more focused and more flexible than a formal national qualification or international diploma-based degree. Designed to certify specific competences or learning outcomes, MCs typically require a shorter time commitment and are more targeted in scope than traditional qualifications. As such, they align closely with the growing demand for rapid, modular learning pathways that can respond to evolving workforce and professional needs. MCs therefore form a part of a wider movement toward alternative, skills-based credentials. Such credentials typically emphasise demonstrable capabilities over prolonged programs of study, which is considered to carry significant standalone value. Increasingly, they are recognized as viable complements or, in some contexts, alternatives to conventional degrees. In this perspective they are offering learners accessible and practical ways to signal expertise, up-skill, or re-skill in a dynamic educational and employment landscape.

Furthermore, these non-degree credentials generally fall into three broad categories, each reflecting a different purpose and level of validation.

- The first category consists of **certificates of course completion**, which are typically awarded after a learner finishes a defined course or learning sequence. An example is a MOOC, that primarily signal participation and exposure to specific content.

- The second category includes **certificates of training completion**, which recognise the successful completion of structured training programs, often focused on practical or job-related skills and commonly used in professional or workplace settings.

- The third category comprises **certificates based on assessment**, which are granted only after a learner demonstrates competency through formal evaluation. This includes examinations, projects, or performance-based assessments linked to work-based training and learning practices and therefore provide a stronger indication of verified knowledge or skills.

MCs - An alternative way to provide credential of skills.

MCs - where learning meet recognition.

From a functionality perspective, MCs are more likely to operate as complementary pathways rather than stand-alone alternatives to traditional qualifications. They typically provide targeted, skills-focused learning that can be accumulated, transferred, or recognised within formal education systems. Through mechanisms such as credit transfer and stackability, MCs enable learners to build incremental progress toward larger qualifications, including diplomas and degrees. In this way, they act as flexible entry points or stepping stones, lowering barriers to participation in various types of educational processes, while supporting lifelong learning and more personalised educational trajectories.

It is worth noting at this stage that the final award of an MC differs fundamentally from the traditional certificates or diplomas typically associated with Bachelor's, Master's or even doctoral degrees. Rather than representing the culmination of a lengthy, comprehensive programme of study, an MC certifies the achievement of clearly defined, targeted learning outcomes linked to specific skills or competences. In this sense, MCs will be understood as alternative digital credentials that on purpose are designed to be modular, stackable and more responsive to rapidly changing educational and economic contexts. Their flexible structure enables learners to engage in shorter, more focused learning experiences that can be undertaken alongside employment or other commitments. Importantly, this flexibility also enhances their relevance to labour market outcomes, as MCs are often closely aligned with employer needs, industry standards and emerging skill demands. They are thereby supporting employability, up-skilling, re-skilling and career progression in ways that traditional degree qualifications may not always be able to achieve as efficiently.

The MC as a digital credential

Technically speaking, an MC refers to the formal certificate, often presented as a digital or visual representation, that is awarded upon the successful completion of a short-term, focused learning programme. This digital certificate serves as verifiable evidence that the learner has achieved specific, clearly defined learning outcomes or competences within a limited scope of study. Unlike traditional degrees or diplomas, MCs are typically narrower in focus and quicker to complete. They are designed to recognise targeted skills or knowledge that are relevant to professional, educational or industry-specific needs.

Digital certification is a defining characteristic of MCs, setting them apart from many traditional forms of certification. Most commonly issued as digital badges, MCs provide verifiable, portable evidence of an individual's learning achievements, competences and skills. These digital credentials are designed to be easily shared across online platforms like the emerging European Wallet. This will make it easier to be deployable to other professional networking sites, personal portfolios and social media profiles. It is indeed allowing learners to publicly showcase their capabilities to employers, peers and institutions. In addition, digital badges often contain embedded metadata that details the issuing organisation and the criteria for earning the credential. They in addition describe the specific skills acquired, while at the same time enhancing transparency, credibility and trust in the certification.

Within the existing literature, the conceptual boundary between MCs and digital badges remains ambiguous and inconsistently articulated.

- An MC is often described and issued after the completion of a **short-term targeted learning program** designed to develop specific skills or competences, while
- Digital badges are typically framed as the form of recognition **awarded upon successful completion of such programs**.

Despite this apparent distinction, the two terms are frequently used interchangeably, with some authors referring to badges as MCs in their own right and others treating MCs primarily as digital artefacts rather than as learning experiences. This lack of terminological clarity obscures whether MCs should be understood principally as educational processes, credentials or technological representations of achievement. Consequently, the conflation of programs and their associated forms of certification complicates both scholarly analysis and practical implementation. It is highlighting the need for more precise and consistently applied definitions within the field.

This information can then be securely stored in an individual learner's European digital wallet, providing a portable and persistent record of their achievement. Ideally, the credential would also be independently verifiable through the awarding body's public website. This will allow employers, institutions, or other third parties to quickly confirm its authenticity, validity and status. Together, these mechanisms enhance transparency, reduce the risk of fraud and give learners greater ownership and control over their verified learning outcomes.

Indeed, from the employer's perspective, the value of digital credentials extends well beyond the simple digitisation or verification of existing awarding of skills and competences and into micro-qualifications. Rather than functioning merely as electronic replicas of traditional certificates, digital credentials could offer a richer, more strategic set of benefits. They can indeed provide granular, skills-based evidence of an individual's capabilities. This will for instance make it easier for employers to identify specific competences, assess job readiness and match candidates to roles with greater precision:

- The **skills matching** referring to an active labour market policy designed to align individuals' acquired qualifications, competences and work experience with the current and emerging needs of the labour market. The objective is to ensure that workers' skills are not underutilised or mismatched, thereby improving employment outcomes and labour market efficiency. This policy typically involves assessing individual skill profiles, identifying gaps or surpluses in relation to employer demand and facilitating appropriate job placement, retraining or up-skilling where necessary. By strengthening the connection between education, training systems and labour market requirements, skills matching supports higher productivity. This will reduce unemployment and skills shortages and enhances workers' long-term employability.

- The **learning pathway provision** refers to a structured and targeted approach for supporting job candidates in addressing identified skills gaps through tailored further education and/or training. Under this provision, individuals are guided through clearly defined learning routes aligned to specific occupational requirements, ensuring that the knowledge and competences they acquire are directly relevant to current or emerging job roles. These pathways may include formal qualifications, short courses, certifications, work-based learning, or blended learning models. They are designed to enhance employability, facilitate career progression and meet the evolving needs of employers. By aligning individual development with labour market demand, learning pathway provision helps candidates transition effectively into roles where specific skills shortages exist.

- **Talent identification** should be broadened to expand the candidate recruitment pool beyond traditional degree-based criteria. This approach recognises individuals who may not hold the formally required educational qualifications, but who possess relevant, job-ready skills acquired through alternative pathways. This could include professional experiences, relevant vocational education and training, industry certifications, MCs or self-directed learning. By valuing non-degree skills that can be verified or credentialed, organisations can access a more diverse and capable talent base. This will help reduce unnecessary barriers to entry and better align recruitment practices with actual role requirements. Such an inclusive, skills-focused strategy enhances workforce agility, supports equity and diversity objectives. It will enables organisations to identify high-potential candidates, whose competences and practical expertise directly contribute to performance and innovation.



Digital credentials will make it possible to share, verify and integrate them seamlessly across recruitment platforms, learning management systems and talent analytics tools. This will help reducing the administrative burden and increasing trust in hiring decisions. Furthermore, they support continuous learning and workforce development by enabling employers to track skills acquisition over time. Included are options to identify skills gaps and align training investments with organisational needs. In this way, digital credentials become not just tools for verification, but dynamic assets that enhance recruitment efficiency, workforce planning and long-term talent strategy.

At the present stage, the notion of such a fully interoperable credentialing framework with a seamless credentialing environment, describes an idealised ecosystem in which individuals can seamlessly document the full range of their achievements as trusted credentials. It is regardless of where or how those achievements were earned. In this vision, users will ultimately be able to collect and manage these credentials within a secure, emerging European digital wallet of their own choosing, rather than being locked into a single institutional or commercial platforms. From such a European digital wallet, credentials will be selectively and effortlessly shared with employers, educational institutions, professional bodies, or other relevant actors. Crucially, such a system will enable these shared credentials to be independently verified and validated in a reliable, interoperable and privacy-respecting manner. This will be done by any authorised party, without unnecessary friction, duplication or dependence on intermediaries.





In reality, the MC landscape remains comparatively underdeveloped and fragmented. Clear and widely accepted learning pathways leading to micro-qualifications have yet to emerge. This is of particularly importance with regard to advanced standing, credit recognition and accreditation, progression into formal qualifications and interoperability across academic and non-academic institutions. The absence of coherent frameworks and shared standards means that MCs are often designed, delivered and recognised in isolation rather than as part of an integrated system of lifelong and life-wide learning. Consequently, learners are frequently unsure how individual MCs could and will contribute to their longer-term educational or career goals. How will the issuing organisations face challenges in aligning their offerings with broader qualification structures? Employers still remain uncertain about the value, equivalence and reliability of these credentials in recruitment and workforce development.

Recognising skills and unlocking the talents.

Powering flexible pathways across EQF levels

MCs are providing and unbundling micro-learning applicable for lifelong and life-wide learning pathways on a pick and mix basis

One of the most persistent misconceptions about MCs is the assumption that they are simply repackaged short courses. In reality, MCs are intentionally designed to serve a dual and more strategic purpose.

- Beyond offering a digital certificate of completion, they function as structured learning building blocks that clearly articulate learning progression pathways.

These pathways may lead horizontally to complementary MCs that deepen or broaden specific skill sets, or vertically toward larger, more traditional qualifications such as diplomas or degrees. By embedding transparency around learning outcomes, credit recognition and alignment with formal programs, MCs will support lifelong learning. They will enable learners to stack, transfer and apply their achievements in meaningful and measurable ways.

That said, many pre-existing short-term learning programs are well positioned to be transformed into MCs, especially where their scope, workload and learning outcome descriptions are clearly articulated. In particular, programs that already define the volume of learning and study in terms of an explicit, transparent number of ECTS credits that learners can earn are more readily adaptable to this format. By formalising these elements, such programs can enhance their portability, recognition and alignment with broader qualification frameworks. They will thereby be increasing their value for learners, employers and education providers alike.

While MCs will certainly function as meaningful standalone awards, their greatest value emerges through their capacity to be stacked. That is, deliberately combined with two or more complementary MCs to contribute toward a larger, cohesive micro-qualification or even a degree program. This stackability option enables learners to progress incrementally. They are building recognised competences over time while maintaining flexibility in pace, focus and learning pathways. Rather than representing isolated achievements, stacked MCs form an integrated framework that supports lifelong and life-wide learning. This is responding to evolving workforce needs and provides a clear, modular route toward formal qualifications with cumulative academic and professional recognition.

MCs are increasingly expected to be undertaken on a flexible, pick-and-mix basis, rather than as components of a fixed or predetermined sequence of modules leading directly to a full degree or alternatively into a micro-qualification. This shift highlights the growing flexibility of educational pathways across several EQF levels. Here will learners selectively engage with discrete, targeted learning units according to their individual needs, professional goals and time constraints. In such a model the MCs function as modular, standalone learning opportunities that prioritise adaptability and learner autonomy over traditional linear learning pathways. It is reflecting broader changes in how educational provision is designed, delivered and consumed.

Typically, this form of MC stackability will be realised through formal credit transfer arrangements. Under this approach, learners who have already completed relevant MCs can have their prior learning, training and study formally recognised, allowing them to receive exemptions from specific modules or units within a traditional micro-qualification or even a degree program. As a result, previously acquired knowledge and skills are not duplicated but instead count toward the larger award. This is reducing time to completion, lowering costs and creating a more flexible and learner-centered pathway into full qualifications. Notably, the term credit refers to the unit used to express the volume and intensity of the studies undertaken within a learning program framework.

Learning without barriers across EQF levels

From a professional development perspective, credits are not limited to formal coursework alone; they may also be awarded within

- recognition of prior learning,
- demonstrated professional skills and
- other verified capabilities.

This broader interpretation acknowledges that meaningful learning and competence can be acquired through a range of contexts. This is including workplace experiences, independent studies and informal or non-traditional learning pathways, thereby valuing experiential knowledge alongside formal educational achievement.

This progression method is not entirely new. It rather builds on established practices enabled by the modular design of MCs. Because MCs are inherently flexible and self-contained, they are often unbundled from larger degrees or comprehensive micro-qualifications. This unbundling allows learners to engage with discrete units of learning independently, without committing to a full program from the outset. At the same time, these standalone MCs can be intentionally designed to stack or accumulate, meaning they may later be combined and formally recognised as contributing toward a larger qualification. In this way MCs serve a dual purpose:

- they offer immediate, targeted learning opportunities, while in addition
- providing clear progression pathways into broader credentials for learners who choose to continue their studies.

As such MCs provide a structured and verifiable means of recognising learning achievements on a small, targeted scale, enabling learners to demonstrate specific skills or competences without committing to full-length qualifications. They are designed to be flexible, stackable and responsive to rapidly changing educational and workforce needs. Broadly, MCs fall into two main categories, which differ in their purpose, scope and methods of assessment. However, together they offer complementary pathways for acknowledging both educational theory and work-based practice-oriented learning.

- **Credit-bearing education and training** refers to structured learning opportunities. This is most commonly short-term micro-learning programs delivering MCs, that are formally recognised within an accredited education and training system. These programs carry an explicit academic value, with the volume of learning expressed in ECTS credits, which quantify the learner's workload and the learning outcomes in a transparent and standardised way. Because they are credit-bearing, these programs can be accumulated, transferred, or stacked toward larger qualifications. This is going to help supporting flexible learning pathways, lifelong and life-wide learning, resulting in closer alignment between education, skills development and labour-market needs.
- **Non-credit continuing education and training** (e.g. like digital badges) refers to short courses, workshops and professional development activities that do not carry formal educational credit, but are designed to support lifelong and life-wide learning and skills development. Learning outcomes from these activities may be formally recognised through digital badges. They provide verifiable and portable digital evidence of acquired competences. These badges can be displayed visually on an individual's CV, professional profile, or an online platform, allowing learners to showcase specific skills and achievements to employers and other stakeholders.



Because such provision does not lead to the award of academic credits, the learning volume is typically expressed in study hours rather than credit values. This approach offers flexibility in design and delivery while still ensuring transparency about the expected learner workload and the level of engagement required.

In other words, MCs can be understood as certificate-earning, short-term micro-learning programs, regardless of the specific form the final award takes. While they may not always culminate in a traditional paper or digital certificate, successful completion is consistently recognised through a formal credential. This recognition can range from conventional certificates to credit-bearing digital badges, or other verified forms of academic or professional acknowledgement. What unifies these varied outcomes is that MCs provide structured, assessable learning experiences with a clearly defined endpoint. It provides a tangible, portable record of achievement that can be recognised by educational institutions, employers, or professional bodies.

Some issuing organisations explicitly design MCs to align with formal, credit-bearing and stackable pathways and may even position them as direct substitutes for accredited coursework. Other organisations will provide MCs that are issued on a non-credit basis, such as digital badges or certificates awarded after the completion of informal or short-term learning programs. Although these non-credit-bearing MCs do not automatically confer academic credit, they may still hold significant value within recognition frameworks. In particular, they can be evaluated and acknowledged as evidence of prior learning, allowing learners to demonstrate relevant knowledge, skills or competences acquired outside formal education. The learners potentially have these recognised within a prior learning agreement or assessment process leading to accredited learning.

In many respects MCs represent a reframing of long-standing educational practices rather than a wholly new form of learning. They will often try to bundle existing courses, modules or training programs into a newly labelled category, emphasising short duration, specific skills and with flexible delivery. This is especially evident in the realm of non-credit-bearing and informal education and training, where similar offerings have existed for decades under labels such as professional development, continuing education or micro-courses. What distinguishes MCs is less the substance of the learning itself, but more the way it is packaged, branded and communicated to learners and employers. This is typically done through standardised descriptions, digital badges, or formal recognition of discrete competences. As a result, MCs will be seen as an evolution in presentation and signalling value, rather than a fundamental departure from established forms of skills and competence focused education.

As part of the wider MC trend in higher education and professional learning, many short courses are increasingly being formally restructured and designated as MCs. This reorganisation typically involves clearer and more specified learning outcome descriptions and defined assessment criteria. This must be aligned with recognised qualification frameworks, which enhances their credibility and portability. A key feature of this shift is that MCs often allow for credit transfer, enabling learners to stack these smaller units of learning toward larger qualifications such as certificates, diplomas, micro-qualifications or even degree programs at university level. As a result, MCs support more flexible, modular learning pathways while responding to the growing demand for targeted, skills-focused education that can be formally recognised across institutions and sectors.

Other issuing organisations are increasingly developing bespoke MCs or unbundling elements of larger for instance university degree programs into stand-alone modules. These initiatives are often designed to address specific skills gaps or respond rapidly to employer and industry needs. While such awards can enhance flexibility, accessibility and even opportunities for both lifelong and life-wide learning, they do not offer the breadth, depth, or educational coherence associated with full university programs. Consequently, these forms of credentials are best understood as complementary to formal university credits, supporting and extending traditional higher education pathways rather than serving as a credible replacement for them.



Themes that arise from the literature addresses that MCs should

- **Support up-skilling and re-skilling** aligned with industry needs, enabling learners to acquire targeted, job-relevant competences while expanding and diversifying the available talent pool.
- **Offer flexible learning pathways** by allowing modules to be taken independently as unbundled units or combined in a stackable format that can lead toward larger micro-qualifications or full degrees.
- Serve as an **alternative to, or more commonly a complement to, traditional qualifications,** enhancing existing education pathways rather than replacing them outright.
- **Provide formal educational recognition**, with learning counting toward academic credit, exemptions and/or credit transfer within recognised qualification frameworks.
- **Deliver verifiable digital credentials**, such as digitally signed certificates or badges, ensuring secure, portable and easily shareable proof of achievement upon completion.

The purpose of MCs

MCs promote education and training by aligning with an understanding of lifelong and life-wide learning as a non-linear, flexible and continually evolving landscape. Rather than positioning learning as a single, linear pathway with a fixed beginning and end. MCs recognise that individuals engage in learning at different stages of life. This is in response to changing personal goals, labour market demands and societal needs. They enable learners to move in and out of education as required, acquiring targeted knowledge and skills that can be applied immediately and built upon over time. In this way, MCs support a fluid learning ecosystem which includes both formal, informal and experiential learning intersect. It is allowing learners to customise their educational journeys, re-skill or up-skill efficiently and use this to adapt to ongoing economic and technological change.

As a new and potentially disruptive format of education and training, MC offerings create opportunities to innovate both beyond and within traditional study and educational programs at various EQF levels. They enable institutions to move past the constraints of conventional degree structures by delivering flexible, targeted and skills-focused learning. It can be rapidly designed, updated and aligned with evolving workforce and societal needs. At the same time, MCs support innovation within existing programs by complementing formal qualifications, enhancing curriculum modularity and providing learners with recognisable evidence of specific competences. Through this dual capacity, MCs still bridge formal education and lifelong learning, expanding access, increasing responsiveness and encouraging more agile and inclusive approaches to education and training.

These non-degree credentials broaden the professional development landscape by emphasising the importance of applying learning dealing with competences. This type of learning should intentionally be aligned with learners' evolving needs, career goals and personal interests. Rather than following a one-size-fits-all educational pathway, they should offer flexible, targeted opportunities for individuals. That is how to acquire and demonstrate specific skills and capabilities that are immediately relevant to real-world contexts. By focusing on measurable outcomes and practical application, these credentials enable learners to up-skill or re-skill efficiently. It will better support lifelong and life-wide learning, while responding more effectively to changing workforce demands while maintaining a clear connection between learning experiences and professional growth.



Indeed, MCs recognise learners' current competence levels while taking into account their individual needs and interests. Beyond this acknowledgement of prior knowledge and personal goals, they enable a high degree of personalisation in learning pathways. Learners can progress at a pace that suits their circumstances, choose when to engage with learning activities and access opportunities regardless of geographic location. This flexibility allows education and professional development to be tailored to diverse lifestyles and commitments. It is going to make learning more responsive, inclusive and aligned with the realities of contemporary work and study.

A related concept is career-based education, which frames learning as a targeted, goal-oriented process aligned with a learner's chosen profession. Rather than emphasising broad or abstract knowledge alone, this approach focuses on developing practical skills, competences and experiences that are directly relevant to a user specified career goal. Instruction is often shaped by real world industry needs, emphasising applied learning, problem-solving and job-ready capabilities. By aligning curriculum, training activities and assessments with specific occupational outcomes, career-based education aims to shorten the gap between learning and employment. It is helping learners' transition more efficiently and confidently into their desired careers.

The self-directed nature of MCs distinguishes them clearly from traditional degree programs, which are usually structured around predetermined curricula and delivered primarily through in-person instruction. MCs place greater responsibility on the learner to manage their own pace, learning pathways and goals, allowing individuals to tailor their education to specific skills or professional needs. This flexibility enables learners to engage with content at times and in formats that suit their personal and professional circumstances, often through online or blended delivery. In contrast, traditional degree programs tend to follow fixed timelines, standardised course sequences and cohort-based progression. They are offering less adaptability to rapidly changing labour market demands. As a result, MCs provide a more agile, learner-centered approach to education that complements, rather than replaces, conventional degree pathways.





Through the processes of unbundling and stackability, this growing emphasis on smaller, modular units of learning has the potential to fundamentally overhaul the education system. Rather than relying on long, linear programs that require years of continuous commitment, education can be restructured into flexible, self-contained components that learners can access, combine and recombine over time. Unbundling breaks traditional degrees and curricula into discrete, targeted learning experiences and learning episodes, while stackability allows these experiences to build toward larger credentials or qualifications. Together, these approaches support lifelong learning, enable rapid skill acquisition in response to changing labour-market demands and broaden access for learners with diverse needs and schedules. By shifting the focus from time-based progression to accumulation of competences, these new models applying MCs challenge long-standing assumptions about how knowledge and skills are delivered, assessed and valued. It is opening the door to a more adaptable, inclusive and responsive educational ecosystem.

MCs are accumulating competences.

A move away from national or international degree completions, contributes to growing fears of learning fragmentation, as educational pathways become increasingly disjointed and episodic rather than coherent and cumulative. Without the unifying structure of a degree program, learning risks being reduced to a series of isolated credentials, short courses, or skills-based experiences that may lack intellectual continuity and shared standards. This fragmentation can weaken the integrative function of education where knowledge builds progressively across disciplines and over time, making it harder for learners to develop deep understanding, critical thinking and a stable academic identity. Moreover, employers, institutions and learners themselves will struggle a bit to interpret the value of fragmented learning signals. It is further amplifying concerns that education is shifting from a holistic developmental process toward a patchwork of disconnected achievements.

However, MCs introduce a more flexible and modular approach to education and training, allowing learning outcomes to contribute meaningfully toward larger degree-level micro-qualifications through the principle of stackability. Under this model, individual MCs can be accumulated, combined and formally recognised as part of a coherent learning pathway. This pathway will be reducing duplication of learning and enabling learners to progress incrementally toward higher qualifications. In addition, the scope of MCs is not limited to these intermediate awards. When appropriately designed and accredited, they can also extend beyond micro-qualifications and be integrated into full degree programs at national or international levels. This creates multiple entry and exit points within the education system, supports lifelong learning and provides learners with greater choice in how, when and to what extent they pursue formal qualifications.

With MCs, as with other forms of education and training, value is commonly assessed through a comparison of the anticipated benefits versus the associated costs. The effectiveness and sustainability of MC provision therefore depend on issuing organisations capacity to evaluate the feasibility and relevance of their offerings for diverse learners. This requires a nuanced understanding of individual learners' motivations for study, prior educational attainment and personal, professional and socio-economic circumstances. When these factors are carefully considered, MCs are more likely to be designed, positioned and delivered in ways that align with learner needs and expectations. It will thereby enhance engagement, completion and perceived value.

In terms of learner demographics, there is currently limited empirical evidence to suggest that MCs are fundamentally reshaping the composition of the student population by engaging large numbers of individuals without prior degree qualifications. While MCs are often promoted as flexible, accessible pathways designed to engage non-traditional learners, such as working professionals, career switchers, or those without formal higher education credentials, existing practices indicate that uptake remains concentrated among learners who already possess some level of post-secondary education. Rather than serving primarily as entry points for new or previously excluded groups, MCs still appear to function largely as supplementary or up-skilling mechanisms for individuals who are already engaged with formal education systems. As a result, their transformative potential in broadening participation among non-degree holders remains more aspirational than empirically demonstrated. This is highlighting the need for further longitudinal and demographic pilots to assess whether this pattern persists over time.



MCs still functions as supplementary mechanisms

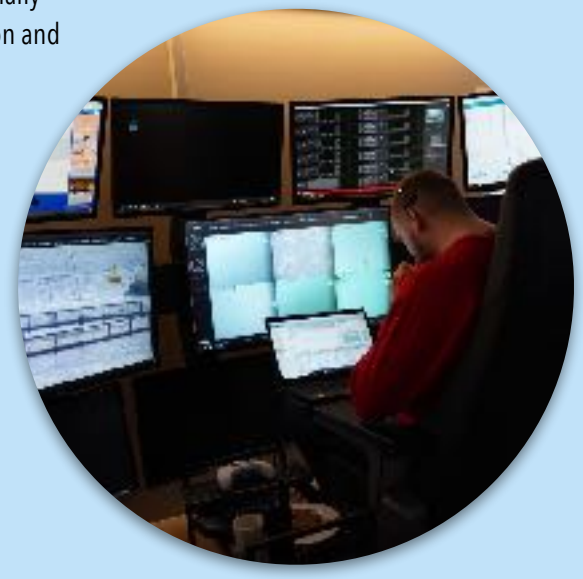
Professional learning and development are arguably the area in which MCs demonstrate their greatest added value. In this context, MCs function as a formal and transparent means of recognising knowledge, skills, competences and expertise acquired after the completion of initial education and training programs. They validate learning that occurs throughout a professional's career, whether gained through targeted courses, workplace experience, or continuous up-skilling initiatives and translate it into clearly defined, portable credentials. By doing so, MCs enable these competences to be documented, mapped and communicated in a structured way, supporting individuals in planning their further professional development, facilitating mobility across roles or sectors and aligning personal growth with evolving labour-market and organisational needs.

Closing the skills gaps by meeting industry needs

Directly related to personalised professional learning and development is the growing role of MCs in responding to clearly defined industry needs. Designed in close alignment with employers and professional bodies, MCs target specific skills and competences that are immediately applicable in the workplace. As a result, they provide timely, flexible and relevant learning opportunities that enable individuals to up-skill or re-skill efficiently without committing to lengthy qualifications. This strong alignment with current and emerging workforce demands makes MCs highly valued by both learners and employers, positioning them as in-demand learning offerings that support career progression, organisational capability and broader economic needs.

Since MCs enable learners to follow a personalised and continuously evolving professional development pathway, they represent a highly adaptable learning configuration suited to diverse learner profiles. Designed to be bespoke, self-directed and flexible, MCs empower individuals to tailor their learning experiences to specific career goals, skill gaps and personal circumstances. This approach supports learners who require autonomy over the pace, timing and focus of their education. This is including working professionals balancing employment and study, career changers seeking targeted re-skilling and lifelong learners aiming to remain current in rapidly changing fields. By allowing learners to select and stack relevant competences as needed, MCs accommodate varying levels of prior knowledge and professional experience, This is making them particularly valuable for a wide range of learner types with distinct motivations, constraints and aspirations.

- For **recent graduates**, MCs can play a valuable role in expanding and enhancing the skills and expertise gained through their formal degree programs. While degrees provide a strong educational foundation, MCs offer targeted, practical learning. This allows undergraduates as well as graduates, to deepen specific competences, explore emerging fields, or gain hands-on experience aligned with current industry needs. They can help bridging the gap between the educational knowledge and skills applied for workplace application, strengthen employability and demonstrate a commitment to continuous learning. By complementing their degrees with relevant MCs, recent graduates can better differentiate themselves in a competitive job market and adapt more quickly to evolving professional expectations.
- For **individuals without a formal degree**, MCs will play a crucial role by providing more flexible and accessible pathways into the labour market, or as stepping stones toward further higher education. They allow learners to demonstrate targeted and job-relevant competences. Those are aligned with current industry needs, improving employability and supporting career entry or progression. In addition, MCs will serve as mechanisms for recognising and validating prior learning, skills and experiences acquired through work, informal learning, or short courses. By formally acknowledging these existing capabilities, MCs will help reduce barriers to education and shorten learning pathways. They will create clearer routes for non-degree holders to transition into higher education programs or skilled employment.
- It is expected that MCs will play a significant role in **continued professional development** by enabling working professionals to up-skill or re-skill in a flexible, targeted and time-efficient manner. These short, focused learning experiences from small learning episodes will allow individuals to update specific competences and stay current with industry standards. It will respond to emerging technologies or regulatory changes without committing to lengthy degree programs. By aligning the learning outcomes with workplace needs, MCs support lifelong learning, enhance career progression and help professionals demonstrate verified, job-relevant skills to employers while balancing ongoing work responsibilities.



As a result, the growing adoption of MCs directly challenges the value, relevance and long-standing assumptions of traditional models of education and training. In particular, it raises critical questions about whether learners genuinely receive a strong return on their educational investment within conventional institutions. This is for instance addressed by the educational costs that are rising, extended time commitments and often rigid curricula associated with formal degrees. By contrast, MCs emphasise flexibility, targeted skill development and closer alignment with labour market needs. They are prompting learners, employers and policymakers alike to reconsider how effectively traditional educational pathways prepare individuals for rapidly changing professional environments and whether they continue to justify their financial and opportunity costs.

These returns can be understood not only in terms of higher wages, career advancement and enhanced overall wellbeing, but also through the broader professional benefits that accompany ongoing learning. Beyond direct wage increases, engagement in flexible and continuous professional learning and development enables individuals to deepen their expertise. They may pursue further specialisations and adapt to evolving industry demands. Such learning pathways often provide formal recognition through certifications and credentials, which validate the knowledge and skills acquired. Collectively, these outcomes strengthen professional identity and improve employability and mobility. They contribute to sustained career satisfaction and long-term resilience in the labour market.

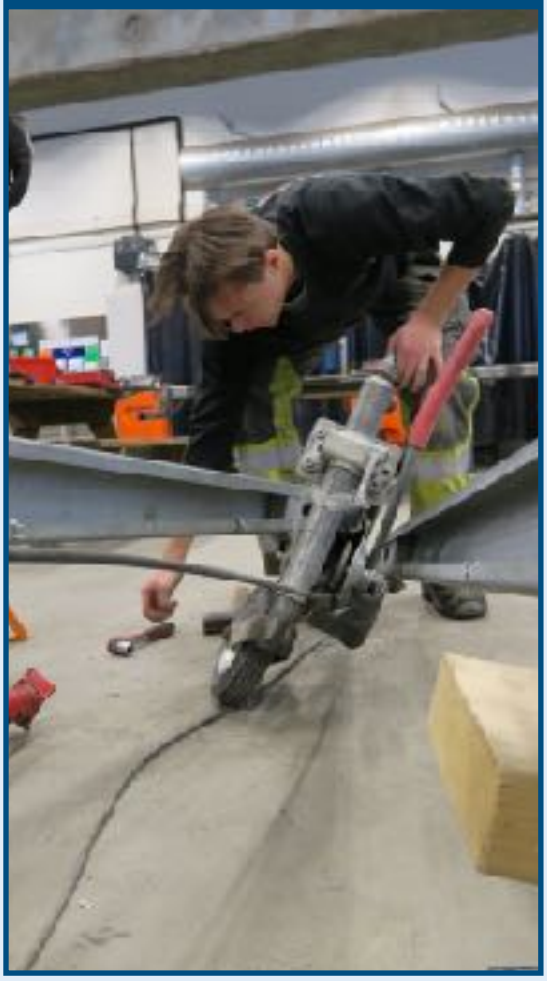
Graduate employability, work readiness and the acquisition of work-aligned skills cannot be meaningfully addressed in isolation from the broader forces reshaping contemporary labour markets. These concerns must be situated within and continually respond to, intersecting economic, technological, health and environmental and geopolitical trends that are transforming the nature of work at an unprecedented pace. Rapid advances in digital technologies, the lingering impacts of global health crises, shifting geopolitical dynamics and the accelerating pressures of climate change are collectively redefining occupational roles, industry structures and employer expectations. As a result, maintaining relevance in the labour market increasingly requires learners to engage in continuous skills development, regularly updating and expanding their competences in response to evolving demands. In particular, substantial investments in the green transition and the ongoing digital transformation of workplaces are not only generating new employment opportunities but also disrupting existing ones, often rendering established skillsets insufficient. Consequently, many learners will need not merely to up-skill, but to re-skill entirely. They will be adapting to new forms of work, emerging technologies and reconfigured working environments in order to sustain long-term employability.

Today MCs are increasingly positioned as a credible and flexible pathway to obtaining professional certifications in today's evolving education and labour markets. They enable prior work experience, informal learning and non-traditional forms of education. The later will be systematically identified, mapped and formally recognised through transparent and verifiable processes. In particular, MCs support

- targeted skills development by focusing on clearly defined and job relevant competences,
- robust assessment practices that validate learning outcomes through evidence-based evaluation,
- alignment with recognised standards that ensure consistency and comparability across sectors,
- strong quality assurance mechanisms that enhance trust, portability and institutional credibility and
- growing employer recognition, as organisations increasingly value MCs as reliable indicators of workforce readiness and professional competence.







MCs help facilitating the digital transformation

With the accelerating digital transformation of the labour market, recruitment practices are undergoing a fundamental shift. Employers are responding not only to broad technological changes, but to organisation specific demands for advanced and continually evolving skills and competence sets. In this context, the digitisation of credentials such as digital certificates, MCs and verified skills profiles is going to play a decisive role in reshaping hiring processes. These digital credentials enable more granular, transparent and up-to-date representations of candidates' competences, making it easier for employers to assess practical skills, competences and job readiness. As a result, recruitment is increasingly oriented toward applying skills and competence measures during the hiring process. This is reducing the reliance on a singular or dominant focus on traditional degree qualifications and instead prioritising demonstrable, relevant capabilities aligned with rapidly changing workplace needs.

Subsequent career development pathways are increasingly shifting toward credentialed, on-the-job learning models that integrate formal recognition with practical hands-on workplace experience. Rather than relying solely on traditional degrees or off-site training, these pathways emphasise structured learning embedded within real work contexts, where employees acquire skills while actively performing their roles. Credentials such as MCs and industry certifications are used to validate this learning, making skills more transparent, portable and aligned with labour market needs. This approach supports continuous up-skilling that accelerates career progression. It enables employers to directly link workforce development with organisational capability building.

Occupations are, however, typically understood not as single, monolithic roles but as bundles of skills and competences. This is structured combinations of knowledge, skills, competences and abilities that enable workers to perform a defined set of employment related tasks. From this perspective, an occupation represents the aggregation of both technical and non-technical skills and competences. It is accumulated through education, training and experience, to be applied across a range of work activities. Such skill and competence bundle and shape how tasks are organised and how work is allocated within firms. They describe how workers transition across roles and industries, emphasising that occupational identity is grounded less in job titles and more in the transferable capacities workers bring to the labour market. Due to this skills and competences cannot be understood or assessed in isolation. They are rather embedded within broader clusters of abilities and knowledge that interact and reinforce one another. In practice, most job roles require a dynamic combination of technical, traditional and soft skills, applied simultaneously to meet complex and evolving workplace demands. These skill sets are not acquired through a single pathway but emerge from the cumulative effects of formal education, vocational training and practical experience. The education framework provides the foundational knowledge and cognitive frameworks. The training develops role specific and technical capabilities, while the experiences enable the contextual application, adaptation and refinement of both hard and soft skills. Consequently, effective performance in any occupational role depends on how well individuals integrate these diverse competences into coherent skill clusters. They should align with occupational requirements and organisational contexts.

Verified skills help unlocking the mobility

Within this perspective and context, research on the economics of skills and competences emphasises that learning outcomes and economic returns are shaped less by the absolute level of any single skill and competence. The important approach is more about how different skills and competences interact with one another and with the learner's existing skill endowment. Skills indeed tend to function as complements rather than as isolated attributes. The productivity and value of one skill often depend on the presence of others. This for instance includes how technical proficiency is enhanced by problem-solving, communication, or socio-emotional abilities. Consequently, individuals with different skill and competence backgrounds may derive very different benefits from acquiring the same new skill. This perspective highlights that the effectiveness of skill and competence development is contingent on the relative complementarity among skills and the prior competences of learners. This is underscoring the importance of considering skill and competence portfolios and learning pathways rather than focusing narrowly on the accumulation of individual skills and competences in isolation. It is within this context that the stackability of MCs is most clearly demonstrated. Stackability not only highlights the capacity of individual MCs to be combined in coherent and progressive ways into micro-qualifications, but also underscores their ideal interoperability. This is valid among MCs themselves and between curated sets of MCs and even traditional degree programs. This interoperability enables learners to accumulate, transfer and integrate learning achievements across different educational pathways. It thereby strengthening the connection between flexible, micro learning activities and established higher education qualifications.

Skill and competence verification better support mobility

Like on-the-job training, open learning courses and other work-based assessments at the workplace are typically recognised only through limited or narrowly defined credentials. While these experiences often involve substantial skill development, practical application and demonstrated competence, the formal acknowledgment they receive is usually restricted to certificates of completion, internal assessments or non-transferable credentials. As a result, the full scope and depth of the knowledge, skills and competences acquired through workplace adapted learning are not always visible or easily comparable within broader education and qualification frameworks, which can limit their perceived value despite their relevance and rigour. The relative lack of verifiable information presents a significant challenge in the hiring process, since it makes accurately assessing candidates' skills and competences more difficult. Without reliable, objective evidences like validated credentials, measurable performance data, or consistent work samples, employers are often forced to rely on self-reported qualifications or subjective evaluations. This uncertainty will increase the risk of misaligned hiring decisions, prolong recruitment timelines and reduce overall confidence in candidate selection.

Skills profiling, including the recognition of skills through MCs, enables short, targeted forms of training to be formally acknowledged and valued within various education pathways. By validating learning acquired through brief courses, professional development modules and industry-led certifications, skills profiling will create clearer links between non-traditional learning and various educational qualifications. This approach allows learners to accumulate recognised skills and competences over time, supporting flexible progression into various education programs while promoting lifelong and life-wide learning and responsiveness to labour market needs.

Recognised skills provides borderless opportunities.

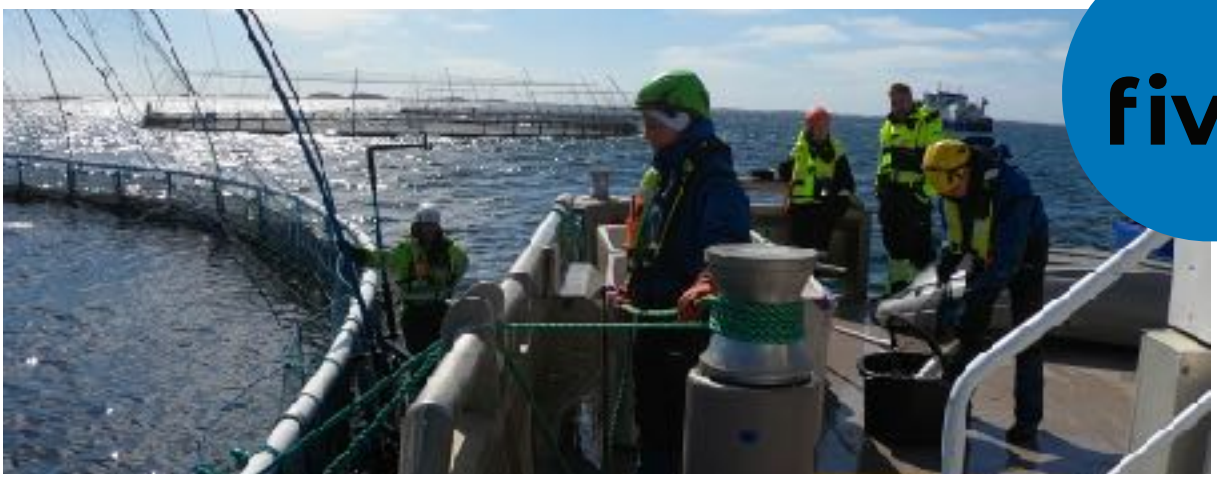
In a context where learning is increasingly framed through the lens of skills and competences, knowledge and expertise developed through professional employment will be formally recognised and validated within the education systems. Through mechanisms such as the awarding of credit for prior learning, competences acquired in the workplace will be translated from non-credit bearing experiences into accredited learning outcomes. These recognised credits can then contribute toward progression into, or completion of, more traditional and formally structured learning programs. They will thereby creating more flexible non-credit to credit pathways that bridge professional micro-learning practice with the conventional macro-learning education system solutions.

Skilled credentials, including industry-recognised certifications, apprenticeships and other forms of short-duration micro-learning will be formalised as MCs. They are becoming an increasingly vital pathway for job attainment and career advancement. As labour markets evolve rapidly and employers seek candidates with immediately applicable skills and competences, MCs offer a flexible, efficient way for individuals to demonstrate competence in specific in-demand areas. Unlike traditional degree programs, skilled based MCs will be earned more quickly, updated more frequently and closely aligned with current industry needs. This is going to make them especially valuable for career changers, incumbent workers seeking up-skilling or re-skilling and employers looking to fill skills and competences gaps. Over time, the growing acceptance and standardisation of skilled MCs will position them as a core component of workforce development systems. This includes complementing formal qualification degrees while expanding access to economic opportunity and lifelong learning.

The complement of skills developed through an entire micro-qualification degree program is demonstrably broader, deeper and more integrated than the skill or even a limited set of skills typically associated with a single micro-course. A full micro-learning program of study is intentionally structured to provide cumulative learning, where foundational knowledge is progressively reinforced, expanded and applied across multiple contexts where skills is recognised. Through this process, students acquire not only subject-specific expertise, but also transferable competences. Those include critical thinking, problem-solving, communication, research literacy and the ability to synthesise complex information over time. In contrast, an individual micro-course is necessarily constrained in scope and duration, focusing on discrete learning outcomes. Those while valuable, cannot replicate the coherence, intellectual progression, or holistic skill development achieved through sustained engagement in a complete micro-qualification degree program.

What is therefore required is a more advanced and systematic approach to skills intelligence. This one must strengthen the capacity to identify, analyse and interpret past and current skills trends, while also anticipating future and emerging skills needs. This entails developing robust methods for assessing skills supply and demand. This must include detecting gaps across sectors and occupations. In addition, it must better understand how technological changes, demographic shifts and economic transitions will reshape workforce requirements over time. By integrating high-quality data with forward-looking analysis and continuous monitoring, this will enable policymakers, educators and employers to make informed decisions. This will proactively help addressing skills mismatches and support long term workforce resilience.

MCs are strengthening skills recognition and learner mobility.



Within this skills governance ecosystem, there is a strong case for providing clearer and more actionable guidance to individual learners regarding the skills and competences they should pursue. Such clarity would help learners better understand how their personal development aligns with labour market needs, sectoral priorities and broader economic and social objectives. By articulating expectations around current and emerging skill requirements, while also indicating potential new micro-learning pathways and progression routes, the ecosystem can reduce uncertainty. It will support informed decision-making and empower individuals to take greater ownership of their lifelong and life-wide micro-learning journeys. Ultimately, clearer signals to learners would strengthen the coherence and effectiveness of the skills and competence system as a whole. It will help ensuring that individual investment in skills and competences translates into meaningful personal, professional and societal outcomes.

While this conclusion may appear self-evident, it nonetheless directly challenges a persistent and often unexamined assumption: that MCs are inherently positioned to replace traditional educational degrees. Such a perception oversimplifies the evolving educational landscape and overlooks the complementary roles these forms of credentialing will play. Rather than functioning as substitutes, MCs are more accurately understood as augmentations designed to address specific, timely skill needs or to support continuous professional development. The traditional degrees will still continue to provide broad, foundational knowledge, critical thinking skills and long-term academic and professional grounding. Framing MCs as replacements not only misrepresents their purpose, but also risks undervaluing the enduring relevance of degree-based education within a diversified and increasingly flexible learning ecosystem.

Building robust soft skills capacities through MCs

MCs not only enable individual learners to up-skill and adapt to increasingly complex and evolving employment tasks. They will serve as a clear signal of a learner's proactive commitment to continuous personal and professional development. In this context, the acquisition of MCs demonstrates a willingness to invest time, effort and resources in building relevant competences, often in response to changing labour market demands. Such investment will enhance employability and career mobility, while at the same time signalling to employers a readiness for lifelong and life-wide learning, innovation and adaptability. Over time, these attributes are closely associated with higher productivity, improved job performance and the potential for increased wages and more advanced career opportunities.

During such "learn to earn" educational journeys, learners will actively engage in applied learning pathways that emphasise the acquisition of durable, job-relevant skills through MCs. These MCs validate specific skills and competences gained through hands-on work-based experiences. This includes continuous practices with real-world problem solving, rather than passive content consumption. As a result, learners will be able to clearly and credibly signal their capabilities to employers. This includes demonstrating adaptability, up-to-date expertise and a commitment to lifelong and life-wide learning. Collectively, this combination of active learning and recognised MCs will help strengthening learners' professional profiles and provides a measurable competitive advantage in an increasingly skills driven labour market.

Particular individual skills, as well as purposeful combinations of such skills sets, will subsequently be delivered to learners through targeted new educational formats. These may take the form of focused, single micro-course modules designed to develop a specific competency. They could include more comprehensive courses that integrate multiple related skills into a structured learning pathway. This flexible approach allows micro-learning offerings to be tailored to varying learner needs, progression levels and professional learning objectives. In addition, they will be supporting modularity and scalability within the curriculum.



Micro-courses are built to develop and validate one competence.

Teaching professionals and particularly those working with increasingly diverse student cohorts, will benefit significantly from MCs that embed global perspectives within the educational profession. When classrooms become sites of cultural, linguistic and experiential plurality, educators are and will often require to navigate unfamiliar worldviews, communication styles and learning expectations. MCs focused on global and intercultural contexts provide targeted, flexible professional learning opportunities that equip teachers with the knowledge, skills and reflective practices needed to respond effectively to this complexity. By engaging with issues such as intercultural competence, global citizenship, inclusive pedagogy and culturally responsive teaching, educators will deepen their understanding of students' backgrounds while enhancing their own professional adaptability. In this way, globally oriented MCs support teachers not only in addressing immediate classroom challenges, but also in developing a more nuanced, ethically informed and future-ready approach to teaching in a globalised educational landscape.

By signalling adaptability through verified and ongoing up- and re-skilling, professionals will demonstrate far more than the possession of current, job-relevant skills. Continuous learning processes provides credible evidence of their ability to evolve alongside changing technologies, industry standards and organisational needs. It reflects a proactive mindset showing ambition, resilience and a genuine commitment to long-term professional growth. In doing so, individuals position themselves as motivated, future-ready contributors. They are not only capable of meeting today's demands, but are also prepared to take on greater responsibility and pursue further development as their roles and industries continue to evolve. It is expected that MCs will play a crucial role in validating qualities that are often difficult to measure or communicate through traditional qualifications alone. By offering targeted, skills-based recognition, they provide credible evidence of competences such as adaptability, problem-solving, collaboration and continuous learning. These credentials translate otherwise intangible attributes into verifiable achievements, making them visible and understandable to employers, institutions and other stakeholders. In doing so MCs will bridge the gap between informal learning and formal recognition, strengthening trust and transparency in how these qualities are assessed and valued.





From learning moments to lifelong soft skills.

Within this regard, the instrumental acquisition of skills and attributes is closely aligned with the concepts of work readiness and graduate employability. Such acquisition extends beyond the mere accumulation of disciplinary knowledge to encompass the development of transferable competences. It includes both the professional behaviours and adaptive capacities that enable students to transition effectively into the workplace. Work readiness reflects the extent to which students are prepared to meet the practical demands, expectations and cultural norms of professional environments. This includes the student's graduate employability emphasising their ability to obtain, sustain and progress in employment over time. Consequently, the purposeful development of instrumental skills such as communication, problem-solving, teamwork and self-management, serves as a critical bridge between education and labour market participation. It is positioning students that are graduating to respond proactively to evolving industry needs and complex work contexts.

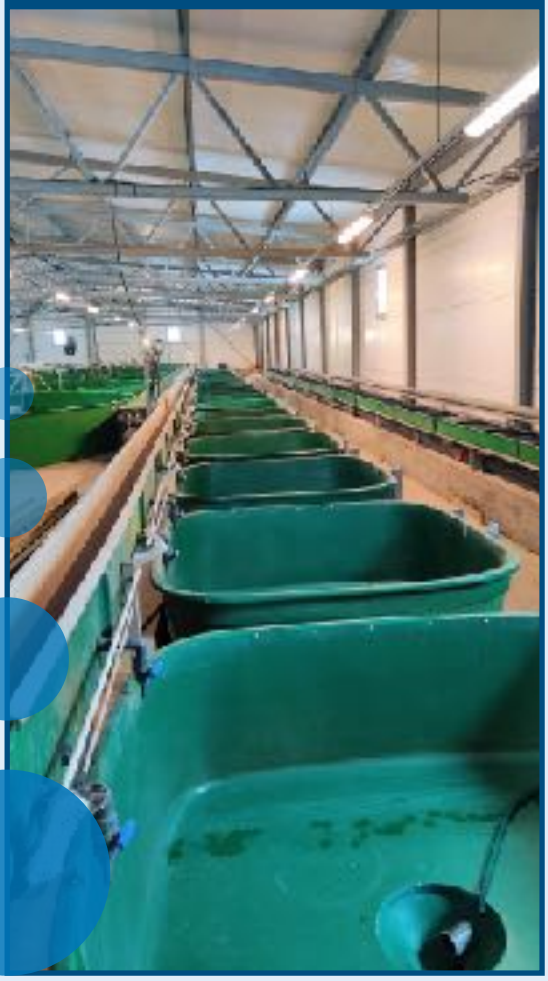
However, it is important to recognise that the repeated identification of skills gaps is frequently framed in broad, generalised terms. Such claims often lack conceptual precision, offering limited clarity about the specific competences, knowledge areas, or levels of proficiency that are actually absent. As a result, these recurring assertions tend to function more as expressions of dissatisfaction than as analytically grounded diagnoses, making it challenging to translate them into targeted interventions or coherent policy responses. The persistent mismatch between existing education and training offerings and the evolving demands of industry for micro-learning episodes highlights the need for greater clarity regarding the labour market outcomes. This includes the learning pathways that operate outside direct government policy frameworks or immediate market driven priorities. While public policy and employer demand often shape the formal education systems, a substantial portion of education and training occurs independently of these forces. This is for instance including community-based programs, private providers, informal learning and alternative credentialing models. Understanding how these pathways translate into employment opportunities, job quality, career progression and skills utilisation is essential. Without robust evidence on their labour market impacts, learners face increased uncertainty, institutions struggle to align curricula with real-world learning outcomes. Policymakers risk overlooking valuable contributions to workforce development. Greater transparency and systematic analysis of these outcomes would support more informed decision-making by individuals, educators, employers and governments. It will help bridging the gap between education provision and the realities of a changing labour market.

MCs will play a key role in developing the future ready soft skills Europe requires.



Enabling robust soft skills capacity





The nature of MCs arguably extends far beyond the simple replacement of traditional degree programs with non-degree qualifications. Rather than serving as a lesser or substitute form of education, MCs represent a fundamental shift in how learning is designed, delivered and recognised. They emphasise flexibility, modularity and responsiveness to rapidly changing skills demands. They are allowing learners to acquire targeted competences at different stages of their personal and professional lives. In this sense, MCs complement rather than compete with conventional degrees, enabling continuous up-skilling and re-skilling without the time, cost and structural commitments associated with full degree programs. Moreover, they encourage closer alignment between education providers, industry needs and workforce development. They are reframing learning as an ongoing, lifelong and life-wide process rather than a one-time achievement tied exclusively to formal degree pathways. Indeed, MCs are only disruptive in a limited and constructive sense. Rather than replacing traditional degrees, they introduce alternative and often complementary pathways for education and training. These short, targeted learning episodes and learning experiences are designed to address specific skills or knowledge gaps and can be flexibly integrated into existing educational trajectories. In many cases, MCs will count toward formal qualifications. They will be stacked to build on, enhance, or accelerate progress within established degree programs or new micro-qualification programs. As such, their value lies not in undermining conventional education pathways, but in expanding access, responsiveness and modularity within it. They are allowing learners to better tailor their development to evolving personal, professional and labour-market needs.

MCs enable individual learners to deepen and broaden their knowledge through flexible, targeted learning opportunities. They allow learners to build upon an introductory foundation by pursuing more advanced knowledge and specialised training. This is done while still serving as accessible entry level qualifications for those new to a field. Designed to be modular and stackable, MCs support continuous learning pathways, empowering individuals to up-skill or re-skill. The students will explore new areas of expertise at their own pace and in alignment with evolving professional or academic goals. These types of awards and support help learners distinguish themselves in a competitive job market. MCs are providing clear, credible evidence of their skills, achievements and professional readiness. Due to this, they will serve as strong signals to prospective employers that a candidate has not only acquired relevant knowledge, but has also demonstrated commitment, initiative and the ability to meet recognised standards. By validating both technical and transferable skills, these awards enhance employability and support career advancement. This will give employers greater confidence in a learner's preparedness to contribute effectively in the workplace.

MCs will provide teaching professionals with a flexible and targeted approach to professional learning and development. They are enabling them to personalize their growth according to specific interests, needs and career goals:

- Through the MCs the educators will deepen, enhance and increase their classroom practices. This is obtained by focusing on practical, evidence-based strategies that have an immediate impact on teaching and student learning.
- These MCs will better support career advancement by formally recognising specialised skills and competences. This will help contributing to professional progression and leadership opportunities.
- Additionally, MCs help teachers remain current with ongoing developments, whether within their subject area or across broader educational, technological and societal contexts. This helps ensuring their practice stays relevant, informed and responsive to change.

However, for MCs offerings to be truly effective and gain the confidence of learners, employers and institutions alike, they must be underpinned by a robust and transparent system of quality control. This system should ensure that MCs are designed around clearly defined learning outcomes, aligned with industry and academic standards and assessed through rigorous and reliable methods. Effective quality assurance mechanisms also involve regular review and updating of content to keep pace with evolving skills demands. This must include clear governance structures that define accountability for design, delivery and assessment. Without such safeguards, MCs risk becoming fragmented, inconsistent or undervalued. With quality assurance they can function as credible, portable and meaningful indicators of competence within lifelong





Setting up quality assurance systems for the MCs

Europe is currently facing a rapid boom in micro-credentialing. Educational institutions across Europe have increasingly voiced concerns about how learning achieved through these programs is verified and recognised. In particular, institutions question the robustness of the mechanisms used to confirm learners' identities, authenticate the assessment outcomes and ensure that credentials genuinely reflect the knowledge, skills and competences acquired. These concerns are amplified by the short-term and modular nature of many micro-learning programs. They will vary widely in structure, delivery modes and assessment practices. As a result, institutions emphasise the need for clear standards and transparent quality assurance frameworks. Included are reliable verification processes to safeguard the credibility, portability and trustworthiness of MCs within the broader European education and training landscape.

The MC landscape is described with and characterised by a complex, multi-actor ecosystem that operates across national, regional and sectoral industrial boundaries. It brings together a diverse range of stakeholders, including higher education institutions, vocational providers, employers, industry bodies, professional associations, technology platforms and public authorities. Each of these are contributing distinct priorities, standards and modes of delivery. These actors interact within and across jurisdictions, shaping how MCs are designed, recognised, funded and quality-assured. As a result, the MC ecosystem is highly dynamic and fragmented, reflecting variations in labour market needs, regulatory frameworks and educational traditions. The ecosystem is also requiring coordination and alignment to

Within this evolving skills landscape, national governments and quality assurance bodies, working in close collaboration with education and training providers, play a crucial and critical role in ensuring that MCs are designed, delivered and recognised in line with national standards. Through coherent regulatory frameworks, transparent quality assurance mechanisms and alignment with labour market needs, these stakeholders will manage to enhance the credibility, portability and trustworthiness of MCs. When strategically embedded within broader education and workforce development systems, MCs will contribute meaningfully to addressing persistent and emerging skills shortages across the labour market. They will help supporting both economic resilience and lifelong and life-wide learning pathways.

This is essential to ensure that the emerging MCs ecosystem does not narrow its purpose to addressing short-term, firm-level skill shortages alone. Nor should it drift into becoming a set of narrowly defined qualifications that are tied primarily to task-based or precarious forms of work that are linked towards immediate employability for on-demand task-based work schedules. This is an outcome already highlighted by critics of MCs. Instead, MCs should be designed and governed in ways that support broader educational, social and economic objectives. They should enable learners to develop transferable knowledge, adaptable capabilities and long-term career resilience. By moving beyond an exclusive focus on immediate labour market demands, the MCs ecosystem should contribute to lifelong and life-wide learning pathways and professional growth. This includes inclusive workforce development, rather than reinforcing fragmented or transactional models of skills acquisition.

What is the interest for the various stakeholders?

Individual learners are looking for up-skilling and re-skilling of their personal and professional development. Individual learners increasingly seek opportunities to up-skill and re-skill in response to rapid technological change, evolving job roles and shifting career aspirations. This group includes professionals aiming to remain competitive in their current fields, individuals preparing for career transitions and lifelong and life-wide learners motivated by personal growth. Their learning goals often focus on acquiring practical, job-relevant skills. This includes strengthening foundational knowledge and developing transferable competences such as digital literacy, critical thinking, leadership and adaptability.

For individual learners, effective up-skilling and re-skilling pathways are flexible, personalised and accessible. They value learning experiences that can be integrated into busy schedules, that offer clear progression and demonstrate tangible outcomes such as certifications, portfolios, or improved employability. Personal professional development in this context is not limited to technical skills alone. It encompasses soft skills, confidence building and the ability to continuously learn and self-direct in a changing environment.

Supporting individual learners means providing relevant content aligned with market needs. It must be aligned with clear guidance on learning pathways and opportunities to apply new skills and competences in real-world or simulated contexts. When done well, up-skilling and re-skilling empower individuals to take ownership of their careers. They must adapt to change proactively and pursue long term personal and professional fulfilment.

Building sustainable soft skills through modular learning.



Educators should be actively offering MCs as a strategic response to the rapidly evolving needs of both learners and industry. As technological innovation, automation and shifting workforce demands continue to reshape career pathways, traditional degree programs alone are no longer sufficient to ensure timely and relevant skill development. MCs provide flexible, targeted and stackable learning opportunities that allow learners to acquire specific, in-demand competences aligned with real-world applications. For educators, integrating MCs into curricula enables faster adaptation to industry trends, closer collaboration with employers and more inclusive access to up-skilling and re-skilling pathways. By embracing MCs educational institutions will better support lifelong and life-wide learning, enhance graduate students' employability and remain responsive and competitive in an increasingly dynamic global economy.

Quality assurance authorities will play a central role in safeguarding the integrity and value of MC offerings. Their responsibilities include establishing and enforcing quality control standards to ensure that MCs meet defined benchmarks for learning outcomes, assessment rigour and relevance to industry and societal needs. In addition, these authorities oversee the formal registration of nationally recognised MCs, ensuring consistency, transparency and portability across institutions and sectors. Through these functions, quality assurance authorities help build trust among learners, employers and education providers. This should be done while supporting the credibility and long-term sustainability of MCs within the national qualification's framework.

Professional bodies will play a pivotal role in establishing and strengthening digital learning platforms by leveraging their industry expertise, standards and networks. They will support the design, development and governance of robust online learning ecosystems. Those will ensure quality, relevance and alignment with professional competences. In addition, these bodies will provide and endorse innovative educational technology solutions that enable flexible, modular and scalable MC adapted learning. Through curated content, industry-recognised certifications and technology-enabled assessment frameworks, professional bodies will help learners acquire targeted and job-ready skills. Those includes promoting lifelong and life-wide learning, ensuring that MCs are credible, portable and widely recognised across sectors.

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Quality frameworks applying recognition and credibility make MCs count.





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At the institutional level, MCs have the potential to play a genuinely disruptive role in reshaping how education providers design, structure and deliver learning offerings: They will, furthermore, affect how companies approach up-skilling and re-skilling their workforce. For education institutions, the growing demand for shorter, skills-focused and stackable credentials challenges traditional degree-centric models. This will occur by encouraging more modular, flexible and industry-aligned programs that can be rapidly updated in response to changing labour market needs. This shift will require institutions to rethink curriculum design, assessment practices, credentialing frameworks and partnerships with industry. It is going to move toward more agile systems that prioritise demonstrable competences and lifelong and life-wide learning pathways.

At the same time, MCs are transforming how companies deliver professional development by enabling more targeted, just-in-time training that aligns closely with specific roles, technologies or organisational goals. Rather than relying solely on lengthy external qualifications or generic training programs, employers will integrate MCs into their workforce development strategies. This will help supporting continuous learning, career progression and internal talent mobility. Collectively, these changes suggest that MCs could significantly blur the boundaries between formal education and workplace learning. They will help prompting both education providers and employers to adopt more collaborative, responsive and learner-centered approaches to development of skills and competences.

Learning pathways should increasingly move away from long, rigid degree programs. They will instead embrace flexible and modular models for skills and competence that are allowing learners to acquire clearly defined skills and capabilities in a timely and relevant manner. Such pathways enable individuals to progress at their own pace, stack or combine micro-learning modules as needed. They will demonstrate mastery through practical outcomes rather than time spent in formal education. This approach not only lowers barriers to entry and re-entry into learning, but also supports lifelong and life-wide up-skilling and re–skilling processes in response to rapidly evolving labour market demands.

In parallel, learning experiences should be more targeted and bespoken. They should be designed around the personalised needs, interests and career trajectories of individual learners. Rather than a one-size-fits-all curriculum, education and training should adapt to where a learner is in their professional journey. This includes recognising prior experience and aligning content with specific goals. By tailoring learning to individual aspirations and industry requirements, these new learning pathways become more engaging. They will in addition become more efficient and impactful. This will help ensuring that learners gain relevant competences that directly support their career progression and long-term employability.

At the same time and similarly, there is significant potential for deeper and more structured collaboration between companies and education providers in the co-design, development and delivery of MCs. By working more closely together, industry partners will help ensuring that MCs are closely aligned with current and emerging workforce needs. At the same time the education providers will contribute with pedagogical learning process expertise, quality assurance and formal recognition. Such collaboration could involve jointly identifying skill gaps, co-developing curriculum content, integrating real-world projects or assessments and regularly updating credentials to reflect technological and industry changes. Strengthening these partnerships would not only enhance the relevance and credibility of MCs, but also support learners in acquiring targeted, job-ready skills that are immediately applicable in the workplace.

Implementation of MCs remains one of its key problems

It is largely unsurprising that the implementation of MCs has emerged as one of the most significant challenges in their adoption. While MCs are often promoted for their flexibility, responsiveness to labour-market needs and potential to widen access to learning, translating these ambitions into effective practices have proven to be complex. Institutions frequently struggle with issues of standardisation, quality assurance and recognition. This happens particularly when MCs must align with existing qualification frameworks and accreditation systems. Moreover, uncertainties around employer acceptance, learner understanding of their value and the integration of MCs into traditional degree pathways further complicate implementation. As a result, the promise of MCs is often constrained not by a lack of conceptual support, but by the practical, administrative and cultural barriers that accompany their deployment at scale. Moving toward MCs as a new form of educational award, whether as a standalone option or as a complement to established degree programs, will require substantial and carefully coordinated change management across the education and employment micro-learning and MCs ecosystems.

Governments, employers and education providers are currently deeply invested in traditional macro-credential models. This shape the funding structures, the regulatory frameworks, the institutional prestige and the hiring practices. Shifting this landscape will therefore involve not only technical adjustments, such as new standards, quality assurance mechanisms and credit-recognition systems. They will significantly affect cultural and organisational changes too. Stakeholders must build shared trust in the value, rigour and portability of MCs, aligning them with workforce needs and integrate them into existing pathways for learning and career progression. Without sustained collaboration, policy support and incentives that encourage experimentation and adoption, MCs are unlikely to move beyond the margins and fulfil their potential as a meaningful complement to conventional degrees.

Additional work is especially needed with respect to providing:

- **A common definition of MCs** (as discussed by the Five project, WP 2),
- **Consistent descriptions of MCs that apply standard elements** (as proposed and outlined by the Five project, WP 2, 3 and 5), and
- **Establishing the principles for designing, issuing and using MCs** (to be discussed in more detail by the Five project, WP 2, 3, 5, 6, 7 and 8)

Similarly, the costs associated with creating and implementing MC offerings require careful and strategic decision-making. These costs will include curriculum design, instructional labour, technology platforms, assessment and credentialing infrastructure, marketing and ongoing quality assurance. As a result, institutions typically need to establish a clear and sustainable business model that defines pricing structures, target audiences, revenue streams and cost-recovery mechanisms. Such a model helps ensure that MCs are financially viable, still while they are remaining accessible and aligned with institutional goals, industry demand and learner needs.

Indeed, the MC ecosystem is shaped by a diverse constellation of actors, including higher education institutions, VET providers, employers, learners, technology platforms, accreditation bodies and policymakers. The interests of those and their incentives often diverge in significant ways. These misalignments constitute a partial but important explanation for the frequently ambiguous, but still inconsistent muddy implementation of MCs into practices. Educational institutions will prioritise educational rigour, quality assurance and alignment with existing qualification frameworks. On the other hand, employers tend to emphasise speed, flexibility and the immediate applicability of skills and competences to workplace needs. Learners, in turn, often seek affordability, portability and clear signalling value in the labour market. Furthermore, platforms and intermediaries may focus on scalability, market differentiation and revenue models. Policymakers and accrediting bodies add yet another layer, stressing standardisation, comparability and public accountability.

The absence of a shared understanding of purpose and value across these groups leads to tensions in design, delivery and recognition. As a result, MCs are implemented unevenly, with variation in definitions, assessment standards, credit value and recognition across contexts and jurisdictions.





Rather than functioning as a coherent and transparent system, MCs too often emerge as fragmented solutions that reflect negotiated compromises among competing priorities. Consequently, the promise of MCs as flexible, trustworthy and widely recognised learning signals is frequently undermined by the very diversity of interests that drives their development.

Recognition and accreditation of MCs

It may be beneficial for governments to adopt a systematic public policy framework to oversee and regulate MC offerings provided by education and training institutions. Such a framework will help ensure consistency, provide a unitised quality assurance and relevance to labour market needs. It will in addition probably preventing fragmentation and variability across providers. At the same time, public policy should prioritise the establishment of an accessible, transparent and user-friendly system. Such a system must enable potential learners to easily identify, compare and recognise MCs. This system should be designed to serve a diverse range of learners, including working professionals seeking to up-skill or re-skill. It must address recent students graduating while still aiming to enhance their employability and jobseekers looking to improve their qualifications. By aligning regulatory oversight with learner accessibility, public policy can support lifelong and life-wide learning pathways. Those will help strengthen the overall credibility and impact of MCs within the education and employment ecosystem.





In such a diverse and multifaceted landscape, it is unsurprising that a wide range of quality assurance systems have emerged and continues to operate at both national and European levels. These systems reflect the differing institutional traditions, regulatory frameworks and strategic priorities. They are collectively aiming to ensure consistency, accountability and continuous improvement. Their coexistence highlights ongoing efforts to balance local autonomy with broader coordination. This should enable stakeholders to respond to contextual needs while aligning with shared standards and expectations across borders.

A comprehensive understanding of the MC landscape must extend beyond the traditionally cited stakeholders of learners, employers and issuing organisations. They must include quality assurance and regulatory bodies as central actors in the ecosystem. Without the active involvement of regulators, there is a risk of a hidden stratification emerging in the perceived and actual value of MCs. This is one in which employers privately rank or privilege certain offerings. On the other hand, learners are lacking transparent signals of quality and recognition, invest time and resources in credentials that do not yield equivalent labour-market returns. Regulatory oversight and quality assurance frameworks therefore play a critical role in aligning expectations across stakeholders. This will help ensuring comparability, credibility and trust in MCs. It will in addition help mitigating information asymmetries that can disadvantage individual learners.

As the regulatory authorities responsible for overseeing these frameworks, national bodies is expected to play a central role in shaping how MCs are understood, valued and used within the wider educational systems. The formal inclusion of MCs within existing National Qualifications Frameworks, or alternatively the development of dedicated national MCs frameworks, enables regulators to articulate a clear and coherent national vision for these awards. Such an approach provides transparency around the learning pathways that MCs will support. This will include how they align with established qualification levels, the expected volume of learning and their potential role in progression to further study or employment. By clarifying these parameters, regulators can support consistency, portability and trust in MCs among learners, providers, employers and other stakeholders. This will occur while ensuring that these awards complement rather than fragment the national qualifications landscape.

MCs are empowering specialized skills for modern labour markets.

MCs are increasingly present in policy and practice, sometimes being explicitly named, defined and aligned with national qualifications frameworks, quality assurance systems or skills strategies. In these cases, they are treated as a distinct and formally recognised category of learning outcomes, with clear parameters around workload, assessment and portability. At other times, however, MCs are not identified as a new or separate concept, but instead are absorbed into longstanding approaches to small-scale, short-term or special-purpose awards. This includes such as certificates, badges, continuing professional development units, or even modular credits. In these contexts, MCs represent an evolution or re-labelling of existing practices rather than a structural innovation. They are instead reflecting historical traditions of flexible and targeted learning that predate the current terminology.

Concerns over the quality assurance of MCs extend well beyond calls for stronger educational oversight of training and learning activities delivered by MC issuers, or the establishment of closer educator and industry partnerships. They encompass broader questions about the consistency, rigour, transparency and comparability of MCs across providers, sectors and jurisdictions. In particular, there is growing unease about the absence of commonly accepted standards for curriculum design, assessment practices, learner workload and learning outcomes. This makes it challenging and sometimes even difficult for employers, learners and traditional education institutions to judge the true value of a given MC. These concerns are compounded by the rapid proliferation of private platform-based providers operating outside established accreditation frameworks. This is raising doubts about long-term credibility, recognition and transferability. MCs are increasingly influencing hiring, career progression and pathways into formal education. Quality assurance must therefore be understood not merely as a matter of oversight or partnership, but as a systemic challenge. This challenge requires coherent frameworks, shared benchmarks and mechanisms of accountability that can sustain trust in this emerging new credentialing ecosystem.

MCs have emerged as a critical response to soaring demand for increasingly complex and specialized skills and competences. Those are accelerated by the digital transformation of the workplaces and the need for continuous professional development. As industries evolve more rapidly than traditional education pathways can accommodate, learners and employers alike are turning to shorter, targeted credentials. Those will better bridge skills gaps, re-skill workers and support lifelong and life-wide learning. However, the rapid expansion of MCs also necessitates appropriate oversight to ensure their quality, relevance and long-term value. Without clear standards and accountability, the proliferation of offerings risks creating confusion for learners. They will lead to uneven recognition by employers and variability in educational rigour. Effective oversight frameworks will help ensure that MCs are aligned with industry needs. They will demonstrate measurable learning outcomes and maintain credibility within broader education and workforce systems.

The provision of formal credence to MCs plays a critical role in establishing learner confidence. By being recognised, quality-assured and often aligned with established educational or industry standards, MCs reassure learners that the micro-courses or micro-qualification programs to which they are attached meet defined levels of rigour and relevance. This assurance extends beyond the learning experience itself to the certificates issued upon completion, which are perceived as credible, portable and meaningful signals of acquired competences, skills and knowledge. As a result, learners are more willing to invest time, effort and resources in MC programs. They are trusting that these credentials will hold value for further study, professional advancement or workforce recognition.

Employers, in turn, are able to demonstrate and reinforce a meaningful degree of trust in candidates who hold these externally verified certificates. Because such credentials are validated by independent, reputable bodies, they provide employers with reliable assurance of a candidate's competences, skills, knowledge and professional standards. This external verification will help reducing uncertainty in recruitment and selection processes. It will better support more informed hiring decisions and fosters confidence that certified individuals have met clearly defined and consistently applied benchmarks.



Summary with the state of the art for MCs

The rapid emergence of MCs has given rise to a diverse and often fragmented landscape of meanings, interpretations and practices. As institutions, policymakers, employers and learners adopt MCs to address evolving educational and workforce needs, differing understandings and conceptualisations have developed regarding what MCs represent. This includes how they should be designed, delivered and assessed, including the purposes they are intended to serve. These variations are reflected in a wide range of approaches, from short skills-based certifications aligned with industry demands to educational oriented credentials embedded within formal qualification frameworks. While this diversity demonstrates the flexibility and innovative potential of MCs, it has also resulted in inconsistencies in terminology, quality assurance, recognition and portability. It is underscoring the need for greater conceptual clarity and shared frameworks to support their effective implementation and wider acceptance.

Overall, the term MC is used with a degree of ambiguity, as it sometimes will refer to more than one closely related but distinct concept. On the one hand, it may denote a short-term training program, typically designed to develop specific skills or competences within a limited timeframe. On the other hand, the same term is also used to describe the formal certification or credential that is awarded upon the successful completion of such a program.

As a result, an MC can simultaneously encompass both the learning experience itself and the documented recognition of achievement that follows. This is leading to variation in interpretation depending on the context in which the MC term is used.

Given the planned digital nature of MCs to be stored in the emerging European digital wallet, these certificates should not be understood merely as static attestations of achievement. Rather, they function as a distinct vehicle through which rich, structured information about both the learner and the associated education or training programme will be embedded, stored and communicated digitally. This will include details such as learning outcomes, assessment methods, workload, level, issuing institution and verification metadata. This is allowing MCs to convey context, transparency and portability across educational, professional and geographic settings.

In other words, MCs represent a distinctly super national European trend that aims to rethink how micro-learning and professional development are designed, delivered, recognised and certified. Rather than replacing traditional qualifications, they complement existing systems by offering flexible, targeted and transparent ways of validating skills and competences acquired through diverse learning pathways. They are responding to labour-market needs and is supporting lifelong and life-wide learning. They will enhance mobility across borders, whereby MCs reflect a broader European effort to modernise education and training frameworks. This will be done while ensuring quality, comparability and trust across institutions and sectors.

It must be anticipated that multiple national and regional interpretations of this concept will continue to exist alongside one another. These differing perspectives are shaped by distinct legal traditions, cultural values, historical experiences and policy priorities. Rather than converging into a single, uniform understanding, these interpretations are likely to evolve in parallel, reflecting the diversity of contexts in which the MC concept is going to be applied. Such coexistence should not be viewed as a weakness, but as an inherent and enduring feature of an international or cross-jurisdictional framework. This is requiring ongoing dialogue, mutual recognition and adaptive cooperation among the various actors involved.



MCs are a flexible response to evolving skills needs in a complex world.

MC offerings are available in a wide variety of forms, each intentionally designed to accommodate different types of learners, goals and circumstances. These formats range from short, skills focused courses and modular online micro-learning programs, to industry aligned certifications and assessments based up on competence. Some MCs emphasize flexibility and self-paced learning to support working professionals, while others are structured around guided instruction, collaborative projects or real-world applications for learners seeking hands-on work-based experiences. By offering multiple formats, MCs enable learners to engage with targeted education in ways that align with their schedules, career stages, learning preferences and specific skill-development needs.

Across the various formats through which MCs are offered, these awards generally share a set of common characteristics. While the specific design, delivery and assessment methods may differ, MCs are typically defined by a combination of core features that distinguish them from traditional macro-qualifications. These features often include a focused scope aligned to specific skills or competences. They will intend to use shorter duration and flexible learning pathways applying dedicated short learning episodes, in combination with clearly articulated learning outcomes and assessment processes that verify demonstrated achievement. In addition, MCs are commonly designed to be stackable or portable, allowing learners to accumulate and apply them across educational, professional or industry contexts. Together, these shared features provide a unifying framework that underpins MC across diverse formats and providers.





In other words, MCs can be understood as formally structured learning experiences that are assessed against clearly defined institutional or national standards. This is ensuring their quality, consistency and credibility. They are designed to provide targeted training in a coherent and well-defined set of skills or competences, allowing learners to develop capabilities that are directly applicable and measurable. Importantly, MCs are intended to support stackability and progression, meaning they can contribute to larger micro-qualifications. They could offer exemptions, or be mapped to credit-bearing courses through established skills-recognition frameworks. A strong emphasis is placed on industry recognition, ensuring that the skills gained are relevant, valued and responsive to current workforce needs. Collectively, these characteristics position MCs as an integral component of a national qualifications or skills framework. They are supporting lifelong and life-wide learning practices, workforce development and flexible education pathways.

It should be noted that the precise configuration and emphasis of these five key elements can vary considerably. Such variation depends on the specific nature, scope and objectives of the education and training award. They will depend on the strategic orientation, regulatory context and institutional priorities of the issuing organisation. Consequently, the common structural features will be identifiable across different awards. However, their interpretation, application and relative weighting are shaped by the educational framework, professional context and intended outcomes associated with each qualification.





Building on the above, MCs typically serve one of three interrelated purposes:

- They function as an educational entry point, enabling learners to access further study by developing foundational knowledge, academic readiness, or subject-specific skills, often in a flexible and modular format.
- MCs support labour market entry by equipping individuals with targeted, job-relevant competences that align with employer needs, thereby enhancing employability, facilitating career transitions, or supporting rapid up-skilling for emerging roles.
- They play a key role in professional learning and development, allowing those already in the workforce to update, deepen or diversify their skills. This should be done in response to evolving industry standards, technological change and lifelong and life-wide learning demands.

It is in this latter context that the true value of MCs becomes most evident. Unlike traditional qualifications that are typically confined to specific stages of formal education, MCs will be undertaken at multiple entry points across an individual learner's educational and professional journey. They provide flexible pathways for learners seeking entry into further formal studies, while also serving as targeted mechanisms for up-skilling or re-skilling in response to evolving professional demands. As such, MCs support lifelong and life-wide learning by enabling individuals to adapt their knowledge and competences in a timely and responsive manner. This is aligning personal development goals with the changing needs of industries and workplaces. As a result, MCs may take different forms depending on their purpose and structure. They can function as:

- Standalone units of learning, designed to develop or validate a specific skill or competence independently, without necessarily contributing to a larger qualifications.

Alternatively, MCs may be offered as credentials, which can be either credit-bearing, allowing learners to apply them toward a formal micro-qualification degree, or non-credit-bearing. The later is serving primarily to recognise professional development, up-skilling, or industry specific expertise without contributing to an educational award.

One skill and one proof. Impact through recognized skills and competences.

Holders of MCs may use them in a variety of complementary ways. An MC can be presented as formal recognition of newly acquired or enhanced skills, competences, or other forms of prior learning by providing evidence of targeted skills and competence achievement in a specific area. At the same time, MCs may be accumulated, combined or stacked and applied toward the completion of larger, more comprehensive micro-qualification programs of education and training. This may include certificates, diplomas or degrees. In this way, MCs function both as standalone attestations of learning and as flexible building blocks within broader micro-learning pathways.

The different purposes of MCs are summarised as a unified and interrelated set of objectives that respond to the evolving demands of learners, employers and societies.

- MCs enhance personalised and lifelong learning by enabling individuals to pursue flexible, modular learning pathways that will be tailored to their specific needs, interests and career stages. They support continuous up-skilling and re-skilling across the lifespan, allowing learners to update their knowledge and skills in response to changing professional and personal contexts without committing to lengthy formal programs.
- MCs facilitate digital transformation by leveraging digital platforms, tools and pedagogies to deliver learning that is accessible, scalable and responsive to technological change. They promote digital literacy and competence. They are in addition encouraging institutions and organisations to innovate in curriculum design, assessment and credentialing practices, thus aligning education more closely with the realities of a digitally driven economy.
- MCs will contribute to the development of durable soft skills, such as communication, collaboration, adaptability, problem-solving and critical thinking. Those remain relevant across different roles and sectors. By focusing on applied, competence focused learning, MCs will help learners acquire transferable skills that enhance employability and support long-term career resilience in an increasingly dynamic labour market.

To date, comparatively little scholarly or policy-focused attention has been directed toward the accreditation and quality assurance mechanisms governing this type of award. Existing discussions tend to be fragmented or peripheral, often treating accreditation as a secondary consideration rather than as a central component of program design and credibility. As a result, there remains a limited understanding of how standards are established, monitored and enforced. This includes how these processes affect institutional accountability, learner outcomes and stakeholder trust. This gap highlights the need for more systematic examination of accreditation and quality assurance frameworks to ensure the rigour, consistency and long-term legitimacy of such awards.

Given their rapid emergence in response to evolving educational and industrial demands, the widespread proliferation of MCs calls for a renewed and sustained commitment to rigorous quality control and systematic monitoring. When MCs become increasingly embedded within formal education systems and workforce development pathways, ensuring their credibility, consistency and relevance is essential. Robust quality assurance mechanisms are needed to safeguard academic standards, align learning outcomes with industry needs and thus maintain stakeholder trust. Without coordinated oversight and clear benchmarks, the expansion of MCs risks fragmentation and uneven quality. This will potentially be undermining their value for learners, employers and institutions alike.