

**People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Research
University of Tlemcen**



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**Micro-Credentials: A Qualification to Demonstrate
Students' Skills and Knowledge at Tlemcen University**

Dissertation submitted to the Department of English as a partial fulfilment of the requirements for Master's degree in Didactics of Foreign Languages

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Dedication

In the culmination of this academic endeavor, i extend my heartfelt appreciation to each of you for your unwavering belief in my potential, your enduring encouragement, and your boundless love. To my parents, your steadfast support and encouragement have provided the foundation upon which I've built my aspirations, your unwavering love, scarifies, and endless encouragement have been driving force behind every success I've achieved. To my auntie, this dedication is a tribute to the profound impact you've had on my life, a testament to the endless gratitude and admiration I hold for you, thank you for the embodiment of love and inspiration and source of support. To my dear friends, your presence has infused joy, laughter, and solace into the challenging moments of this pursuit. With deepest gratitude, I dedicate this dissertation to each of you, recognizing the profound impact you've had on my life's journey.

Acknowledgments

All the praise is due to Allah, the most Gracious and the most Merciful for giving me the patience and strength to finish this work.

This dissertation would not have been possible without the support and guidance of many individuals. First and foremost, I would like to express my sincere gratitude to my supervisor, Dr. BENSAFA Abdelkader. Their invaluable guidance, insightful feedback, and unwavering support throughout this journey have been instrumental in shaping this work.

I would also like to extend my thanks to all my teachers who have played a significant role in my academic development. Their dedication to teaching and their passion have fostered my intellectual curiosity and equipped me with the necessary skills to undertake this research.

Finally, I'm grateful to the members of jury. Their willingness to dedicate their time and expertise to evaluate this work is deeply appreciated.

I'm also grateful to the students and teachers who participated and helped in achieving this work.

This dissertation has been a challenging yet rewarding experience to everyone who has supported me along the way, Thank you.

Abstract

In today's fast-paced and ever-evolving world, characterized by rapid technological advancement and shifting job landscapes, the traditional model of education is being challenged. In response to the demand for more flexible and targeted learning experiences, Micro-credentials have emerged as a transformative educational tool that complements traditional degree programs. Accordingly, this exploration delves into the role of Micro-credentials as a means of showcasing students' skills and knowledge areas. Thus, this study aims at investigating the effectiveness and impact of Micro-credentials in demonstrating students' skills and knowledge in real-world scenarios. For this purpose, a case study including 31 students and 5 teachers from the department of English at the university of Tlemcen were undertaken. Two research instruments were used to collect data, a questionnaire for students and an interview for teachers in order to have perceptions about Micro-credentials and examine how these bite-sized degrees have evolved as a mean of supplementing traditional methods of assessing student capabilities. Ultimately, the topic seeks to shed light on how Micro-credentials can serve as a valuable tool for educators, employers, and students themselves in recognizing and validating the diverse skills and competencies acquired through various learning experiences. The collected data were analysed both quantitatively and qualitatively. The results show that Micro-credentials are a great program to showcase and demonstrate student's skills and knowledge.

Table of Contents

Dedication	i
Acknowledgments	ii
Abstract	iii
List of figures	vii
List of tables	viii
List of Acronyms and Abbreviations	ix
General Introduction	1
Chapter one: A Theoretical Background on Micro-credentials	5
I.1. Introduction	6
I.2. The concept of micro-credentials	6
I.2.1. Types of micro-credentials	9
I.3. The components of Micro-credentials:	12
I.4. The growth and evolution of the idea of digital badges and micro-credentials:	15
I.4.1. Early roots:	15
I.4.2. Initial adoption and development of digital badges	17
I.4.3. The rise and recognition of Micro-Credentials:	20
I.4.3.1. The rise of Micro-credentials	20
I.4.3.2. The relationship between MOOCs and Micro-Credentials	22
I.4.3.3. The impact of the COVID-19	23
I.4.3.4. The recognition of Micro-Credentials by higher education institutions	24
I.5. The relationship between Micro-Credentials and Digital Badges	25

I.6. The benefits of adopting Micro-credentials in higher education and the employment field _____	26
I.6.1. Unbundling higher education through the use of micro-credentials _	26
I.6.2. Benefits of Micro-Credentials for employers _____	27
I.7. Challenges of adopting Micro-credentials in higher education _____	31
I.7.1. lack of common understanding around Micro-credentials _____	31
I.7.2. Low standardization and the diverse nature of Micro-Credentials result a decreased level of recognition _____	31
I.7.3. The adoption of Micro-Credentials might require changes to the institutional structure _____	32
I.8. Recommendations to overcome the challenges _____	32
I.9. The features of Micro-Credentials platforms _____	33
I.9.1. Feature of Micro-credentials platforms identified from literature __	33
I.9.2. The popular Micro-Credentials platforms _____	34
I.10. The blockchain technology and Micro-Credentials _____	36
I.10.1. the benefits of issuing Micro-Credentials on a blockchain technology _____	36
I.11. Conclusion: _____	38
Chapter II: Research Design and Analysis _____	40
II.1. Introduction _____	41
II.2. Research design _____	41
II.2.1. Research setting _____	41
II.2.2. Case study _____	41
II.3. Sample population _____	43
II.3.1. Students' profile _____	43

II.3.2. teachers' profile	43
II.4. Data collection	43
II.5. Research instruments	44
II.5.1. students' Questionnaire:	44
II.5.2. Teachers' interview	46
II.6. Data analysis	47
II.6.1. Students' Questionnaire	48
II.6.2. Teachers' interview	57
II.7. Data interpretation	68
II.7.1. Interpretation of the Questionnaire's results	69
II.7.2. Interpretation of the Interview's Results	73
II.8. Conclusion	75
General Conclusion	76
Bibliography	80
Appendixes	85

List of figures

Figure I.1. a visual representation of the kinds of data that can be included in an open badge. Adopted from “open badges (P.S there’s data inside....)”by Mathers, 2019.

Figure I.2. Illustration of the relationship between Micro-Credentials and Digital Badges. (Adopted from UNCTAD. 2023. Designing Micro-Credentials for the future of work).

Figure I.3. shown how Blockchain can be used to securely store and verify student achievement records. (Adopted from ArK, T. V. (2017, December 21). How blockchain Will Transform Credentialing and Education). Getting Smart.

Figure II.1. Percentages of people familiar with Micro-credentials

Figure II.2. Results on perception of Micro-credentials compared to traditional academic degrees

Figure II.3. perceptions of MCs as a tool for validating acquired skills and knowledge

Figure II.4. Factors influencing preferences for Micro-credentials

Figure II.5. Lifelong learning: MCs vs traditional degrees

Figure II.6. perceptions of educational methods in showcasing real-world skill application

Figure II.7. Micro-credentials vs. traditional degrees in demonstrating learner skills

Figure II.8. Micro-credentials course completion rates

Figure II. 9. Awareness of digital Micro-credentials platforms

Figure II.10. Micro-credential programs enrollment

List of tables

Table I.1. different perspectives and definitions of micro-credentials in literature...

List of Acronyms and Abbreviations

MCs: Micro-Credentials

1ETECH: first education technology

LRNG: pronounced as “learning” and symbolizes the platforms that focus on fostering lifelong learning experiences, it aims to connect young people with learning opportunities both in and out of school.

IMS: Integrated management system

IBM: International Business Machines Corporation

JSON-LD: JavaScript Object Notation for Linked Data

REST-API: Representational State Transfer Application Programming Interface

MOOCs: Massive Open Online Courses

DBs: Digital Badges

ROI: Return On Investment

General Introduction

In the 21st century, the landscape of education and professional development has transformed significantly, emphasizing the need for continuous learning and skills acquisition. Among these developments, Micro-Credentials emerged as a pivotal innovation. Micro-Credentials are digital certifications that verify an individual's skills and knowledge in specific areas, providing a flexible and accessible means of professional development. This concept aligns with the global shift towards lifelong learning and the demand for workforce adaptability in ever-changing job market. Micro-credentials offer a targeted approach to skill acquisition, allowing learners to gain and demonstrate competencies in particular areas without committing to lengthy degree programs. This flexibility makes them especially valuable in fast-paced industries where technological advancements and new methodologies continuously reshape required skill sets. Effective use of Micro-credentials can enhance employability and career progression by validating skills that are immediately relevant to employers. The popularity of Micro-Credentials surged during the COVID-19 pandemic, a period that highlighted the necessity for adaptable and remote learning solutions. As traditional educational institutions faced unprecedented disruptions, many learners and professionals turned to online platforms for skill development. In higher education, Micro-Credentials have become increasingly integral as universities and colleges strive to meet the changing needs of students and the job market, their popularity has prompted educational institutions and organizations to explore suitable methodologies and platforms for their delivery. The integration of digital technologies plays a crucial role in this context, facilitating the design and dissemination of Micro-credentials that meet the evolving needs of learners. Educators and administrators must understand the specific demands of their target audience, the best practices for content delivery, and the ways to effectively assess and validate acquired skills.

Despite their potential, the implementation of Micro-Credentials present challenges, such as ensuring the credibility of the credentials and the standardization of assessment criteria. Addressing these issues is essential for maintaining the value and recognition of Micro-Credentials in the broader educational and professional landscapes. The aim of the current study is to investigate the significance of Micro-

Credentials in modern education particularly in higher education. It explores the effectiveness of these credentials in demonstrating and enhancing learners' skills and employability, the methodologies for their implementation, and the challenges faced by the teachers and higher education institutions (the university of Tlemcen, the English department) in ensuring their credibility and acceptance. The task of this study is to provide insights to the following questions:

- 1- What does the concept of Micro-Credentials turn around?
- 2- How do Micro-Credential effectively demonstrate and validate students acquired skills and knowledge in comparison to traditional academic credentials?
- 3- What are the ways and methodologies for the implementation of Micro-credentials?

Consequently, the hypotheses of this research are:

1. Micro-Credentials may revolve around the concept of offering learners a way to gain specific skills or knowledge in a shorter period of time compared to traditional academic degrees. It is like earning a mini-credential or a bite sized degrees that focuses on specific skills (competency) or area of interest.
2. Micro-credentials may effectively demonstrate and validate students acquired skills and knowledge by providing tangible evidence, such as project-based assessment and real world application, which can be more relevant and practical compared to traditional academic credentials that rely heavily on theoretical coursework and exams.
3. Let's say a student completes a Micro-Credentials in digital marketing. As a part of the assessment, they might have to create and execute an actual social media campaign for real client. This hands on experience showcase their ability to strategize, implement, and analyze marketing initiatives providing concrete evidence of their skills.
4. Exploring various ways and methodologies for the implementation of Micro-Credentials may unveil innovative approaches such as project-based assessment, competency frame works, industry collaboration and digital

platforms (Coursera, EDx, LinkedIn) which can effectively support the successful integration of Micro-Credentials into educational system.

To confirm these hypotheses, this research purpose is to find out how Micro-Credentials can demonstrate students' skills and knowledge at the university of Tlemcen in the English department and whether they are familiar with such term. It also investigates whether these programs have been used by the teachers or have any kind of experience with them as well as checking the best strategies or approaches to implement these programs into the educational system. Qualitative and quantitative data were gathered from multiple sources, relying on a set of research tools: a questionnaire for students and structured interview for teachers.

This work is consisted of two main chapters. The first chapter is concerned with the literature review about the concept of Micro-Credentials and its types as well as its benefits Etc. Besides, the second chapter is the practical part of this study in which focuses on the research design and methodology in conducting this work. Accordingly, it is also focuses on the analysis and interpretation of gathered data from students' questionnaire and the teachers' interview in attempt to answer the research questions by confirming or disconfirming the research hypotheses.

Chapter One

A Theoretical Background on Micro-credentials

I.1. Introduction

As the world of education keeps changing quickly, new ideas like micro-credentials and digital badges are becoming more popular, they represent a significant shift towards personalized and competency-based learning. These groundbreaking tools offer learners the chance to acquire specific skills and knowledge in targeted areas of study, with the extra benefit of stackability to demonstrate accumulative achievements. Micro-credentials and digital badges are increasingly recognized by employers and educational institutions as a means to certify and recognize specific skills or knowledge acquired in focused areas of study thus these flexible educational tools offer a personalized approach to professional development tailored to individual needs and informed by industry input. However, despite their potential to bridge the gap between formal education and workforce demands challenges remain regarding their recognition and acceptance within traditional educational systems. Accordingly, this chapter deals with a theoretical background about the concept of micro-credentials, their importance as well as the challenges faced in implementing them into higher education systems etc....., a review about micro-credentials growth and evolution is also stated.

I.2. The concept of micro-credentials

Micro-credentials have become a hot topic in higher education over the past decade (Kilsby & Fountin, 2019). Many universities worldwide are trying out micro-credentials programs (Milligan & Kennedy, 2017). According to the European Commission, Micro-credentials encompass two main elements: a) brief educational experiences known as micro learning opportunities, and b) digital credentials provided by these short learning experiences, which emphasize the acquired skills and competencies. From this standpoint, digital credentials are regarded as certified evidence of learners' accomplished activities and fulfillment of the necessary requirements in terms of skills, competencies, and achievements. However, a major challenge is the lack of common understanding and confusion surrounding the concept of micro-credentials (Rossiter & Tynan, 2019).

Different groups within the micro-credentials ecosystem have different definitions and perceptions, some even use terms like digital badges interchangeably with micro-credentials. Table (1) showcases the different perspectives and definitions of micro-credentials in literature.

Table 1. different perspectives and definitions of micro-credentials in literature.

Perspective	Definition	Author
Micro-credentials as a learning offerings	Packages of learning designed to meet specific learner need that are smaller than conventional qualifications	(Mischewski, 2017)
	Any credential that covers more than a single course but it is less than a full degree	(Pickard, et al.,2018)
Micro-credentials as proof of skills, competences and achievements	A visual representation of your capability	(Tracey,2014)
	Certification of learning that can accumulate into larger credential or degree, be part of portfolio that demonstrates individuals' proof of learning, or have a value in itself	(ECIU, 2020)

	<p>A micro-credential is a certification of assessed learning that is additional, alternate, complementary to or a formal component of a formal qualification</p>	<p>(Beverley, 2019)</p>
	<p>A micro-credential represents a judgment by an organization or individual regarding person's experiences, abilities, knowledge, or qualifications</p>	<p>(Riconscente, et al., 2013)</p>
	<p>Credentialing systems that follow competency based professional learning to recognize a learner's skills, achievements, and accomplishments</p>	<p>(kilsby & Fountain, 2019)</p>
<p>A Combination of both perspectives</p>	<p>A micro-credential can take many forms. At its smallest, it is a single module, subject, skill or competency, but it can also be a suite of skills or knowledge, or a skill set.</p>	

	Some micro-credentials may have a form, such as skill sets, while others could be specific to an individual company or an individual learner	(business council of Australia, 2018)
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The table illustrates how micro-credentials are discussed from various angles in literature. Micro-credentials are viewed as smaller learning opportunities compared to regular qualifications. According to Tracey (2014) and Beverley (2019), micro-credentials are typically viewed as evidence of learning competencies and successes. Micro-credentials are certified abilities, competencies, and achievements that demonstrate a learner's completion of required activities and meeting requirements. According to the business council of Australia (2018), micro-credentials are defined as specialized abilities that are not recognized or linked to learning opportunities.

I.2.1. Types of micro-credentials

The terminology for micro-credentials is not universally agreed upon, and there may be some overlap between categories. Here is a thorough list that covers various types.

- **Badges**

Digital badges are like virtual medals that are often awarded for completing a short online learning course or module, they can be displayed on resumes, social media profiles, or websites to showcase competencies, abilities, or skills gained through learning experiences.

- **Certificates**

Certificates are more formal type of micro-credential compared to badges, they offer a more comprehensive delineation of the acquired skills or knowledge learned

and they are commonly granted by educational institutions or online platforms, they might be required for certain jobs or programs.

- **Micro-courses**

Short, self-contained learning experience designed to teach a specific skill or knowledge set in a condensed timeframe. They can be online or in-person, and typically culminate in a badge or certificate.

- **Stackable credentials**

It is like building the learner's expertise brick by brick. Stackable credentials are a collection of micro-credentials that, when combined, demonstrate mastery in a broader area. The learner can earn these credentials progressively, allowing him to gradually build his knowledge over time. For example, a series of micro-credentials in project management, communication, and leadership can be stacked to form a ^micro-project management certification^, offering a comprehensive credential valued by employers.

- **On-demand micro-learning**

This is a game-changer for busy learners. It provided readily available bite-sized learning modules that can be completed in minutes, often under 10. Accessible from anywhere with an internet connection, on-demand micro-learning allows you to squeeze in learning short breaks. Each module focuses on a specific skill or concept, ensuring laser-focused learning. Imagine needing a quick refresher on a software function, on-demand micro-learning delivers the precise knowledge you need, right when you need it. These modules can be delivered in various formats like short videos, interactive simulations, or infographics to keep learning engaging. Upon completion, the learner might even earn a badges as a digital recognition of the acquired skill.

- **Gap-based, competency-driven learning**

Gap-based, competency-driven learning flips the script on traditional learning. Instead of a one-size-fits-all approach, it identifies the learner's specific skill gaps through assessments. This personalized roadmap targets those gaps with focused

learning activities like micro-courses or workshops. Once the learner filled the gaps, assessments ensure mastery of the competency. This data-driven approach ensures efficient learning, improved performance, and keeps the learner's motivated by focusing on demonstrably closing skill deficiencies. It is a win-win for both individuals seeking career advancement and organizations looking to upskill their workforce.

- **social and non-profit Micro-credentials**

Social and non-profit micro-credentials emerge as a novel approach to acknowledging valuable contributions made outside the formal employment sphere. These credentials focus on validating skills, knowledge, and experiences gained through participation in social programs, volunteer work, and community initiatives. Imagine a micro-credential for leading a community garden project or mentoring youth. These validate the skills (leadership, communication) developed through such engagement and showcase commitment to social good. Individuals benefit from this recognition by enhancing their personal brand and professional reputation. In essence, they offer a more holistic understanding of an individual's skills and experiences within the broader learning landscape.

- **Assessment-only Micro-credential**

Assessment-only micro-credentials offer a unique twist within the micro-credential landscape. Unlike most credentials that require completing a learning program, these focus solely on demonstrating your existing knowledge and skills through assessments. This streamlined approach boasts several advantages: it saves valuable time for those already proficient, is often more affordable due to the lack of a learning component, and provides formal recognition of your current skillset, the assessments themselves can vary depending on the credential taking the form of written exams, performance-based projects, or even portfolio reviews. This approach caters to a specific audience: seasoned professionals seeking validation of their existing knowledge, career changers showcasing skills from non-traditional experiences, and even self-taught learners finally gaining formal recognition for their acquired knowledge.

- **industry-delivered short courses**

Industry-delivered short courses addresses a specific niche within the micro-learning landscape. Created and delivered by industry experts and organization, these courses offer targeted skill development directly aligned with current industry needs and practices. This ensures the content is not only relevant but also reflects the latest industry trends and technologies. This focus on practical application and real-world scenarios makes industry-delivered short courses highly valuable for working professionals seeking to up skill or bridge skill gaps in current field.

- **pick-and-mix Micro-credentials**

Pick-and-mix micro-credentials revolutionize the micro-credential landscape by promoting a learner-centric approach. This innovative strategy empowers individuals to curate personalized learning journeys by selecting individual credentials from a diverse pool, learners can prioritize specific skill gaps by choosing targeted credentials, optimizing learning outcomes. Furthermore, pick-and-mix - fosters learner autonomy, placing ownership over the learning trajectory and potentially boosting motivation. This approach allows for the development of customized skillset and by carefully selecting credentials, learners can cultivate unique skillset precisely aligned with their career aspirations.

This is just a glimpse into the diverse world of micro-credentials, this list isn't exhaustive and new types of micro-credentials might emerge as the landscape continues to evolve.

I.3. The components of Micro-credentials:

a. Competency

The competency forms the foundation of a micro-credential. It's the precise skill or knowledge area a learner will master. Imagine it as a target – clear, well-defined, and focused on a specific need within a particular field. Jargon should be avoided to ensure everyone understands exactly what expertise the micro-credential signifies. Examples might be "Develop effective social media marketing strategies" or "Demonstrate proficiency in data analysis using Excel."

b. learning objectives

Learning objectives act as the stepping stones to achieving the competency. They break down the larger skill into smaller, measurable goals. Imagine them as mini-targets that guide the learner's progress. Each objective should be specific, outlining what the learner will be able to do by the end. They should also be measurable, allowing you to assess if the learner has achieved them. Action verbs like "analyze," "create," or "troubleshoot" are helpful in describing these newfound abilities. Most importantly, learning objectives must directly connect back to the overall competency, ensuring the learner is on the right track.

c. Content

The content serves as the learning material, equipping the learner with the tools to reach their target skill. Just like different learners have different preferences, the content should be diverse and engaging. This could include online modules, interactive exercises, case studies, or even simulations. Readings, videos, and hands-on activities can all play a role, depending on the complexity of the competency. The depth of the content should be carefully considered to ensure it provides a thorough understanding without getting overwhelming.

d. Assessment

Assessment serves as the final test, evaluating if the learner has truly mastered the competency through the provided content. Imagine it as verifying if the learner can hit the bullseye. Assessments should directly test the skills outlined in the learning objectives. Variety is key here, with options like quizzes, projects, portfolios, presentations, or even performance-based tasks catering to different skills. The quality of the assessment is paramount – it needs to be reliable and valid, ensuring it accurately measures the intended skill and avoids being a test of memorization alone.

e. Issuance

Issuance is the moment of recognition, where the learner receives the micro-credential for successfully completing the assessment. Think of it as a badge of honor or a certificate for their accomplishment. This can take the form of a digital badge, a

traditional certificate, or another form of digital record. Security is crucial here, with a secure and verifiable issuance process to prevent fraud. Additionally, the micro-credential should be easily accessible to the learner electronically, allowing them to readily showcase their newly acquired skill.

f. portability

Portability in micro-credentials ensures that learners can seamlessly transfer their earned credentials across different educational institutions and workplace. It involves creating standards and formats that allow for interoperability between systems, ensuring transparency of credential details, and enabling aggregation of credentials into a single digital portfolio. Alignment with industry standards, recognition from bodies and collaboration among stakeholders further enhance the portability and credibility of micro-credentials, empowering learners to demonstrate their skills and knowledge consistently across various contexts.

g. Metadata

It is like a detailed label on product, this metadata includes descriptive information such as titles, issuers, and learning outcomes, technical details about the credential format, and even copyright information. This rich data makes micro-credentials easier to find, verifies their authenticity, and clearly explains the skills and knowledge gained. Standardized metadata also allows different platforms to recognize these credentials making them more portable and valuable. In short; metadata is the secret key that gives micro-credentials their power.

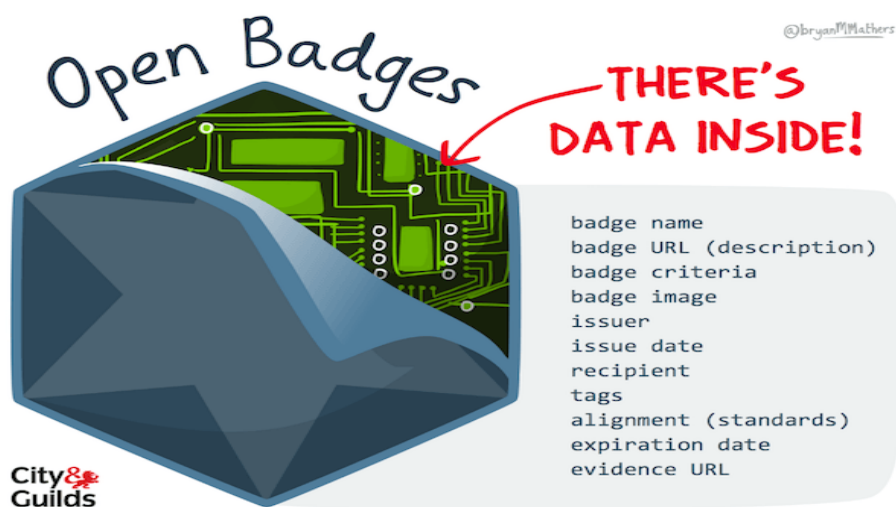
Figure I.1. a visual representation of the kinds of data that can be included in an open badge. Adopted from “open badges (P.S there’s data inside....)”by Mathers, 2019.

Overall, these various components work together to create a powerful learning and credentialing system. By focusing on specific skills, outlining clear learning goals, and ensuring proper assessment, micro-credentials provide a targeted and measurable way to develop competence with a rich metadata empowers discovery, verifies authenticity, and offer valuable context. All the components combine to make MCs a flexible and effective tool for lifelong learning and career development.

I.4. The growth and evolution of the idea of digital badges and micro-credentials:

From the earliest civilizations to the digital age, the quest of recognition of skills and expertise has been a fundamental aspect of human society. In today’s rapidly evolving world, the concept of MCs has emerged as a dynamic and innovative approach to credentialing, offering individuals the opportunity to showcase their abilities in targeted, tangible ways. Exploring the rich history of MCs unveils a fascinating journey through time, revealing how ancient practices of skill recognition have evolved into modern-day strategies for lifelong learning and professional development.

I.4.1. Early roots:



Symbols have served as efficient means of communication for millennia, from

ancient hieroglyphics to modern barcodes (Bailey, 2008). The earliest symbols, found in European caves dating back 10,000 to 20,000 years, depicted hunters' achievements, acting as symbols of accomplishments. Throughout history, symbols have held significance for individuals, groups, and organizations worldwide, from heraldry representing kingdoms to trademarks like McDonald's golden arches (bailey, 2008). Each symbol carries both connotative and donative meanings influenced by various factors such as culture, peer groups, and personal experiences (Womack, 2005). Over time, the meaning of symbols can evolve even if their physical representation remains unchanged. The concept of open badges exemplifies this evolution, allowing for more adaptable and comprehensive meanings that can be updated based on changes in the field or topic area.

Between 10.000 B.C. and 4.000 B.C., there was a limited progress in symbol development, although this period marked a transition from prehistoric to a more modern human existence (bailey, 2008). Different civilizations contributed to the advancement of symbols, leading to their widespread use. However, cross-cultural use of symbols posed challenges then and continue to do so today due to globalization's impact on non-verbal communication. Symbols can manifest in various forms, such as badges, awards, certificates, and credentials, jewelry, with meaning derived from personal perceptions and experiences (bailey, 2008).

Furthermore, numerous organizations and entities incorporated symbols and badges into their procedures but these symbols were not tailored for individuals but rather aimed to fulfill the organization's internal and external necessities. Consequently, organizations were concerned about the significance or worth attributed to these symbols by users. Most interpretations focused on tangible external factors. The organization associated symbols with values pertinent to them, such as a certified technician. In this context, the organization could readily locate a technician possessing specific skill sets when required. While an employee might perceive certification as a pathway to increased income or promotion, the organization viewed it as a tool for identifying necessary skill sets for its benefit. Thus there was a minimal consideration given to the individual's perceptions of the symbol, its desirability, or the factors influencing their feelings towards it. Similar approaches are evident in

military and business domains. In instances where the military needed to identify individuals with particular skill sets or quickly assign responsibilities during emergencies, they would assign a specific rank and its corresponding symbol. Similarly, organizations identifying valuable customers would bestow special status, such as club membership or unique designation signifying the need for a distinct relationship in customer interactions.

I.4.2. Initial adoption and development of digital badges

The adventure commenced with a badge

The term of digital badges started really to gain more interest and actually emerged with the introduction of digital badges by the Mozilla foundation in 2011. These badges were part of the badges for lifelong learning competition and aimed to revolutionize how learning achievements were recognized. The open badges project, in collaboration with the MacArthur Foundation, and out of the research of Erin Knight, founding director of the open badges project at Mozilla, marked a significant shift in acknowledging learning beyond traditional certifications. As highlighted by Siemens and Gasevic (2012), this innovative offered a novel way to recognize learning achievements beyond the limitations of traditional certifications. Mozilla initiative led to the development of the Mozilla backpack, a system for recording digital representations of learning that integrated with various learning management system. This innovative approach allowed individuals to reward badges based on non-learner recorded outcomes, fostering a culture of recognizing diverse skills and competencies. Backpack was retired in August of 2019 and has since been transitioned to Badgr, another open badge system. All digital badges that were stored in Mozilla backpack have been successfully transferred and preserved. The responsibility of overseeing the open badge standard has been taken over by IMS global, who previously maintained SCORM standards. According to Mark Surmon of Mozilla, the goal of the development of Mozilla Open Badges was always to expand and have a positive impact (**EcampusOntario, 2019**). These early efforts set the stage for what was to come.

There was a global expansion between the years (2013-2015), by the year 2013 the open badges 1.0 was officially launched by Mozilla, gaining attention at events like the Clinton global initiative. The initiative aimed to reach millions of students and workers sparking interest not only in the U.S but also across Europe with campaigns like badge the UK, which grew into a network of over 120 organizations issuing 25.000 badges over the next two years. **In 2014**, the summit to reconnect learning, funded by the MacArthur Foundation and organized by the sprout fund, aimed to transition Open Badges from Innovation edges to mainstream, it means the goal of this event was to make Open Badges more popular and common, instead of just something new and different. At the summit, business and education partners pledged support to accelerate digital badge adoption. As a result, the badge alliance was established to oversee the open badges specification and community. Fourteen working groups were initiated to oversee various aspects, generating surveys, white papers, and improvements. Additionally, at the Mozfest 2014, Mozilla and digitalme launched the badge the world map project, aimed at mapping global badge initiatives, it means to show where in the world people were using badges for learning and other things.

In 2015, the growing demand for verifiable and portable badges became evident, major corporations such as IBM, Pearson, and Microsoft embraced Open Badges, joining numerous organizations worldwide. With the backing of the Badge Alliance, over 650 individuals, including educators, technologists, researchers, community leaders, and strategists, engaged in various working groups. These groups aimed to enhance support and cooperation across different sectors like higher education, digital literacy, educator training, workforce development citywide badge systems.

Over the timeframe of 2016 through 2017, significant advancements have been demonstrated. In 2016, hundreds of thousands of people received millions of open badges. By October that year, the Mozilla Backpack held 967.766 badges from learners worldwide. The Open Badges community was actively upgrading to Open Badges 2.0, aiming to fulfill numerous crucial use cases identified by stakeholders. Starting January 1, 2017, 1EdTech in collaboration with Mozilla Foundation and collective shift/LRNG, took on the responsibility of advancing the Open Badges

specification and community. This initiative operated under a Mozilla-granted licence. Meanwhile, the IMS incorporated the work of the Badge Alliance Standard working group into a fresh union of learning stakeholders launched the Bologna Open Recognition Declaration, advocating for a universal open framework to recognize lifelong and life-wide learning accomplishments.

In 2018, a coordinated effort culminated in the final draft of the Open Badges Specification 2.0, introducing notable features such as endorsements, globalization, and multilingual capabilities. This iteration also incorporated advancements to accommodate professionals with disabilities and embraced the full integration of JSON-LD. According to 1EdTech statistics, the number of earned Open Badges surged to 24.1 million in 2017, marking a significant increase over a twelve-year period. By 2019, and as it was previously mentioned the Mozilla Backpack was discontinued by the Mozilla Firefox browser, which subsequently reached an agreement with Concentric Sky to facilitate the migration of users and open badges to the badgr Backpack platform. Moreover, the year 2020 witnessed the issuance of the Open Badges 2.1 API, designed as badge Connect™, which provided a REST-API akin to its predecessor, OB 2.0 data models. Over twenty platforms, accredited by 1EdTech for their adherence to the Open Badges standard, joined this initiative.

To sum up, digital badges have emerged as a significant element in modern education, symbolizing the achievements and competencies acquired by learners in a tangible and shareable form. They foster motivation, provide recognition for incremental learning, and facilitate the display of skills in digital realm that increasingly values concise evidence of professional capabilities. As both an educational and professional currency, digital badges bridge the gap between traditional credentials and the flexible, skill-specific requirements of today's dynamic workforce. Their integration into educational and social media platforms reflects a broader trend towards gamification and innovative approaches to learning, demonstrating their potential to reshape how we engage with and value lifelong learning and professional development.

I.4.3. The rise and recognition of Micro-Credentials:

The predictive power of academic certifications for job success is diminishing. While it was never exceptional, it was previously deemed crucial for job applications to possess either an academic or a good academic certificate. However, this importance is now beginning to fade. More and more alternative credentials are gaining attention and increasing in value. Various pathways are emerging from the traditional higher education system and are becoming more relevant for employers. These alternative pathways often involve credentials earned in post-secondary education or professional training following initial academic graduation. Micro-Credentials, a relatively recent development, have gained popularity in multiple disciplines. They signify mastery of a limited set of skills or competencies, as opposed to the broader and interconnected skill sets represented by full bachelor's degrees or similar qualifications in current credentialing systems. Unlike traditional credentialing conventions, typically summarized by a certificate or transcript with no connection to explicit evidence of the earner's competencies, Micro-Credentials are directly linked to digital artifacts that explain the nature and criteria of the credential, as well as evidence contributed by the earner.

I.4.3.1. The rise of Micro-credentials

As technology rapidly advances and industries continuously redefine workforce skills, there is a growing consensus on the need for adaptable education. This shift is transforming traditional higher education models, replacing lengthy, costly degree programs with shorter, industry-focused ones. Micro-credentials, per UNESCO, emphasize specific learning outcomes in narrow fields, attainable in shorter durations. Offered by various entities including commercial, private, and traditional educational organizations, these credentials cater to the demand for flexibility. These specialized programs, often professional certificates, equip students with precise job skills effectively bridging the student-employer gap. Due to their practical benefits, Micro-credentials significantly influence both employers and students in decision making processes.

According to a study conducted by Fong et al. (2016), the implementation of Micro-credentials initiatives saw a significant increase between 2016 and 2017. Furthermore, a majority of higher education institutions view Micro-credentials as a crucial strategic asset for their future (Fong et al., 2016). Recognizing the need for employers to have clear understanding of the skills and competencies possessed by potential employees (Hope, 2018), higher education institutions have turned to MCs as a solution to effectively convey this information, which traditional credentials often fail to do. Moreover, the growing diversity of student demographics and learning needs, coupled with the rise of non-traditional learners, presents a significant challenge for higher education institutions to adopt a one-size-fits-all approach (Soares, 2013). For instance, some students prioritize acquiring specialized skills for immediate employment, opting for programs focused on practical competencies rather than traditional degrees. Additionally, some students may pursue full-time degrees, while others may choose to study part-time. Therefore, it is imperative for higher education institutions to provide a range of options to accommodate the diverse preferences of learners (Beilby, 2018).

As per the Credential Engine, a non-profit credential registry, the number of micro-credentials available to learners in 2022 was 1,603, which is almost twice the number offered in 2021 (820). This count specifically includes formal Micro-Credentials that are issued through massive open online courses (MOOCs). MOOC providers collaborate with academic institutions and large employers to offer programs on online platforms such as EdX, Coursera, Udacity, and other MOOC providers were among those considered by Credential Engine when counting Micro-credentials. Apart from the over 1.600 Micro-credentials offered through MOOCs in 2022, learners also had access to hundreds of thousands of certificates and non-credential offerings, this included over 2.150 coding bootcamp courses and 430,000 digital badges. Furthermore, employers have observed an increase in the popularity of micro-credentials and a greater acceptance of these non-degree credentials in the workplace. In a survey conducted in 2022, which involved over 750 professionals, including nearly 600 individuals responsible for hiring or training within their

organizations, approximately 74% reported an uptick in job applicants listing non-degree credentials on their resumes.

Based on findings from a Coursera survey conducted in 2022:

- An overwhelming 90% of students globally perceive earning a professional certificate as instrumental in distinguishing themselves to potential employers and securing employment post-graduation.
- There is a significant 76% increase in student enrollment in academic programs that offer industry Micro-credentials as supplementary qualifications.
- A substantial 80% of employers acknowledge the value of professional certificates in bolstering a candidate's job application.
- Employers demonstrate a notable 72% increase in the likelihood of hiring candidates equipped with a professional certificate.
- Furthermore, an impressive 95% of university leaders in the united states believe that industry Micro-credentials are becoming an indispensable component of higher education in the foreseeable future.

Given the countless advantages associated with this type of qualification, it is no surprise that Micro-credentials have garnered substantial popularity and recognition within higher education and job market.

I.4.3.2. The relationship between MOOCs and Micro-Credentials

Ever since their emergence in 2011, XMoocs have revolutionized the way people acquire knowledge by offering an alternative learning method. Unlike cMoocs, which prioritize network building, interactively, and openness, xMoocs are designed to transmit information with minimal interaction between the teacher and learner (Bates, 2014). The advent of MOOCs has led to the establishment of prominent platforms such as Coursera and Udacity, which offer access to Massive Open Online Courses and provide certification for a cost. Some individuals or organizations may opt to pay for access, either to earn credit or to provide training for their employees. Within this educational landscape, Micro-Credentials have also gained prominence. Udacity has

trademarked the term “ Nano degree”, Edevate has trademarked “ Micro degree”, and EdX has trademarked “ MicroMasters” (System.suny.edu). Coursera, on the other hand, has trademarked their credential as “Mastertrack”. Additionally, other commercial badging systems like Credly and Fidelis have also entered the scene.

I.4.3.3. The impact of the COVID-19

The development of Micro-credentials has a history that extends far beyond the pandemic. However, in recent times, modular learning has emerged as an effective method to retrain and enhance the skills of individuals who have lost their jobs due to the COVID-19 crisis. Consequently, the European commission asserts that a wider adoption of Micro-credentials could stimulate educational and economic innovation and contribute to a sustainable recovery post-pandemic. The suggested Council Recommendation on MCs also emphasizes that the potential of Micro-credentials should be investigated as part of the execution of the Recommendation on Effective Active Support to Employment post the COVID-19 crisis (EASE). The experience gained by educational providers with new formats of educational delivery during the pandemic could aid in achieving this objective. When universities worldwide had to shut down their campuses, they swiftly transitioned to online educational delivery. Online platforms such as Coursera and edX assisted universities by granting free access to their MOOC libraries. Hence, the pandemic not only hastened the shift towards digitalization of education but also exposed the strengths and weaknesses of the current digital infrastructure and educational methodologies. These insights gathered during the pandemic serves as the foundation of the European Digital Education Action Plan 2021-2027, where Micro-Credentials are recognized as one of the solutions for a more ambitious approach to digital education. Concurrently, the digital infrastructure of Europass has been established to address gaps in the labor market, which could also facilitate the portability, sharing, and storage of digital Micro-Credentials. The question here is, will this ultimately lead to further modularization and flexibility in education? Anant Agarwal, the CEO of edX, appears to have no doubts. As early as 2017, during the US higher Education Innovation Summit, he foresaw that ‘education will become modular, omnichannel, and lifelong.’

In simple terms, the COVID-19 pandemic accelerated the adoption of Micro-Credentials in higher education for a few reasons. With the shift towards online learning during the pandemic, many institutions were forced to move classes online and recognized the value of Micro-credentials as a flexible and accessible way for students to gain specific skills and knowledge remotely. Moreover, as the job market becomes more competitive, Micro-Credentials offer a way for individuals to quickly upskill or reskill in specific areas to remain relevant in their fields. Overall, the COVID-19 pandemic had a significant impact on the adoption of Micro-Credentials from various stakeholders, including policy developers, higher education representatives, learners, and employers, as they offer a flexible, cost-effective, and skills-based approach to learning that is well-suited to the changing needs of the workforce.

I.4.3.4. The recognition of Micro-Credentials by higher education institutions

Micro-Credentials as an alternative form of credentials are increasingly being acknowledged by higher education institutions, although the level of integration and recognition differs. The 2023 Global Micro-Credentials Survey conducted by HolonIQ reveals that progress has been made in establishing frameworks regulations, and funding for Micro-credentials. However, institutional adoption is still in its early phases, with almost 20% of institutions reporting that Micro-credentials are not present at their institution, and around 66% describing their adoption as ‘emerging’.

In recent years, several educational institutions have begun incorporating Micro-Credentials into their degree programs, although their primary focus remains on short courses. The short courses domain presents fewer obstacles for the integration of Micro-credentials within institutions and aligns more naturally with their non-accredited offerings. Nonetheless, the widespread recognition of Micro-credentials faces certain challenges such as the absence of standardized definitions, criteria, and regulations. These factors pose difficulties for employers when evaluating the credibility and value of these credentials. Nevertheless, certain countries have taken steps towards incorporating Micro-credentials into their national qualifications frameworks, thereby facilitating their official recognition. For instance, Australia has already successfully integrated MCs into its national qualifications framework.

Similarly, Malaysia Qualifications Authority released a comprehensive guide in 2020, outlining best practices for Micro-credentials providers. These initiatives demonstrate a growing recognition of the potential benefits and importance of Micro-credentials in the education and employment sectors.

Despite the considerable efforts made, there remains a possibility that employers may not acknowledge Micro-credentials and may not value them in the labor market as much as they do traditional degrees. This situation has the potential to perpetuate educational inequality and result in a disjointed and fragmented education system that relies heavily on Micro-credentials. In summary, although there is a growing inclination among higher education institutions to recognize Micro-credentials, there are still obstacles to their complete integration and acceptance.

I.5. The relationship between Micro-Credentials and Digital Badges

The relationship between digital badges and Micro-Credentials is highly significant in the fields of education and professional development. Digital badges serve as visual representations of certifications that can be easily shared online, containing additional information or metadata that provides the context and meaning to the achievement. On the other hand, Micro-credentials are certifications that validate assessed learning, complementing formal qualifications by confirming expertise in specific areas of study or professional growth. Digital badges visually represent these credentials, while MCs represent the actual experience or opportunity. Similarly, micro-credentials can be compared to degrees, while digital badges are like diplomas, symbolizing the attainment of micro-credentials. This connection allows for the creation of flexible programs that can award digital badges, micro-credentials, or both, catering to various learning needs and recognition criteria.

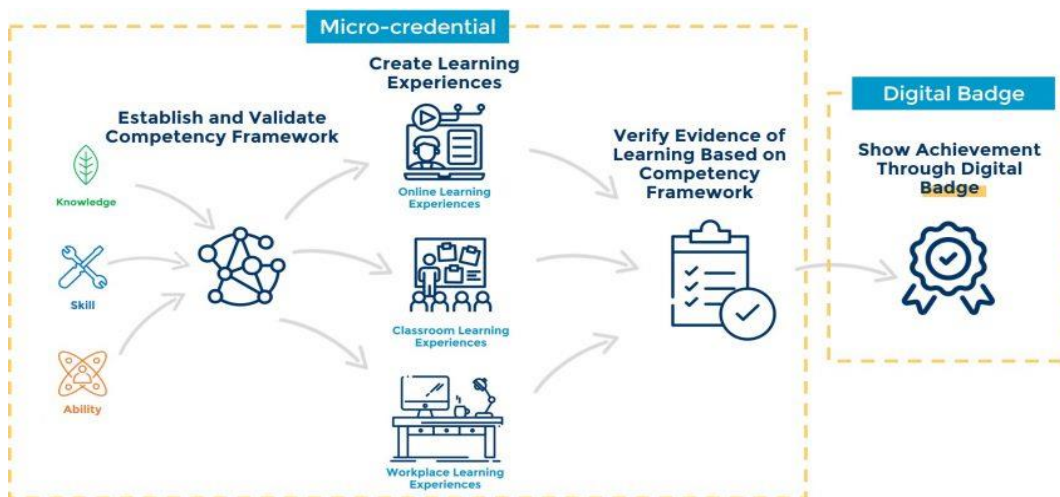


Figure I.2. Illustration of the relationship between Micro-Credentials and Digital Badges. (Adopted from UNCTAD. 2023. Designing Micro-Credentials for the future of work).

I.6. The benefits of adopting Micro-credentials in higher education and the employment field

The emergence of micro-credentials in the last decade has been driven by various motivations within higher education institutions (Clayton, et al., 2014; Halavais, 2018). Despite some skepticism that views this rise as a passing trend or mere marketing hype in the realm of learning innovation (Doran, 2017; Maloney & kim, 2019), there are compelling reasons for their adoption.

I.6.1. Unbundling higher education through the use of micro-credentials

The success of unbundling goods and services in various industries has been well-documented, leading to cost reductions and more flexible options for consumers (Horn, 2014; Ferreira, 2014). However, the implementation of unbundling in higher education has lagged behind other sectors (Robertson & komljenovic, 2016; McCowan, 2017). Recognizing the importance of employers knowing the specific skills and competences of potential employees, higher education institutions have started to embrace the concept of micro-credentials (Hope, 2018). Unlike traditional degrees, certificates, and transcripts, micro-credentials offer a more precise and manageable way of showcasing learners' skills and achievements through relevant metadata. This facilitates the unbundling of higher education and enhances learners' awareness of their own abilities, while also meeting the demands of employers (Hope,

2018). Micro-credentials, therefore serve as a valuable tool in reshaping higher education.

I.6.2. Benefits of Micro-Credentials for employers

MCs provide various substantial advantages to employers, which makes them such a precious instrument for skill progress and for the workforce improvement. Here are some key benefits that this bite-sized- certifications offer:

- 1. Targeted skill development:** Employers can gain exactly the skills needed to shine in their positions, and that is thanks to how Micro-Credentials are designed in which they focus on particular skills, competencies, or areas of expertise that are appropriate to the job or industry. Thus, it may lead to an increased productivity and professional performance.
- 2. Continuous learning culture:** By encouraging employers to actively seek Micro-Credentials advocates a culture of continuous learning among the organization. Thus employers are more probably to stay current with the latest market trends and best techniques, which may lead to advancement and enhanced problem-solving capabilities.
- 3. Cost-Effective training:** Employers can allocate in the particular skills that are instantly required, instead of committing to a very long pricy programs. And that is exactly what Micro-Credentials offer which are often more cost-effective than traditional programs, this tailored approach may lead to cost savings.
- 4. Improved Employee Engagement:** Providing Micro-Credentials demonstrates a pledge to employee development. Employee engagement, motivation, and loyalty to the company are higher when they perceive their employers to be interested in their professional development.
- 5. Skill verification:** Employees who carry pertinent Micro-Credentials are more trustworthy by their employers because MCs offer a systematic procedure to confirm the abilities and competencies of employees, thus they had their capabilities evaluated and validated.

6. **Customized learning pathways:** With this customized approach, employees are assured to gain the skills most relevant to their positions and the organization goals. Therefore, employers and employees may work together and collaborate to design a more personalized learning pathway that meet the demands of the company and the individuals' career objectives.
7. **Performance development:** As employees gain new abilities through these Nano-degrees, their performance is probably going to enhance. Hence, better project outcomes, higher customer satisfaction levels, and more competitiveness can be resulted.
8. **Measurable impact:** Employers may observe the effect of Micro-Credentials on their employees' performance and skill improvement. This data-driven approach permits organizations to evaluate the return on investment (ROI) of their learning and development initiatives.

To conclude, Micro-Credentials offer employers with a flexible and effective opportunity to enhance their staff skills, knowledge, and production. Companies can create a culture of continuous improvement and innovation by giving targeted, cost-effective, and adjustable educational solutions, among other benefits that can include draw in and retain top talent.

I.6.3. benefits of Micro-Credentials for students

Micro-Credentials offer many advantages to students, making a cherished option for both traditional learners and others looking to advance their skills outside the formal education. The following are some of the main benefits of Micro-Credentials for learners.

1. **Focused learning:** Micro-credentials are created to offer specific tailored skills or knowledge in a condensed period. This permits learners to stay focused on obtaining specific abilities relevant to their career objectives or personal passions without the extensive commitment required by a full degree programs.

- 2. Flexibility and affordability:** Micro-Credentials provide students the flexibility to adapt their learning journeys to suit their needs, interests, and capabilities. Thus, Micro-credentials are a perfect fit for the idea of lifelong learning, education is becoming more flexible, which leads to a variety of activities that promote ongoing growth.

“with micro-credentials, learners will experience much more freedom to create their own lifelong development path,” she stresses. “Based on individual learning needs, learners will be able to choose and combine courses from diverse educational institutions to form their own path, without having to follow a full bachelor’s or master’s degree. This gives a professional more control over their own development, path, courses, activities and educational institutions. Micro-credentials open the eyes to a world of opportunities.” (Klaar Vernailen (WUR), Project leader Micro-credentials).

In the other hand, Micro-Credentials are more affordable compared to traditional degree programs, allowing students to access high-quality education at a lower cost and without the need for a long term commitment (in Algeria is completely the opposite since education it provided free of charge in public schools and universities, which traditional degree programs are not considered expensive compared to MCs. However, the affordability and value of Micro-Credentials will depend on individuals’ circumstances and priorities, as well as the particular offerings and costs associated with obtaining them in Algeria).

- 3. Career advancement:** Micro-credentials help students advances their career by equipping them with the skills and needed, they play a crucial role demonstrating their expertise in specific areas making them more attractive to potential employers since they frequently acknowledged and valued by employers as a proof of their specific expertise and abilities thus the students’ chances in career progression will be increased. Micro-Credentials are a great pathway for new graduates entering the job market that desires to look competitive, validate and showcase their skills.

4. **Stackable credentials:** plenty of Micro-credentials programs can be stacked or combined permitting students to collect or complete multiple credentials gradually. As a result, they build a strong portfolio of abilities, skills, and knowledge that will help learners stand out in the employment market and also providing a continuous learning.
5. **Industry alignment:** Micro-credentials are designed in collaboration with industry experts, ensuring that the skills taught are aligned with industry needs, thus enhancing employability.
6. **Accessibility:** Micro-credentials are frequently available and offered online, allowing students to gain them regardless their geographical location or timetable restrictions democratising access to education. They may also receive knowledge from a variety of sources thanks to this accessibility on a global scale.
7. **Skill validation:** Micro-credentials often include assessments or projects that verify a student's knowledge and skills. Such verification can help one's further employment or educational prospects.

Sean Gallagher, the founder and executive director of Northeastern University's Center for the Future of Higher Education and Talent Strategy. Sees these small programs more like a supplement rather than a whole substitute.

“it's more of a post-baccalaureate phenomenon, a little bit like a master's degree, but a shorter version,” Sean Gallagher.

To sum up, Micro-credentials are a powerful tool that can improve higher education and reshaping it by providing specific skills and competencies to learners, enhancing employability, and addressing the skill gaps in the labor market. These bite-sized-certifications offer flexibility, affordability, and industry-aligned training that challenges traditional degrees by meeting unique needs of learners through offering stackable credentials. Micro-credentials facilitate the unbundling of higher education that allow for more targeted instructions at a faster rate. The popularity of Micro-credentials has risen as employers prefer skill-oriented employees rather than those with college degree only because they can manifest their knowledge

competences easily. With their ability to fill up gaps in skills and provide tailored learning experiences, Micro-credentials are becoming indispensable component in modern education.

I.7. Challenges of adopting Micro-credentials in higher education

Higher education institutions encountering numerous obstacles in the adoption of Micro-Credentials, particularly in the initial phase (Barnett, 2017). This chapter delves into the primary challenges confronting policymakers and higher education institutions during the implementation of Micro-credentials programs. The literature extensively covers the challenges associated with adoption of MCs compared to other facets of this educational innovation.

I.7.1. lack of common understanding around Micro-credentials

The lack of common understanding of Micro-Credentials poses a major challenge to their integration in higher education. While policy makers may have some knowledge of the concept, there remains significant confusion about what these Nano degrees truly entail and how they fit into the higher education landscape. It is essential to establish a clear definition of Micro-credentials and ensure that this definition is effectively communicated to all institutions involved in order to foster a shared understanding.

I.7.2. Low standardization and the diverse nature of Micro-Credentials result a decreased level of recognition

In order for Micro-credentials to hold significance, they must be supported by dependable standardized data concerning the specific skills and competencies they demonstrate (Resei, et al., 2019; Kato, et al., 2020). The absence of standardized data on Micro-Credentials diminishes their credibility leading assessors to rely on alternative sources to validate an individual's skills and competencies (Kassi & Lehdonvirta, 2019). This is why numerous higher education institutions are actively engaged in establishing criteria to standardize Micro-Credentials (Nuffic, 2018). These criteria may pertain to the evaluation process, program level, learning outcomes, and EQF (European Qualification framework) level.

I.7.3. The adoption of Micro-Credentials might require changes to the institutional structure

Currently, there is limited knowledge on which specific areas of higher education institutions should be modified and how. However, research indicates that changes should be made to curriculum design, assessment structures, pathway definitions, and IT infrastructure when adopting Micro-Credentials (Lockly, et al., 2016). This restructuring poses a significant challenge to the adoption of Micro-Credentials in higher education, particularly due to resistance to change (Lane, 2007).

I.8. Recommendations to overcome the challenges

To overcome the obstacles of Micro-Credentials application in higher education, the literature proposes several suggestions.

1. **Creating a conceptual framework:** the first step in to help higher education providers (HEPs) to create a conceptual framework that will guide the adoption and implementation of Micro-credentials, and it will provide answers to the questions of technological, organizational, and people-related obstacles.
2. **Adapting existing programs:** institutions may modify their course offerings to include Micro-credentials, which are financially viable and meet the requirements of adult learners. A systematic review proposes the creation of Micro-credentials framework which is in line with requirements of the stakeholders, such as learners, Institutions, employers, and government agencies, to make sure that the competencies are clear and foster collaboration among these groups.
3. **Standardizing Micro-credentials for more transferability and recognition:** standardization of qualifications on competencies and stacking of credentials are very important in their acceptance and transferability among various institutions. Establishing institutions that build micro-credentials into current programs and provide measurable criteria. Moreover, Micro-credentials should be regulated, integrated into national qualification

frameworks, recognized, and quality assured mechanisms should be addressed so that they can be assessed fairly

4. **Clarifying definitions:** addressing the lack of clear definitions, ambiguous course descriptions, and lack of accreditation are also the points of attention. The policy creations should facilitate the inclusion of Micro-credentials into higher education systems.

In essence, overcoming the obstacles of micro-credentials implementation in higher education necessitates a multi-dimensional approach that includes forming the frameworks and standards, adapting the existing programs, ensuring the quality and recognition, and promoting the collaboration among the stakeholders.

I.9. The features of Micro-Credentials platforms

In recent times, there has been a surge in multiple Micro-credentials platforms. The number of these platforms and the variety of features they offer are constantly growing. However, the literature related to these platforms is scarce, and most of the insights are only available in white papers and blogs. In general, Micro-credentials platforms are developed to allow users to save, arrange, distribute, and earn Micro-credentials. The features set can differ from one platform to another (Glover, 2013). With the implementation of Micro-credentials, a deep understanding of the features and their differences becomes a necessity as the reasons for why some platforms offer specific features and others do not remain unclear. This chapter presents an integrated list of features taken from existing literature. This inventory includes platforms that can award badges for non-formal or extracurricular learning, as well as those that can be linked to formal education.

I.9.1. Feature of Micro-credentials platforms identified from literature

- ***Creating templates for Micro-credentials:*** the development of templates for micro-credentials enables issuers to establish uniform formats that can be easily accessed and modified at the later stage (Willse, 2014).
- ***Visualizing and documenting pathways for Micro-credentials:*** permits issuers to incorporate information on the connections between Micro-

credentials and illustrates this relationship through visualization (Casilli, 2013).

- ***Standardized framework data:*** endorsing standardized frameworks for input as supporting evidence during the development of Micro-credentials (Rehak & Hickey, 2013).
- ***Registration for learning offerings:*** enables individuals to enroll in educational opportunities such as courses that are accessible on the platform (SCLDA, 2014).
- ***Submitting evidence of learning:*** earners have the ability to upload supplementary materials to substantiate their accomplishments while submitting an application for a Micro-credential (Grant, 2013).
- ***Collecting Micro-credentials earned in a portfolio:*** earners are provided with the opportunity to securely store and effectively manage their acquired Micro-credentials within their personal portfolio on the platform (Glover, 2013).
- ***Importing micro-credentials from another source:*** earners have the ability to bring in Micro-credentials obtained from external sources apart from those offered on the platform (Dimitrevic et al., 2013).
- ***Visualisation of Micro-credentials and their metadata:*** enables the ability to access and view the Micro-credentials upon reception.
- ***Reviewing metadata of the learner's Micro-credentials:*** allows access of the metadata of Micro-credentials (Otto, 2015).
- ***Validating the evidence of achieving Micro-credentials:*** recognizers are able to verify the attainment through a reliable procedure (Otto, 2015).

I.9.2. The popular Micro-Credentials platforms

Edx MicroMasters: edX MicroMasters is a platform that provides online master's degree courses. The classes are created by the best universities and are acknowledged by a lot of higher education institutions. Students can receive a

MicroMasters credentials after finishing the program, which they can use for professional development or supplement their regular degree.

Coursera Specializations: through Coursera Specialization, learners are able to gain a full knowledge of a particular subject. The platform partners with the best universities and experts in the industry to offer courses of high quality which many higher-education institutions do take into consideration. Students can take each course and an overall specialization certificate at the end of the program.

Coursera MasterTrack Certificates: Coursera MasterTrack Certificates give a flexible and cost-effective option to get a professional credential. The classes are taught by the instructors from the best universities and are credited by many colleges and universities. Learners can obtain a certificate of completion in each course and a MasterTrack Certificate at the end of the program.

Udacity Nanodegrees: Udacity Nanodegrees are online programs which give learners a chance to get real industry-focused skills. The courses are taught by professionals and are applied to real-life environments. The learners will receive a Nanodegree upon completion of the program, which can be used for professional development or supplemental to a traditional degree.

Microsoft Professional Program: Microsoft Professional Program is a learning platform that gives learners the skills that are highly demanded in the areas of data science, artificial intelligence and cybersecurity. The program is accredited by many higher education institutions and it is designed to give students the skills and knowledge that they need for a career in technology.

IBM Skills Academy: the IBM Skills Academy is a platform that equips learners with the skills required for the emerging technologies such as blockchain, cloud computing, and artificial intelligence. The program is accredited and it is accepted by many higher education institutions, and it is aimed at training learners for careers in technology.

Google Career Certificates: Google Career Certificates equip learners with cutting-edge skills in IT support, data analytics, and project management, which are in-demand fields that are growing in popularity. These certificates are accepted by

many universities and colleges and are geared towards helping learners transition into technology careers.

These platforms are few from many others popular platforms that offer various Micro-Credentials programs that are also accepted by many universities.

I.10. The blockchain technology and Micro-Credentials

Blockchain, as a public ledger, stores, information in a decentralized network, which is shared by a group of users and includes transactions, contracts, and other digital forms. The blockchain is built up by adding each new block at the end of the chain and all the blocks are cryptographically hash to their neighbors. Cryptography and consensus algorithms are the core tools used for security and consist operation of the blockchain. In addition, blockchain. In addition, it is highly known for its unalterable feature that is why it is suitable for businesses which need high reliability and truth-fullness in data as those data which are saved in blockchain cannot be modified or deleted.

I.10.1. the benefits of issuing Micro-Credentials on a blockchain technology

Micro-credentials and blockchain technology are highly complementary, and their connection is developing in multiple different ways. Here are more details about their connection:

- **Security:** with the help of blockchain technology, there is a chance to establish a decentralized security platform in order to keep and share Micro-credentials in a way they could not be falsified and the digital badges could be guaranteed.
- **Immutability:** blockchain's immutable nature assures that the data recorded once cannot be changed in any, which creates a permanent, unchangeable record of Micro-credentials.
- **Decentralization:** blockchain technology provides a decentralized nature that results is a shared ledger for the Micro-credentials exchange, which can be done without a central authority.

- Trust and verification: with the help of blockchain technology, Micro-credentials can be verified by anyone, thus increasing the level of trust in the credentialing process and the efficiency of the employer's skill evaluation
- Interoperability: the model 1.0 standard of W3C verifiable credential when used with Blockchain technology makes secure, trustworthy, and interoperable certification exchange possible, which allows learners to share their credentials across different platforms and groups.
- Peer-to-Peer Learning: the technology of Blockchain allows direct peer-to-peer learning, thus enabling the learners to get and validate their Micro-credentials with each other.
- Micropayments: Blockchain's decentralized model gives birth to micropayments, which lets learners pay for micro-credentials on per-course basis, making education cheaper and accessible.
- Transparent Recordkeeping: Blockchain technology makes a transparent system of records and it is possible for learners to track their progress and for the employers to evaluate their skills really accurately.
- Lifelong learning: the integration of Micro-credentials and blockchain technology enhances lifelong learning and enables individuals to keep their skills in line with their professions and earn recognition for their achievements.

Micro-credentials and blockchain technology will change the outdated credentialing system, through this partnership, individuals can benefit from a safe, reliable, and verifiable way to record their skills and knowledge, which will enable them to control of their lifelong learning agenda. Employers and institutions can save time and effort by having streamlined verification processes and obtaining a clearer picture of a candidate's skills. Although there are still the challenges of wide-spread adoption and potentially scalability, the impact of micro-credentials on the blockchain is undeniable. It is this creative method that has the potential to change the way we value and reflect skills in our changing world.

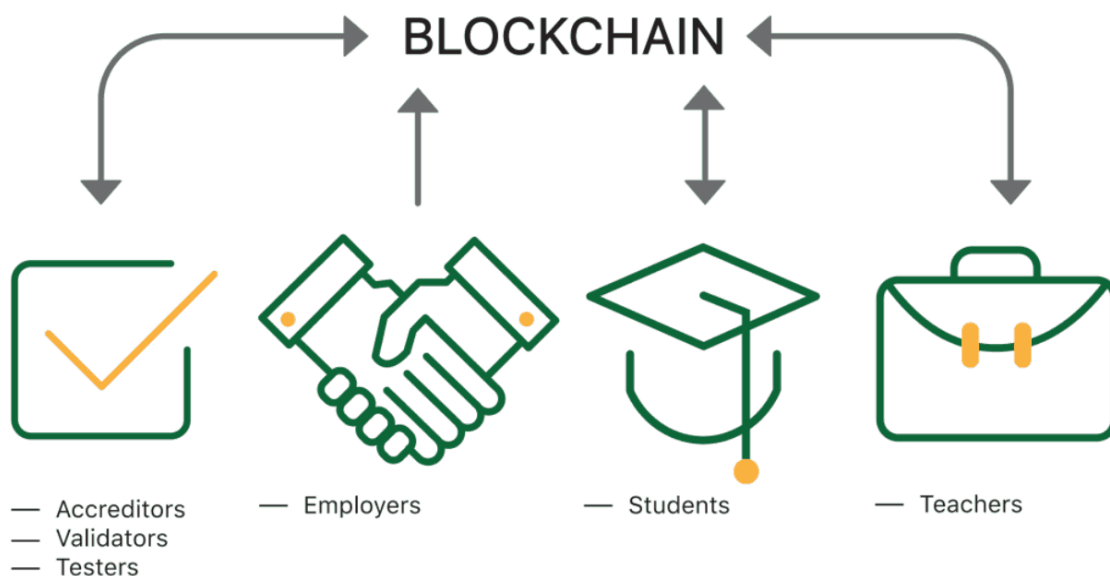


Figure I.3. shown how Blockchain can be used to securely store and verify student achievement records. (Adopted from ArK, T. V. (2017, December 21). How blockchain Will Transform Credentialing and Education). Getting Smart.

I.11. Conclusion:

In this theoretical chapter, we have dealt with the concept of Micro-Credentials from different angles and perspectives. Micro-credentials are becoming immensely popular in postsecondary education, government and industry. In most cases, they can be taken digitally making them more flexible and accessible to learners. Higher education institutions can take advantage of micro-credentials to improve access and increase the number of students enrolled in such programs. They also enable learners to close the skills gap by gaining specific skills that are necessary for their career goals or particular needs. Nonetheless, introducing micro-credentials can be problematic within higher education sector, thus requiring more studies about their sustainability in the future. Most studies on social, economic and higher education sectors have provided analysis through one stakeholder involvement only which necessitates proper research that explicitly examines various approaches of stakeholders on micro-credential issues. Furthermore, there is inadequate knowledge

on how much these benefits could contribute towards a sustainable future but more research is needed before any conclusion can be reached concerning this matter.

Chapter II

Research Design and Analysis

II.1. Introduction

The present chapter intends to introduced the data collected from the two research tools: master one English students' questionnaire and teachers' interviews and then a detailed analysis and interpretation of the results. It focuses more on how much Micro-Credentials is popular and used among teachers and students, how they demonstrate students' skills and knowledge as well as the suitable methods should be used to assess these Nano-degrees. To achieve this, the researcher has tried to investigate how the teachers and the students of the English department at the university of Tlemcen consider the effectiveness of using and implementing Micro-Credentials in Higher education institutions in showcasing the abilities and skills of the learners. Therefore, this chapter starts with presenting the research design and methodology. It also describes the participants as well as the instruments utilized in this study; specifically, a questionnaire with students and an interview with teachers. Furthermore, this chapter distribute a clear idea about the procedures employed to analyse the collected data, which can be characterized as a blend of quantitative and qualitative methodologies.

II.2. Research design

II.2.1. Research setting

This research took place in the in the Faculty of letters and languages department of English exactly section of English in Abou Bekr Belkaid university of Tlemcen, taking the students of master one and the teachers as a case study. The students and teachers in the department have different fields of study such as Didactics, linguistics, literature and civilization.

II.2.2. Case study

A Case study in an in-depth examination and analysis of a specific subject, such as a person, group, event, organization, or phenomena within its real life context. Thomas R. Kratochwill defines a case study as: "a well-crafted case study is a window into the real world, allowing us to explore the 'why' and 'how' behind events

and phenomena.” Moreover, according to Jordan (1997), case study is a way of obtaining in-depth information and insights. Accordingly, there are three types of case study: those based on the research objective, those based on the number of cases examined, and those based on the unit of analysis. The case study according to the research objective encompasses three subcategories: descriptive, explanatory, exploratory. Moreover, the case study based on the number of cases examined comprises two main types: single and multiple.

Choosing the appropriate research methodology that suits the research objectives is one of the most common challenges a researcher encounter. Thus, in order to conduct a considerable study and write an effective piece of research, this step should be taken into consideration. Hence, the present piece of work is a teachers’ opinions and perceptions about the concept of Micro-Credentials as well as its effectiveness in demonstrating the students’ skills and knowledge.

Moreover, it gathers data from various sources by depending on a range of research tools: a questionnaire for students and an interview for teachers, in order to build a solid foundation for the research project, we need to gather crucial data that will provide a comprehensive understanding and yield valuable information on this topic.

A mixed approach between quantitative and a qualitative was adopted. The quantitative approach was used in students’ questionnaire about their use of micro-credentials programs and their experience with the platforms offering such programs, while the qualitative one was used for teachers’ interview in which they are asked about their opinions concerning the use of MCs in improving and showcasing the skills and knowledge based on their experience, and which assessment method they think it is suitable for such programs. The data collected from the students’ answers were represented in form of statistics and graphics, while teachers’ answers were stated in a clear way.

II.3. Sample population

In any empirical study, it is essential to carefully choose a sample population as the foundation for the experiment. In this regard, a sample is the specific group that the research will gather data from, the sample size is consistently smaller than the overall size of population thus, the population is the entire group that the research wants to draw conclusions about, it encompasses all the elements of interest, whether they are people, objects, events, organizations, countries, species, or any other category.

Therefore, the sample is chosen randomly to participate in this research. This piece of work is based on the input 31 students who answered the questionnaire, and 4 teachers who responded to structured interview. The participants are from the department of English, university of Tlemcen.

II.3.1. Students' profile

This prolonged essay deals with the students of the English department in the university of Tlemcen. The sample who participated in the research are 31 students randomly selected to answer the questionnaire, mix between males and females. The participants are English students and have diverse proficiency levels. Moreover, the students are from different majors including didactics, linguistics, literature and civilization and even translation. All of them are master 1 students.

II.3.2. teachers' profile

The sample involves four teachers at the university of Tlemcen exactly the English department. They are all full time teachers, holding their "Doctorate" degree. All of them are experienced teachers teaching various modules.

II.4. Data collection

Two research tools have been used to collect data from the participants in a clear way, to achieve the study objective. The questionnaire was directed to students while the structured interview was addressed to teachers. The students are kindly invited to answer the questionnaire by putting a cross (X) in the appropriate box, whether are

strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), or Strongly Disagree (SD), even comment whenever necessary.

Close-ended questions are beneficial for respondents as they allow for quick and efficient conclusions. These types of questions are easier for respondents to answer, which helps avoid wasting time and simplifies the interpretations of results. In contrast, the teachers' interview was structured to allow them to respond freely about the subject matter. This open-ended approach gave respondents the freedom to answer more expansively about the topic.

The survey was conducted at the university of Tlemcen faculty of letters and languages department of English (section of English).

II.5. Research instruments

In this research, two main research tools have been used on collecting data from both students and teachers in detailed and clear way. The questionnaire for the students and the interview with the teachers. These tools are presented as follows:

II.5.1. students' Questionnaire:

A Questionnaire is a research tool consisting of a set of questions designed to gather information or opinions from individuals on a particular topic. It is commonly used in surveys and studies to collect data in a structured manner. It includes a series of questions that can be open-ended questions allow respondents to provide detailed answers in their own words, while closed-ended questions provide predefined response options for respondents to choose from. Moreover, the questionnaire provides a relatively cheap, quick, and efficient way to obtain large amounts of information from a large sample of people, the questions should follow logically progress from least to the most sensitive, and be easy for respondents to understand. The questionnaire can be administered in various formats like online, over the phone or in-person. Hence, careful questionnaire design is crucial to collect high-quality, unbiased data that accurately represents the target population. In summary, a questionnaire is a structured research tool used to systematically collect information from a group of people to address a research question or objective.

In this research, the questionnaire consisted of different types of questions such as choosing the suitable answer from a number of choices (closed questions), open questions in which the participants may answer freely in their own words (expressing opinions), as well as mixed questions inquiring respondents to choose from provided options and provide a rationale for their selection. Besides, the response options are typically arranged on a scale from “strongly agree” to “strongly disagree”, “with a neutral” or “neither agree or disagree” option in the middle. Participants choose the single response that most closely aligns with their views on the statements presented.

The students’ questionnaire consists of 19 questions. Hence, the questionnaire is directed to thirty-one students, the main concern of these questions is how students see the effectiveness of micro-credentials compared to traditional degrees, also their experience with such programs as well as their awareness of the concept. In other words, the questionnaire focuses on the point of view of the students on how Micro-Credentials demonstrate students’ skills and knowledge.

The first questions are about general understanding of the topic and its concept based on each student; it contains questions asking about whether they have heard of the term Micro-credentials before or not, if yes are they familiar with the concept of MCs ...etc. The following next questions are about their opinions about how Micro-credentials help students gain skills in a short period (multiple choice questions), as well as the effectiveness of MCs in showcasing the students’ skills and knowledge. The next three questions are more like a comparison between traditional degrees and micro-credentials. Finally, the rest of the questions are designed for asking the students about their experience with such programs and whether they have enrolled in a MC program through one of the platforms that offers these programs. The last two questions are about how they envision the role of Micro-Credentials in education and professional development.

II.5.2. Teachers' interview

An interview is a purposive conversation between interviewee and interviewer, it is conducted by a researcher to collect in-depth information from participants on a specific topic. It's a fundamental tool in a qualitative research designed to gather rich data about people's experiences, thoughts, feelings, and opinions that might not be easily captured through surveys or other methods.

Merriam-Webster defines an interview as "a formal consultation usually to evaluate qualifications" or "a meeting at which information is obtained from a person". Besides, Collins English Dictionary describes an interview as "a formal meeting at which someone is asked questions in order to find out if they are suitable for a job or a course of study". According to Cannell and Kahn's (1968) definition, the interview appears as a "conversation initiated by the interviewer for the specific purpose of obtaining research-relevant information, and focused by him on content specified by research objectives".

The interview and the questionnaire are different from each especially in terms of social interaction and oral form. Furthermore, when creating an interview schedule it is crucial to formulate questions that can provide extensive insights into the study subject while also aligning with the research goals and objectives.

There are three main types of interview which are as follows: structured, semi-structured, and unstructured interviews. Structured interviews involve a predetermined set of questions asked in a consistent manner and standardized manner, this type allows for fair and objective comparisons between respondents. The structured interviews can be relatively quick compared to other interview formats but the duration can vary depending on the complexity of the questions and the depth of the responses. Hence, the semi-structured interview is a flexible interview format that combines predetermined questions with the opportunity for open-ended discussion. While, there is a general outline of topics to cover, the interviewer has the freedom on the participant's responses, allowing for deeper understanding of the subject matter. On the other hand, unstructured interview is a free-form interview format

where there is no predetermined set of questions. Instead, the conversation flows naturally, allowing the interviewer to explore various topics and delve into the participant's responses in depth. This type provides flexibility and allows for rich, detailed insights but may lack consistency across interviews.

Accordingly, in the current research a structured interview is used with aim of gaining information about the teachers' experience and attitudes towards Micro-Credentials programs and their effectiveness in showcasing students' skills and knowledge. As well as their opinions in implementing such programs in higher education institutions, and whether these programs can be considered as alternative to traditional degrees. Each teacher was interviewed individually via seventeen questions for the purpose of understanding and exploring their answers about the topic deeply.

The interview is divided into five rubrics, the first one consists of four questions asking about general understanding of the topic, i.e., their prior information and thoughts about Micro-credentials. The second rubric as well is consisted of four questions in which focus on the impact of MCs on teaching and learning, the third rubric contains three questions which turns around the validation and the appropriate assessment of Micro-Credentials. Besides, the fourth rubric focuses on the opinions of teachers about the implementation and integration of such programs and their impact on both teachers and students, it comprises three questions. The last rubric looks for the teachers' additional insights concerning the subject matter.

II.6. Data analysis

Data analysis is the process of inspecting, cleaning, transforming, and modeling data to extract useful information and draw conclusions. In research process data analysis is a vital step in order to examine the data collected through students' questionnaire and teachers' interviews. According to Cohen et al (2007), "Data analysis is a body of methods that help to describe facts, detect patterns, develop explanations, and test hypotheses. It is used in all of the sciences".

In order to test the research hypotheses of this study, two main data collection tools were used, students' questionnaire and teachers' interviews, which are analysed quantitatively and qualitatively.

II.6.1. Students' Questionnaire

This questionnaire aims at examining the students' perceptions toward Micro-credentials and their opinions and views of these Nano-degrees impact on demonstrating and showcasing the students' skills and knowledge comparing to traditional degrees.

After collecting the data, the results of this constructed questionnaire have been analysed qualitatively and quantitatively as follows:

Question 1: have you heard of Micro-credentials before?

As it is shown in the following figure that more than a half of the sample are not familiar of the term Micro-credentials; out of 31 participants, 15 (48.4%) have heard of the term in the opposite 16 (51.6%) never heard of such term.

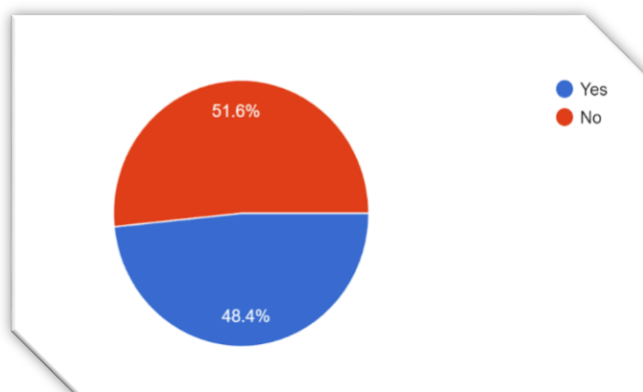


Figure II.1. Percentages of people familiar with Micro-credentials

If yes, please describe your understanding of Micro-credentials.

All the sixteen students answered this question. The answers are closely similar to each other; the majority describes their understanding to the term Micro-credentials as a way to gain skills quickly and conveniently, and that they are focused on practical applications rather than theoretical knowledge. Some other descriptions even say that Micro-credentials can be a substitute for traditional education. Other respondents

described MCs as a bite-sized certification that validate the attainment of specific skills or competencies, they are typically earned by completing short, focused learning experiences, such as online courses, workshops, or projects, unlike traditional degrees, Micro-credentials offer more flexibility in terms of time, cost, and content, allowing learners to customize their learning path and acquire targeted skills relevant to their career goals. Moreover, the data overwhelmingly portrays Micro-Credentials as focused on acquiring specific skills quickly rather than replacing traditional education. The emphasis is on practical application learned through short, focused learning experiences, while some descriptions mentioned a connection to traditional education (e.g., “diploma” or “degree”), the focus remains on achieving practical skills in shorter timeframe.

Question 2: Micro-credentials offer a way to gain specific skills or knowledge in a shorter period compared to traditional academic degrees

It is seen from the following figure that the majority of the sample agree 19 (61.3%), and 6 (19.4%) strongly agree that Micro-credentials are a faster way to gain skills or knowledge than traditional degrees. Only 6 (19.4%) were neutral on the statement.

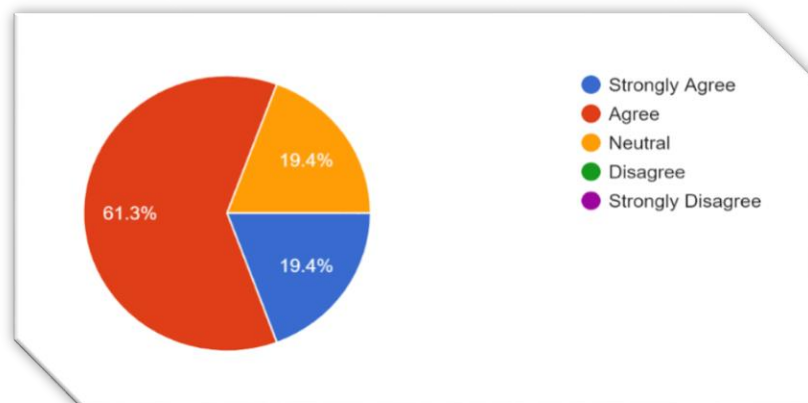


Figure II.2. Results on perception of Micro-credentials compared to Traditional academic degrees

Why or why not? Please justify:

Based on the provided answers, the majority of the respondents agreed on the above statement for different reasons. Most of them said that Micro-credentials are beneficial for students, offering a way to gain specific skills or knowledge in a shorter period, they are even considered effective in terms of time and effort, providing flexibility and adaptability to individual learning capacities. Thus the focus on specific skills or competencies is highlighted as a key advantage, enabling learners to exceed the broader requirements of traditional degree programs. However, other respondents gave different viewpoint, they said it depends on what skill or knowledge. For example, some skills or knowledge can be acquired in a small period of time while other requires much more than that, for instance courses which involve learning communication skills or team management can be dealt with in short periods but language learning or scientific studies like math or physics require more time to be understood and to achieve decent knowledge on them.

Question 3: do you think Micro-credentials effectively demonstrate and validate acquired skills and knowledge?

It is seen from the following figure that the majority of the respondents (25 students, 83.3%) believe that Micro-credentials are effective. However, the rest (6 students, 16.7%) don't agree with them.

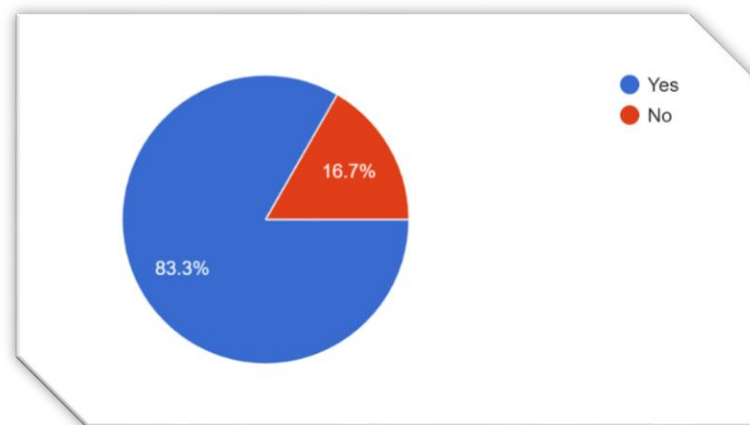


Figure II.3. perceptions of MCs as a tool for validating acquired skills and knowledge.

If yes, what makes you think so?

The responses on this question were varied, but the most shared response is that Micro-credentials gives the opportunity to learners the chance to showcase their skills and competencies in real life situations (practical experience). Hence that's what makes these bite-sized degrees more effective in demonstrating students skills more than traditional degrees. Some other respondents said that Micro-credentials are unlike traditional degrees, they focus on targeted skills or competencies, providing a clear indication of what the learner has mastered. This specificity allows employers and others stakeholders to quickly assess an individual's capabilities in particular area.

If no, what improvement do you think are necessary?

The rest of the sample (5 students, 16.7%), think that Micro-credentials are not as effective as traditional academic methods. Therefore, they suggest integrating these Nano-degrees with traditional education systems to provide learners with more flexible and personalized learning pathways.

Question 4: what factors make Micro-credentials appealing for someone seeking to upskill or learn new skills quickly?

As it is seen in the following figure, shorter duration and more focused curriculum is the most popular response, with 23 (74.2%) of respondents agreeing that it is the most appealing. Hence, 12 (38.7%) of the respondents indicated that flexibility and online accessibility are important factors and nearly a third 9 (29%) of respondents found industry relevance and practical application to be a crucial factor. Furthermore, cost effective was selected by 5 (16.1%) of the respondents and the least popular response, with only 1 (3.2%) of respondents indicating that a focus on a specific skill is the most appealing factor.

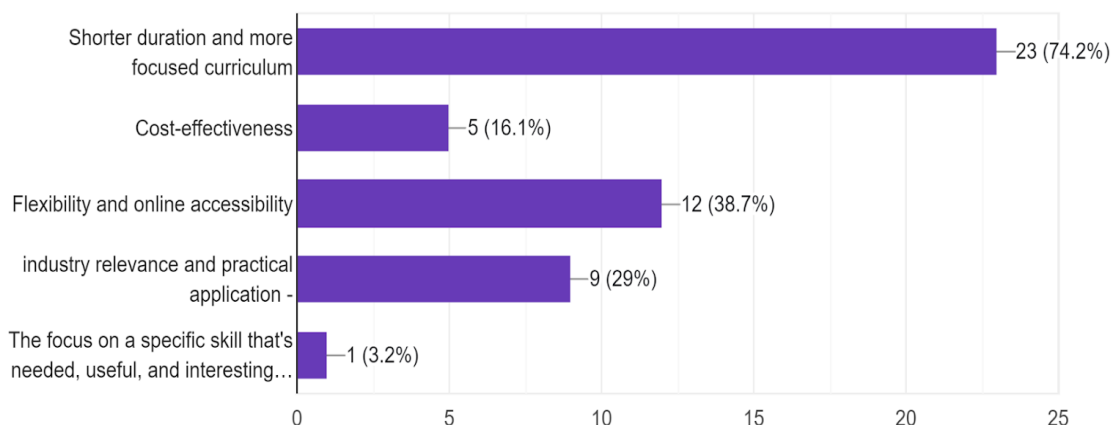


Figure II.4. Factors influencing preferences for Micro-credentials

Question 4: how do you view the relevance and practicality of Micro-credentials compared to traditional academic degrees?

The shared responses by participants reveals that Micro-credentials are viewed favorably for their focus on practical skills and their ability to be completed quickly. According to the majority of them, Micro-credentials are a good option for individuals who want to gain specific job-ready abilities in a shorter timeframe. Additionally, other students claim that the flexibility and online availability of MCs make them more accessible than traditional degrees. However, other respondents have different point of views they indicated that Micro-credentials are seen as a valuable and successful alternative for those seeking targeted skill development, while traditional degrees are acknowledged for their comprehensiveness and official recognition, thus the effectiveness of traditional methods can't be denied. Hence the choice between the two depends on the individuals' goals and needs.

Question 5: Micro-credentials support lifelong learning and encourages continuous skill development compared to traditional academic programs.

The following figure shows that 11 (35.5%) of the respondents are neutral toward the statement, and 8 (25.8%) agree that Micro-credentials support lifelong and encourages continuous learning as well as 5 (16.1%) of the respondents strongly agree. While the rest of the respondents 6 (19.4%) strongly disagree and 1 (3.2%) disagree.

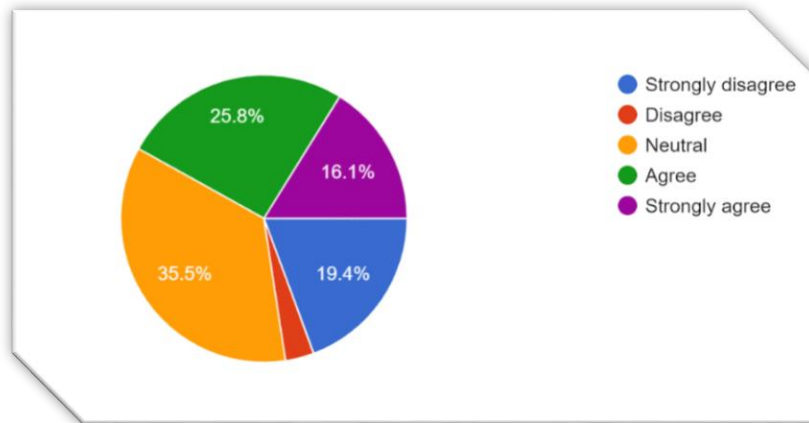


Figure II.5. Lifelong learning: MCs vs traditional degrees

Question 6: which methods is more likely to showcase a learners' ability to apply knowledge in real world scenarios?

This question is delivered to determine which method is believed to be more effective at showcasing a learner's ability to apply knowledge in real-world scenarios. Hence. The figure below shows that a large majority of respondents 26 (86.7%) that Micro-credentials are more likely to showcase a learners' ability to apply knowledge in real-wold. However, the rest of the respondents 4 (13.3%) believe that traditional degrees are more effective in showcasing the learner's skills or knowledge.

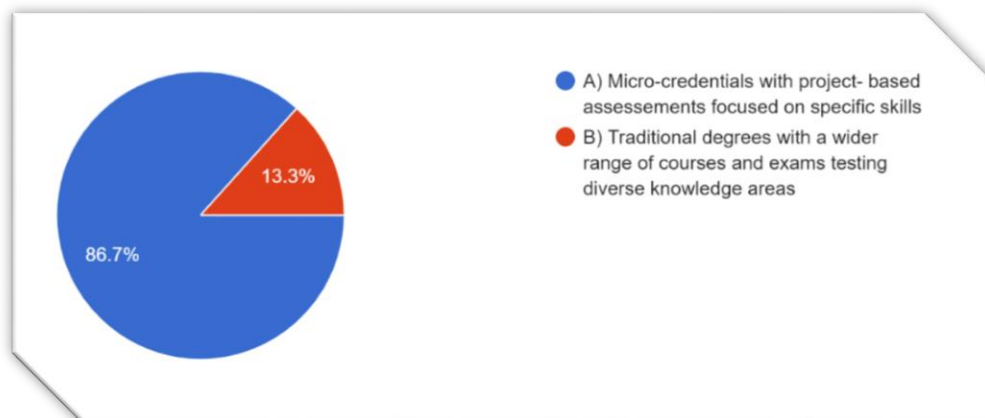


Figure II.6. perceptions of educational methods in showcasing
Real-world skill application

Question 7: Which method provides a more tangible demonstration of a learners' skills and competencies?

It can be noticed in the figure below that the majority of students (76.7%) believe that Micro-credentials with project-based assessments provide a more tangible demonstration of a learner's skills and competencies. Only (23.3%) of the respondents selected traditional degrees with exams and theoretical coursework.

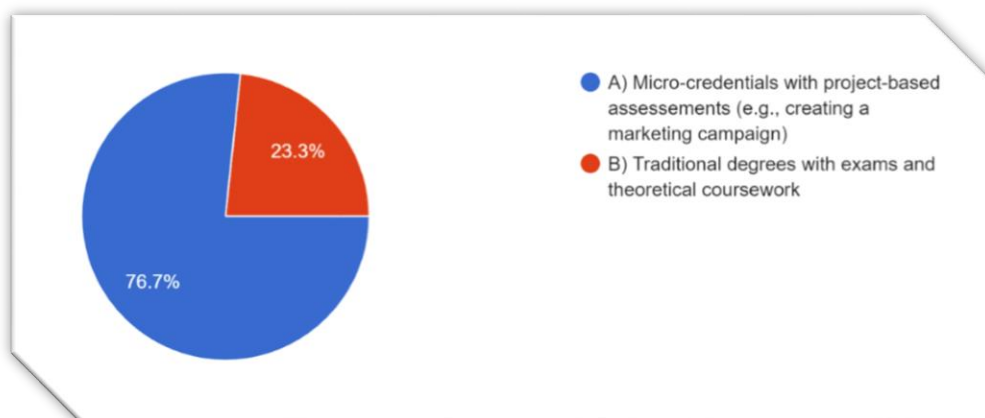


Figure II.7. Micro-credentials vs. traditional degrees in demonstrating learner skills

Question 8: what types of assessment method are suitable for Micro-credentials?

This question tried to know the best assessment method to assess such programs according to the students. Hence the most common shared response is performance-based assessment, portfolio reviews, project demonstrations, competency exams, peer evaluations, competency-based assessment and real-world stimulations. Thus, according to the students these methods allow for the demonstration of practical skills and knowledge relevant to specific competencies, providing a more holistic and applicable assessment approach for micro-credentials.

Question 9: Have you ever completed a micro-credential course or program?

The outcomes obtained from this question showed that (77.4%) of the participants have ever completed a Micro-credential course or program, while (22.6%) indicated that they have not ever completed such type of program or course before. These findings are represented in the subsequent figure:

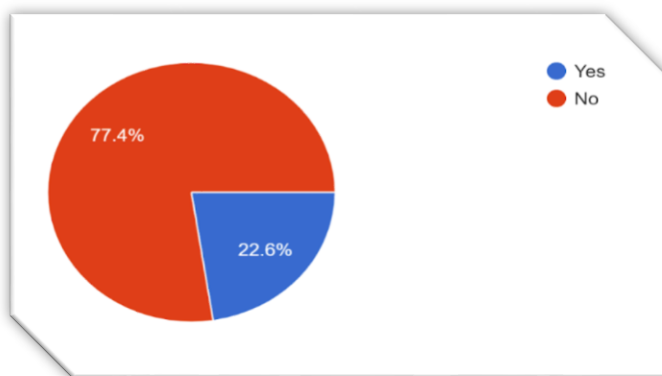


Figure II.8. Micro-credentials course completion rates

If yes, describe your experience and its impact on your skills and knowledge

Out of the total participants, only nine individuals provided responses to this particular question. Accordingly, respondents have engaged in various Micro-credential programs or courses, ranging from cross-cultural diplomacy to programming languages and business management. The respondents mentioned practical exams and hands-on learning experiences as a part of their courses. Some other respondents noted that the programs were effective for specific skills they wanted to acquire, such as learning programming language quickly or understanding the vocabulary necessary for running a business. Furthermore, several respondents highlighted the social aspect of their learning experiences mentioning the opportunity to meet new people and the positive impact on both social and professional skills.

Question 10: Are you aware of digital platforms offering micro-credentials programs such as Coursera, EDx, LinkedIn learning?

Based on the figure below the majority of the respondents (64.5%) are aware of digital platforms offering Micro-credentials programs. And the rest of them (35.5%) never heard of such platforms before.

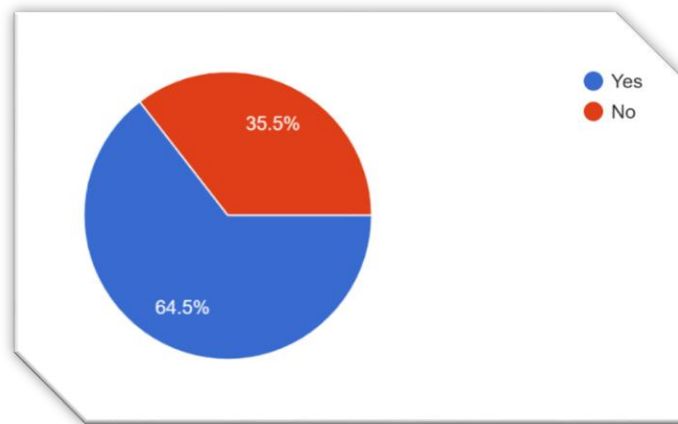


Figure II. 9. Awareness of digital Micro-credentials platforms

Question 11: If yes, have you ever enrolled in a micro-credential program through these platforms?

As it is seen in the following figure the majority of the respondents (73.1%) never enrolled in a Micro-credential program through these platforms, while the remaining respondents (26.9%) had an experience with such platforms.

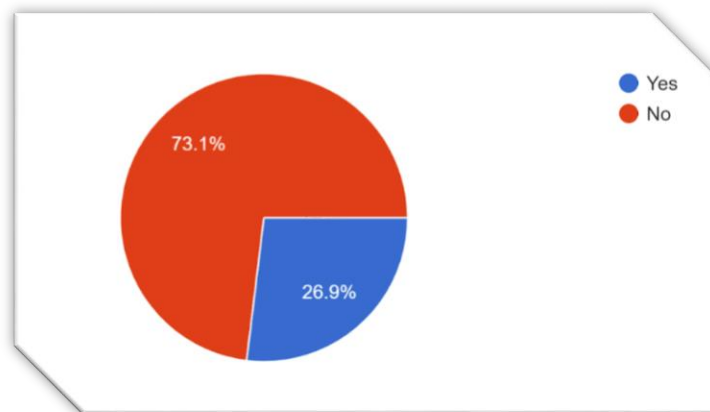


Figure II.10. Micro-credential programs enrollment

Question 12: How do you envision the future role of micro-credentials in education and professional development

The participants were asked in this question to give their opinion about the role of MCs in both education and professional development in the future. The outcomes attained showed that there is a strong consensus among the participants

that Micro-credentials will play a significant role in the future of education and professional development. Many see them as valuable tools for personalized learning paths, career advancement, and adapting to rapidly changing job markets. There is also recognition of their effectiveness in providing practical skills and enhancing flexibility in learning. However, some emphasize the need for proper testing of their effectiveness. Overall there is optimism about the potential of Micro-credentials to revolutionize education and career development.

Question 13: Is there anything else you would like to share or express regarding micro-credentials?

This question was delivered to collect some extra information that the research maybe not aware of. Accordingly, the participants did not share any extra interesting information about Micro-credentials.

II.6.2. Teachers' interview

The second research instrument used in this study was the interview. A structured interview consist of 17 question was addressed to 4 teachers of the English department at Tlemcen university. The goal of this interview is to investigate the teachers' perceptions about Micro-credentials' programs and even their experience with them, and their view about their effectiveness in demonstrating students 'skills and knowledge in real life situations.

The teachers' interview is analyzed as in the following:

Rubric one: general understanding

The first rubric consist of four questions ask about general understanding.

Question 1: tell me about your prior experience with Micro-credentials, if any

Teacher 1 said "although it is not really part of the curriculum dispensed to my students, I have always tried to include it in one way or another on all the modules I teach."

Teacher 2 said "I have not had prior experience with Micro-credentials in teaching English."

Teacher 3 said “I didn’t have such experience before.”

Teacher 4 said “in my experience as a teacher Micro-credentials have been extremely valuable for my professional growth. I’ve learned Micro-Credentials in areas such as digital literacy and classroom management.”

Question 2: what are your initial thoughts on the concept of Micro-credentials?

Teacher 1 said “Micro-credentials offer tailored training that can meet students’ needs and interests and prepare them for the job-market.”

Teacher 2 said “Micro-credentials offer a flexible and targeted approach to acquiring specific skills and knowledge.”

Teacher 3 said “I think it is good especially in learning foreign language, but it is also insufficient and scanty.”

Teacher 4 said “I think Micro-credentials are a great idea, they provide focused, flexible professional development, allowing teachers to improve specific skills relevant to their needs.”

Question 3: compared to traditional degrees, how do perceive the value and effectiveness of Micro-credentials for students?

Teacher 1 said “I always encourage learning that is innovative, creative, flexible, useful, learner-centred and responsive to the needs of the job market. I see Micro-credentials as a useful addition to students’ professional lives, but not as a replacement for traditional degrees.”

Teacher 2 said “well they are small, focused lessons that can help students learn specific skills quickly better than traditional degrees.”

Teacher 3 said “traditional degrees are more valuable and useful than Micro-credentials ones.”

Teacher 4 said “compared to traditional degrees, I see Micro-credentials as valuable for specific skill development but not as comprehensive. Traditional degrees provide broader, in-depth knowledge and critical skills thinking. Micro-

credentials are effective for targeted, immediate skill acquisition and can complement a traditional degree by addressing specific gaps or emerging needs.” However, they don’t replace the depth and breadth of education a traditional degree offers.”

Question 4: in your opinion, what are the potential benefits and drawbacks of integrating micro-credentials into your curriculum?

Teacher 1 said “Personally, I found myself in the teaching profession doing tasks that no one had taught or prepared me for before. Although I have learned everything on my own, deep down, I wish that someone had trained me. That is why I would like to include such training in my curriculum, so that my students are prepared personally, professionally, psychologically, technologically, methodically and linguistically for the 21st century profession, and they do not experience what happened to me: being left to their own devices. I see no downside to such integration.”

Teacher 2 said “on my view, integrating MCs into the curriculum can offer students skills relevant to their career.”

Teacher 3 said “the benefits is that students can learn and specific skills in a short period of time, but I think they are not as valid as traditional methods.”

Teacher 4 said “Micro-credentials offer personalized, practical skill development, flexibility, increased engagement, and competitive edge for students. However, they can be resource-intensive, potentially overwhelm students, risk fragmented learning, face recognition issues, and pose challenges in maintaining consistent quality. Hence, they hold great promise but need careful integration to be effective.”

Rubric two: Impact on teaching and learning

The second rubric consists of four questions as well. It asks questions about the impact of Micro-credentials on teaching and learning.

Question 1: Can you identify specific skills or knowledge areas within your subject that align well with the Micro-credentials model?

Teacher 1 said “Data analysis and visualization, project management, digital marketing, graphic design, and language proficiency.”

Teacher 2 said “assessment, technology, classroom management, teaching a foreign language.”

Teacher 3 said “I think it can be used to learn and have such level in foreign languages (to study a new language).”

Teacher 4 said “digital literacy, classroom management, assessment and evaluation, project-based learning, social-emotional learning.”

Question 2: how do you envision Micro-credentials influencing student learning and engagement in your classroom?

Teacher 1 said “as Micro-credentials are learner-centered and depend on engaging activities, I strongly believe that using them in the classroom will attract and motivate learners as they will see their usefulness outside their classroom. As a result, I’m quite sure that they will be more involved in classroom discussions/activities.”

Teacher 2 said “it can enhance, develop student learning by providing teachers with targeted skills and strategies.”

Teacher 3 said “they will have a good influence on them, by motivating them to engage in new fun activities.”

Teacher 4 said “I envision Micro-credentials significantly enhancing student learning and engagement by allowing me to incorporate cutting-edge practices and specialized knowledge into my curriculum. For instance, earning micro-credentials in areas such as advanced research methodologies or digital pedagogy would enable me to offer students the latest tools and techniques, making coursework more relevant and engaging.”

Question 3: could Micro-credentials be used to personalize learning experiences for individual students? If so, how?

Teacher 1 said “of course, Micro-credentials can offer a personalised learning experience that is completely different from traditional teaching, which may seem uninteresting or too theoretical. Micro-credentials allow students to explore topics of interest outside of the regular classroom environment through extracurricular activities such as workshops or independent projects.”

Teacher 2 said “yes, it could by adapting methods and materials to match diverse learning styles, levels, and interests.”

Teacher 3 said “yes it could. In order to help know their level/skills in a specific topic.”

Teacher 4 said “yes, Micro-credentials could be used to personalize learning experiences for individual students. They allow students to focus on specific skills or areas of interest relevant to their personal and career goals, by customized learning paths, skill-based learning, flexibility, recognition of diverse skills.”

Question 4: based on your understanding, how could Micro-credentials be integrated into existing assessment practices within your course?

Teacher 1 said “I can design specific assessment activities such as analysing data sets or interpreting statistical results. I can put them in situations and ask them to manage them to assess their management, decision-making and leadership skills. I can also introduce them to digital marketing strategies and graphic design.”

Teacher 2 said “in my courses Micro-credentials could be integrated as specific modules focused on particular skills. For instance, a module on data analysis could include targeted assignments, quizzes, and projects. My students would complete these alongside the main coursework, earning a Micro-credential upon demonstrating mastery of that specific skill.”

Teacher 3 said “to integrate Micro-credentials into exiting assessment, I can design specific assessment aligned with the credentials or offer optional activities. It gives students more recognition for their learning.”

Teacher 4 said “in my course I would try to link micro-credentials to major projects or final assessments, for instance, students could earn a Micro-credential by completing a comprehensive project that applies course concepts to real-world scenarios. This would ensure that the Micro-credential aligns with the overall course objectives and showcases the students’ applied knowledge and skills.”

Rubric three: assessment and validation

This rubric is consisted of three questions

Question 1: do you believe project-based assessment and real-world applications are more effective than traditional exams in validating learning outcomes? Why or why not?

Teacher 1 said “In my opinion, we will not be able to compare the effectiveness of two completely different visions of learning until large-scale research is carried out with Algerian students. Do not forget that we currently rely on ministerial canvas with specific objectives proposed by scientific committees and validated by stakeholders, which require traditional exams. Therefore, I will answer this question when project-based assessments and real-life applications are officially implemented. That is when the real research can start and we can confirm their effectiveness or not.”

Teacher 2 said “yes because they are like real life situations where you have to use what you have learned.”

Teacher 3 said “no they don’t, traditional exams are more effective and real in validating learning outcomes.”

Teacher 4 said “I definitely believe that project-based assessment and real-world applications are more effective in validating learning outcomes compared to traditional exams. The reason is that these approaches allow students to apply their

knowledge and skills in practical, real-life scenarios. This not only tests their understanding of the subject matter but also their ability to problem-solve, think critically, and collaborate with others. Traditional exams, on the other hand, often focus on rote memorization and regurgitation of information, which may not accurately reflect a student's true understanding or ability to apply knowledge in real-world situations. Project-based assessment and real-world applications provide a more comprehensive and authentic evaluation of a student's learning outcomes.”

Question 2: If you were to implement project-based assessment for micro-credentials, what challenges do you anticipate facing?

Teacher 1 said “If I were to introduce project-based assessment for micro-credentials, I would certainly face challenges from some of my colleagues, whom I am sure would not be cooperative as they are often reluctant to make small changes, let alone introduce such a thing. Unfortunately, they prefer to stick to old-fashioned lectures rather than make slight changes, and I think this is what could hinder the success of such an amazing project. Another challenge would be the lack of competence and motivation of the students. In fact, a possible success would depend mainly on the commitment of the students and a good command of English as well as the computer skill.”

Teacher 2 said “I think lack of understanding such term would be the greatest challenge in implementing project-based assessment.”

Teacher 3 said “Implementing project-based assessment for Micro-credentials may come with a few challenges, one challenge is ensuring that the projects are aligned with the specific criteria and learning outcomes of each Micro-credential. It would require careful planning and design to create meaningful projects that effectively assess the required skills and knowledge.”

Teacher 4 said “I think some challenges may include the time and resources required to design and evaluate projects, ensuring consistency and fairness in grading, and managing varying levels of student preparedness. Scalability is another corner,

especially with larger classes, and integrating these projects seamlessly into the existing curriculum without overwhelming students will be crucial.”

Question 3: how could collaboration with industry partners contribute to creating meaningful and relevant Micro-credentials for your students?

Teacher 1 said “collaboration with industry partners would demonstrate to students the usefulness of the training they have received and its application outside the university, where they will put it into practice.”

Teacher 2 said “by making sure that they learn skills that are important for jobs and providing real work projects to work on.”

Teacher 3 said “collaboration with industry partners ensures that Micro-credentials are aligned with current job market needs, providing students with relevant skills and real-world projects.”

Teacher 4 said “collaborating with industry partners can greatly enhance the relevance and meaning of Micro-credentials for students, by working closely with professionals in the field, we can ensure that the skills and knowledge being assessed are directly applicable to real-world scenarios.”

Rubric four: integration and implementation

This rubric is consisted of 3 question as well

Question 1: in your opinion, what resources or support would be necessary to successfully integrate Micro-credentials into your curriculum?

Teacher 1 said “the support we need is human. We need the cooperation of managers, colleagues, students and specialists in the fields of marketing and economics to share their knowledge and experience with us.”

Teacher 2 said “we would need clear rules, good materials, training for teachers and motivated students.”

Teacher 3 said “in my opinion, successfully integrating Micro-credentials into the curriculum would require various resources and support. It would be essential to have clear guidelines and frameworks for designing and assessing MCs. This could

include training and professional development opportunities for teachers to understand the principles and best practices for Micro-credentials.”

Teacher 4 said “in my opinion to integrate Micro-credentials, we would need institutional support, robust technical infrastructure, faculty training, industry partnership, student resources, and reliable assessment tools.”

Question 2: do you see online platforms like Coursera or LinkedIn learning playing a role in offering a delivering Micro-credentials for your students? How?

Teacher 1 said “If I had to include Micro-credentials in my course, I would teach my students how to use any platforms that would help them either find a job using LinkedIn/Indeed/Emplotic, or build their career skills on Coursera.”

Teacher 2 said “yes, it can provide small courses of specific skills and they can earn badges or certifications.”

Teacher 3 said “Absolutely, online platforms like Coursera and LinkedIn can play a significant role in offering and delivering MCs to students. These platforms provide a wide range of courses and certifications that can be tailored to specific skills or areas of expertise.”

Teacher 4 said “yes, such platforms are essential for offering Micro-credentials. They provide flexible, online courses that teach practical, job-relevant skills.”

Question 3: how do you see Micro-credentials contributing to professional development opportunities for teachers?

Teacher 1 said “I’m the kind of teacher who does not like routinized teaching and who always open to innovations, especially those based on ICT. For this reason, I believe that Micro-credentials would lead to my professional development, as it will improve my skills in various areas and my teaching practices, and it will definitely lead to job satisfaction.”

Teacher 2 said “it can offer teachers flexible opportunities for professional development by focusing on specific skills and areas of interest.”

Teacher 3 said “I believe that Micro-credentials have immense potential to contribute to professional development opportunities, by providing a more personalized and focused approach to learning, allowing teachers to enhance their skills in specific areas that align with their interests and professional goals.”

Teacher 4 said “I see Micro-credentials as valuable tool for my professional development. They allow me to learn new teaching techniques, stay updated on the latest trends in education, and gain expertise in specific subject areas. The flexibility of online courses means I can fit this learning around existing responsibilities, and even earning verified certifications enhances my qualification and demonstrate my commitment to continuous improvement, benefiting both career and my students”.

Rubric five: Exploration and additional insights

This last rubric consists of three questions as well

Question 1: based on our conversation, are there any specific concerns or questions you have about Micro-credentials?

Teacher 1 said “not really. The students of today are not the same as the student of yesterday. I’m glad that the ministry has changed its vision towards learning and teaching and we have felt the change. However, the road of the implementation of Micro-credentials is still long, but not impossible!”

Teacher 2 said “no there are not, I just wish that our ministry takes these programs into consideration.”

Teacher 3 said “no I don’t have.”

Teacher 4 said “I don’t have any concerns, I hope higher education institutions support these type of courses for better teaching and learning experience.”

Question 2: would you be interested in participating in the development and implementation of Micro-credentials for your subject area? If so, in what capacity?

Teacher 1 said “I’m interested in Micro-credentials myself, I would like to introduce them in Master 1 and 2 speciality didactics whose content is outdated and needs to be refreshed. I would add data analysis and visualization, project management, digital marketing, graphic design and language skills.”

Teacher 2 said “yes, I’d like to participate. By suggesting what skills are important and how to test them.”

Teacher 3 said “Absolutely, I would be thrilled to participate in the development and implementation of Micro-credentials for my subject area. I could contribute as a subject matter expert, helping to design the content and assessment criteria for the Micro-credentials, I could also serve as a facilitator or mentor, guiding other teachers through the process of earning the credentials.”

Teacher 4 said “yes, I would be interested. I could contribute by designing course content, providing expertise on relevant skills and knowledge, and assessing the effectiveness of Micro-credentials in meeting educational and professional development goals.”

Question 4: have you encountered any innovative approaches or the best practises related to Micro-credentials that you’d like to share?

Teacher 1 said “I’m still working on that.”

Teacher 2 said “well, I have not come across any specific approaches”

Teacher 3 said “I’ve come across some innovative approaches such as personalized approach that ensures teachers are engaged and motivated throughout the learning process, as well as project-based assessments or portfolios can be great way to demonstrate mastery of the Micro-credential.”

Teacher 4 said “yes, I’ve encountered some innovative approaches including, modular learning, stackable credentials, project-based learning, peer assessment, industry partnership, and flexible delivery modes.”

II.7. Data interpretation

The students’ questionnaire and the teachers’ interview gave a major number of data and answers. Each one of them shares and expresses their opinions and thoughts, to discover their perceptions about the term Micro-credentials as a new concept in the field of education and understand the effectiveness of these type of courses in demonstrating students’ skill and knowledge and possible ways to successfully integrate them into the higher education institutions.

The first hypothesis in this study, which denotes that Micro-Credentials may revolve around the concept of offering learners a way to gain specific skills or knowledge in a shorter period of time compared to traditional academic degrees. It is like earning a mini-credential or a bite sized degrees that focuses on specific skill (competency) or area of interest, was improved after data collected were analyzed. The students provided different definitions about the concept of Micro-credentials but all of them share the same concepts or thoughts. Thus the hypotheses about the concept of Micro-credentials is confirmed.

The second hypothesis which denotes that Micro-credentials may effectively demonstrate and validate students acquired skills and knowledge by providing tangible evidence, such as project-based assessment and real world application, which can be more relevant and practical compared to traditional academic credentials that rely heavily on theoretical coursework and exams. As shown in this study, the teachers and students of the university of Tlemcen in the English department agreed on that Micro-credentials does actually showcase the students’ acquired skills and knowledge compared to traditional degrees. Therefore, according to them Micro-credentials are better in demonstrating students’ skills and knowledge compared to traditional method since they are more flexible and focused on the learners’ needs and they can be earned in a short period of time in comparison to

traditional once. Moreover, these Nano-degrees focus on the practical side and real world application that's what makes them more effective. However, some of the students and teachers said that the role of traditional methods should not be neglected. These results have asserted the second hypothesis proposed in the study.

The third hypothesis proposed in this study, which denotes that exploring various ways and methodologies for the implementation of Micro-Credentials may unveil innovative approaches such as project-based assessment, competency frameworks, industry collaboration and digital platforms (Coursera, EDx, LinkedIn) which can effectively support the successful integration of Micro-Credentials into educational system. Hence, based on the collected and analyzed data, this hypothesis was confirmed as well. The students and teachers confirmed that best approaches and methodologies to implement Micro-credentials into the educational system is the need for a good assessment approach which project-based assessment, as well as the need for clear rules and frameworks and to solve this challenges a competency framework approach should be adopted. Moreover, industry collaboration would play a great role in integrating MCs by demonstrating to the students the usefulness of what they are studying, and they will have the chance to actually apply the theories in which they dealt with in the classroom in real-world situations or scenarios. Thus, this will enhance the relevant and the effectiveness of Micro-credentials to students as well as teachers and will make sure that the courses are aligned with current market job needs. Teachers provided positive opinions about the significance of digital platforms in offering and delivering Micro-credentials, and this help easy implementation of them into the educational system.

Finally, the findings of this work showed that Micro-credentials are good programs to help demonstrating and showcasing the student's acquired skills and knowledge.

II.7.1. Interpretation of the Questionnaire's results

From the analysis of students' Questionnaire, it has been shown that our study relies on sample population of university of Tlemcen at the English department. All

of them are English students from different specialties (didactics, linguistics, translation, literature and civilization). They are a 31 participants, a mixed between males and females.

Moreover, out 31 participants, (48.4%) have heard of the term Micro-credentials, while (51.9%) have never heard of it. When asked to describe their understanding of Micro-credentials, the 16 respondents who were familiar with the term provided similar answers. They described Micro-credentials as a way to gain skills quickly and conveniently, focusing on practical applications rather than theoretical knowledge. Some viewed Micro-credentials as a substitute for traditional education, while others as a bite-sized certifications validating specific skills or competencies. These certifications are typically earned through short, focused learning experiences like online courses, workshops, or projects. Micro-credentials offer more flexibility in terms of time, cost, and content, allowing learners to customize their learning paths and acquire targeted skills relevant to their career goals. Overall, the emphasis was on acquiring practical skills quickly, rather than replacing traditional education.

Most of the sample, (61.3%) agreed, and (19.4%) strongly agreed that Micro-credentials are a faster way to gain skills or knowledge compared to traditional degrees. Only (19.4%) were neutral on this statement. Most respondents justified their agreement by highlighting the benefits of Micro-credentials for students, such as gaining specific skills or knowledge in shorter period. However, some respondents noted that the effectiveness of Micro-credentials depends on the type of skills or knowledge being acquired. For instance, communication skills can be learned quickly, while language learning or language learning or scientific studies like math or physics require more time to achieve a decent understanding.

The majority of respondents, (83.3%) believed that Micro-credentials effectively demonstrate and validate acquired skills and knowledge. The most shared response was that Micro-credentials give learners the opportunity to showcase their skills and competencies in real-life situations, making them more effective than traditional degrees in demonstrating practical skills. Other respondents noted that Micro-credentials focus on targeted skills and competencies, providing a clear indication of

what the learner has mastered. This specificity allows employers and other stakeholders to quickly assess an individual's capabilities in a particular area. On the other hand, (16.7%) did not agree that Micro-credentials are as effective as traditional academic methods. They suggested integrating Micro-credentials with traditional education systems to provide learners with more flexible and personalized learning pathways.

According to the survey, the most appealing factor of Micro-credentials for those seeking to upskill or learn new skills quickly is their shorter duration and more focused curriculum, with (72.2%) respondents agreeing. Flexibility and online accessibility were also important factors for (38.7%) respondents. Nearly a third of the respondents, 9 (29%), found industry relevance and practical application to be crucial. Additionally, 5 (16.1%) considered cost-effectiveness an important factor, while the least popular response, with only 1 (3.2%) respondent, indicated that a focus on a specific skill was the most appealing factor.

Participants viewed Micro-credentials favorably for their focus on practical skills and the ability to complete them quickly. They considered Micro-credentials a good option for individuals who want to gain specific job-ready abilities in a shorter timeframe. Additionally, the flexibility and online availability of Micro-credentials make them more accessible than traditional degrees. However, some respondents acknowledged the value of traditional degrees for their comprehensiveness and official recognition. They noted that while Micro-credentials are a valuable and successful alternative for targeted skill development, traditional degrees cannot be overlooked for their effectiveness. The choice between the two depends on individual goals and needs.

A large majority of respondents, 26 (86.7%), believed that Micro-credentials are more likely to showcase a learner's ability to apply knowledge in real-world scenarios. In contrast, 4 (13.3%) respondents believed that traditional degrees are more effective in showcasing a learner's skills or knowledge. This indicates a strong preference for Micro-credentials when it comes to demonstrating practical application of knowledge. the majority of students, 76.7%, believed that Micro-

credentials with project-based assessments provide a more tangible demonstration of a learner's skills and competencies. In comparison, only 23.3% of the respondents selected traditional degrees with exams and theoretical coursework as providing a more tangible demonstration of skills and competencies. This suggests that students see more value in the practical, hands-on approach of Micro-credentials. Respondents indicated that various assessment methods are suitable for Micro-credentials, including performance-based assessments, portfolio reviews, project demonstrations, competency exams, peer evaluations, competency-based assessments, and real-world simulations. These methods allow for the demonstration of practical skills and knowledge relevant to specific competencies, providing a more holistic and applicable assessment approach for Micro-credentials.

The survey showed that 77.4% of participants had completed a Micro-credential course or program, while 22.6% had not. Among those who had completed a program, respondents reported engaging in various Micro-credential courses ranging from cross-cultural diplomacy to programming languages and business management. They mentioned practical exams and hands-on learning experiences as part of their courses. Several respondents highlighted that these programs were effective for acquiring specific skills they wanted, such as quickly learning a programming language or understanding business vocabulary. Additionally, some respondents noted the positive impact on their social and professional skills, mentioning the opportunity to meet new people.

The majority of respondents, 64.5%, were aware of digital platforms offering Micro-credential programs. However, 35.5% of respondents had never heard of such platforms. This indicates a relatively high level of awareness among the participants about available digital platforms for Micro-credentials.

Participants strongly believed that Micro-credentials would play a significant role in the future of education and professional development. Many saw them as valuable tools for personalized learning paths, career advancement, and adapting to rapidly changing job markets. There was also recognition of their effectiveness in providing practical skills and enhancing flexibility in learning. However, some

emphasized the need for proper testing of their effectiveness. Overall, there was optimism about the potential of Micro-credentials to revolutionize education and career development.

II.7.2. Interpretation of the Interview's Results

Teachers have varying levels of experience with Micro-credentials. Teacher 1 has tried integrating them into existing modules despite them not being part of the official curriculum, while Teachers 2 and 3 have no prior experience. Teacher 4 values Micro-credentials for professional growth in areas like digital literacy and classroom management. Initial thoughts on Micro-credentials are generally positive, with teachers appreciating their flexibility, targeted skill acquisition, and relevance to job markets, though Teacher 3 finds them insufficient for comprehensive learning. Compared to traditional degrees, Teachers 1 and 4 see Micro-credentials as valuable but not replacements, while Teacher 2 highlights their effectiveness for quick skill learning, and Teacher 3 maintains that traditional degrees are more valuable. Regarding benefits and drawbacks, Teachers 1 and 2 see Micro-credentials as enhancing career-relevant skills, Teacher 3 doubts their validity compared to traditional methods, and Teacher 4 acknowledges both potential benefits and resource-intensive challenges.

Teachers identified various skills that align well with Micro-credentials, including data analysis, project management, digital marketing, language proficiency (Teacher 1), classroom management, and assessment (Teachers 2 and 4). Teacher 3 focuses on language proficiency. They believe Micro-credentials can enhance student engagement by demonstrating practical applications, with Teachers 1 and 4 particularly highlighting increased motivation and relevance. Teachers 1 and 4 see them as tools for personalized learning experiences, offering customized learning paths and extracurricular opportunities. For integration into assessment, Teachers suggest designing specific activities and projects (Teachers 1, 2, and 4) and aligning assessments with Micro-credential criteria (Teacher 3).

Opinions on project-based assessment versus traditional exams vary. Teacher 1 calls for research to compare effectiveness, while Teachers 2 and 4 favor project-based assessments for their real-life applicability and comprehensive evaluation. Teacher 3 prefers traditional exams. Anticipated challenges in implementing project-based assessments include resistance from colleagues, student competence, and motivation (Teacher 1), lack of understanding (Teacher 2), alignment with learning outcomes (Teacher 3), and resource and consistency issues (Teacher 4). Collaboration with industry partners is seen as enhancing the relevance and applicability of Micro-credentials, with Teachers emphasizing alignment with job market needs and practical scenarios (Teachers 1, 2, 3, and 4).

Successful integration of Micro-credentials requires various resources and support. Teachers highlight the need for cooperation from stakeholders (Teacher 1), clear guidelines, materials, training, and motivated students (Teachers 2 and 3), and robust technical infrastructure and industry partnerships (Teacher 4). Online platforms like Coursera and LinkedIn are viewed as significant tools for delivering Micro-credentials, offering flexible, job-relevant courses (Teachers 1, 2, 3, and 4). For professional development, Teachers believe Micro-credentials offer personalized, flexible opportunities to enhance specific skills, stay updated with educational trends, and improve teaching practices (Teachers 1, 2, 3, and 4).

Teachers generally have no major concerns about Micro-credentials and express optimism about their potential (Teachers 1, 2, 3, and 4). They are interested in participating in the development and implementation of Micro-credentials, with Teacher 1 focusing on updating outdated content, Teachers 2 and 4 on designing and assessing skills, and Teacher 3 on contributing as a subject matter expert and mentor. Innovative approaches noted include personalized learning, project-based assessments, and modular learning, though some teachers are still exploring best practices (Teachers 1, 3, and 4).

It can be noticed from the outcomes that both students and teachers perceive Micro-credentials as an effective means to quickly gain specific skills and knowledge. The finding suggest that Micro-credentials offer practical, flexible, and

time-efficient alternative to traditional academic degrees, as highlighted by the majority's positive responses. This validates the first hypothesis of this research. Furthermore, the majority of the participants believe that Micro-credentials effectively demonstrate and validate acquired skills through practical, real-world applications, such as project-based assessments and competency exams. Thus, this support the second hypothesis. Finally, respondents highlighted the appeal of innovative assessment methods such as project-based assessment, industry collaboration and the role of digital platforms in supporting the integration of MCs programs, confirming the third hypothesis.

II.8. Conclusion

The second chapter of this extended essay is devoted to the analysis and interpretation of data gathered from the research instruments used in this study. Accordingly, the findings of this study provide a comprehensive analysis and interpretation of the data collected from both students' surveys and teachers interview regarding the perception and effectiveness of Micro-credentials. It has been observed that both students and educators recognize the significant benefits and potential of MCs in contemporary education. The data reveals a shared understanding of the importance of Micro-credentials in providing flexible, targeted, and practical learning opportunities that can complement traditional academic pathways. Furthermore, the results indicate that Micro-credentials are highly valued for their ability to offer real-world applications and competency-based assessments, which are seen as more effective in demonstrating and validating specific skills and knowledge compared to traditional academic methods. Both students and teachers agree on the need for integrating Micro-credentials with conventional degrees to create more holistic and adaptable learning experiences. Overall, the study underscores the positive reception and growing importance of Micro-credentials in education and professional development, highlighting their role in addressing the evolving demands of the job market and supporting lifelong learning.

General Conclusion

The ability of students to achieve their objectives in any professional context depends largely on their acquired skills and knowledge. Consequently, these learners often seek ways to enhance their competencies through various educational means. The current study has aimed to address the research questions outlined in the General introduction, focusing in the role and effectiveness of Micro-credentials in higher education. This research was conducted at the university of Tlemcen exactly in the English department to identify how Micro-credentials can support students in demonstrating and validating their skills and knowledge.

A case study research design was used, incorporating both qualitative and quantitative methods for data collection and analysis. Hence, the following research questions guided this study:

- 1- What does the concept of Micro-credentials turn around?
- 2- How do Micro-credentials effectively demonstrate and validate students' acquired skills and knowledge in comparison to traditional academic credentials?
- 3- What are the ways and methodologies for the implementation of Micro-credentials?

Accordingly, the hypotheses of this research are:

- 1- Micro-Credentials may revolve around the concept of offering learners a way to gain specific skills or knowledge in a shorter period of time compared to traditional academic degrees. It is like earning a mini-credential or a bite sized degrees that focuses on specific skills (competency) or area of interest.
- 2- Micro-credentials may effectively demonstrate and validate students acquired skills and knowledge by providing tangible evidence, such as project-based assessment and real world application, which can be more relevant and practical compared to traditional academic credentials that rely heavily on theoretical coursework and exams.

Let's say a student completes a Micro-Credentials in digital marketing. As a part of the assessment, they might have to create and execute an actual social media campaign for real client. This hands on experience showcase their ability to strategize,

implement, and analyze marketing initiatives providing concrete evidence of their skills.

Exploring various ways and methodologies for the implementation of Micro-Credentials may unveil innovative approaches such as project-based assessment, competency frame works, industry collaboration and digital platforms (Coursera, EDx, LinkedIn) which can effectively support the successful integration of Micro-Credentials into educational system.

Based on data collected from both student surveys and teacher interviews, the following conclusions were drawn:

First, a substantial portion of students and teachers recognized the value of Micro-credentials in providing a quick and focused means of skill acquisition. Most students perceived Micro-credentials as practical and efficient, allowing for targeted learning paths that align closely with career goals. This confirms the first hypothesis that Micro-credentials offer a way to gain specific skills or knowledge in a shorter time compared to traditional degrees.

Second, the study found that Micro-credentials are effective in demonstrating and validating acquired skills and knowledge. Both students and teachers emphasized the practical nature of Micro-credentials, highlighting how project-based assessments and real-world applications provide concrete evidence of competencies. This supports the second hypothesis that Micro-credentials are more practical and relevant than traditional academic credentials, which are often more theoretical.

Third, the exploration of methodologies for implementing Micro-credentials revealed innovative and effective approaches. Teachers and students noted the importance of industry collaboration, competency frameworks, and the use of digital platforms for delivering and assessing Micro-credentials. This aligns with the third hypothesis, indicating that diverse and modern methodologies can facilitate the successful integration of Micro-credentials into the educational system.

In conclusion, the study suggests that Micro-credentials are a valuable addition to the educational landscape. They offer a flexible, efficient, and practical way to acquire and demonstrate skills, which is highly relevant in today's rapidly evolving job market. Integrating Micro-credentials with traditional educational methods can provide a more comprehensive and adaptable learning experience, catering to the diverse needs of learners and employers alike. The positive reception from both students and teachers highlights the potential of Micro-credentials to enhance educational and professional development, paving the way for their broader adoption in the future. This topic is quite new and vast thus it requires further exploration. It is hoped that this research will pave the way for future investigations, encouraging a deeper understanding and broader implementation of Micro-credentials in various educational contexts.

Bibliography

References

- Contact, D. you have a question about micro-credentials at W. A. our contact: Kv. (2023, January 25). *Micro-credentials guarantee the quality of more flexible education*. WUR. <https://www.wur.nl/en/newsarticle/micro-credentials-guarantee-the-quality-of-more-flexible-education-1.htm#:~:text=This%20means%20that%20any%20learner>
- Hanafy, A. (2020). Features and affordances of micro-credential platforms in higher education. *Trepo.tuni.fi*. <https://trepo.tuni.fi/handle/10024/124188>
- Micro-credentials survey. 2023 trends and insights*. (n.d.). www.holoniq.com. <https://www.holoniq.com/notes/micro-credentials-survey-2023-insights>
- Varadarajan, S., Hwee, J., & Ben Kei Daniel. (2023). A systematic review of the opportunities and challenges of micro-credentials for multiple stakeholders: Learners, employers, higher education institutions and government. *International Journal of Educational Technology in Higher Education*, 20(1). <https://doi.org/10.1186/s41239-023-00381-x>
- What are microcredentials? | sertifier*. (n.d.). <https://sertifier.com/blog/what-are-micro-credentials/>
- Kiiskilä, P., Hanafy, A., & Pirkkalainen, H. (2022). *Features of Micro-credential Platforms in Higher Education*. *ResearchGate*. <https://doi.org/10.5220/0011030600003182>
- Viano, A. (n.d.). *What's New with Microcredentials in Higher Education? Technology Solutions That Drive Education*. https://edtechmagazine-com.cdn.ampproject.org/v/s/edtechmagazine.com/higher/article/2023/04/whats-new-microcredentials-higher-education-perfcon?amp=&_qsa=1&_js_v=a9&usqp=mq331AQIUAKwASCAAqM%3D#amp_tf=

[From%20%251%24s&aoh=17121857889985&referrer=https%3A%2F%2Fwww.google.com&share=https%3A%2F%2Fedtechmagazine.com%2Fhigher%2Farticle%2F2023%2F04%2Fwhats-new-microcredentials-higher-education-perfcon](https://www.google.com/share=https%3A%2F%2Fedtechmagazine.com%2Fhigher%2Farticle%2F2023%2F04%2Fwhats-new-microcredentials-higher-education-perfcon)

Ahsan, K., Akbar, S., Kam, B., & Abdulrahman, M. D. (2023). *Implementation of micro-credentials in higher education: A systematic literature review*. *Education and Information Technologies*, 28(10), 13505–13540. <https://doi.org/10.1007/s10639-023-11739-z>

Micro-credentials. Concept, framework, impact. (n.d.)

<https://www.doxychain.com/blog/micro-credentials-framework>

Bates, A. (n.d.). *History of Microcredentials: New Frontier in Skills Training* | Soapbox Engage | Online fundraising platform for nonprofits. Soapbox Engage.

<https://www.soapboxengage.com/blog/2247-history-of-microcredentials-new-frontier-in-skills-training>

Open Badges History | IMS Open badges. (n.d.). <https://openbadges.org/about/history>

What was the first use of the term micro-credential? | 5 Answers from Research papers.

(n.d.). SciSpace – Question. <https://typeset.io/questions/what-was-the-first-use-of-the-term-micro-credential-3c2xac8ptt>

Ehlers, U. (2018). *Higher Creduation – Degree or Education? The Rise of*

Microcredentials and its Consequences for the University of the Future. *Questa Soft*. <https://www.cceol.com/search/article-detail?id=847014>

Introduction to Micro-Credentials | SCOPE. (n.d.)

<https://scope.bccampus.ca/mod/book/tool/print/index.php?id=19222>

Raish, V., & Rimland, E. (2019). *Micro-Credentials and Digital Badges*. In Amazon. ALA TechSource.

Will micro-credentials challenge traditional higher education degrees? (n.d.). GEM

Report SCOPE. <https://www.education-progress.org/de/focus/22-microdredentials>

Ifenthaler, D., Bellin-Mulraski, N., & Kristin Mah, D. (Eds.). (2016). *The foundation of Digital Badges and Micro-credentials/ demonstrating and recognizing knowledge and competencies com (1st edition)*. Springer International Publishing Switzerland.

10 kinds of Micro-Credentials | Welcome to TeachOnline. (n.d.).

<https://teachonline.ca/tools-trends/10-kinds-micro-credentials>

The power of Micro-Credentials on Blockchain. (n.d.).

<https://www.doxychain.com/blog/microcredentials-on-blockchain>

Alsobhi, H. A., Alakhtar, R. A., Ubaid, A., Hussain, O. K., & Hussain, F. K. (2023).

Blockchain-based micro-credentialing system in higher education institutions:

Systematic literature review. Knowledge-based Systems, 265, 110238.

<https://doi.org/10.1016/j.knosys.2022.110238>

Finkelstein, J., Knight, E., & Manning, S. (2013, July 16). *The potential and value of using digital badges for adult learners (American Institutes for Research Draft Report for Public Comment)*. Retrieved from LINC'S (Literacy Information and Communication System) website:

https://lincs.ed.gov/publications/pdf/AIR_Digital_Badge_Report_508.pdf

Caruso, M. (2022, September 26). *Micro-credentials: The solution to the skills gap and accessible education. University Business. <https://universitybusiness.com/micro-credentials-the-solution-to-the-skills-gap-and-accessible-education/>*

Galindo, M. (2023, April 13). *The relationship between digital badges and micro-credentials*. Digital Promise. <https://digitalpromise.org/2023/04/13/the-relationship-between-digital-badges-and-micro-credentials/#:~:text=Digital%20badges%20are%20electronic%20representations>

Roberto, T. (2024, February 5). *The Growing Importance of Micro-Credentials in Higher*

Education. Keystone education group. https://www-keg-com.cdn.ampproject.org/v/s/www.keg.com/news/the-rising-significance-of-micro-credentials-in-higher-education?amp_gsa=1&js_v=a9&hs_amp=true&usqp=mq331AQIUAKwASCAAgM%3D#amp_ct=1711544517913&tf=From%20%251%24s&aoh=17115445089086&referrer=https%3A%2F%2Fwww.google.com&share=https%3A%2F%2Fwww.keg.com%2Fnews%2Fthe-rising-significance-of-micro-credentials-in-higher-education

Shupe, N. (2024, February 26). 11 Popular Micro-Credential Programs, Why You Should Care | Volt. Volt. <https://volvedu.com/lessons-from-the-field/11-popular-micro-credential-programs-and-why-you-should-care/>

Rusconi, G. (2024, March 1). What are micro-credentials and how can they be used?

Cloud Assess.

<https://cloudassess.com/blog/microcredentials/#:~:text=Affordability%3A%20Compared%20to%20traditional%20degrees>

Education and Information Technologies. (2024, May 27). SpringerLink.

<https://link.springer.com/journal/10639>

Expert voices. (n.d.). Eua.eu. Retrieved May 28, 2024, from

<https://eua.eu/resources/expert-voices/263:providing-micro-credentials-the-important-role-of-higher-education-institutions.html>

Appendixes

Micro-Credentials Questionnaire

Definition:

Micro-credentials revolve around the concept of offering learners a way to gain specific skills or knowledge in a shorter period of time compared to traditional academic degrees. They are like earning mini-credentials or bite-sized degrees that focus on a specific skill (competency) or area of interest. Micro-credentials effectively demonstrate and validate students' acquired skills and knowledge by providing tangible evidence, such as project-based assessment and real-world application, which can be more relevant and practical compared to traditional academic credentials that rely heavily on theoretical coursework and exams.

1. Understanding of Micro-Credentials:

- Have you heard of micro-credentials before?
- Yes
- No
- If yes, please describe your understanding of micro-credentials:

[Open-ended response]

2. Perception of Micro-Credentials:

- Do you believe micro-credentials offer a way to gain specific skills or knowledge in a shorter period compared to traditional academic degrees?

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

- Why or why not?

[Open-ended response]

3. Effectiveness of Micro-Credentials:

- Do you think micro-credentials effectively demonstrate and validate acquired skills and knowledge?

- Yes
- No

- If yes, what makes you think so?

[Open-ended response]

- If no, what improvements do you think are necessary?

[Open-ended response]

4 Comparison with Traditional Academic Credentials:

- How do you perceive the relevance and practicality of micro-credentials compared to traditional academic credentials?

[Open-ended response]

5. Assessment Methods in Micro-Credentials:

- What types of assessment methods do you believe are suitable for micro-credentials, based on the provided hypothesis?

[Open-ended response]

6. Integration of Micro-Credentials:

- In your opinion, what innovative approaches can support the successful integration of micro-credentials into the educational system?

[Open-ended response]

7. Experience with Micro-Credentials:

- Have you ever completed a micro-credential course or program?

- Yes

- No

- If yes, please describe your experience and its impact on your skills and knowledge:

[Open-ended response]

8. Awareness of Micro-Credential Platforms:

- Are you aware of digital platforms offering micro-credential programs such as Coursera, edX, or LinkedIn Learning?

- Yes

- No

- If yes, have you ever enrolled in a micro-credential program through these platforms?

- Yes

- [] No

9. Future Perspectives:

- How do you envision the future role of micro-credentials in education and professional development?

[Open-ended response]

10. Additional Comments:

- Is there anything else you would like to share or express regarding micro-credentials?

[Open-ended response]

Interview with Teachers

Micro-credentials are a framework for delivering competency-based qualifications that are shorter than a comprehensive certification. They enable learners to demonstrate their knowledge and gain skills in a specific topic. Your collaboration is acknowledge and will add insights to this reserach work.

Rubric one: General understanding

Tell me about your prior experience with micro-credentials, if any.

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What are your initial thoughts on the concept of micro-credentials?

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Compared to traditional degrees, how do you perceive the value and effectiveness of micro-credentials for students?

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In your opinion, what are the potential benefits and drawbacks of integrating micro-credentials into your curriculum?

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Rubric Two: Impact on teaching and learning

Can you identify specific skills or knowledge areas within your subject that align well with the micro-credential model?

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How do you envision micro-credentials influencing student learning and engagement in your classroom?

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Could micro-credentials be used to personalize learning experiences for individual students? If so, how?

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Based on your understanding, how could micro-credentials be integrated into existing assessment practices within your course?

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.....**Rubric three: Assessment and validation**

Do you believe project-based assessments and real-world applications are more effective than traditional exams in validating learning outcomes? Why or why not?

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If you were to implement project-based assessment for micro-credentials, what challenges do you anticipate facing?

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How could collaboration with industry partners contribute to creating meaningful and relevant micro-credentials for your students?

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Rubric Four: Integration and implementation

In your opinion, what resources or support would be necessary to successfully integrate micro-credentials into your curriculum?

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Do you see online platforms like Coursera or LinkedIn Learning playing a role in offering and delivering micro-credentials for your students? How?

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How do you see micro-credentials contributing to professional development opportunities for teachers?

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Rubric Five: Exploration and additional insights

Based on our discussion, are there any specific concerns or questions you have about micro-credentials?

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Would you be interested in participating in the development and implementation of micro-credentials for your subject area? If so, in what capacity?

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Have you encountered any innovative approaches or best practices related to micro-credentials that you'd like to share?

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