

GUIDE TO DESIGN, ISSUE AND RECOGNISE MICRO-CREDENTIALS

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1 Introduction

This guide aims to accelerate the flexibility and responsiveness of learning systems within the European Training Foundation's partner countries, by providing guidance on the design, issue and recognition of micro-credentials. It has been prepared as part of ETF's thematic support for the qualifications systems of ETF partner countries including Türkiye, Algeria, Egypt, Libya, Morocco, Tunisia and countries in the Western Balkans, the Eastern Partnership, the Southern and Eastern Mediterranean, as well as Central Asia.

It is based on a wide consultation with stakeholders in ETF partner countries, the European Union and an in-depth analysis of selected international practices. The guide was prepared by a team at the Knowledge Innovation Centre, with Anthony F. Camilleri leading and supported by Martina Darmanin, Katja Kamšek and Jasmina Poličnik, following a participative process in which 140 experts and stakeholders were consulted. We are grateful for the input received via survey responses and expert panels. From ETF, Arjen Deij and Anatolii Garmash contributed to the guide and coordinated the project.

Tailored recommendations have been co-created with practitioners and other experts, with the intention of being thus co-owned and finally endorsed by them as well as to facilitate their use beyond the ETF.

This guide is targeted towards any persons in a position to develop, manage and provide micro-credentials¹ and/or facilitate the recognition of micro-credentials at provider, system or regional levels. This includes decision makers within learning institutions (such as course designers, programme directors, admission officers, faculty boards and academic directors), staff of recognition and quality assurance authorities, policy makers in the learning sector, as well as sectoral bodies, professional associations, chambers and employers who are engaged in the training and development of personnel. In this respect, this guide addresses both accredited learning providers and awarding bodies as well as alternative providers (such as, but not only limited to non-formal and informal learning providers²).

This document is the first attempt to provide universal advice on developing, issuing and recognising micro-credentials. Now it's important to put this guide to the test and get feedback from users so that the next version be better. Please, send your comments, suggestions and questions to Anatolii.Garmash@etf.europa.eu.

1.1 The Rise of Micro-Credentials

Rather than a new phenomenon, **the provision and recognition of small periods of learning has existed for years.** Examples of micro-credentials range from open-water diving certifications provided by tourism-focused dive-centres to massive online courses on Artificial Intelligence provided by higher education institutions.

While there are no comprehensive statistics on the implementation of micro-credentials globally, tracking the growth of massive open online courses (MOOCs) and corporate learning provides a proxy for the evolution of the phenomenon. Recent years show an inexorable growth in MOOCs (shown in Figure 1), starting well before the COVID-19 pandemic, and only being accelerated by it. 2021 saw 220 million users take courses with the major course providers, and even more courses launched (Shah, 2021).

¹ for the purpose of these guidelines, provider refers to any public or private learning organisation or institution, assessment centre and/or awarding bodies providing and awarding micro-credentials and thus these terms are used interchangeably throughout the text.

² while formal learning takes place in an organised and structured environment, and typically leads to the award of a qualification, non-formal learning can take place through planned activities (in terms of learning objectives, learning time) where some form of learning support is present (e.g. student-teacher relationships). Examples of non-formal learning may include training activities organised by companies or civil society organisations. On the other hand, informal learning is not organised or structured in terms of objectives, time or learning support as it can result unintentionally from daily activities related to work, family or leisure (Council of the EU, 2012).

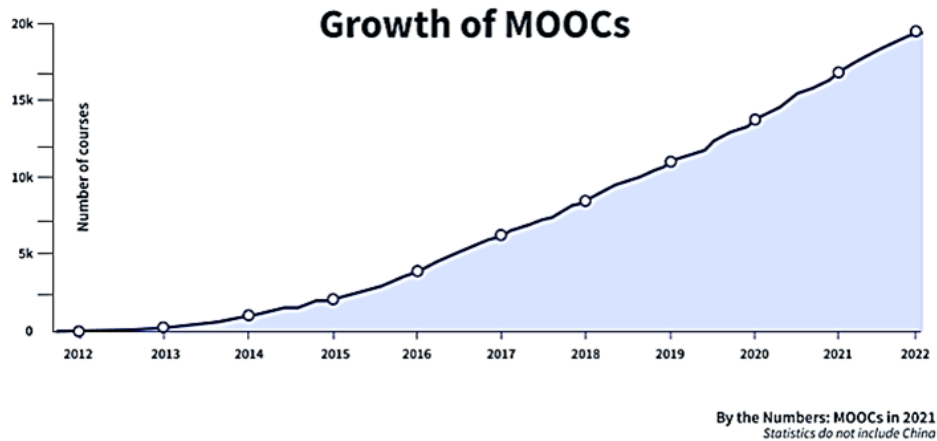


Figure 1: The growth of MOOCs measured over a decade reaching to a peak of 19.4K MOOCs in December 2021 by approximately 950 universities worldwide. Source: Shah (2021).

An overview of the major global digital learning platforms for micro-credentials (provided in Table 1) indicates that **they already represent a major route of learning, with global learners exceeding 100 million annually** and the scale of the operation of many micro-credential providers exceeding the reach of many national educational systems.

Table 1: The reach and type of micro-credentials provided by the world's major EdTech platforms.

Platform	Registered Learners	Types of Micro-Credentials (as of 2022)
Coursera	97 million (as of 2021)	Specialisation, MasterTrack, Professional Certificate
edX	42 million (as of 2021)	XSeries, MicroBachelors, MicroMasters, Professional Certificate, Professional Education
Udacity	11.5 million (as of 2019)	Nanodegree
Future Learn	17 million (as of 2021)	Program, ExpertTrack, Microcredential
LinkedIn Learning	17 million (as of 2020)	Path

Source: Adapted from Cirlan and Loukkola (2020) and Shorgov (2020).

1.2 Defining Micro-Credentials

The European Union (EU) defines a micro-credential as:

*the **record of the learning outcomes** that a learner has acquired following a **small** volume of learning. These learning outcomes will have been **assessed** against **transparent** and clearly defined criteria. Learning experiences leading to micro-credentials are designed to provide the learner with specific knowledge, skills and competences that respond to societal, personal, cultural or labour market needs. Micro-credentials are **owned by the learner**, can be shared and are **portable**. They may be **standalone or combined** into larger credentials. They are **underpinned by quality assurance** following agreed standards in the relevant sector or area of activity.*

Source: Council of the EU (2022).

The term micro-credential is not universally agreed upon, with tens of definitions used globally. Further examples of varied nomenclature used by providers of micro-credentials include Verified Certificates, Digital Badges, “alternative credentials”, “awards”, “micro-certifications”, “micro-qualifications”, “micro-degrees”, modules, units (Camilleri and Hudak, 2018).

This report aligns with the EU’s definition, which stands out by **requiring that micro-credentials are “underpinned” by quality assurance (see Chapter 3), always based on learning outcomes (see Chapter 4) and assessment (see Chapter 6)**. The focus on assessment of learning outcomes ensures that micro-credentials represent not only learning experiences but are linked explicitly with skills obtained by learners.

This definition brings the idea of micro-credentials close to that of qualifications, which the European Union (EU) refers to as “*the formal outcome of an assessment and validation process by a competent authority and typically take the form of documents such as certificates or diplomas. They determine that an individual has achieved learning outcomes to given standards. Those learning outcomes may be achieved through a variety of paths in formal, non-formal or informal settings, whether in national or international contexts. Information on learning outcomes should be easily accessible and transparent*” (Council of the EU, 2017). What distinguishes micro-credentials in this context, is that qualifications are part of larger formal systems in a country, they belong to a national qualifications system. Micro-credentials are more flexible as they require smaller workloads, are designed in a more bottom-up way than qualifications but can be recognised as part of larger formal systems as well.

The discussion and literature on micro-credentials tend to encompass the entirety of a lifecycle of a micro-credential as depicted in Figure 2.

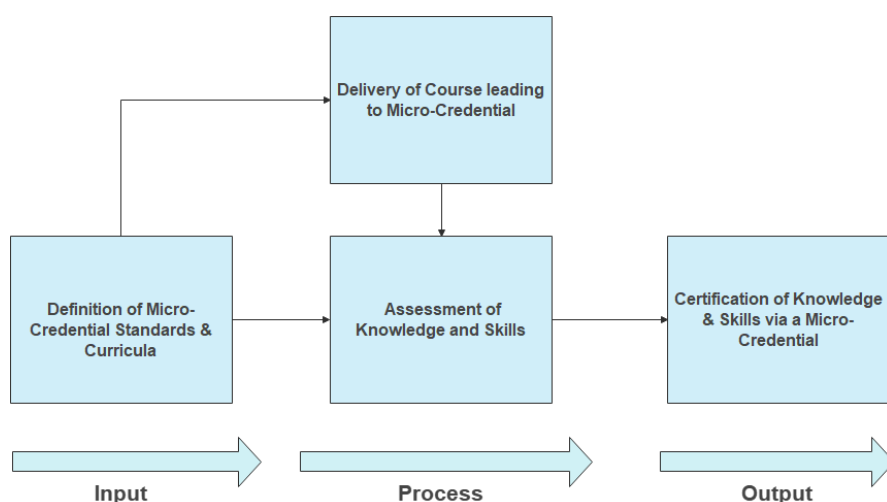


Figure 2: Processes encompassed by the EU micro-credential definition.

This guide refers to all of these processes under the term ‘micro-credential’ unless otherwise specified. Furthermore, a rich ecosystem of micro-credential formats exists within the boundaries of the EU definition, an example of a typology in the context of higher education is proposed in Table 2.

Table 2: Three clusters of micro-credentials

Skill Credential	Learning Unit	Short Learning Programmes
1-25 hours of learning	25-150 hours of learning	150-1500 hours of learning Typically consists of more than one learning unit
Awarded within the context of non-formal learning	Awarded within the context of formal learning and include options for assessment	Awarded within the context of formal learning and include options for assessment
Not explicitly quality assured by external QA	Often explicitly quality assured by external QA	Always explicitly quality assured by external QA
Linked to the acquisition of a specific competence	Linked to the acquisition of a set of learning outcomes	Linked to specific career progression goals
		Can be mapped to qualification frameworks, either as ‘partial qualifications’ or as a special category of micro-qualifications

Source: Adapted from Camilleri and Hudak (2018).

The vast and rapid proliferation of micro-credentials in all different shapes, sizes, names, intended durations, assessment methods and delivery modes makes it difficult for these credentials to be recognised for education and training or employment purposes. **This challenge becomes particularly conspicuous when micro-credentials lack standards in describing learning outcomes, skills and competencies as well as/or transparency in assessment methods and criteria which would help individuals understand the quality and value of the micro-learning experience.**

This guide has thus been created to help address the challenges linked to micro-credential provision and recognition, taking into account, where possible, the variety of issues different providers may face with regulatory frameworks, quality standards, transparency and interoperability.

2 Executive Summary: A Micro-Credential Design Checklist

This guide provides practical advice for the design of micro-credentials, using the design principles suggested by **Annex II of the EU Council Recommendation on Micro-Credentials³**. In doing so this guide seeks to improve the link between validation and certification of prior learning, adapt fit-for-purpose quality assurance of micro-credentials for different types of providers, and facilitate inclusion of smaller units of learning into qualifications frameworks or systems, thus supporting the recognition of micro-credentials for education and training (E&T) and/or employment purposes.

The checklist in Table 3 below summarises the **main recommendations for micro-credential providers to consider when implementing micro-credentials**. It also provides implementation guidance which may be applied as relevant to your situation as a formal, non-formal or informal learning provider, awarding body, commercial organisation or non-profit organisation.

Table 3: Micro-Credential Design Checklist

Dimension	Design Recommendation	Guidance on Implementation
Quality Assurance (Ch.3)	<ul style="list-style-type: none"> ✓ Incorporate micro-credentials into your institutional quality assurance system. 	<ul style="list-style-type: none"> ■ Use the same internal quality evaluation assurance processes for micro-credentials as for other programmes and/or qualifications (awards). ■ Collect feedback from learners on their satisfaction with micro-credentials. ■ Collect feedback from external stakeholders (such as employers or their representative organisations, among others) on micro-credentials. ■ Collect information and feedback on labour market integration and career pathways after completion of micro-credentials. ■ As part of evaluation, assess how to improve the design and the provision of micro-credentials based on the agreed learning outcomes as well as how to improve the process of certification. ■ Review the course/s leading to the micro-credential periodically, at minimum annually, and publish a list of changes which have been made since the last edition.
	<ul style="list-style-type: none"> ✓ Externally review the quality of your institution. 	<ul style="list-style-type: none"> ■ Ensure regular reviews by an external quality assurance body which would review the quality of relevant processes carried out by the provider. This may include a national quality assurance agency, a standards body such as the International Organization for Standardization (ISO) or other sectoral or peer organisations.
	<ul style="list-style-type: none"> ✓ Publish methods and results of internal and external quality assurance. 	<ul style="list-style-type: none"> ■ Publish information on how the design, assessment and certification of micro-credentials is done, together with the results of internal and external quality assurance.
Transparency (Ch.4.1)	<ul style="list-style-type: none"> ✓ Publish the learning outcomes, notional workload and, where 	<ul style="list-style-type: none"> ■ Design teaching, learning and assessment criteria and methods according to defined learning outcomes and document the link.

³ [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627\(02\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627(02)) as of 10 December 2022.

	<p>relevant, credit points of micro-credentials.</p>	<ul style="list-style-type: none"> ■ Integrate micro-credentials into an existing credit system which complies, where possible, to the principles in Annex V to the European Qualifications Framework (EQF). ■ Publish information on micro-credentials using the standard model (described in Annex I of the EU Council Recommendation). Reference learning outcomes to formal taxonomies such as skill or competence frameworks (e.g. ESCO).
	<p>✓ Integrate micro-credentials into national and regional qualifications frameworks.</p>	<ul style="list-style-type: none"> ■ Classify micro-credentials by National Qualifications Framework (NQF) level, using the level descriptors, based on learning outcomes.
<p>Portability (Ch.4.2)</p>	<p>✓ Issue micro-credentials as verifiable digital credentials.</p>	<ul style="list-style-type: none"> ■ Issue micro-credentials according to a structured data format for credentials (such as the European Learning Model), to ensure interoperability. ■ Digitally sign micro-credentials to ensure that their authenticity can be checked by a verifier. ■ Ensure learners own and control their own micro-credentials.
<p>Relevance (Ch.5)</p>	<p>✓ Design micro-credentials which address identified needs of specific target groups of learners.</p>	<ul style="list-style-type: none"> ■ Consult potential learners, employers, the staff of your institution and/or other stakeholders (e.g. alumni and trade unions) to identify the needs of your target groups and the added-value micro-credentials could bring to all groups. ■ Ensure your micro-credential design does not exclude members of your target group from accessing, participating in and completing micro-credentials nor from improving them. ■ Evaluate micro-credentials with a representative sample of your target group before launching, after launching (with enrolled learners), as well as after their completion of the course.
	<p>✓ Collaborate actively with external stakeholders, including employers and other labour market groups, policymakers and decision makers.</p>	<ul style="list-style-type: none"> ■ Link micro-credentials to identified skill needs, such as those in occupational standards or labour market intelligence and consult relevant stakeholders (sectors, professionals, employers). ■ Co-design and co-develop micro-credentials within the context of continuing professional development (CPD) schemes or active labour market measures. ■ Work with decision and policymakers to improve (a) transparency of micro-credentials, (b) use of verifiable digital credential systems as well as (c) micro-credential recognition for learning and employment.
	<p>✓ Create or develop a micro-credentialing strategy for your institution.</p>	<ul style="list-style-type: none"> ■ Evaluate whether governance structures and policies are adequate for dealing with micro-credentials at scale. ■ Ensure appropriate processes and procedures, including in regard to digital technologies. ■ Establish an appropriate business model to sustain micro-credentialing including through cost-sharing models. ■ Mitigate risks and practice continuance improvement throughout all stages of the micro-credentialing process. ■ Consider:

		<ul style="list-style-type: none"> Integrating micro-credentials into existing operational and supportive practices. Measures to engage learners and other stakeholders in the improvement of micro-credentialing strategies.
Valid Assessment (Ch.6)	<ul style="list-style-type: none"> Issue micro-credentials at the end of a process of assessment, regardless whether learning takes place in formal, informal and non-formal learning contexts. 	<ul style="list-style-type: none"> Choose the most appropriate form/s of assessment to evaluate tasks with which learners can best demonstrate attaining the agreed learning outcomes. Ensure assessment criteria and methods are quality assured, documented and published on the relevant platforms where the micro-credential offers are promoted. Implement robust systems to verify the identity of learners subject to assessment while assuring learners' rights to privacy. Include information on assessment processes and methods together with grading schemes in micro-credential certificates issued to learners. Ensure the learning outcomes of the micro-credentials can be assessed independently from the learning process -- a learner should have the possibility of earning a micro-credential without being required to attend the course/s.
Learning Pathways (Ch.7)	<ul style="list-style-type: none"> Design micro-credentials to support flexible learning pathways, including the possibility to validate, recognise and 'stack' micro-credentials from across different systems. 	<ul style="list-style-type: none"> Develop and publish policies actively supporting: <ul style="list-style-type: none"> The recognition of micro-credentials issued by other providers, including through recognition of prior learning. Procedures for the validation of non-formal and informal learning so as to enable the award of micro-credentials on the basis of assessment of learning outcomes gained outside formal learning contexts.
Recognition (Ch.8)	<ul style="list-style-type: none"> Enable multiple, feasible routes for micro-credential recognition 	<ul style="list-style-type: none"> Establish inter-provider Credit Exchange Agreements between networks of micro-credential providers. Implement the options of 'free electives' in programmes which learners can obtain using micro-credentials from other providers. Facilitate recognition via the Recognition of Prior Learning as the 'fallback' route when no other recognition route is available. Apply the principles of International Conventions such as the Global Convention on the Recognition of Qualifications Concerning Higher Education (GRC). Where the provider is a formal learning provider, assessment centre or awarding body: <ul style="list-style-type: none"> Seek collaboration with private or public sector entities (which may include professional bodies, companies and other enterprises) to co-design and offer micro-credentials which may be automatically recognised for employment and education purposes. Where the provider is a non-formal or informal learning provider (such as training or work-based learning centres, professional bodies, companies and other enterprises): <ul style="list-style-type: none"> Tailor the recommendations in this guide to design and offer fit for purpose interoperable micro-credentials.

Learner Centricity (Ch.9)	<ul style="list-style-type: none"> ✓ Give learners the opportunity to follow micro-credentials in different ways, different times and different places. 	<ul style="list-style-type: none"> ■ Micro-credentials, where possible <ul style="list-style-type: none"> • Are open access, or otherwise affordable. • Allow for self-paced small periods of learners which can be personalised to the learners' interest and the number of hours of study planned by the learner around work or caring responsibilities. • Allow for the possibility of a blended learning format where online learning may be combined with on-site practical or work-based learning.
	<ul style="list-style-type: none"> ✓ Recognise and supplement learners' resources to take agency to improve micro-credentials. 	<ul style="list-style-type: none"> ■ Award credit or allocate time during the programme for learner engagement. ■ Allocate time for learners to debate the improvement of micro-learning during the course/programme itself.
	<ul style="list-style-type: none"> ✓ Protect learners' possibilities to autonomously take agency in improving micro-credentials. 	<ul style="list-style-type: none"> ■ Establish or develop policy prescribing the right of learners to engage in the improvement of micro-credentials such as through seats for learner elected representatives in your institution's governance structures. ■ Sustain funding streams for learners' engagement activities.
	<ul style="list-style-type: none"> ✓ Encourage learners' willingness to take agency in improving micro-credentials regardless of whether the learner would benefit directly from it. 	<ul style="list-style-type: none"> ■ Engage learners as equal partners within the institution's community - thus supporting the development of a sense of belonging. ■ Engage alumni in debates and capacity building activities.
Information and Guidance (Ch.10)	<ul style="list-style-type: none"> ✓ Ensure accessibility and effective outreach of information on micro-credential offers. 	<ul style="list-style-type: none"> ■ Ensure that your micro-credential offer is accessible via multiple online catalogues and services.
	<ul style="list-style-type: none"> ✓ Guide learners and promote lifelong-learning through micro-credentials. 	<ul style="list-style-type: none"> ■ Make clear what can be done with the micro-credential, including for further learning, work or other purposes. ■ Assist learners in understanding the recognition of prior learning and thus the possibility for combining micro-credentials with other learning, life and employment experiences to reach their personal goals. ■ Expose learners to interdisciplinary topics. ■ Integrate career guiding elements into the delivery of micro-credentials which also focus on industry-specific skills.

3 Quality of Micro-Credentials

[Quality Assurance Processes should be] fit for purpose, clearly documented and accessible and meet the needs and expectations of learners and stakeholders.

Source: Council of the EU (2022).

This chapter recommends the integration of fit for purpose internal and external quality assurance processes to providers' micro-credentialing practices. Quality assurance processes apply to the **delivery of courses** leading to micro-credentials (where applicable), **assessment and certification**.

At the heart of quality assurance processes is the requirement to collect feedback from actors on the micro-credential demand side, such as learners and employers. This can enhance the quality (and reputation) of a provider by enhancing, among others, the quality (and reputation) of the micro-credentials it issues. In essence, **quality assurance is relevant to ensure that learners pursuing a micro-credential can avail themselves of high-quality learning opportunities which can also be recognised for education and training or employment purposes.**

3.1 Implement External Quality Assurance of Micro-Credential Providers

While quality assurance (QA) approaches may differ per country, the EU Council Recommendation indicates that, **as a minimum, “external QA is based primarily on the assessment of providers (rather than individual courses) and the effectiveness of their internal QA procedures.”**

A provider may choose (or be required) to become externally quality assured via several pathways including:

- Accreditation or licencing procedures, whereby an external quality assurance procedure must be undergone as part of a regulatory requirement, for a micro-credential to be allowed to be offered within a jurisdiction.
- Professional and Employer certifications – business membership organisations, business membership organisations, groups of employers or large employers will create lists of ‘approved’ providers or courses for professional development.
- External Quality Assurance certification schemes by standardisation bodies such as ISO 21001 – Educational Organisation Management Systems or ISO 17024 – Conformity assessment – General requirements for bodies operating certification of persons or ISO 17024 – General requirements for bodies operating certification of persons.
- Platform certification schemes – whereby a massive open online course (MOOC) platform (or other online platform) conducts its own quality assessment of courses before allowing them to be offered via the platform.

A comprehensive external quality approach combines self-assessment, external review and processes for improvement. Standards which external QA reviews should consider, based on the Council of the EU Recommendation (2017), include:

- the **design** of micro-credentials and application of the **learning outcomes** approach.

- the **process of certification** and whether **learner assessment** is valid and reliable, according to agreed and transparent learning outcomes-based standards.
- quality assurance processes (for e.g. internal quality assurance) consist of **feedback mechanisms** and procedures for continuous improvement of micro-credentials and are based on clear and measurable objectives, standards and guidelines.
- **involvement of all relevant stakeholders** at all stages of assuring and improving quality of micro-credentials.
- the **regularity of evaluations** associating self-assessment and external review.
- whether QA is **integral** to internal management and supported by the appropriate resources.
- the **electronic accessibility** of evaluation results.

The essential principle is that micro-credential providers' internal QA system needs to be evaluated externally, ideally by an entity independent from the organisation running the QA system.

3.2 Implement Internal Quality Assurance of Micro-Credentials

A risk-based approach to quality assurance of micro-credentials recognizes that the stakes and potential consequences of participating in a smaller, more focused learning experience are different from those associated with a full 3-year university program. As such, the quality assurance methods for micro-credentials should be tailored to the unique characteristics and risks associated with these smaller credentials.

Micro-credentials require significantly less time to complete than a full 3-year university program. Consequently, the opportunity cost and potential lost time for a student participating in a micro-credential are lower. Similarly, since they are less expensive (for individuals or governments) than traditional degree programs, the financial risk is also lower. Micro-credentials are also often pursued alongside other educational or professional commitments, minimizing disruptions to a student's life and reducing the risk of having to leave a job or relocate.

Given these factors, **quality assurance methods for micro-credentials should be adapted to reflect the lower risk profile and unique characteristics of these programs.** Quality assurance methods may emphasize the direct relevance and applicability of the program to the specific skills or competencies being targeted. This might include a more targeted assessment of course content, instructional methods, and learning outcomes. As micro-credentials often cater to specific industry needs, quality assurance should prioritize ensuring that these programs align with current industry standards and practices.

On the other hand, practices such as using large multi-disciplinary programme committees to evaluate quality, doing extensive and lengthy consultations for years before launching a programme or running internal programme level reviews by evaluation teams may not be necessary given the specificities of micro-credentials. A risk-based approach to quality assurance for micro-credentials acknowledges the unique characteristics and lower risk profile of these programs compared to traditional degree programs. **Adapting quality assurance methods to account for these differences can help ensure that micro-credentials remain relevant, effective, and responsive to the needs of both learners and industry stakeholders.**

According to the EU Council Recommendation (2022), providers should ensure that their internal QA procedures review:

- The **overall quality** of the micro-credential itself, based on the quality standards referred to in Chapter 3.1. including Annexe IV of the EQF, the European Standards and Guidelines for Higher Education, and the European Quality Assurance Framework for VET.
- The **quality of the course**, where applicable, leading to the micro-credential.
- **Learners' feedback** on the learning experience leading to the micro-credential.
- **Peers' feedback**, including other providers and stakeholders, on the learning experience leading to the micro-credential.

When gathering learners' feedback on the learning experience, providers should enable **learners to be involved as equal partners in the internal QA process** (see also Chapter 9). Taking the responsibility to co-own the improvement of the learning experience is essential for learners to develop collaborative skills and competencies which are necessary both in the labour market and society in general.

Beyond giving feedback only through surveys, learners may take on more meaningful roles when they participate in internal governing and quality assurance structures (Klemenčič, 2018). Their involvement e.g. in designing, communicating, administering and improving quality improvement processes further legitimises the quality claims made by the micro-credential provider. The meaningful and non-tokenistic participation of learners in such structures should be actively endorsed from the view that learners are not only there to listen and succeed in their assessments, but that they are key players to improving micro-credentials.

A commonly used model for the evaluation of learning is the Kirkpatrick model. Developed in the 1950s it is still valid today and applies completely to micro-credentials. The model suggests implementing evaluation at four levels, summarised in Table 4.

Table 4: Kirkpatrick model of evaluating training.

Level	Evaluation Target	Evaluation Period	Evaluation Methods
1 - Reaction	Participants' immediate reactions to the learning program – satisfaction, engagement and perceived relevance of the learning.	During the course or immediately after.	Post-learning surveys, questionnaires and informal discussions.
2 - Learning	Participants' acquisition of the intended knowledge, skills, and attitudes from the learning program	At the end of the course.	Assessment tools including tests, quizzes, examinations, demonstrations etc. (see Chapter 6).
3 – Behaviour	Participants' application of their newly acquired knowledge and skills in their work or daily life.	Weeks to months after the end of the course.	Interviews with students or their tutors, or employers to review performance data.
4 – Results	Overall impact of the learning programme on its intended target group or audience.	Months after course (typically 12-24).	Analysis of key performance indicators (KPIs), financial data, or other organisational metrics.

Source: Content adapted from Kirkpatrick and Kirkpatrick (2016).

Another benefit of learner involvement in internal governance and quality assurance structures is that when learners are representative of the learner body (e.g. they are elected by learners to participate in such structures), the quality processes become thus more inclusive and accessible to all learners as

representatives would be accountable to advocate in the best interests of learners and to report back on the results of their involvement. **By facilitating the ability of learners to participate in quality assurance processes accountably, micro-credential providers are enabling a completed feedback loop where the results of learners' feedback can be acted and followed-up on by their representatives** (Klemenčič, 2018).

3.3 Publish Quality Data

Given that there are thousands of micro-credential providers globally, offering tens of thousands of micro-credentials, and that nearly all of these are easily accessible to learners via online platforms, it becomes nearly impossible for a verifier to recognise these micro-credentials on the basis of reputation alone. Thus, **publication of information associated with the quality of a micro-credential becomes essential to build trust for the recognition of micro-credentials**. Quality-related information includes but may not only be limited to information on providers' QA procedures, evaluation results, reputational indicators, procedures for staff evaluations along with learners' ratings and feedback on the micro-credentials.

Publishing quality data requires a provider to use multiple interlocking techniques:

- Publication of their quality assurance **policy** on their website.
- Including a **summary** of quality procedures applied to the course and assessment in the micro-credential certificate awarded to a student.
- Publishing the **results of external quality assurance** (endorsement) on their website, together with the results of those evaluations in full.
- Publishing the **results of student and stakeholder evaluations** on the websites.
- Ensuring that online course catalogues that rate or review courses include the micro-credential in their **rankings, assessment and/or ratings**.

4 Transparency and Portability of Micro-Credentials

4.1 Transparency of Micro-Credentials

Publishing information on the micro-credentials' design and quality using standards for transparency as recommended in this chapter can facilitate a fair and quick process of recognising the micro-credential for education, training or employment purposes. **Recognition is a three-way transaction involving an issuing organisation, the learner and a recognising organisation (such as an employer or E&T organisation). Ensuring transparency of the micro-credential is essential to enable the trust that allows such a transaction to take place.**

The EU recommends that “*Micro-credentials are measurable, comparable and understandable, with clear information on learning outcomes, workload, content, level, and the learning offer, as relevant*” (Council of the EU, 2022).

4.1.1 Describe Micro-Credentials in a Standardised Format

Annex I of the EU Council Recommendation (2022) suggests a list of mandatory and optional elements which should be used to describe micro-credentials. These are listed in Table 5.

Table 5: Mandatory and Optional Elements to describe a micro-credential.

Mandatory elements	Optional elements
<ul style="list-style-type: none">▪ Identification of the learner▪ Title of the micro-credential▪ Country(ies)/Region(s) of the issuer▪ Awarding body(ies)▪ Date of issuing▪ Learning outcomes▪ Notional workload needed to achieve the learning outcomes (in ECTS credits, where possible)▪ Level (and cycle, if applicable) of the learning experience leading to the micro-credential (EQF, QF-EHEA), if applicable▪ Type of assessment▪ Form of participation in the learning activity▪ Type of quality assurance used to underpin the micro-credential	<ul style="list-style-type: none">▪ Prerequisites needed to enrol in the learning activity▪ Supervision and identity verification during assessment (unsupervised with no identity verification, supervised with no identity verification, supervised online, or onsite with identity verification)▪ Grade achieved▪ Integration/stackability options (stand-alone, independent microcredential/integrated, stackable towards another credential)▪ Further information

Source: Council of the EU (2022).

Adopting such a standard enhances the comparability of micro-credentials. Additionally, **by reducing the complexity which arises from needing to deal with micro-credentials in tens or even hundreds of different formats, it significantly simplifies the ability of all parties to recognise said micro-credentials.**

4.1.2 Publish Learning Outcomes, Notional Workload and Credit/s

Learning outcomes are the learning goals defined from the learner's perspective (what the learner knows, understands and is able to do after the completion of the learning process) and

not the teacher's or mentor's perspective (teaching subjects). This distinction is vital because the learning outcomes are not just statements. The proper implementation of learning outcomes implies that teaching and learning methods should be meaningfully chosen for the learner to develop the agreed learning outcomes. Similarly, the assessment of learners' achievements should adequately evaluate whether a learner has developed an agreed learning outcome and not some other outcomes (Kennedy, 2007).

Workload is the estimated time invested by learners to achieve the stated learning outcomes. Workload can be reported a simple function of time, e.g. in hours, or using a compound indicator such as credits embedded within credit systems.

Examples of the expression of workload in credits include The European Credit Transfer and Accumulation System⁴ (ECTS) and the European Credit System for Vocational Education and Training⁵ (ECVET). The ECTS Users' Guide defines ECTS credits as "*the volume of learning based on the defined learning outcomes and their associated workload*". For illustration, "*60 ECTS credits are allocated to the learning outcomes and associated workload of a full-time academic year or its equivalent*" and using this analogy "*one credit corresponds to 25 to 30 hours of work*" (European Commission, 2015). An application of the ECTS is demonstrated by the partners of the European MOOC Consortium and fellow micro-credential providers which abide to the Common Micro-Credential Framework (CMF). The implementing parties of the CMF are required to design and issue micro-credentials which award credit according to the ECTS (The European MOOC Consortium, 2018).

Other examples of credit systems include those of the UK⁶, where different credit systems in England, Wales, Northern Ireland and Scotland in Further Education and Higher Education all use 10 notional learning hours as a basis for 1 credit (Pollard, et al. 2017). The same principle is applied in South Africa⁷ and New Zealand⁸. In the United States⁹, while the length of a semester may vary, the Carnegie definition is based upon a minimum length of 16 weeks. Thus, a unit of credit equates to three hours of student work per week (one hour lecture plus two hours of homework or three hours of lab) for 16 weeks, making one credit approximately equal to 48 notional hours (US Department of Education, n.d.).

Depending on the context, a micro-credential provider may choose to align with an existing credit system and/or develop a credit system that is unique to their institution and/or platform. In all cases, design principles for a credit system based on Annex V of the EU Council Recommendation on the European Qualifications Framework for Lifelong Learning (EQF)¹⁰ include:

1. Credit systems should support flexible learning pathways, for the benefit of individual learners.
2. When designing and developing [micro-credentials], the learning outcomes approach should be systematically used to facilitate the transfer of (components of) [micro-credentials] and progression in learning.
3. **Credit systems should facilitate transfer of learning outcomes and progression of learners across institutional and national borders.**
4. Credit systems should be underpinned by explicit and transparent quality assurance.

⁴ <https://op.europa.eu/en/publication-detail/-/publication/da7467e6-8450-11e5-b8b7-01aa75ed71a1> as of 10 December 2022.

⁵ <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009H0708%2802%29> as of 10 December 2022.

⁶

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/595633/Credit_transfer_in_Higher_Education.pdf as of 28 April 2023.

⁷ <https://www.saqa.org.za/wp-content/uploads/2023/02/Policy-and-Criteria-for-Credit-Accumulation-and-Transfer-within-NQF-2021.pdf> as of 28 April 2023.

⁸ <https://www.nzqa.govt.nz/providers-partners/assessment-and-moderation-of-standards/assessment-of-standards/generic-resources/unit-standard-definitions-and-explanations/> as of 28 April 2023.

⁹ www2.ed.gov/about/offices/list/ous/international/usnei/us/credits.doc as of 28 April 2023.

¹⁰ [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017H0615\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017H0615(01)) as of 10 December 2022.

5. The Credit acquired by an individual should be documented, expressing the acquired learning outcomes, the name of the competent credit awarding institution and, where relevant, the related credit value.
6. Systems for credit transfer and accumulation should seek synergies with arrangements for validation of prior learning, working together to facilitate and promote transfer and progression.
7. Credit systems should be developed and improved through cooperation between stakeholders at the appropriate national and Union levels.

Where defining workload by means of a credit system is not feasible (such as when a micro-credential is provided outside of formal learning), the highest prioritisation should be given to ensuring transparency in the learning outcomes. This would facilitate micro-credentials to be integrated in national qualification frameworks (see next Chapter 4.1.3.), and to be recognised for learning or employment purposes (see Chapter 8).

4.1.3 Integrate Micro-Credentials into National Qualifications Frameworks

Learning outcomes of micro-credentials should be described with reference to the level descriptors of respective national or regional qualifications frameworks. Reference to qualification frameworks increases the understanding of the value of the micro-credential to actors on the demand side of the micro-credential ecosystem.

[The NQFs aim to] make qualifications easier to understand and compare. The NQFs classify qualifications by level, based on learning outcomes - that is, what the holder of a certificate or diploma is expected to know, understand, and be able to do. This classification reflects the content and profile of qualifications.

Source: Cedefop (2022).

Two approaches exist to mapping micro-credentials to existing NQFs:

- A new micro-credential qualification type may be established under the NQF.
- A micro-credential may be outlined as a subunit of an existing qualification on the NQF.

Examples of four national systems where micro-credentials are mapped within their national qualification frameworks (although differently implemented) are presented from Ireland, New Zealand, Namibia and Georgia.

4.1.3.1 Ireland

Micro-credentials are incorporated at every level of the Irish National Framework of Qualifications as shown in Figure 3. They are represented in three different forms:

- “*Minor Awards*” (at any level, outcomes of partially completed “*Major Awards*” can be awarded).
- “*Supplemental Awards*” (from Level 4 onwards, learning in addition to “*Major Awards*” can be awarded).
- “*Special Purpose Awards*” (specific achievements can be awarded at any level).

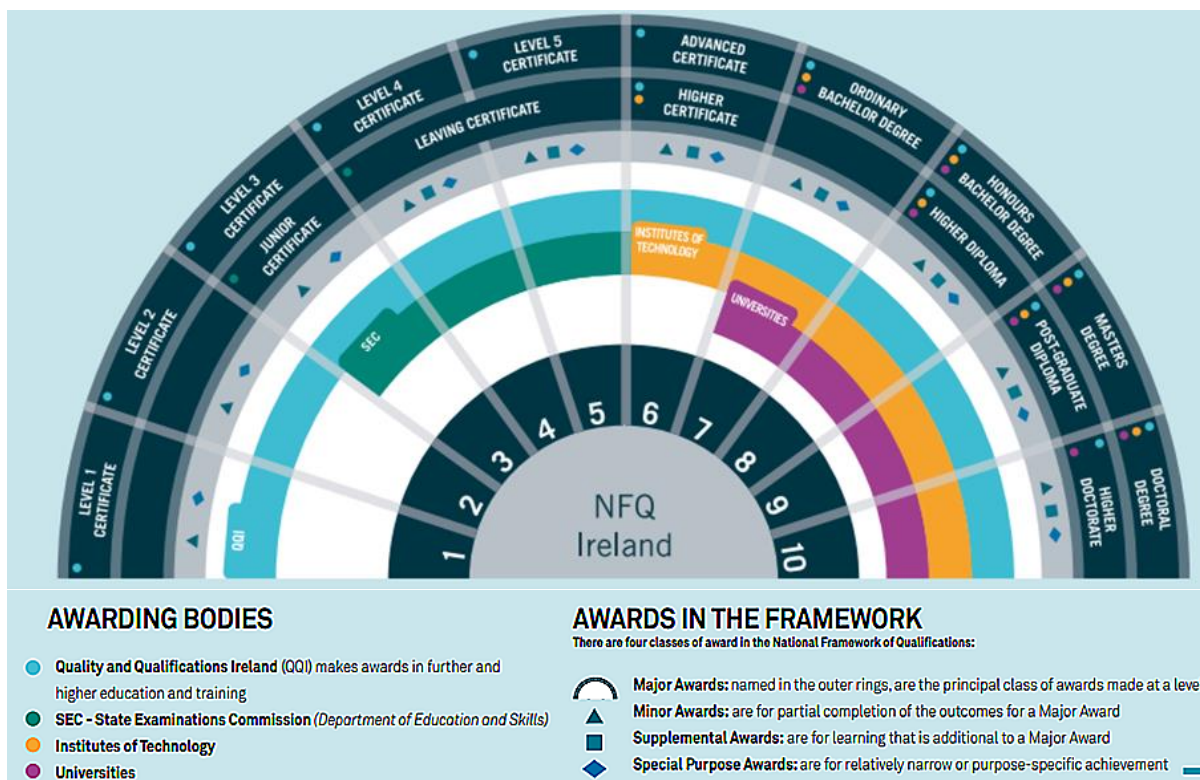


Figure 3: The Irish NQF. Source: Quality and Qualifications Ireland (2021).

Micro-credentials are awarded by universities, institutes of technologies, other awarding bodies, the State Examinations Commission and Quality and Qualifications Ireland (QQI)¹¹.

4.1.3.2 New Zealand

The New Zealand Qualification Authority (NZQA) applies an integrated quality assurance approach to micro-credentials based on ongoing self-assessment, external validation and monitoring that is similar but not identical to the qualifications¹². Micro-credentials can be listed at any level (from 1 to 10) of the New Zealand Qualifications and Credentials Framework (NZQCF) as shown in Figure 4. They must have at least one credit (10 learning hours) and are typically more than 5 credits and less than 40 credits. They must clearly state the learning outcomes, demonstrate that they meet an industry or community need and include an assessment component. Vocational micro-credentials must include any relevant skills standards (ETF, 2022a).

¹¹ QQI is the state agency for the external quality assurance of further and higher education and training and training in Ireland. Besides, it is the national awarding body for further education and training and training and most private higher education and training providers. Among other activities, the QQI develops and maintains award standards in cooperation with the providers and stakeholders and supports the recognition of prior learning. Non-major awards can be used, in a flexible way, to achieve a major award.

¹² <https://www2.nzqa.govt.nz/assets/About-us/Publications/Insights-papers/Micro-credentials/Aotearoa-New-Zealands-early-micro-credentials-journey.pdf> PDF as of 31 March 2023.



Figure 4: The NZQCF. Source: ETF (2022a).

To award a micro-credential that is listed on the NZQCF, an education and training provider must be registered with NZQA and accredited to deliver that micro-credential. However, micro-credential is not a protected term and there are a range of 'micro-credentials' available that are not quality assured by NZQA and are not listed on the NZQCF. Outside of formal education and training settings, NZQA offers an 'Equivalency service' for micro-credentials. This establishes a credit value and level of complexity, but NZQA does not quality assure the provider nor the micro-credential (ETF, 2022a).

4.1.3.3 Namibia

Namibia's unit standards¹³ incorporate micro-credentials into its NQF depicted in Figure 5. They represent an award, signifying that a person has been formally assessed and attained a nationally agreed performance standard. Unit standards must comply with the NQF principles and any regulations made to awards placed on the Framework to become registered. They state, among others, the outcome(s) of learning and/or work activity, the proof, quality and context of performance a candidate must produce and/or demonstrate, references to quality assurance systems, and notional learning time. Units are periodically reviewed. They refer to Initial Vocational Education and Training, Continuing Vocational Education and Training and Adult Education (ETF, 2022a).

It is common practice in Namibia that when learners don't complete a whole qualification they will gain recognition for the outcomes of learning and/or work activities they are able to perform. Similarly, the Namibia Training Authority recognises the individual's prior learning by assessing it against one or more unit standards or components of a part-qualification or qualification¹⁴.

¹³ <https://www.namqa.org/files/files/REGULATIONS%20NATIONAL%20QUALIFICATIONS%20FRAMEWORK.PDF> as of 27 January 2023.

¹⁴ <https://www.nta.com.na/recognition-of-prior-learning/> as of 27 January 2023.

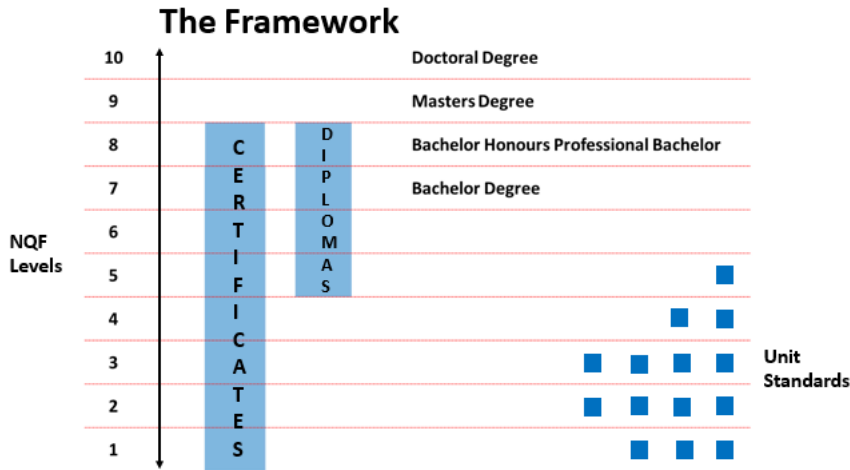


Figure 5: The Namibian NQF. Source: Namibia Qualifications Authority (n.d.).

4.1.3.4 Georgia

Micro-credentials exist in Georgia as short-term vocational training and retraining programs for up- and re-skilling (ETF 2021a). The programs lead to so-called Continuing Vocation Education and Training (CVET) qualifications. These programs are included in their National Qualifications Framework, between the 2 and 5 out of 8 levels of the Framework as seen in Figure 6. After the completion of the program, learners get a state recognised certificate. CVET qualifications can be stacked into larger credentials in pursuing the full VET qualification (ETF, 2022a).

NQF level	Education System	Training and Re-Training
1	Georgian – Language course certificate	
2	State document, verifying elementary education Georgian – Language course certificate	2 nd level VET training certificate 2 nd level VET re-training certificate
3	Basic VET diploma Georgian Language course certificate	3 rd level VET training certificate 3 rd level VET re-training certificate
4	State document, verifying complete general education Secondary VET education diploma Georgian-Language course certificate	4 th level VET training certificate 4 th level VET re-training certificate
5	Associate Degree Higher VET education diploma	5 th level VET training certificate 5 th level VET re-training certificate
6	Bachelor Teaching training certificate	
7	Master Doctor of Medicine (MD) Doctor of Dental Medicine (DDM) Master of Education (M.Ed) Master of Veterinary Science (MVSC) Veterinary training course certificate	
8	PHD	

Figure 6: The Georgian NQF. Source ETF (2023).

4.1.4 Publish Skills and Competency Descriptors aligned to Micro-Credentials

Many recognition decisions can be essentially reduced to an evaluation of whether a person has the skills required for a certain task. Many micro-credentials only contain rudimentary data on skills obtained by their holder, which leads employers to find difficulty in understanding their value.

Such data can be derived from international sectoral or competency frameworks, occupational and skills classification and/or occupational standards. An example of an international competency framework is the European Skills, Competences, Qualifications and Occupations (ESCO)¹⁵. Among other features, ESCO works as a dictionary that describes, identifies and classifies occupations and skills relevant within European learning and labour market spheres. As of January 2023, it encompasses 13,890 skills mapped with occupations and international occupation classification standards.

The Common European Framework of Reference for languages provides proficiency levels for language acquisition in terms of understanding, speaking and writing. This framework organises language proficiency in six levels, A1 to C2, which can be regrouped into three broad levels: Basic User, Independent User and Proficient User, and that can be further subdivided according to the needs of the local context. The levels are defined through 'can-do' descriptors.

The more links that can be made with skill and competence taxonomies the easier it becomes to understand the achievements that micro-credentials represent. They also aid users to find links between micro-credentials. **These links may be important for combining or stacking micro-credentials to obtain a larger qualification or to obtain credit or exemptions.** By stacking micro-credentials, learners are able to accumulate the necessary credits or workload to construct a learning pathway (see Chapter 7).

Competency frameworks and qualification frameworks need to be used together – with competency frameworks being most useful at providing granular skill information, while qualification frameworks are useful in contextualising that skill acquisition within the overall levels of an educational or qualifications system.

4.2 Portability of Micro-Credentials

[Portable] Micro-credentials are owned by the credential-holder (the learner) and may be stored and shared easily by the credential-holder, including through secure digital wallets (e.g. Europass), in line with the General Data Protection Regulation. The infrastructure for storing data is based on open standards and data models. This ensures interoperability and seamless exchange of data, and allows for smooth checks of data authenticity.

Source: Council of the EU (2022).

For a digital micro-credential to be recognised using a digital system (so that it may then be verified and recognised for learning and/or employment purposes) it is, according to Camilleri and Ardie (2022), necessary that:

1. Digital credentials are sent from a learner to a verifier (any digital system of an entity recognising a digital credential for education and training or employment purposes) in a commonly agreed format.
2. The verifier can verify the authenticity of digital credentials via, e.g. a digital signature or against a registry.
3. The verifier can process the content of digital credentials according to a standardised format.
4. The verifier can confer the status of recognition to the holder as a result of processing the content of the credential and/or holder.

To enhance the recognition of their micro-credentials, providers should issue credentials that allow the seamless management and verification of computer-readable, digitally-signed credentials (portability)

¹⁵ <https://esco.ec.europa.eu/en> as of 10 December 2022.

as well as their rapid exchange across different digital systems (interoperability) while ensuring the credential holder maintains ownership and control of the credential.

This would enable, for instance, individuals to share their credentials seamlessly with the digital systems of talent managers or employers' human resources management systems, therefore enabling mobility of learners and people in the workforce.

Notwithstanding this, many micro-credentials, especially those offered by commercial entities, do not necessarily align with these values. There are significant examples of providers implementing 'walled gardens' - enabling transparency and portability only within their own systems to keep users locked into their own offering. While this may be a valid business model, this guide suggests **that enabling competition between individual micro-credentials (rather than micro-credential vendors), and allowing for full transparency and portability, brings more benefits in the long-term to the micro-credential market as a whole.**

4.2.1 Issue Digital Verifiable Credentials

Increasingly, credentials of all kinds need to be issued in formats that can be understood by computer systems. In 2001, it was already reported that 90% of large US companies are saving at least one week by automatically screening and processing applications in their hiring processes rather than screening them manually (Cappelli, 2001).

Ensuring that a person's micro-credentials can be recognised in the digital world requires a computer system to be able to understand the information in a micro-credential and to be able to verify its authenticity.

Ensuring that the information in the credential can be understood requires using a structured data format to encode information about a learner's achievements. Unlike an unstructured format such as a scan or a Portable Document Format (PDF) which merely presents information to a human to process, structured data can be queried by a computer system to extract meaning. Thus, e.g. it becomes possible for a system to automatically match the skills of a learner to a job opportunity. Equally important to using a structured data format is using a **commonly accepted data model**. Only by aligning to common standards, does it become possible to share and process digital micro-credentials in a lifelong perspective. Examples of such data models include the European Learning Model¹⁶, Open Badges and the Comprehensive Learner Record. Of these, the European Learning Model is specifically designed to support the recommended properties of micro-credentials described in Annex I of the EU Council Recommendation (2022).

Verification of authenticity is accomplished by digitally-signing a credential. A digital signature is a digital code which is attached to an electronically transmitted document to verify its contents and the sender's identity. The security of the document derives from the security of cryptographic protocols, which ensure that the certificate is cheaper to produce than its paper equivalent but prohibitively expensive to reproduce by anyone except the issuer.

It is also possible to also check the authenticity of the institution issuing the credential. This implies checking that the institution is reputable and not a diploma-mill. This can be done by including the institution within lists of quality trusted (as described in Chapter 3) institutions, which can be automatically queried by credentialing software.

While introducing digital signatures would be an added cost and complexity, the long-term benefits can outweigh the downsides by, e.g. reducing the necessity of the issuer to verify the document after issuing and enabling the recipient of the credential to share it seamlessly and instantly with third parties.

The European Digital Credentials for learning¹⁷ are an example of a credentialing system that can be used freely by any micro-credential provider to issue verifiable credentials. It supports the requirements of using structured data, by implementing the European Learning Model. The credentials are made

¹⁶ <https://europa.eu/europass/it/news/launch-european-learning-model> as of 15 May 2023.

¹⁷ <https://europa.eu/europass/en/stakeholders/european-digital-credentials> as of 27 January 2023.

available both as a human-readable 'diploma' as well as computer-readable code, supported by an extensive list of authenticity checks as demonstrated in Figure 7.

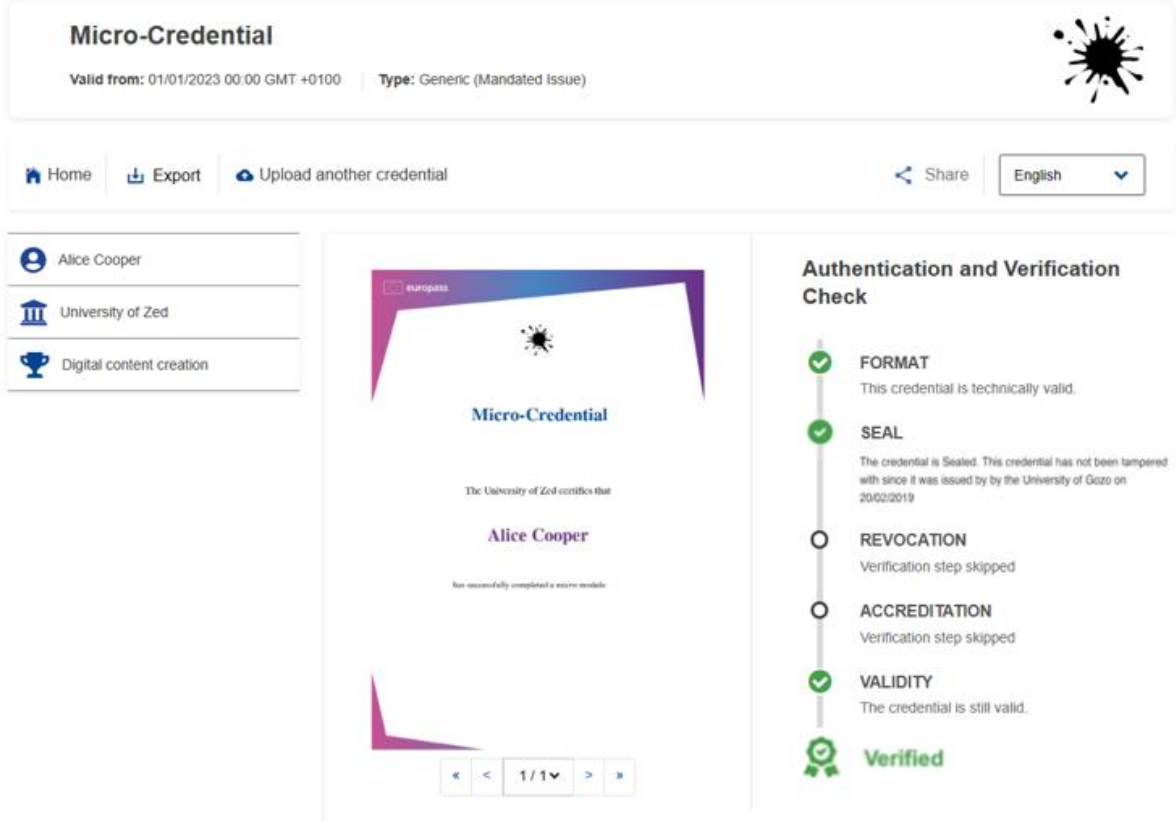


Figure 7: A demonstration of a digital micro-credential using the Europass platform.

These include checks on the digital signature to ensure that the awarding body actually issued the credential, checks to see if the credential has been tampered with and whether the credential is a valid (micro-) credential. Additionally, the system is linked to the European Commission’s accreditation database which checks and verifies any licences the educational institution may hold (Europass, n.d.).

5 Relevance of Micro-Credentials

*Micro-credentials should be designed and issued as distinct, targeted learning achievements and learning opportunities leading to them are to be **updated as necessary, to meet identified learning needs.** **Collaboration** between education and training organisations, employers, social partners, other providers and users of micro-credentials is encouraged to increase the relevance of the micro-credentials for the labour market.*

Source: Council of the EU (2022).

Relevance can mean different things to different beneficiaries. For individuals, employability can be enhanced by developing skills and competences that can be transferred from one occupation or sector to others. It is often a combination of micro-credentials that will keep people employable by engaging in regular upskilling and reskilling. Unemployed or laid-off workers can benefit from micro-credentials to reskill to get back to work with skills that are in demand and people who have a job may need to upskill to help improve productivity and performance. For the growing number of freelance workers with short-term contracts without a permanent job, such as online workers, keeping up to date is essential to keep working. In Ireland, e.g. vendor certifications (offered by private companies) have an important role to play in entry to and progress within occupations within the ICT sector (Cedefop, 2022).

Micro-credentials are used to respond to the needs of employers for the specific education and training of their current or future employees, also described as the skills employers are looking for and list in their job postings. German employers stress the importance of micro-credentials being closely linked to practical, flexible, on-demand, and short learning experiences and therefore keeping the regulatory requirements to a minimum. In Slovenia they have formalised these type of micro-credentials as so-called supplementary qualifications within their qualifications framework that supplement professional competences and focus only on the exact needs of employers and are not intended to acknowledge transversal or general skills (Cedefop, 2022).

For society, they are relevant when they contribute to social development and advancing social mobility. Every stakeholder and sector, even person in society stands to benefit from learning which supports social mobility.

5.1 Make Micro-Credentials Relevant to Learners

With learners forming the largest demographic of all stakeholders in the learning community, micro-credential designers and issuers should **identify which target group of learners** they would like to attract, organise consultative outreach activities to understand the needs that should be taken into account in the design and implementation of micro-credential offers and maintain measures to continuously improve the relevance and unique value of micro-credentials for, and with the target group/s. This should be one of the foremost steps in planning the development of micro-credentials. Providers may implement measures such as:

- **consulting** potential learners, employers, staff within the institution and/or other stakeholders (for e.g. alumni and trade unions) to identify target groups, their needs and the added-value micro-credentials could bring to them;

- **evaluating** micro-credential programmes with a sample of the target group before launching, after launching, with enrolled learners, as well as after completion of the programme with graduates. This could contribute to improving the relevance of micro-credentials to the target group.

Additionally, relevance implies ensuring that micro-credential design does not exclude part of the target group from accessing, participating in and completing micro-credentials nor from improving them. **Micro-credentials which are open access, or otherwise affordable, allow for self-paced small periods of learners which can be personalised to the learners' interest are among the inclusive measures that can be taken to prevent marginalising learners.**

Institutions may use a variety of indicators to measure relevance to learners including:

- demographic data to measure whether the intended target groups are being included.
- results from learner evaluation surveys.
- comments and recommendations from external quality assurance reviews.
- data on returning students who choose to take more than one micro-credential with a provider.

5.2 Make Micro-Credentials Relevant to the Labour Market

In today's globalised society continuously challenged and transformed by disruptive technologies, global crises and conflicts as well as a labour market characterised by its high mobility, employees and employers are constantly required to develop new skills and competences. **The possibility for employers to address specific skills gaps through hiring or training is among the main values of micro-credentials to the labour market** (ETF, 2022b). Additionally, micro-credentials help assist the transition to labour market for new graduates, address the need for upskilling and reskilling of the workforce, sustain lifelong learning policies and motivate lifelong learning behaviour (Cedefop, 2022).

Educational providers' ability to make micro-credentials relevant to the labour market depends on their ability to:

- **Analyse labour markets** to proactively identify emerging skill-gaps.
- **Develop timely micro-credentials** which are able to address those skill-gaps.
- **Attract learners** to the micro-credential programmes.
- **Evolve the offer** by incorporating feedback from learners, employers and other stakeholders.

New industry and occupational standards, current practice and in company training, vacancies and other forms of labour market research can be used to identify emerging skill needs, as can be consultations with employers, professional bodies and sectoral organisations, chambers and organisations supporting small and medium enterprise (SME) development. Collaboration between providers and employers can also be sought through, e.g. **co-designing and providing micro-credentials as part of continuing professional development (CPD) schemes** which may focus on industry-specific skills as well as more general professional competencies.

As the target group of people seeking to upskill or reskill may comprise high proportion of adult learners with extensive work experience compared to more conventional learners, it is necessary for micro-credential providers to take into account measures to ensure this target group is not excluded (see Chapter 5.1 and Chapter 9). Other measures to ensure the employability value of micro-credentials have been outlined in

Providers should **enable employers and professional bodies to take an active role in the development of micro-credentials** following recommendations outlined in Chapter 3 including: Engaging professional bodies to endorse the quality of micro-credentials (Chapter 3.1), collecting their feedback for the continuous improvement of micro-credentials (Chapter 3.2) and publishing quality data

such as endorsements from employers (Chapter 3.3). Chapter 4.1.4. also recommended how learning outcomes of micro-credentials can be linked with skill and competency descriptors and qualification frameworks to better facilitate transparency for professional recognition, and thus relevance, of micro-credentials. In addition, employers and professional bodies can take a more active role by enabling the interoperability of micro-credentials by integrating verifiable digital credentials into their human resources management systems (see Chapters 4.2 and 8.2) and developing and using a common language of skills and competencies in digital credentials (see Chapter 11.3).

Challenges to the recognition of micro-credentials for employment purposes (and therefore relevance of micro-credentials to the labour market) cannot be solved at the provider-level alone.

Chapter 11 recommends policy-level actions to scale-up the interoperability of micro-credentials, another critical means to facilitate the relevance of micro-credentials to the labour market. A whole-system approach is also emphasised by the World Economic Forum (WEF) which called upon governments to collaborate more actively with business, non-profit and education and training sectors to not only scale-up micro-credentials but to also link them with national qualification systems to support the recognition of competencies across the learning and earning landscape (World Economic Forum, 2021).

5.3 Make Micro-Credentials Relevant to Yourself as a Provider

The question of reputation and cost-benefit ratio plays a significant role in determining the relevance of micro-credentials to E&T organisations and awarding bodies, whether providing them for the first time or in the process of scaling up provision. In either case, the risk of low enrolments always has the potential to dry up the financial streams of the organisation as it also suffers a downgrading in its reputation.

By integrating micro-credentials into existing practices, rather than launching them as a separate strand of work, organisations can complement and where relevant widen the organisation's missions and strategies. In this way, micro-credentialing can be seen less as a burden and more as an opportunity to expand the use of and gains from the organisation's budget. While E&T organisations with access to bigger budgets could take more risk of being more innovative with designing and issuing new micro-credentials than those with access to lower budgets - many E&T organisations have already some experiences organising micro-credentialing on smaller scales through e.g. the provision of unique non-formal learning awards and certificates.

Micro-credentials may be designed to reach learners which would otherwise be excluded from education and training, to address pressing economic and/or social needs in a timely fashion or (via recognition) to extend the scope of a learning offer beyond what an institution can usually provide. Each of these use cases presents the possibility for institutions to better meet social goals.

Making micro-credentials relevant to a wider pool of learners in a way that it contributes to improving the providers' reputations, their ability to fulfil their missions as well as the cost-efficiency of their operations is a complex process requiring providers to ensure that **the necessary capacity and competencies of staff (including teachers and administrators) is both available and able to be continuously developed throughout the micro-credential design and implementation process.** Investment in the training of staff, both in terms of funds and measures to encourage participation of staff is crucial to ensure the relevance of micro-credentials to providers.

Staff [should] undertake regular training and develop cooperation with relevant external stakeholders to support capacity building and quality improvement, and to enhance performance.

Source: European Parliament and Council of the EU (2009).

5.4 Pursue realistic opportunities for Micro-Credentialing

Ensuring micro-credentials are both relevant to learners and an added value to all stakeholders requires a **whole-system approach** in designing, implementing and improving micro-credentials. Anything less may risk internal disputes. For instance, micro-credentials could risk not being recognised at the programme level despite the leadership of the same E&T organisation setting targets for micro-credential provision.

When many of those within an E&T organisation are novices to micro-credentialing, taking a moment to identify opportunities to simply integrate micro-credentials into already existing strategies and operations can go a long way in overcoming concerns. The project Micro-Credentials Exchange (MicroCredX) developed an Opportunity Scoping Tool, depicted in Figure 8, to support the development of institutional micro-credential strategies.



Figure 8: The MicroCredX Opportunity Scoping Tool for developing Institutional Micro-Credential Strategies.

The tool consists of organisational questions to help in defining clear and tangible opportunities and indicators for the successful implementation of micro-credentials. **The questions are best answered in dialogue with all stakeholders in an institution** – through the organisation of workshops with staff at all levels thus enabling the co-development and co-ownership of an institutional strategy for micro-credentials.

6 Valid Assessment

6.1 Quality Assessment

The critical differentiator of the micro-credential definition used by the EU is that “**micro-credential learning outcomes (must be) assessed against transparent and clearly defined criteria**” (Council of the EU, 2022). Where short periods of learning such as a MOOC, merely offer a non-assessed credential such as a certificate of attendance, they are not considered to be micro-credentials as per the EU definition.

To avoid cumbersome recognition procedures and increase trust in micro-credentials for their recognition it is necessary for all micro-credential providers to ensure assessment criteria and methods are quality assured and documented. Their **relevance (suitability) for assessment of learning outcomes defined in the micro-credential should be assessed in consultation with stakeholders, persons who conduct training or carry out assessment, and tested to evaluate their effectiveness and practicality**. The quality of assessment and the way how the assessment methods and criteria are designed are critically important for ensuring reliability, objectivity and validity of assessment and credibility of its results.

Based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG, 2015), a quality assessment should ensure that:

- The criteria for and method of assessment as well as criteria for marking are published in advance.
- The assessment allows students to demonstrate the extent to which the intended learning outcomes have been achieved.
- Students are given feedback, which, if necessary, is linked to advice on the learning process.
- Assessors or assessment designers are familiar with existing testing and examination methods and receive support in developing their own skills in this field.
- Assessment is consistent, fairly applied to all students and carried out in accordance with stated procedures.

Organising fit for purpose assessment and quality assurance of assessment for micro-credentials provided in non-formal or informal learning contexts is also expected for the credentials to be recognised for further education and training purposes.

Micro-credential designers and issuers should formulate the criteria, forms and procedures of assessment most appropriate to evaluate the tasks with which learners can best demonstrate attaining the agreed learning outcomes. While multiple-choice tests and other easily automatable assessment techniques can offer scale at low cost, they are not always the best choice for proving a given unit of learning. Project or problem-based learning assessment methods are commonly used in micro-credentials provided by two European University Alliances: The Arqus Alliance’s ‘Engaged Citizens’ Program (see Chapter 10.2) and the European Consortium of Innovative Universities (ECIU) Alliance’s Micro-Modules¹⁸. **A combination of assessment methods such as a written questioning or exam combined with a practical simulation, or the presentation of a project followed by answers to oral questions tend to offer higher predictive validity of learner performance.** Table 6 gives a breakdown of different assessment options.

Table 6: Forms of assessment

¹⁸ <https://engage.eciu.eu/browse?learningOppTypes=623140001> as of 1 March 2023.

Form of assessment: type of tasks assessed	Levels of Grading	Place of assessment and authentication required
<ul style="list-style-type: none"> ▪ Quiz: test recall ▪ Numerical exercises: test analytical skills ▪ Self-assessment learning diaries or portfolios: test reflection skills ▪ Written or oral exams: Test knowledge and application of knowledge to theoretical scenarios ▪ Peer reviews: test synthesising and presentation skills ▪ Project or problem-based learning: Test practical problem-solving skills 	<ul style="list-style-type: none"> ▪ Self-graded ▪ Peer-graded ▪ Externally-graded <ul style="list-style-type: none"> • Automatically • Manually by instructor 	<ul style="list-style-type: none"> ▪ Online with ID verification ▪ Online without ID verification ▪ On-site with ID verification ▪ On-site without ID verification

Source: Adapted from Sood et al. (2018) and Mitroi (2012).

Providers should consider on-site assessment with ID verification the most effective method against cheating. For micro-credential providers that are only able to organise assessment online, the project “An Adaptive Trust-based e-assessment System for Learning” (TeSLA) recommends using biometric instruments such as facial verification, voice recognition and keystroke dynamics among other methods to ensure the learner's identity and authorship (TeSLA, 2018). Any such instruments and means of learner verification must ensure learner's rights to privacy and be in line with state or regional regulations such as the EU's General Data Protection Regulation (GDPR).

*Even when complying to European GDPR regulations, national legislation it is important to **provide students with information and guidance on how the system deals with privacy and security.***

Source: Sood et al. (2018).

Third-parties recognising micro-credentials may wish to know whether the applied assessment criteria and methods were appropriate for evaluating the intended learning outcomes. Hence, it is vital that micro-credential providers or recognised assessment **providers publish the assessment criteria, processes and methods together with the grades schemes to ensure full trust in the output.** This can be done by including information on the assessment processes in the document supplementing the qualification (or however otherwise termed such as award or certificate) gained upon completion of the micro-credential.

6.2 Validation of Non-Formal and Informal Learning (VNFIL)

Assessment plays a key role in the validation of learning irrespective of the context in which this learning took place.

Going through validation helps a learner to ‘exchange’ the outcomes of non-formal and informal learning for credit within a programme, or for future learning or employment opportunities.

Source: Cedefop (2015).

Micro-Credentials open new opportunities for the Validation of Non-Formal and Informal learning by acknowledging smaller, nuanced units of skills acquisition. This approach challenges traditional qualifications' monolithic structure, spotlighting granular competencies and opening diverse learning paths. By certifying distinct skills or knowledge areas, micro-credentials foster tailored, lifelong learning, acknowledging varied expertise sources. They bridge the gap between formal education and real-world applications, enhancing workforce adaptability. Thus, micro-credentials democratize learning recognition, offering a more dynamic, precise tool for validating and celebrating all forms of knowledge acquisition.

Validation is strongly encouraged by the EU Council Recommendation on VNFIL (2012)¹⁹ and emphasises that the process of validation of learning outside formal settings must generate trust, notably by demonstrating that requirements of reliability, validity and quality assurance have been met. In this light, the Council of the EU (2012) recommends validation be made up of four steps:

1. **Identification** of an individual's learning outcomes acquired through non-formal and informal learning.
2. **Documentation** of an individual's learning outcomes acquired through non-formal and informal learning.
3. **Assessment** of an individual's learning outcomes acquired through non-formal and informal learning.
4. **Certification** of the results of the assessment of an individual's learning outcomes acquired through non-formal and informal learning in the form of a qualification, or credits leading to a qualification, or in another form, as appropriate.

Micro-credentials in this case can be acquired upon certification of the results of the assessment. In the Netherlands, one of the main success factors for increasing opportunities for VNFIL is the introduction of policy standards that allow smaller bits of learning to be assessed based on the motto that the glass is half full rather than half empty (Duvekot, 2016).

Furthermore, another way in which micro-credentials support VNFIL is through the unbundling of assessment from course provision (in that **the learner can be directly assessed without being required to attend the course**). The latter supposes learners have developed learning outcomes in non-formal or in-formal settings. The Test of English as a Foreign Language²⁰ (TOEFL) is one example for unbundled assessment, whereby language proficiency can be assessed without the user undergoing the course. Below are more examples of how unbundled assessment supports validation of already attained learning outcomes.

6.2.1 Kazakhstan

Atameken National Chamber in Kazakhstan established and manages a Register of Certification Centres of Specialists. In 2021, 36 registered centres assessed individuals' competences based on their occupational standards. These awards are supplementary to the formal learning programmes within the

¹⁹ [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012H1222\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012H1222(01)) as of 27 January 2023.

²⁰ <https://www.ets.org/toefl.html> as of 27 January 2023.

Vocational Education and Training sector and are not part of their qualifications framework (ETF, 2021b and ETF, 2022a).

6.2.2 Tunisia

Within the national vocational training framework, there is a plan to implement a national system for the certification of learning outcomes (ETF, 2021c). This system would enable the recognition of informal and non-formal learning outcomes through the certification of unit(s), in French termed "*Champs de Competences*" for the partial completion of formal learning programmes. The assessment would be organised based on a national certification reference system and carried out by a third party under supervision (ETF, 2022a).

7 Learning Pathways

*Micro-credentials are designed and issued to support flexible learning pathways, including the **possibility to validate, recognise and 'stack' micro-credentials from across different systems**.....Decisions to 'stack' or combine credentials lie with the receiving organisation (e.g. education and training institutions, employers, etc.), in line with their practices, and should support the goals and needs of the learner. Stacking does not create an automatic entitlement to a qualification or a degree. Such decisions are made by regional and national authorities or institutions in line with their awarding processes.*

Source: Council of the EU (2022).

This chapter shifts from the view of micro-credentials as stand-alone units of learning to their ability to be stacked into batches of modularised learning units.

By stacking micro-credentials, **learners can accumulate the necessary credits or workload to construct a learning pathway**. Stacking can be a result of deliberate design, allowing combinations of micro-credentials with a larger qualification, which can then be formally recognised. Stacking can also be a process undertaken by an individual mixing different micro-credentials into a combination that works for their personal or career development, that is not necessarily formally recognised. Recognising one or more micro-credentials in a validation or recognition procedure by comparing them to components of existing qualifications, can help to combine these with additional learning to obtain a formal qualification. Learners tend to stack micro-credentials via three different routes (Table 7):

Table 7: Learning pathways and sources of credit a learner can accumulate.

Learning Pathway	Accumulation of Credits/ Unit of Workload
Open	From any subject as well as any provider - meeting certain quality criteria - of the learner's choosing. An example of this is shown in Figure 9.
Elective	From a list of subjects and providers established by the learner's E&T organisation. An example of this is shown in Figure 10.
Rigid	From a compulsory list of automatically sequential subjects. An example of this is shown in Figure 11.

The screenshot shows a website for Harvard's Liberal Arts & Sciences department. On the left, there is a navigation menu with items like 'Liberal Arts & Sciences Education', 'Concentrations', 'Harvard College Curriculum', 'Electives', 'Dual Degree Music Programs', and 'Study Abroad'. The main content area includes a video player and a section titled 'Plan Your Academic Journey' with the text: 'The undergraduate degree is designed with flexibility in mind: you set your own academic goals, and we'll help you plan coursework to meet them—while also ensuring you receive a broad liberal arts and sciences education.' On the right, there is a sidebar with a section titled 'Enroll at Affiliated Institutions' which states: 'Harvard undergraduates can take classes at one of Harvard's ten graduate schools or cross-enroll at other Boston-area institutions.'

Figure 9: Screenshots of an open learning pathway provided by Harvard University's Liberal Arts programme²¹. Learners can freely enrol into classes offered by other universities affiliated with Harvard. Source: Harvard University (n.d).

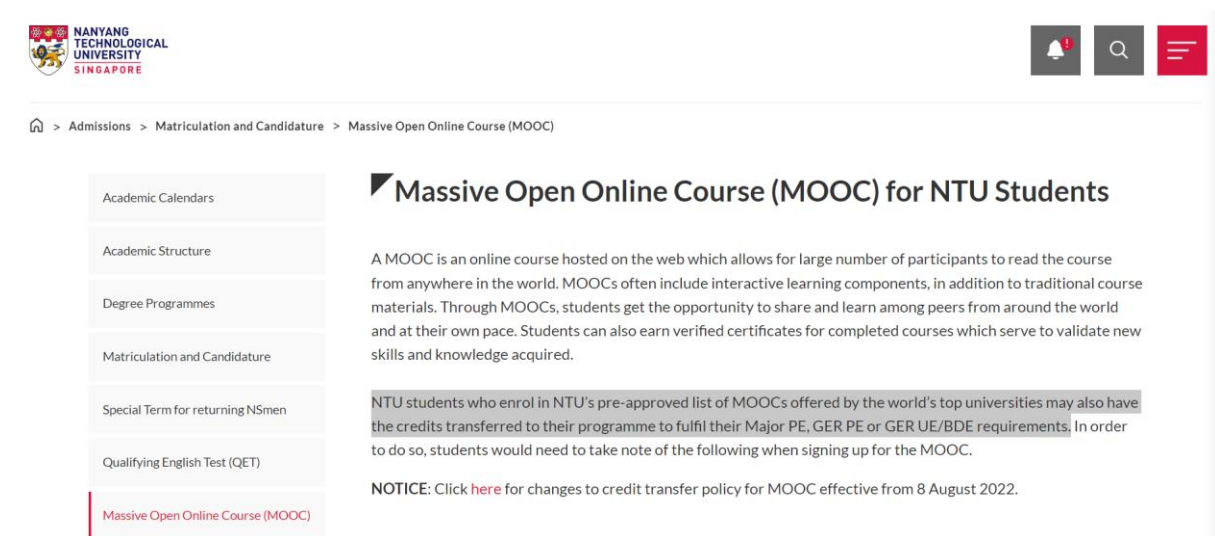
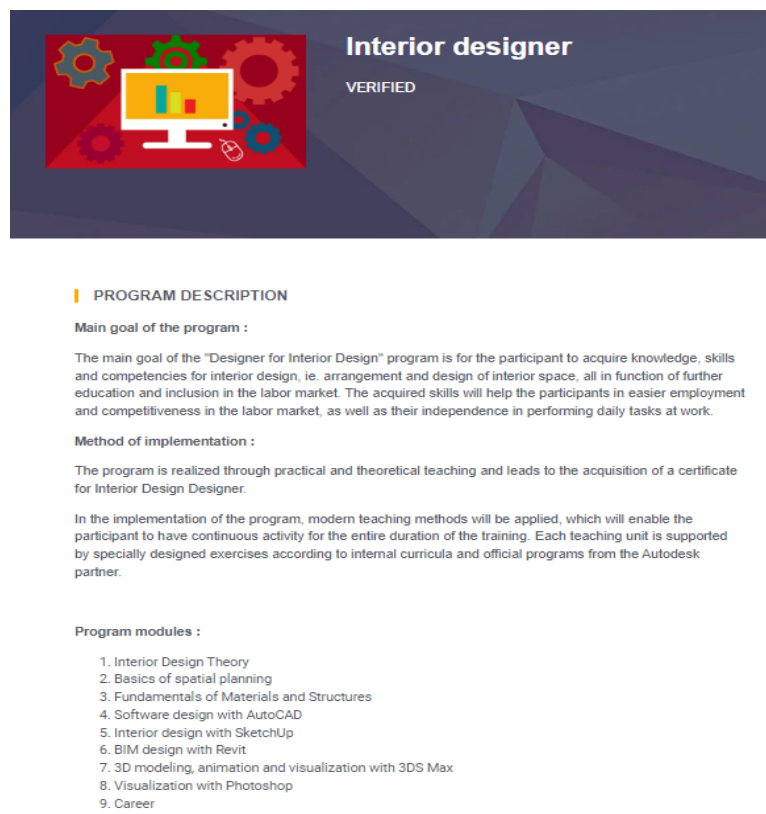


Figure 10: Screenshot of an elective learning pathway provided by Nanyang Technological University²² (NTU). Learners can select from a list of MOOCs and have the credit recognised in the fulfilment of specific programmes. Source: NTU (n.d.)



²¹ <https://college.harvard.edu/academics/liberal-arts-sciences> as 10 February 2023.

²² <https://www.ntu.edu.sg/admissions/matriculation/mooc> as 10 February 2023.

Figure 11: Screenshot of a rigid learning pathway offered by a private company in Skopje²³. Learners must complete modules 1 to 9 in the figure above to gain a verified micro-credential in Interior Design. Source: PI Adult Education Center- Skopje (n.d.)

Irrespective of the pathway chosen, **success factors** for creating a stackable system of micro-credentials include:

- The use of a credit system to measure workload (see Chapter 4.1.2).
- The use of NQF level-rated descriptors and learning outcomes (see Chapter 4.1.3).
- Clear policies on recognition of credits from other systems, including via recognition of prior learning (see Chapter 8.1.1.3).

Such policies and systems may be applied within a single system or platform, but may also be applied across networks of institutions, allowing for stacking of micro-credentials from multiple different institutions.

Chapter 8 demonstrates how the establishment of inter-institutional agreements enables learners to have micro-credentials automatically recognised by having credit transferred and accumulated in fulfilment of their programme. The same chapter recommends facilitating the recognition of prior learning (RPL) when learners have already acquired learning in for e.g. a previous study programme, or in the workplace (informal learning) or through a non-formal training provider. The goal of RPL is to increase the flexibility of a learner's learning pathway. According to the Dutch Organisation for Internationalisation in Education (Nuffic, 2020), **flexible learning pathways** may take the form of:

- Access and admission to the programme not based on the standard requirements in terms of entrance qualifications (e.g. a secondary school leaving certificate).
- Exemptions of part of the programme based on a previous obtained qualification or period of study.
- Exemptions of part of the programme, or the whole programme, based on non-formal or informal learning.
- Credit transfer during the programme (e.g. via exchange programmes).
- Distance learning and e-learning.

²³ <https://cov.gov.mk/course/%d0%b4%d0%b8%d0%b7%d0%b0%d1%98%d0%bd%d0%b5%d1%80-%d0%b7%d0%b0-%d0%b2%d0%bd%d0%b0%d1%82%d1%80%d0%b5%d1%88%d0%bd%d0%be-%d1%83%d1%80%d0%b5%d0%b4%d1%83%d0%b2%d0%b0%d1%9a%d0%b5/> as of 10 February 2023.

8 Recognition

Micro-credentials have a clear signalling value of learning outcomes...[and] are recognised, where possible, by the competent authorities, for academic, training or employment purposes, based on the information provided according to the European standard elements (Annex I) and the principles for the design and issuance of micro-credentials (Annex II).

Source: Council of the EU (2022).

This guide distinguishes between:

Recognition of micro-credentials for education and training purposes: the formal acknowledgement of micro-credentials by a competent recognition entity for providing an applicant with the right to apply for admission to an education or training programme, to transfer credit within it, or to exempt part or all of it.

Recognition of micro-credentials for employment purposes: the acknowledgement of micro-credentials by an employer for providing an applicant with the possibility of employment or job progression.

Micro-credentials can be considered as doorways to utilise recognition processes in two new ways.

One is related to the fact that they represent, in many cases, a new form of recognition of learning outcomes acquired both inside and also outside education and training institutions. While the term micro-credential may be novel, the activities it encompasses may refer to long-standing practices. The second door opens to the increased need for more flexible learner-centred bodies providing education and training from a lifelong learning perspective.

Source: Cedefop (2022).

8.1 Recognition of Micro-Credentials for Education and Training

This form of recognition takes place anytime prior learning is recognised for formal education and training purposes. This can include for admission into an E&T organisation, exemption from part of a programme, as well as stacking or combining credentials for the purposes of progression through an education and training programme or for certification of learning outcomes.

Such recognition can take place via various routes depending on the existence of credit sharing and recognition agreements or on regional or global recognition frameworks, as well as validation arrangements. This chapter recommends micro-credential providers to **ensure the necessary pre-conditions for recognition to take place through different recognition routes**.

In Europe, the recognition of qualifications is mainly the prerogative of the education and training institution to which an applicant applies for recognition. Given that there is a lack of harmonisation of definitions, processes, and evaluation criteria for micro-credentials, E&T organisations are expected to tailor criteria for recognition.

The project 'Evaluating e-learning for academic recognition' - e-Valuate²⁴ led by Nuffic demonstrated how stand-alone e-learning (including micro-credentials) can be recognised for access into Higher Education. The project suggested seven criteria for the evaluation of a micro-credential, based on recognition procedures of foreign qualifications:

- **quality** - internal or external quality assurance procedures applied to the micro-credential or accreditation of the micro-credential provider;
- **online verification** - the authenticity of a credential may be determined by checking the provider's website for the programme or by checking the digital signature on a verifiable credential;
- **level** - should be indicated with reference to established (national or regional) qualification frameworks, rather than to a platform specific classification;
- **learning outcomes** - should be listed in as much detail as possible, preferably with reference to a skill or competence framework;
- **workload** - should be indicated in terms of theoretical workload, as well as actual workload undertaken by the learner;
- **testing** - the existence of standardised testing rubrics against which to assess learner performance;
- **online identification** - the processes for ensuring that the credential-holder is the same person who followed the learning experience and participated in the assessment.

Nuffic have developed a freely available online tool to aid credential evaluators in assessing micro-credentials against these criteria. Screenshots are shown in Figure 12.

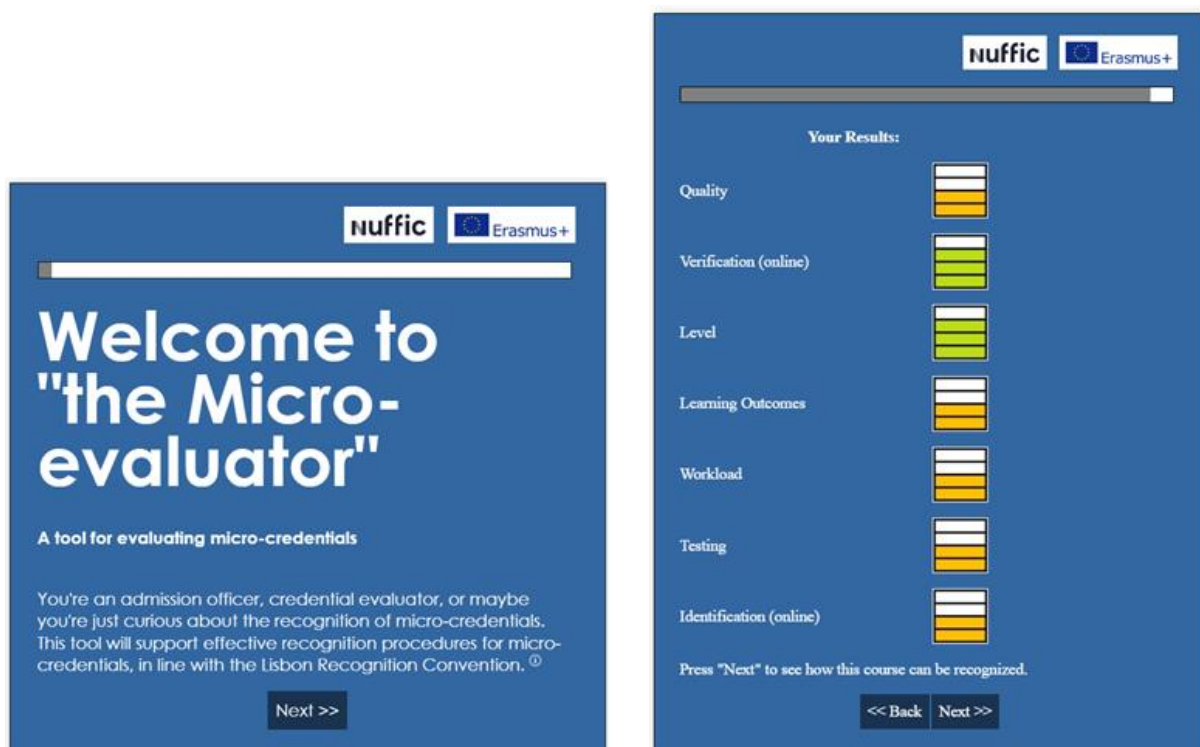


Figure 12: Screenshots of the Micro-Evaluator tool²⁵. Source: Nuffic (n.d.)

²⁴ <https://www.nuffic.nl/en/subjects/recognition-projects/e-valuate-concluded> as of 10 February 2023.

²⁵ <https://fd8.formdesk.com/nuffic/micro-credentials/?get=1&sidn=c7aa32c5b48245d78325aee512ac5361> as of 10 February 2023.

[Despite the availability of this tool] *it is difficult and time consuming to gather the necessary information about the seven criteria mentioned above. In addition, the lack of information requires recognition experts to accept a degree of uncertainty.*

Source: Nuffic (2022).

The high administrative burden required to evaluate micro-credentials on a case-by-case basis creates a strong incentive for providers to **develop routes for automatic or semi-automatic recognition wherever possible.**

8.1.1 Enable Multiple, Feasible Routes for Micro-Credential Recognition

Our mapping of recognition practices for micro-credentials, displayed in Figure 13, indicates that there are several potential routes an education and training provider may take to enable recognition.

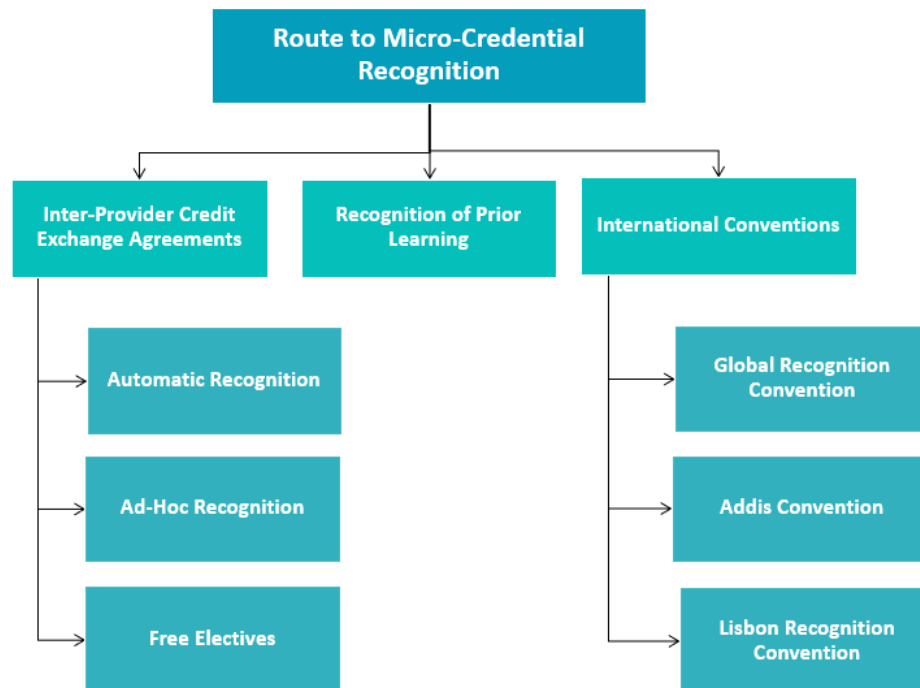


Figure 13: Main routes to recognise micro-credentials for education and training purposes.

The most automatic route involves recognition of a micro-credential using an established credit-exchange agreement between the education and training institutions involved. Where no such agreement exists, micro-credentials may be recognised through the procedures for recognition of prior learning (RPL). In each case, recognition might enable a learner to be admitted, progress through or complete a study programme on the basis of micro-credentials earned at another learning institution.

Additionally, a micro-credential can be recognised for access to Higher Education in institutions belonging to systems which have ratified the Convention on the Recognition of Qualifications concerning Higher Education in the European Region (LRC)²⁶ and/or the UNESCO Global Convention on Higher

²⁶ <https://www.coe.int/en/web/conventions/full-list?module=treaty-detail&treatyid=165> as of 10 February 2023.

Education (GRC)²⁷ - both legally binding recognition frameworks to ensure fair and transparent recognition processes.

Currently, most of the 'recognition routes' are theoretical, or the subject of pilot projects. Interviews indicate that where it is available at all, the only route that is widespread at this moment is usually that of RPL. Nevertheless, the next sections provide a guide to how to enable recognition of micro-credentials in any learning organisation.

8.1.1.1 Facilitate Recognition via Credit-Exchange Agreements

'Recognition Networks' which use inter-institutional agreements provide the best route to the recognition of micro-credentials between learning organisations. **Inter-provider agreements for credit exchange are a common feature of mobility programmes.** Within VET, a Memorandum of Understanding (MoU) is often signed to regulate mobility. It confirms that VET partners accept each other's status as competent institutions; accept each other's quality assurance, assessment, validation and recognition criteria and procedures as satisfactory for the purposes of credit transfer; agree on the conditions for the operation of the partnership, such as objectives, duration and arrangements for review of the MoU; agree on the compatibility of qualifications concerned for the purposes of credit transfer, using the reference levels established by a regional qualification framework such as the EQF; and identify other actors and competent institutions that may be involved in the process concerned and their functions (European Parliament and Council, 2009). In Higher Education 'Inter-institutional Agreements' serve a similar purpose. Providing that micro-credentials are credit-bearing (and share a credit system with the programme a learner follows), then they can be recognised as contributing to a programme a learner is following or in which they want to enrol.

Taking into account the views of different stakeholders, and based on findings from Henderikx and Ubachs (2019), recognition of credit exchange occurs when:

- From an **organisational perspective**, two or more learning institutions organize and recognize the study periods followed by their learners in an exchange program or in a networked/joint program. Institutional policies and strategies entail such collaborations and mobility. Collaboration and mobility agreements create the organizational framework. The organisations involved enhance their profile and strengthen their curricula.
- From a **learner perspective**, learners follow a learning activity, a course or part of a curriculum in another university in the framework of a bilateral or a network/consortium agreement between universities. Learners benefit from a rich international academic experience.
- From a **teaching staff perspective**, staff is organising a learning activity or a course in the framework of a bilateral or a network/consortium agreement between learning organisations. By doing so, new learning and mobility formats are created, based on international course and curriculum design. Teaching combines collaboration in learning, research and innovation.

Automatic Recognition via Inter-Institutional Agreements

Under such an agreement, a group of E&T providers can agree to allow their learners to use credits from other providers party to the agreement, as part of their study programme. The essential nature of such agreements is that they are automatic in nature – i.e. **learners who are studying a programme at a home organisation, may acquire any relevant micro-credential that meets the requirements of the agreement to form part of the study programme, without the need for further administrative procedures.** Such agreements may be designed with varying scopes and level of ambition.

Learning organisations, especially small ones, may want to give learners access to a more comprehensive programme than what is feasible with their staff and resources. This can be made

²⁷ <https://www.unesco.org/en/legal-affairs/global-convention-recognition-qualifications-concerning-higher-education?hub=66535> as of 27 January 2023.

possible through an agreement leading to an elective learning pathway by extending a list of modules a learner may select from during their studies with select micro-credentials offered by other organisations.

Should the aim be to offer the learner an international multi-institutional learning, then an agreement leading to a rigid learning pathway would result in a programme designed to include compulsory credits from two or more E&T organisations. Joint degrees are an extreme form of such arrangements.

In all these cases, **an inter-institutional agreement can be used to regulate micro-credential credit transfer** - the key elements of the agreement being the:

- **Two or more institutions** party to the agreement.
- **Modules/courses** which shall be available for exchange.
- **Programmes (at the home institutions)** where these modules/courses may be included.
- **Conditions** for the automatic recognition of these modules/courses (e.g. the learner achieving a passing grade).

The project European Credit Clearinghouse for Opening up Education and training (ECCOE) created and validated a template for such inter-institutional agreements labelled as a Model Credit Recognition Agreement (MCRA). The MCRA may be organised between two higher education institutions (HEIs) for a maximum of two courses which can be mutually recognised/ validated as equivalent in each institution. A user's guide is available to support new HEIs in using the tool for developing a MCRA. Other than the elements described above, the tool also includes existing recognition and validation paths in the existing partner HEIs in order to further standardise and advance the use of MCRA with new HEIs (ECCOE, n.d.).

Credit-exchange agreements are the least administrative route given that they allow for automatic recognition, and they provide for predictable, reproducible outcomes in recognition processes. Figure 14 depicts a screenshot of a possible product of inter-institutional credit exchange agreements - two joint Master's degree programmes in Sustainable Development offered by Hiroshima University, University of Graz and Leipzig University according to the specialisation chosen by the learner.

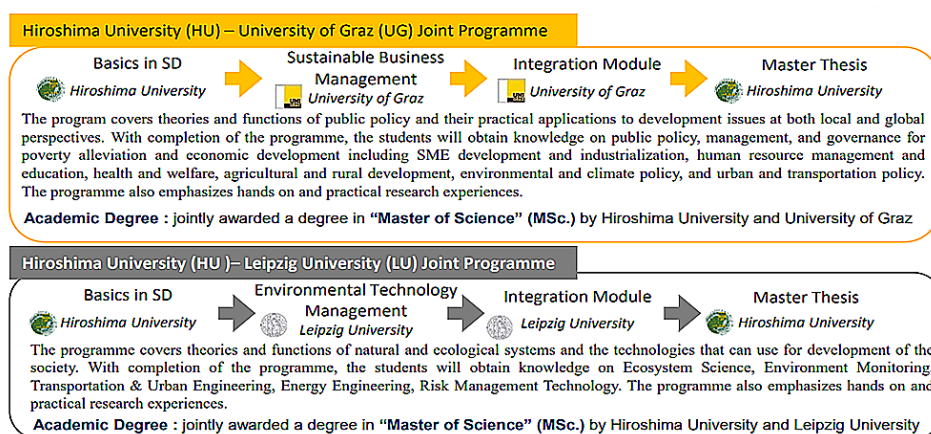


Figure 14: A joint Master degree programme with two specialisations in sustainable development offered by Hiroshima University. Source: Hiroshima University (2020).

Such agreements can be signed bilaterally between institutions, or institutions may create wider 'networks of recognition' between larger groups of organisations. The 'European Universities' initiative provides many examples of such recognition networks being established across Europe. Examples include the "Mobility Minors" programmes²⁸ of the European Consortium of Innovative Universities whereby learners of the partner universities of the alliance can sign up for an elective set of courses

²⁸ <https://www.eciu.eu/for-learners/about#cycle> as of 27 January 2023.

made up of 30 ECTS credits at any one of the partner universities. These credits will be automatically recognised as part of their programmes within their home universities.

Ad-hoc recognition via Inter-Institutional Agreements

The other potential path for recognition of micro-credentials is that of using **trilateral contracts** between a learner's home institution, an institution they choose to visit (either via a virtual or a physical mobility) and the learner (Sidaoui and Villecroze, 2020). An example of this is depicted in Figure 15 Different to the automatic recognition path described above, in this case, **each recognition is a bespoke agreement which sets out an individual study plan** that summarises the mobility (or successive mobility periods) within the curriculum or course.

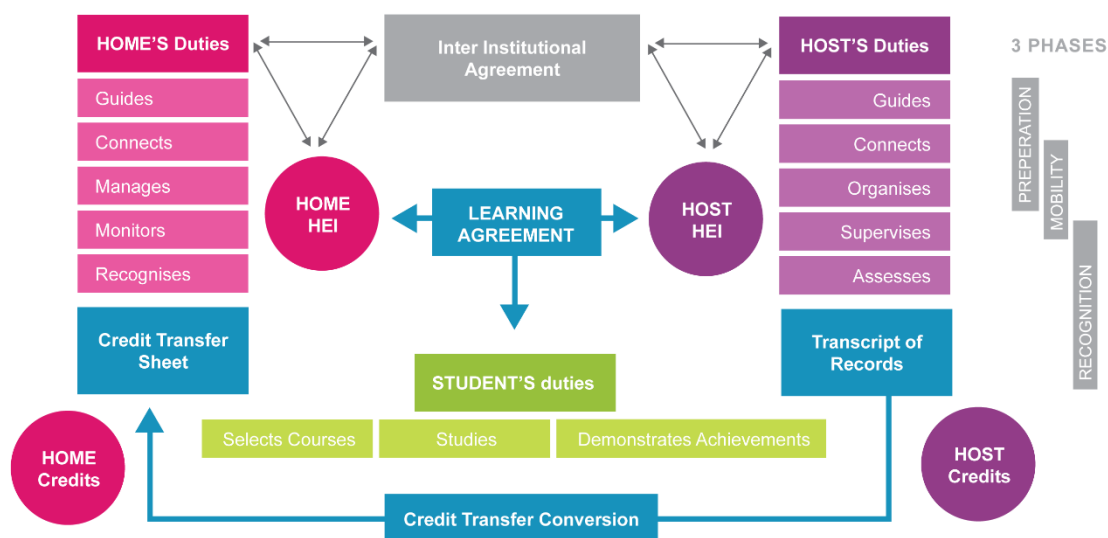


Figure 15: The recognition process for credit exchange via learning agreements amongst South-East Asian Universities participating in the SHARE programme: European Union Support to Higher Education in the Association of South-East Asian Nations (ASEAN) Region. From SHARE (2018).

Typically, an inter-institutional agreement will establish a trust relationship between the institutions participating, but critically, unlike in the examples above, **will not provide for automatic recognition of all such study periods**. Instead, these are regulated on an ad-hoc basis by the learning agreement, key elements recommended from the SHARE programme (2018) include details on the:

- Parties to the agreement, including the learner.
- Modules/courses which are to be exchanged in the specific mobility.
- Specific dates for the mobility period.
- The specific programme (at the home institutions) where these modules/courses may be included.
- Conditions for the automatic recognition of the modules/courses (e.g. the learner achieving a passing grade).

While this route to recognition requires significantly more administration than the automatic recognition route, it may be easier to implement for institutions, since it uses existing structures and procedures that are already established for mobility periods.

8.1.1.2 Facilitate Recognition via free electives

In many learning systems, 'free' electives have been part of the system for years. Many micro-credentials aim to encourage learners to widen their perspectives and acquire additional self-identified skills they feel are valuable for their personal development.

Typically, the only requirement for the recognition of such elective studies is that the credits are awarded by (or workload acquired from) a certified or recognised institution. This facility is often used e.g. to allow learners to receive credit for attending summer schools, participate in entrepreneurship competitions and more. A variation of the scheme sometimes awards credit for volunteering or social work.

The pedagogical logic of free electives is that a learner should have full **freedom to complement their studies** from any source they feel would be conducive to their own personal and professional development. Given that it is the learner who decides that any given experience should be recognised as part of their learning, the institution owning the programme only has to implement minimal verification checks. Since these typically only form a small percentage of the overall programme, the risks from a 'wrong' choice are minimal.

Given the wide acceptance of this methodology, **encouraging learners to take micro-credentials as part of such free-electives programmes is a straightforward and fast way to implement recognition procedures.**

8.1.1.3 Facilitate recognition via Recognition of Prior Learning (RPL)

***Prior learning:** the experience, knowledge, skills, attitudes and competencies which an individual has acquired as a result of formal, non-formal, or informal learning, **assessed** against a given set of learning outcomes, objectives, or standards.*

Source: UNESCO (2019).

As eluded in Chapter 6.2, an individual may have their previously acquired learning, especially which took place in non-formal or informal learning contexts, assessed and validated (VNFIL). Validation is a crucial factor for prior non-formal or informal learning to be recognised for the purpose of accessing education and training – granted such learning meets the general admission requirements. **Micro-credentials as the form of certification of individual's learning outcomes acquired through formal, non-formal and informal learning could therefore support both the validation and recognition of prior learning.**

Anecdotal evidence indicates that currently RPL is the most common form of micro-credential recognition, given that procedures for this route already exist in most learning organisations. As such, RPL could be considered the default 'fallback' route for recognising micro-credentials, i.e. **this route is always available when no other routes apply.** However, RPL is also administratively heavy - often requiring customised processes for each procedure, which also leads to uncertain outcomes. This can create disincentives for institutions as well as learners to use this route. Formal qualifications may also be assessed by E&T providers particularly when the holder of the qualifications applies for admission to a learning offer without following the standard entry requirements (e.g. a secondary school leaving certificate). In states party to the UNESCO Global Convention on Higher Education (GRC), "*individuals have the right to have their qualifications²⁹ assessed for the purpose of applying for admission to higher education studies or seeking employment opportunities.*"

²⁹ The GRC's definition for a qualification broadly covers both higher education qualifications and qualifications giving access to higher education (e.g. diplomas and awards attesting the successful completion of an education programme or validation of prior learning).

Prior learning may also be validated through a process termed credit recognition, an example of which is demonstrated by The Open University's Open Bachelor degree (QD)³⁰ which allows individuals to apply for credit to be transferred from a previous study. When the subject of the previous study is the same or similar to that of the QD, applications are referred to an academic expert who will make an assessment as to how much credit would be transferred. When the subjects are different, there may be the option to transfer a maximum of 60 credits as part of a 'free choice' element offered in the QD (The Open University, n.d.).

While the labour intensive process makes it difficult for RPL to be used at scale as the default method for recognition of micro-credentials, by “simplifying” fit for purpose RPL procedures for micro-credentials that follow the EU Council principles for the design and issuance of micro-credentials³¹, **micro-credentials could support the recognition of prior learning, while RPL could in turn, further enable the stackability of micro-credentials** as outlined in chapter 7.

8.1.1.4 Facilitate recognition using International Conventions

When micro-credentials are issued by formal education providers, they are recognised, where possible, based on standard recognition procedures used in recognising foreign qualifications and learning periods abroad.

Source: Council of the EU (2022).

The Erasmus+ funded project “*Micro-credentials linked to the Bologna Key Commitments - MICROBOL*” suggests that micro-credentials awarded by Higher Education Institutions may fall under the Lisbon Recognition Convention definition of a period of study, or, as long as they are awarded as a stand-alone credential, they can fall in the LRC definition of qualification (MICROBOL, 2021). This allows for them to be assessed according to the principles and procedures outlined in the convention.

The Global Recognition Convention is more explicit in its support for micro-credentials by emphasising the recognition of prior learning, and of qualifications based on partial studies. As such, **it provides a strong policy imperative to signatories to use its tools to facilitate the recognition of micro-credentials.**

8.2 Recognition of Micro-Credentials for Employment

Employers tend to identify **skill-based hiring** as one of the most important current trends in human resource management (Fuller, Langer and Sigelman, 2022). This describes a set of practices that focus on identifying the skills needed to be successful in a given role and then matching potential employees to the opportunity. This matching is based on their skills and competencies, or the aptitude they have shown for acquiring the necessary skills quickly (DeMark, et al., 2022).

As a mixture of both industry-specific and professional competencies are expected of most jobs, employers typically look for self-reporting of skills via a CV, rather than a list of achieved micro-credentials. By using a mixture of experience, credentials, interviews and tests to assess a candidate, employers would be able to evaluate an applicant's skills more directly and with efficiency. In this context, **it is not the micro-credentials that are recognised but rather the skills and competencies contained within those micro-credentials.** As such, in hiring, micro-credential recognition may be limited to being used as evidence of 'willingness to learn', or of acquisition of certain niche skills that may not be covered by a main learning programme. **This always assumes that either the employer**

³⁰ <https://www.open.ac.uk/study/credit-transfer/my-ou-qualification?path=a> as of 28 April 2023.

³¹ [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627\(02\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627(02)) as of 10 December 2022.

has a willingness to accept micro-credentials, and/or that the applicant tracking software in use by the employer has the ability to read and process micro-credentials. It is not unusual for these assumptions to fail (SHRM Foundation, 2021).

Recognition of micro-credentials becomes more attractive to employers with respect to **continuing professional development (CPD)**. Compared to other options for CPD, such as mentorship, part-time or full-time degrees, micro-credentials offer a more flexible, cheaper pathway that is more easily integrated with the requirements for promotion or change of responsibilities. This considerably **increases the incentive of employers to recognise micro-credentials in this context**.

Various routes to recognition exist:

- An employer may decide to use a specific corporate training provider (such as LinkedIn Learning, EdX or Alison, among others) to recognise courses from a subset chosen by the employer or from the whole list.
- An employer may decide to agree in advance with an employee to take a specific micro-credential from a specific provider.
- An employee may simply present micro-credentials taken at their own initiative to the employer as evidence of newly obtained competencies and have these recognised.

Table 8 sheds light on the tendencies for micro-credential recognition in hiring and CPD across the main major types of employers in the labour market.

Table 8: The role of micro-credentials in hiring and continuing professional development.

Type of Employer	Role of Micro-Credentials in Hiring	Role of Micro-Credentials in Continuing Professional Development (CPD)
Large Employers	CVs are typically screened using applicant tracking software - these will typically screen for discrete skills, but not specifically for micro-credentials.	Will typically have in-house training programmes that consist entirely of micro-credentials. These micro-credentials may or may not be certified, and form part of personal development plans.
Small-Medium Employers	CVs are typically screened more manually - micro-credentials may need to come from a reputed provider, or have their own reputation to make a significant effect on the hiring process.	CPD is less formal - it is likely that employers and/or employees might suggest specific micro-credentials to help learn new skills.
Regulated Professions	Micro-Credentials are likely to play no role in hiring - unless they are specifically indicated as a route to entry the profession.	A trusted list of micro-credentials and micro-credential providers may be established where professionals can obtain certified CPD credits.
In all Cases	Evidence of several achieved micro-credentials can serve as evidence of initiative to learn.	Increasingly employers will use an external micro-credential provider (such as LinkedIn Learning, EdX) to supply the micro-credentials for learning, and will recognise all micro-credentials from the approved platform.

Source: Adapted from Camilleri et al. (2022).

9 Learner-Centred Micro-Credentials

*Micro-credentials are designed to meet the needs of the target group of learners. Learners are involved in the internal and external quality assurance processes and **their feedback is taken into account as part of the continuous improvement** of the micro-credential.*

Source: Council of the EU (2022).

Micro-credential providers should do as far as possible to give learners the opportunity to follow micro-credentials in different ways, different times and different places. Courses may be designed in a blended format (on-site and online) with the ability for learners to plan the number of hours of study around work or caring responsibilities. In this area, e-learning offers significant advantage, especially when combined with on-site practical or work-based learning (The European MOOC Consortium, 2018 and Hendrikx and Ubachs, 2019).

Such forms of learning are not only critical for lifelong learning to become more accessible but are also, unsurprisingly the main drivers behind the demand for micro-credentials. As micro-credentials tend to be sought most by adult learners with extensive work experience compared to more conventional learners, it is necessary for micro-credential providers to put in place measures to ensure the needs of this target group are not excluded when designing, implementing and improving micro-credentials (see also Chapter 3.2 and 5.1).

Whether a micro-credential is provided online or on-site, providers should invite **all learners to contribute to the continuous improvement** of micro-credentials as co-owners of the learning experience. While including a learner or two for an internal or external quality assurance panel can support the agency of a selected few to improve micro-credentials, all learners should have the possibility to partake in the improvement of micro-credentials. Furthermore, requesting learners to fill in surveys and feedback forms after completing their programmes restricts learners from taking agency in real time to improve their learning experience.

Through learner agency, the wellbeing of learners, staff and the micro-credential provider's organisation can be improved as learners take ownership of co-shaping their learning in a community of shared purpose. Among the forms of agency through which learners gain a sense of responsibility to improve micro-credentials include individual agency (e.g. by the learners themselves), proxy agency (for e.g. through a learner representative) and or collective agency such as in group movements (Klemenčič, 2015).

Based on studies by Klemenčič (2015) and the European Students' Union, 2020 and the ESGs (2015), sharing responsibilities between providers and learners to improve the learning experience, environment and pathways of micro-credentials can be done by:

- 1. Recognising and supplementing learners' resources to take agency** to improve micro-credentials. Examples of this would be for micro-credential providers to:
 - a. Award credit or allocate time for learners to co-develop or tailor aspects of the curriculum during the programme itself, for example, through a form of community engagement of their choosing to supplement the learning experience.
 - b. Allocate time for learners to debate the improvement of micro-credentials during the programme itself.
- 2. Protecting learners' possibilities to take agency** in improving micro-credentials. An example of this would be for micro-credential providers to:

- a. Establish or develop and promote policy prescribing the right of learners to engage in the improvement of micro-credentials such as through seats for learner elected representatives in your institution's governance structures.
 - b. Set-up and ensure accessible information to an ombudsperson service to handle learner complaints.
 - c. Allocate and ensure sustainability of funding streams for learners' activities to engage in the improvement of micro-credentials.
 - d. Promote a culture of 'appropriateness' through regular capacity building activities for staff to encourage learners to engage in the improvement of micro-credentials. Agencies (e.g. Student Partnerships in Quality Scotland- SPARQS, Scotland³²) or stakeholder organisations representing learners (e.g. the Global Student Forum³³) or advocating for the learner and staff participation in university governance (e.g. Magna Charta Observatory³⁴) provide useful expertise for the organisation of such activities.
- 3. Encouraging learners' willingness to take agency** in improving micro-credentials regardless of whether the learner would benefit directly from it. An example of this would be for micro-credential providers to:
- a. Engage learners as equal partners within the institution's community - thus supporting the development of a sense of belonging.
 - b. Engage alumni in debates and capacity building activities to further develop practices for learner engagement and thus create new potential to improve micro-credentials.

Keeping learner agency at the heart of any micro-credentialing or learning debate is important in making lifelong learning a reality. Lifelong learners showcase their ability to continue learning and further developing competencies through their respective identities. The importance of building identity in learners is backed up by the OECD's Future of Education and Skills 2030 project, identifying which competencies best prepare future generations for jobs yet unforeseen. The main **future-proof competencies** outlined in the OECD Learning Compass 2030 include the (1) **skills, knowledge, attitude and behaviour** as the core foundation upon which (2) **transformative competencies** such as creating new value, reconciling tensions and dilemmas, and taking responsibility and (3) **learner agency** can be developed (OECD, 2019).

³² <https://www.sparqs.ac.uk/> as of 5 April 2023.

³³ <https://www.globalstudentforum.org> as of 5 April 2023.

³⁴ <https://www.magna-charta.org/> as of 5 April 2023.

10 Information and Guidance on Micro-Credentials

*Information and advice on micro-credentials should **be incorporated in lifelong learning guidance services** and should reach the broadest possible learner groups, in an inclusive way, **supporting education, training and career choices**.*

Source: Council of the EU (2022).

Persons involved in the design, issuing and recognition of micro-credentials should:

1. Ensure the accessibility and effective outreach of information on micro-credentials.
2. Integrate lifelong learning guidance and into micro-credentials.

10.1 Ensure Accessibility of Information on Micro-Credentials

Micro-credential designers and issuers, while considering using the elements listed in Annex I of the EU Council Recommendation to describe micro-credentials upon issuing, may also **adapt this same list, as done below, for providing information on the offer of micro-credentials relevant to potential learners**. All the elements listed in Annex I excluding those related to information on the award itself when the micro-credential has been completed have been removed from the list below. Designers and issuers should ensure transparency in the elements of information enabling potential learners to make the best suited choice of offer on micro-credentials. Table 9 lists what such elements could include.

Table 9: Informative elements on Micro-Credential Offers.

Informative Elements on Micro-Credential Offers
<ul style="list-style-type: none">▪ Title of the micro-credential▪ Country(ies)/Region(s) of the issuer▪ Learning outcomes including skill and competency-related information (with reference to the respective sectoral or other competency framework) if applicable▪ Notional workload needed to achieve the learning outcomes (in credits where possible)▪ Qualification Level (and cycle, if applicable) of the learning experience leading to the micro-credential (with reference to the respective Qualification Framework), if applicable▪ Type of assessment▪ Form of participation in the learning activity▪ Type of quality assurance used to underpin the micro-credential▪ Prerequisites needed to enrol in the learning activity▪ Integration/stackability options (stand-alone, independent micro-credential/integrated, stackable towards another credential)▪ Further information e.g. entitlements to which occupations as well as further education and training programmes the micro-credential may be recognised for

Source: Adapted from Council of the EU (2022).

National course catalogues can be considered a best practice on centralising accessible information on qualification offers (including micro-credentials). Stakeholders may use this to discover information about courses, compare courses, receive suggestions on potential courses they want to follow and much more. On the regional level, Europass³⁵ represents a set of online tools and information that supports communicating skills, qualifications and experiences in 30 languages across Europe.

10.2 Offer Guidance for Life-Long Learning

Lifelong learning plays a crucial role in leading the transformation of economies that is necessary to meet today's unprecedented social, economic and environmental challenges. When it comes to becoming lifelong learners, however, individuals may require guidance how to face the many doubts and questions as to which learning offers best prepare them to take the lead in navigating through this time of transformation.

For micro-credentials to attract individuals who can find countless learning offers online, providers should ensure accessible, user-friendly and effective career guidance services. It is to no surprise that choosing a learning offer can be overwhelming if individuals are inundated with work and caring responsibilities, and more so when trying to decipher which skills and competencies individuals should target. In fact, simply searching online what skills are necessary in the 21st century gives a very broad spectrum of all the skills individuals should possibly be proficient with.

Guidance services may be included:

- **In the promotion of the micro-credential.**
- **As part of the micro-credential itself.**

When promoting micro-credentials, providers should include **guidance on the learning and/or employment opportunities that may emerge from obtaining a micro-credential.** This gains particular significance given that very flexible learning pathways may inherently include the risk of being socially exclusive if the target group for those micro-credentials are not well-equipped with the competencies or guidance to access and benefit from them (Orr et al, 2020). **Services to speak to professional guidance councillors** should also be included, particularly when it comes to the ability of potential learners to have their prior learning recognised for a flexible learning pathway (see Chapter 7). An example of such services is demonstrated by the tailored support provided to learners seeking to validate previously acquired learning for admission to the Catholic University of Louvain (UCL)³⁶.

In regard to offering guidance services as part of the micro-credential itself, an example is provided in Figure 16 depicting a screenshot from Coursera's Career Success Specialization offered by the University of California, Irvine Division of Continuing Education. While micro-credentials such as this can solely focus on basic management, communication, and negotiation skills, providers can also seek to **integrate career guiding elements into micro-credentials which also focus on industry-specific skills.**

³⁵ <https://europass.eu> as of 27 January 2023.

³⁶ <https://uclouvain.be/en/study/vae/un-accompagnement-sur-mesure.html> as of 5 April 2023.

Figure 16: Coursera's Career Success Specialization offered by the University of California, Irvine Division of Continuing Education. Source: Coursera (n.d.).

Aside from integrating career guiding tools into micro-credentials, **learners can be proactively guided through a variety of learning and career pathways through micro-credentials which expose them to interdisciplinary topics**. An example such is taken from the Arqus European University Alliance 'Engaged Citizens' program³⁷ which uses research and challenge-based learning methodologies framed by themes such as "Diversity, Interdisciplinarity and Social Challenges". The micro-credential programme includes an intensive five-day on-site course, a research project combining online learning modules where learners work in interdisciplinary teams to finally present their projects in a forum led by learners. The certificate awarded after completion of the programme is able to be recognised for 6-12 ECTS credits if learners complete the on-site course, the full programme and attend the Forum (Arqus, 2022) By working in interdisciplinary teams, learners can further identify their disciplinary as well as skill and competency-related strengths and weaknesses to help build on their identity and therefore guide their personal development as lifelong learners.

³⁷ <https://arqus-alliance.eu/action-lines/engaged-citizens/> as of 1 March 2023.

11 Policy-Level Recommendations

This chapter elaborates on evidence-based policy recommendations and initiatives to enhance the design, issuing and recognition of micro-credentials. The significance of enabling policy frameworks, regulations and legislation is first addressed, followed by initiatives to publish micro-credential related data as linked open data, to make it accessible, understandable and comparable. Policy recommendations to advance the use of digital technologies and skill descriptors are also elaborated on. Based on a foundation of trust, 'recognition networks' for credit exchange agreements can be further fostered and the recognition process made more fair and transparent through alignment with global conventions.

11.1 Develop Enabling Frameworks and Legislation

Whether for learning or employment purposes, decision-makers and policymakers must address the question of trust in the value micro-credentials hold for recognition (even when offered within a formal learning context). Trust in the value of a micro-credential is difficult as while, e.g., any individual and especially those facilitating recognition may “*understand that a master’s degree signifies a higher level of preparation than a bachelor’s degree, it is impossible to say whether a Udacity Nanodegree prepares a person more or better than an edX Professional Certificate or a Coursera Specialization*” (Pickard, 2018).

One crucial way to build trust in micro-credentials is for decision-makers and policymakers to **structurally consult with all stakeholders** the development of enabling frameworks, regulations or legislation to integrate micro-credentials into existing learning and employment (human resources) systems. These may include:

1. A fit for purpose country or system level policy initiative to establish a **commonly agreed definition** of micro-credentials, **standard elements for describing** a micro-credential, and **principles for designing, issuing and recognising** micro-credentials using, where applicable, the recommendations outlined in this guide.
2. A country or system level policy initiative to **integrate micro-credentials in the National Qualifications Framework**, where relevant, and stakeholder-wide consultation on the development of one where none is in place.
3. A fit for purpose country or system level policy initiative for enabling the **recognition of prior learning**, including by enabling individuals the **right to request the validation and/or credit-rating of previously acquired formal, non-formal or informal learning** for the purposes of recognition to access employment or E&T.

In regard to the first policy initiative, an example of an enabling framework for micro-credentials beyond that of the European Union is the 'Australian National Microcredentials Framework' (NMF)³⁸. Among others, the framework sets a national definition for micro-credentials, agrees on unifying principles for micro-credential and establishes critical information and minimum standard requirements.

Similar aspects to the EU Council Recommendation include the requirement of assessment, stated learning outcomes, workload, level and use of standards of quality assurance. Where no QA standards are applied, a statement of quality is required. Additionally, the Australian NMF includes requirements for harmonizing the design of micro-credentials with skill descriptors and industry specifications where the credential is recognised.

In regard to the second policy initiative, see Chapter 4.1.3 for specific country examples where micro-credentials were integrated into national qualifications frameworks. As demonstrated in Chapter 8,

³⁸ <https://www.education.gov.au/higher-education-publications/resources/national-microcredentials-framework> as of 1 March 2023.

where qualification frameworks are in place, the recognition of micro-credentials is facilitated when verifiers can assess an applicant's micro-credentials to existing competency frameworks such as, but not only limited to NQFs. However, most education and training systems have not yet integrated micro-credentials into them (Nuffic, 2019)

Finally, in regard to the third policy initiative, aside from policies to enable the validation and certification of prior learning in the form of a micro-credential (see country examples mentioned in chapter 6) policy initiatives may also enable RPL procedures to facilitate recognition of micro-credentials, including through credit recognition, where an evaluator assesses the learner's record of learning for awarding credit toward a qualification or programme, or by enabling credit rating. E.g. the Scottish Qualifications Authority (SQA) is enhancing the training offered by companies and professional organisations by formally placing it on the Scottish Credit and Qualifications Framework (SCQF), Scotland's national framework for qualifications. Providers of such training can then issue awards to their employees' undertaking this training and these rewards reflect the SCQF level, that in turn reflects the level of difficulty and SCQF credits which indicate the length of time taken to complete the training (SQA, n.d.). In South Korea, the Academic Credit Bank System (ACBS) is a central agency which, rather than issuing the credits itself, formally evaluates applications from non-formal education institutions to become ACBS- accredited institutions. This accreditation would enable non-formal education providers to award their learners credit which can be accumulated to a degree (ACBS, n.d.).

11.2 Invest in Freely Available technology to Authenticate Credentials

Significant effort is expended by both learning organisations and employers in authenticating the claims which are made in credentials. **Freely available technology offers the possibility to entirely remove this work**, making it easier and quicker to recognise micro-credentials and paving a way towards recognition becoming more commonplace.

In order of preference, policy and decision-makers should take the following actions to accelerate this:

- **Incentivise credential issuers to issue verifiable digital credentials** (such as digitally signed PDFs, or European Digital Credentials) wherever possible, and strongly discourage other formats.
- **Promote trusted databases of credentials**, and work with recognition authorities and issuers to make their credentials available through such databases. For example, in the U.S. 97% of credentials issued by post-secondary institutions are registered with the National Student clearinghouse, which allows any interested party who needs to verify credentials able to do so from a single source.
- **Incentivise verification bodies to maintain and publish databases of completed recognitions.** By maintaining such a database, the checks that have been done on one credential can be used to inform those being done on similar credentials. By publishing information about the recognition, other institutions recognising the credentials can benefit from the information.

11.3 Reinforce a Common Taxonomy of Skills and Competencies in Credentials

Aside from encouraging awarding bodies to produce better credentials, policy and decision-makers should **incentivise credential issuers to make skills in micro-credentials visible using a common taxonomy developed by actors across the credential supply and demand sides.**

A promising technological approach is the use of Artificial Intelligence to extract skills data from natural text, and to use this to better understand a person's learning accomplishments. Such tools are being increasingly integrated into applicant tracking software as well as common CV builders and platforms. Another approach is for recognising authorities to create mappings between employment opportunities, desired skills and micro-credentials that teach those skills.

One example of this in action is the European Skills, Competences, Qualifications and Occupations (ESCO)³⁹. ESCO represents a European classification of skills, competences, qualifications and occupations available in 28 languages (besides official EU languages, Icelandic, Norwegian, Arabic and Ukrainian). It encompasses 3008 occupations (including hierarchical relationships between them and mappings to International Standard Classification of Occupations – ISCO and 13,890 skills) as of January 2023.

Another example is the Rich Skill Descriptors developed by the Open Skills Network⁴⁰. Using this system, an employer can publish a job vacancy that lists not only the skills required, but also link it to a list of courses that impart those skills. This can be used to screen potential candidates by skills or by learning background, increasing the potential pathways to an interview.

Finally, **employers as well as education and training organisations can develop application templates which encourage users to describe the skills they possess**, rather than solely relying on descriptions of work experience and credentials earned. This allows a person to describe their learning outcomes to a recognising body, even where the body has no prior knowledge of the micro-credential.

11.4 Create or Promote Reference Databases of Trusted Courses and/or Providers

Common to recognition for education, training and employment purposes is the emphasis of the verifying body on the reputation of the organisation issuing the credential and/or the micro-credential itself.

Three tools can be used to help assess such reputation:

- **Databases of 'trusted issuers'** can be used to list and find institutions that meet a certain set of widely accepted quality criteria. Such lists may be provided by quality assurance bodies who accredit institutions, or by professional associations or ranking organisations that create lists of institutions that meet their criteria.
- **National or regional databases of qualifications** provide lists of qualifications that can be referenced by any person wishing to check the status of a particular micro-credential (see Chapter 10.1)
- **Recognition databases** can provide information as to which learning organisations or employers accept various micro-credentials, providing a proxy for a reputational score.

In Europe, the European Quality Assurance Register has developed a database of external Quality Assurance Results (DEQAR)⁴¹. This database includes a list of programmes and HEIs accredited according to the ESGs. It encompasses information for most Higher Education institutions on the continent. If learners or authorities want to check whether a specific HEI in Europe issuing micro-credential is accredited, they can use DEQAR because it lists accredited HEIs. A key element of DEQAR is that it makes its data available to other computer systems via application programming interfaces. This allows any recognising entity to integrate recognition checks directly into its systems as seen in Figure 16 below. The screenshot depicts the outcome of evaluating a qualification awarded by an accredited institution part of the DEQAR database for recognition through the Diplome platform, the first blockchain system for the recognition of qualifications run by CIMEA (Finocchietti, 2021).

³⁹ <https://esco.ec.europa.eu/en> as of 10 December 2022.

⁴⁰ <https://www.openskillsnetwork.org/rsd> as of 1 March 2023.

⁴¹ <https://www.eqar.eu/qa-results/search/> as of 27 January 2023.

CIMEA
CENTRE OF INTERNATIONAL
ACADEMIC RECOGNITION

**STATEMENT of
COMPARABILITY**

REFERENCES: [REDACTED] DATE: 24/02/2021

ELEMENTS OF THE QUALIFICATION

NAME OF THE HOLDER: [REDACTED]
 DATE OF BIRTH: [REDACTED]
 NAME OF THE QUALIFICATION: Bachelor in Banking and Finance
 AWARDED YEAR: 2020
 COUNTRY OF ISSUE: Algeria
 AWARDED INSTITUTION: 'EVOUAR' University
 STATUS OF INSTITUTION: [REDACTED]
 TYPE OF QUALIFICATION: [REDACTED]
 CLASSIFICATION LEVEL: 1st cycle CIMEA/ EQF level 6
 DURATION: 3 years
 WORKLOAD: 180 ECTS
 DEQAR ID OF THE AWARDED INSTITUTION: DEQAR-ST5881

EVALUATION DETAILS:
 [REDACTED]

The present Statement is drafted by CIMEA, the national of France competence dealing with the ENARIC - National Academic Recognition Information Centre network of the European countries in the ENIC European National Academic Recognition Information Centre network of the Council of Europe and UNISCED - European Region. The present Statement has the value of non-binding advisory and it does not imply nor assume the responsibility of the awarded qualification.

When producing its participants, CIMEA makes use of Machine Learning linked to the diploma review.

'Comparability' means the analysis of the qualifications level of countries by the status of the European countries in the ENIC European National Academic Recognition Information Centre network of the Council of Europe and UNISCED - European Region. The present Statement has the value of non-binding advisory and it does not imply nor assume the responsibility of the awarded qualification.

Diplôme Révisé
 Le présent diplôme a été révisé par CIMEA.

CIMEA - Via XXII Aprile, 26 | 00185 Roma - www.cimea.it

Figure 17: CIMEA's state of comparability - an evaluation of a qualification for recognition purposes. From Finocchietti (2021).

National course catalogues, which mainly exist in Europe, tend to list all qualifications and/or learning opportunities available within a country. They can be considered best practice on centralising reference databases of qualification offers. The **Europass**⁴² platform includes an aggregator of course data stored in national qualification databases (including some micro-credentials). It therefore provides a one stop shop for trusted information about qualifications on the regional level (Europass, n.d.). The European Training Foundation is currently working with neighbouring countries to the EU to implement a similar network of national qualification databases with a centralised portal, to aid recognition of qualifications (including micro-credentials) throughout Europe's neighbourhood.

11.5 Apply Principles of International Recognition Convention

At the time of publication, the UNESCO Global Convention on Higher Education (GRC) has only registered 21 states as parties, with only 15 having ratified the convention⁴³. **By applying the principles of the convention, a country gives learners an automatic right to have their micro-credentials (qualifications and study periods) recognised for purposes of access to Higher Education and employment.** It also provides a set of guidelines towards internationally standardised processes and procedures to make this a reality. Signature of the convention implies that a state is committed towards fairer and more efficient recognition procedures to access Higher Education, including via support for flexible learning pathways. Regional conventions such as the Lisbon Recognition Convention and the Revised Convention on the Recognition of Studies, Certificates, Diplomas, Degrees and Other Academic Qualifications on Higher Education in African States (Addis Convention⁴⁴) promote ratifications in the respective regions in synergy with the GRC.

⁴² <https://europass.eu> as of 27 January 2023.

⁴³ <https://www.unesco.org/en/legal-affairs/global-convention-recognition-qualifications-concerning-higher-education?hub=66535> as of 27 January 2023.

⁴⁴ https://www.unesco.org/en/legal-affairs/revised-convention-recognition-studies-certificates-diplomas-degrees-and-other-academic#STATE_PARTIES as of 31 March 2023.

12 ACRONYMS

A.S.E.A.N.	Association of South-East Asian Nations
CEDEFOP	The European Centre for the Development of Vocational Training
CIMEA	Information Centre on Academic Mobility and Equivalence
C.M.F.	Common Micro-Credential Framework
C.P.D.	Continuing Professional Development
C.V(s).	Curriculum Vitae (Resume/s)
C.V.E.T.	Continuing Vocational Education and Training
D.E.Q.A.R.	Database of External Quality Assurance Results
E.C.I.U	European Consortium of Innovative Universities
E.C.V.E.T.	European Credit System for Vocational Education and Training
E.&.T.	Education and Training
Ed.Tech.	Education Technology
E.A.R-H.E.I.	European Area of Recognition – Higher Education Institutions
E.Q.A.V.E.T.	European Quality Assurance Reference Framework for Vocational Education and Training
E.Q.F.	European Qualifications Framework for Lifelong Learning
E.S.C.O.	European Skills, Competences, Qualifications and Occupations
E.S.G.	Standards and Guidelines for Quality Assurance in the European Higher Education Area
E.T.F.	European Training Foundation.
E.U.	European Union
G.D.P.R.	General Data Protection Regulation

GRC.	Global Convention on the Recognition of Qualifications Concerning Higher Education
H.E.I(s).	Higher Education Institution(s)
I.S.O.	International Organization for Standardization
L.O(s).	Learning Outcome(s)
LRC	Convention on the Recognition of Qualifications concerning Higher Education in the European Region
M.C.R.A.	Model Credit Recognition Agreement
M.O.O.C(s).	Massive Open Online Course(s)
M.o.U.	Memorandum of Understanding
N.T.U.	Nanyang Technological University
N.Q.F(s).	National Qualification Framework(s)
Nuffic.	The Dutch Organisation for Internationalisation in Education
O.E.C.D.	Organisation for Economic Cooperation and Development
SHARE	European Union Support to Higher Education in ASEAN Region
S.M.E(s).	Small and Medium Enterprise(s)
TeSLA	An Adaptive Trust-based e-assessment System for Learning
U.N.E.S.C.O.	United Nations Educational, Scientific and Cultural Organization
V.E.T.	Vocational Education and Training
V.N.F.I.L.	Validation of Non-Formal and Informal Learning
W.E.F.	World Economic Forum

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