

# A CRITICAL ANALYSIS OF EUROPEAN MICRO-CREDENTIAL DEVELOPMENT IN AN ERASMUS+ PROJECT

Neill WYLIE

Laura WIDGER

Valerie BRETT

Helen MURPHY

South East Technological University, IE

Email: [neill.wylie@setu.ie](mailto:neill.wylie@setu.ie)

**Keywords:** *Micro-credentials, instructional design, online learning, EU projects*

## ABSTRACT

Micro-credentials can authenticate the achievements of personalised and focused learning experiences. This innovative practice paper critically evaluates the collaborative European development of six micro-credentials in an Erasmus+ project in the area of basic skills. A unique aspect of this research is that, at the time of writing, this was among the first European funded projects which attempted to collaboratively develop micro-credentials based upon the European Commission's recommended micro-credentials definition. The methodology employed for developing the themes for the micro-credentials is discussed. This paper critically explores design considerations for micro-credential development emphasising the importance of choosing an appropriate instructional design framework. This research supports further understanding on micro-credential development at a critical phase in their growth and application in higher education across Europe.

## INTRODUCTION

While higher education institutes have tended to consider awards in terms of credit accumulation in the European Credit Transfer System (ECTS), the validation of smaller parcels of learning has grown in popularity in recent years (Flynn et al., 2023). Micro-credentials can be used in a variety of settings and offer a flexible and reliable means of capturing continuous professional development (CPD). In 2022, after much consultation with European stakeholders, the European Commission (EC) (2022) advanced the following definition for micro-credentials:

*"A micro-credential is the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes have been assessed against transparent and clearly defined standards. Courses 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" (EC, 2022).*

The definition places a strong emphasis on the specific knowledge, skills, and competences that a learner acquires through a micro-credential. Additionally, it emphasises that micro-credentials are portable, specifying that they can be shared and transferred across different contexts, institutions, or industries. This suggests that micro-credentials should be used to demonstrate skills and knowledge in a variety of settings and can support learners to advance their careers or pursue new opportunities. What is notable about the definition is that it does not set down specific criteria for associated ECTS for micro-credentials, which may result in variation in terms of content load and duration of micro-credentials delivered across Europe. However, it does note the importance of micro-credential design to address societal, personal, cultural or labour market needs (EC, 2022).

The COVID-19 pandemic has provided the motivation for the swift application of micro-credentials by governments in several authorities (Wheelahan & Moodie, 2021). Additionally, international government organisations such as the OECD and UNESCO are increasingly turning their attention to micro-credentials (Kato, Galan-Muros & Weko, 2020). This increased focus on micro-credentials is part of the EC's response to digital transformation, whereby a growing number of individuals in Europe are required to update their knowledge, skills, and competences to fill the gap between their formal education and the needs of an evolving society. Recovery from the COVID-19 pandemic and the acceleration in the use and uptake of digital technologies in our everyday lives has increased the pace of change in how we live, learn and work. Intentionally designed micro-credentials are a relatively new concept and lend themselves to a wide variety of educational knowledge, skills, and competence achievement. Furthermore, micro-credentials can certify the outcomes of small, tailored learning experiences. While micro-credentials are usually regarded as distinct from ECTS credits, some European universities have also formalised a connection between the two (Flynn, *et al.*, 2023).

This paper is based upon research from an Erasmus+ funded project entitled 'EBSN (European Basic Skills Network) Professional Development Series for Basic Skills Teachers'<sup>1</sup> which commenced in September 2021 and will finish in June 2023. At the time of writing, this research was one of the first collaborative Erasmus+ projects which attempted to develop micro-credentials from the blueprint phase through to the post evaluation phase across several European states and institutions. The project differs from the approach adopted in other micro-credential projects where partners typically develop their micro-credentials in isolation, but collaborate to share experiences and develop frameworks for recognition and transferability of the associated credits. This paper critically analyses the development of the micro-credentials within the project providing the context in which micro-credentials have risen in popularity. It briefly elaborates on the development of key themes for the micro-credentials and explains key considerations of the design framework employed before advancing a micro-credential design blueprint and discussing challenges involved in collaborative micro-credential development.

## MICRO-CREDENTIAL DEVELOPMENT PROCESS

A review of European Union (EU) policy and literature on the upskilling of basic skills teachers informed the selection of six overarching themes, presented in *Table 1*, for the micro-credentials developed by the partners as part of the Erasmus+ project.

---

<sup>1</sup> Project partners: Progress Consult and the University of Pécs in Hungary; the National Adult Literacy Agency (NALA) and the South East Technological University (SETU) in Ireland; Folkeuniversitetet in Norway; and the Directorate for Research, Lifelong Learning and Employability within the Ministry for Education and Employment in Malta (DRILLE).

Micro-credential Themes	ECTS*	EFQ	Delivery
Approaching Digital Teaching and Learning	1	5	Online
Basic Literacy			
Diversity and Interculturalism			
Empowering Adult Learners of Basic Skills			
Digital Competence			
Facilitating the Learning Process			

\*Equivalent to 1 ECTS in duration c.25 hours. At the time of writing micro-credentials were not credit bearing.

Table 1: Micro-credential themes for the EBSN Professional Development Series

It was important at the outset to determine a common structure for the development of the micro-credentials to mitigate design flaws. The European standard elements to describe a micro-credential, as set down in the EU recommendations (EC, 2022), include the mandatory elements presented in

Table 2. All these elements were included in the design phase with each micro-credential being equivalent to 1 ECTS at EQF (European Qualifications Framework) level 5.

Mandatory element	Description
Learner information	The learner needs to be identified and records kept within the awarding body.
Issuer information	Information on the issuer/provider, including country; information on the awarding body or institution, including country, including a signature or seal of the issuer/provider and/or awarding body or institution.
Micro-credential information	Title, date of issuance or date of assessment, verification of authenticity.
Learning experience	Learning outcomes, workload (in ECTS, when possible), assessment and form of quality assurance.
QF level	NQF level (when possible), QF-EHEA and EQF level (if self-certified/referenced), ISCED level & subject area code, SQF level (if needed).
Assessment	Type of assessment.
Participation	Form of participation in the learning activities and access requirements.
Quality assurance	Type of quality assurance used to underpin the micro-credential.

Table 2 Mandatory elements for issuing micro-credentials (adapted from EU recommendation, page 16)

The project's methodology followed a shared design process where partners fed their different fields of expertise (in teacher training, basic skills provision, designing micro-credentials) into a joint planning procedure facilitated by the lead content developer based in one of the project partners. While this process appeared to be the most efficient way to develop content, it did not always go as planned. Points of improvement are discussed below.

## DESIGN CONSIDERATIONS

Occasionally, there is a perception that the course material is uploaded onto a Learning Management System (LMS) without adequate attention to design, given that micro-credentials are often short in duration and predominantly delivered fully online. Further,

deconstructing already existing modules may seem like a pathway to micro-credential development. However, micro-credentials need to facilitate ease of access, be engaging for the learner, have distinct outcomes and be intentionally designed and fit for purpose targeting specific skills, knowledge, and competences (Flynn *et al.*, 2023). Micro-credentials that lack transparency about their learning outcomes, assessment methods, and the criteria for earning the credential can lead to confusion and scepticism among learners and employers, which can ultimately limit the effectiveness and value of the credential. As noted by Wheelahan and Moodie (2021), there is a need for more transparency in micro-credential programmes. Therefore, instructional design is a key component of the development phase of micro-credentials, however, there appears to be a lack of relevant literature on the design principles of micro-credentials. This paper seeks to address this gap by advancing design considerations for micro-credential development.

Employing an instructional design framework helps ensure that the course content and activities are designed in a way that promotes effective learning. A well-designed framework considers the learning objectives, target audience, and the learning environment to create a course that is engaging, effective, and promotes meaningful learning. Moreover, by using an established instructional design framework, course developers can save time and resources by leveraging existing best practices and avoiding common mistakes. This can help streamline the course development process and improve efficiency. Salmon's (2014) Carpe Diem design framework was selected as the mechanism to develop the micro-credentials. Carpe Diem (Salmon, 2014) allows for the micro elements to be given consideration in terms of the actual learner profile or persona. Micro elements relate to, for example, delving into the finer details of persona building or fine tuning the course storyboard. This was important in this research as the developers were not faced with one complete lens through which to filter content but rather a fragmented lens consisting of various personas over multiple cultural and linguistic backgrounds. Building in time for deciding who the target personas were was an essential aspect of the development process. This allowed for a more comprehensive approach to content development which was focused on serving a European audience as opposed to one specific institutional or national audience as is often the case with micro-credentials, such as those offered by HEIs. The collaborative approach embedded in the Carpe Diem framework works well in a development process in which subject matter experts (SMEs) and instructional designers (ID) work in tandem through the six steps outlined in

Table 3.

Stage	Description
Blueprint	SMEs and IDs collaborate on the essential aspects of what they aim to achieve. This output is agreed in a mission statement. Persona is created.
Storyboard	Collaboratively the process of learning, teaching and assessment is drawn out in a visual way, working out a schedule, a sense of flow and alignment between the components.
Build Prototype	IDs build the design in the online environment and create some real practical testable activities.
Reality Check	Colleagues act as 'reality checkers' to provide productive feedback by engaging in beta testing.
Review and Adjust	Any adjustments can be made, and an Action Plan is developed for the additional work that is needed.
Planning Next Steps	The team implements the course based upon the Action Plan.

Table 3 Carpe Diem Approach

Several other frameworks were considered and subsequently discounted due to their limitations for this project. One such framework was ADDIE. ADDIE, an instructional design framework comprising the five stages of Analysis, Design, Development, Implementation, and Evaluation, is widely employed in various fields. It was developed in the 1970s and was first used by the United States military as a methodical approach to crafting training programmes (Molenda, 2003). The ADDIE model has since undergone numerous modifications and enhancements by several individuals and organisations and has gained widespread acceptance as one of the most used models in educational and training contexts (Smith & Ragan, 2005). The authors found that while generic in nature, ADDIE did not lend itself well to this research due to its linear approach. This approach can be effective for more static content but may be restrictive when dealing with collaboratively generated content or learning outcomes that do not have a predetermined end state, such as those in this research.

Similarly, Backwards Design (Wiggins & McTighe, 1998) was discounted as a suitable model for this research. While the model does have strengths in that it identifies desired results and seeks to determine criteria for evaluating student progress and has the added benefit of being both systemic and flexible (Graff, 2011), it does not contain a specific 'blueprint' phase for outlining the essential criteria and developing the 'persona' or lens in which the content is filtered through. It is advised that further research into the development of European collaborative micro-credentials should consider the design framework and pay particular consideration to the initial blueprint phase which facilitates persona creation.

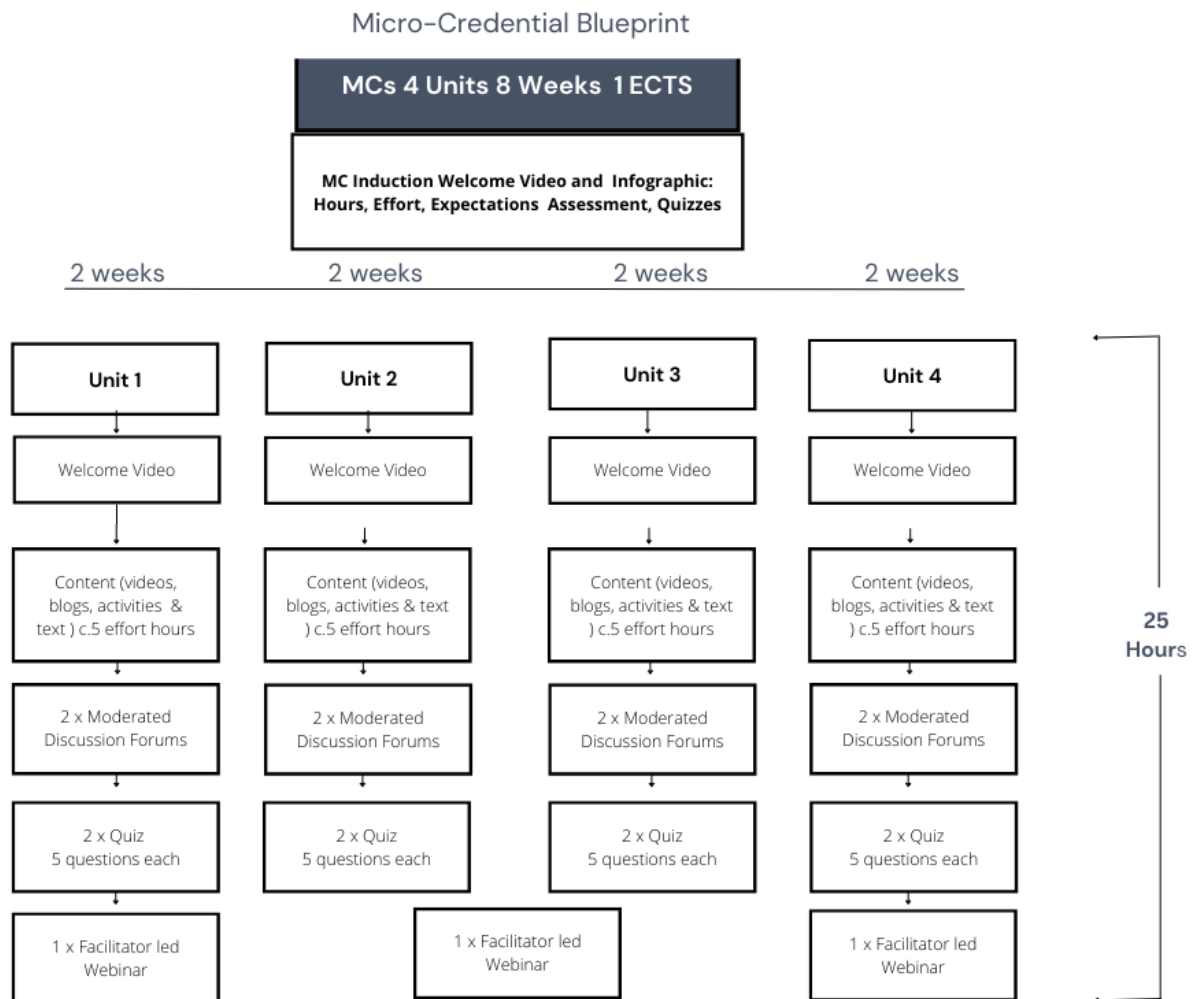
Importantly, Universal Design for Learning (UDL) was employed during the design phase. UDL is a set of principles for curriculum development which provide students equal opportunities to learn, including those with disabilities. Studies have demonstrated that the UDL framework holds considerable promise for catering to the needs of diverse learners across various environments. (Coffman and Draper, 2022). It seeks to enhance the experience of all students by introducing more flexible methods of teaching to cater for the diversity of learners. An example of its use in practice is evident in the inclusion of podcasts, videos, and recorded texts in the project's micro-credentials. Furthermore, participants are given the option of submitting activities in various media forms which caters for those who prefer more visual, experiential communication styles.

## Design Blueprint

As depicted in *Figure 1* overleaf, each micro-credential contains eight weeks of content spread over four units consisting of engaging activities, moderated discussion forums, quizzes and synchronous webinars equivalent to 1 ECTS credit or c.25 effort hours of study.

This research aims to share good practice by developing a blueprint for micro-credential design after an initial piloting phase which yielded feedback on content, duration, tools, facilitator involvement and accessibility. It is deemed essential to pilot and seek feedback on the micro-credentials before their release to a wider European audience due to, among others, the nature and complexity of the development process. Feedback from pilot participants provides authentic insights into how engaging and effective the course is for learners which can in turn help instructors and course designers identify areas for improvement to increase learner engagement and motivation. In some instances, feedback pointed out issues with content localisation which merited a review of the content including

assignments, assessment and digital media. In others, videos were not deemed culturally appropriate for some audiences and were amended.



*Figure 1 Micro-credential blueprint*

In addition, the feedback enabled the developers to rebalance items such as the number of quiz questions and webinars. Participants preferred to have a standardised approach to quizzes which led the team to devise two quizzes per content unit of five questions each, totalling forty quiz questions for each micro-credential as depicted in Figure 1 above. Moreover, the team added one more facilitator led webinar as participants saw value in synchronous contact which allows the participants and facilitators to interact with each other in real time. Studies have shown that synchronous instruction presents an effective opportunity for online facilitators to develop new instructional models and promote the active involvement of online learners in the teaching/learning process (Leo *et al.*, 2009). The participant feedback aligns with research indicating students prefer a consistent course structure when taking online courses (Young & Norgard, 2006).

Biweekly micro-credentials workshops were held for the partners involved in content development where the various phases of Carpe Diem were consecutively worked through. These meetings provided fertile ground upon which team members could raise questions on content suitability, design, licensing, edtech and activities, as well as providing the

opportunity to 'soundboard' ideas with one another, thus adding to greater coherence over the six micro-credentials. It was important in these meetings to develop solid 'storyboards' for each micro-credential which visualised the learning paths and ensured constructive alignment within. Again, this aspect made Carpe Diem the most effective design framework for this research's goals.

Activities were built into each micro-credential which aimed to further engage the participants in the content following the 'Build Prototype' phase in Carpe Diem in which tangible, practical and testable activities are designed and tested. These activities were designed with UDL in mind using downloadable templates so that participants could easily access the activity and follow the format for submission. In total, each micro-credential contained two downloadable template activities which participants were encouraged to share in the discussion fora for peer and tutor review.

All six micro-credentials were released to specific European audiences in late Spring 2023, each being facilitated by a member of the project team. A further evaluation is planned which will provide more feedback on their efficacy.

### **Challenges in collaborative European micro-credential development**

While there exists a European framework for micro-credential development, uptake has been slow, with many EU countries still to adopt the definition based on ongoing research at South East Technological University (Widger *et al.*, 2023). Initial consultation, as part of the EBSN project, with teacher training organisations in Norway, Hungary, Switzerland, Spain, Germany, Ireland and Malta, indicate that the latter four countries have organisations that offer micro-credentials.

Cronjé (2011) posits that educational technology has developed a new society in which we need to learn how to grow together despite our differences. While this educational technology assists cross-cultural research, it is also imperative to be aware of and respect cultural norms within the partner organisations involved in the collaboration. The research consisted of partners from four European countries, each with distinct working styles and communication norms which had to be managed from a content development perspective.

It was noted at times during the content development phase that some partners adopted a more team-oriented approach while others worked independently. While this did not cause conflict, it is interesting nonetheless to note especially in team-oriented tasks as some partners preferred a more individualistic approach. Another challenge related to engaging stakeholders. Engaging stakeholders at all levels, including employers, educators, and learners, is essential for the success of micro-credentials. Achieving this engagement across Europe can be challenging given the diverse interests and priorities of different stakeholders. Additionally, cultural differences towards 'netiquette', the rules of conduct for respectful and appropriate communication on the internet, and online team meetings caused some minor issues during the development phase.

As a way of mitigating possible issues with communication, it is recommended that a digital communication manifesto be developed at the outset which outlines the core principles and values that guide digital communication practices. Additionally, it provides a framework for decision-making and helps to ensure that digital communication activities are aligned with the organisation's goals and values. In addition, it promotes consistency and clarity in communication activities. Outlining clear guidelines and standards helps to ensure that messages are communicated effectively and that communication practices are consistent across different channels and platforms. Importantly, for collaborative European projects such as this one, a digital communication manifesto can help to build trust and credibility with partners by demonstrating a commitment to transparency, openness, and ethical behaviour.

By developing a digital communication manifesto at the outset, expectations could be set which partners would agree to abide by.

## CONCLUSION

This paper has discussed the European development of six micro-credentials. It has explored the selection of an instructional design framework upon which to develop the micro-credentials and analysed the design phase of micro-credentials. It has provided a blueprint for the micro-credentials designed in this research and has advanced some challenges inherent in cross cultural development of micro-credentials.

The increased focus on the use of micro-credentials in education illustrates the need for innovative and adaptable recognition of learning. Micro-credentials facilitate students to learn specific skills or gain knowledge in professionally focused areas, and are stackable, supporting flexible progression. They provide a unique mechanism to recognise and develop the work-based learning of employees to support both reskilling and upskilling as well as lifelong learning. While the research discussed in this paper focused on the development of micro-credentials at a European level it is also timely for those seeking to develop micro-credentials in institutes of higher education and other educational institutions. Furthermore, micro-credentials must be relevant to the learners' needs and the rapidly changing demands of the labour market. They need to be recognised and accepted by employers and other education providers to ensure that learners can transfer their credentials across different contexts and make use of their qualifications. This requires collaboration between different stakeholders, including employers, education providers, and policymakers. Collaborative development is necessary to ensure that micro-credentials stay current and meet the evolving needs of learners and employers. It is hoped this paper will contribute to increased European collaboration in micro-credential development.

## REFERENCES

Dick, W. and Carey, L. (1996) *The systematic design of instruction* (4th ed.). New York: Harper Collins College Publishers.

European Commission (2022) *Proposal for a Council Recommendation on a European approach to micro-credentials for lifelong learning and employability – Adoption*. Council of the European Union. Available at: <https://www.consilium.europa.eu/en/press/press-releases/2022/06/16/council-recommends-european-approach-to-micro-credentials/> (Accessed: 27 March 2023).

Flynn, S., Cullinane, E., Murphy, H. and Wylie, N. (2023) 'Micro-credentials & Digital Badges: Definitions, Affordances and Design Considerations for Application in Higher Education Institutions', *All Ireland Journal of Higher Education*, 15(1), pp. 1-18.

Graff, N. (2011) 'An Effective and Agonizing Way to Learn: Backwards Design and New Teachers' Preparation for Planning Curriculum.' *Teacher Education Quarterly*, 38(3), pp. 151-168. Available at: <http://www.jstor.org/stable/23479622> (Accessed: 19 April 2023).

Kato, S., Galán-Muros, V. and Weko, T. (2020) 'The Emergence of Alternative Credentials.' *OECD Education Working Papers, No. 220*. OECD Publishing. Available at: <https://www.oecd-ilibrary.org/content/paper/b741f39e-en> (Accessed: 27 March 2023).



Leo, T., Manganello, F., Pennacchiotti, M., Pistoia, A. and Chen, N. S. (2009) 'Online synchronous instruction: Challenges and solutions', *2009 ninth IEEE international conference on advanced learning technologies*, pp. 489-491. DOI: 10.1109/ICALT.2009.148. .

Molenda, M. (2003) 'In search of the elusive ADDIE model', *Performance Improvement*, 42(5), pp. 34-37.

Smith, P. L. and Ragan, T. J. (2005) *Instructional Design* (3rd ed.). Hoboken, NJ: John Wiley & Sons.

Widger, L., Murphy, H., Wylie, N. and Brett, V. (in press) 'Establishing an understanding of flexible accreditation pathways for online learning modules for basic skills teachers in the framework of EBSN Professional Development Series', *South East Technological University*.

Wiggins, G. and McTighe, J. (2005) *Understanding by design* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Wheelahan, L. and Moodie, G. (2021) 'Analysing micro-credentials in higher education: a Bernsteinian analysis.' *Journal of Curriculum Studies*, 53(2), pp. 212-228. DOI:10.1080/00220272.2021.1887358.

Young, A. and Norgard, C. (2006) 'Assessing the quality of online courses from the students' perspective', *The Internet and Higher Education*, 9(2), pp. 107-115.

