

Received Date: December 20, 2025

Accepted Date: January 12, 2026

Published Date: February 01, 2026

MOOCs as training tools in Morocco: challenges and prospects

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Abstract

This study examines the role of MOOCs as a training and professional development tools for future teachers in Morocco in a context where the education system is profoundly influenced by the digital transition. It highlights their various pedagogical and professional contributions while questioning their approach to including an axiological dimension in the development of teaching staff identity. By jointly examining the theoretical frameworks and educational policies in Morocco, we highlight the advantages offered by MOOCs in terms of flexibility and skills development. However, we also consider to be key, such as equity, certification recognition and constitutional consistency.

Keywords: Teacher training – Professional development – Digital education – axiological dimension.

Introduction

The use of intelligent systems and their tools in online learning has radically changed the educational landscape, making courses more participatory and engaging. These technologies offer performance and efficiency, facilitating learning styles for a large portion of the target audience (Almufarreh & Arshad, 2023).

Following the global COVID-19 health crisis, the advancement of distance learning has been largely shaped by the accelerated adoption of online educational platforms (Blyznyuk et al., 2021; Schreiber, 2022).

During this period, the transition to digital learning can be associated with temporal fragmentation, which leads to increased distraction for students due to operational constraints and, for instructors, the challenge of managing their availability while seeking to balance participant autonomy and supervision (Boboc & Metzger, 2019).

Among the technological tools that are part of this innovation are massive open online courses, known by the acronym MOOC. Technological innovation has led to an explosion in the use of these tools (Daradoumis et al., 2013), offering access to educational resources and learning opportunities to a huge audience. According to Perna and his co-authors, these tools can be defined as massive open online courses (MOOCs) as comprehensive courses that can accommodate a multitude of participants on a “massive” global scale, are offered free of charge to users with minimal registration requirements, and are delivered “online” via the web " (Perna et al., 2014).

In 2005, the Moroccan government implemented a nationwide strategy aimed at making information and communication technologies accessible in all public schools. In this context, teachers are seen as key players in any transformation. According to the National Charter for Education and Training

(2009), the reform guarantees these professionals a balance between motivation and recognition; “social and professional conditions that enable them to devote themselves fully and with dignity to what is more than just a job, but a vocation.” Such participation by teachers also requires professional qualifications in line with new teaching models (Ben Seghir & Abdelouahed, 2022).

The aim of this article is to show how MOOCs contribute or could contribute to the training of future teachers in Morocco as structured professional development tools. More specifically, it analyzes their potential roles in the acquisition of pedagogical and didactic skills while highlighting their ability to integrate an axiological dimension that is essential to the construction of professional teaching identity. Through a cross-reading of theoretical and institutional frameworks, we aim to highlight the conditions under which MOOCs can become real levers for training trainers in the Moroccan context.

Therefore, the central question of our study is as follows:

In a context of digital and pedagogical transformation, how can MOOCs serve as effective tools for professional development and axiological training for future teachers in Morocco?

To address this issue, the article is divided into two complementary parts. The first part analyzes the theoretical foundations of MOOCs and their place in educational policies and teacher training programs. The second part first examines the challenges, then the limitations, and finally the prospects for the effective and contextualized integration of MOOCs, emphasizing their professionalizing and axiological potential.

I. MOOCs in teacher training: conceptual framework

1. Definition and types of MOOCs

Various authors in their research confirm that it would be too ambitious and complex at this stage to introduce MOOCs, given the wealth of literature dedicated to them (Cisel and Bruillard, 2012; Daniel, 2012). However, the concept of MOOCs retains its prestige and is now considered a generic term defining a specific type of learning. In his article on MOOCs, Bruillard highlighted a few key points to remember:

- Firstly, MOOCs are online courses, more specifically video-based distance learning lessons aimed at a wide range of learners with no registration requirements and no specific follow-up.

- Secondly, MOOCs encompass different types of conversation, mainly between peers, and take on a rather academic structure with assignments to be handed in and strict time frames.
- Finally, the significant scale encourages the use of automated assessment methods or those carried out by the learners themselves (Bruillard, 2014).

Furthermore, their innovative approach to teaching stems not only from their scale, but also from their ability to give each participant the opportunity to interact remotely with their peers. As with accessibility, the fact that they are partially free of charge has contributed significantly to their rapid development (Depover et al., 2017). In reality, this is an essential humanistic advance that truly enables universal learning.

When it comes to types of MOOCs, there are generally two main categories in the MOOC universe: XMOOCs (eXtended MOOCs) and CMOOCs (Connectivist MOOCs). These two groups differ significantly in terms of their principles and techniques, which influences how they are developed and their impact on learners.

CMOOCs adhere to the fundamental principles of MOOCs, emphasizing characteristics such as independence, transparency, and learner interaction (Bates, 2015; Daniel, 2012; Knox, 2013; Peters, 2016). Conversely, XMOOCs are generally delivered by platforms such as Coursera, edX, and Udacity, which emphasize knowledge transfer and are organized around specialist-led learning (Université Tourou, 2013). They usually rely on pre-recorded video seminars and assessments such as quizzes and exams, adopting a more conventional teaching style (Bates, 2014).

Furthermore, MOOCs have led to the emergence of SPOCs (Small Private Online Courses), which are also changing the landscape of higher education (Pan et al., 2017).

SPOCs aim to improve communication between peers by combining the benefits of online learning with smaller class sizes. They address the shortcomings of MOOCs by offering study programs designed for smaller audiences, thereby promoting more direct interaction and personalized education (Monteréal, 2023). SPOCs are frequently used to enrich traditional face-to-face teaching by creating synergy between digital and physical learning modes (Mutawa, 2017).

These training courses promote the implementation of effective digital-based activities, provided that teachers take into account the needs, expectations, perceptions, and

questions specific to their educational environment. The aim is to stimulate teachers and encourage interaction and mutual support among professional staff (Koukis and Jimoyiannis, 2017). The effectiveness of mass courses in teacher training is well established (Manning et al., 2014).

Thus, the variety of MOOC formats, including CMOOCs, XMOOCs, and hybrid formats such as SPOCs, demonstrates the flexibility of these systems and their ability to meet a range of educational objectives. This diversity encourages us to move beyond a purely technological view of MOOCs and consider them as real educational tools whose effectiveness depends heavily on the organizational and institutional decisions that guide their creation. With this in mind, studying the specific challenges associated with their application in the Moroccan context of training trainers seems to be a necessary step in understanding their practical benefits, constraints, and limitations.

2. MOOCs as training tools

Our world is experiencing unprecedented quantitative and qualitative progress in information and communication technologies and their application in the education and training sectors (EL Anouar and EL Adnani, 2022).

The teacher's skills associated with the “knowledge deepening” approach focus on their ability to organize information by defining the tasks to be accomplished and incorporating free software tools and applications specific to a field of study into student-centered teaching methods and collaborative projects (Kheraz & EL Hajjami, 2016).

The advancement of these digital technologies and the widespread use of the internet have profoundly influenced online education, facilitating the emergence of learning tools accessible to a wide audience. This progress has promoted the popularization of knowledge by removing time and space restrictions, thus making educational resources more accessible (El Anouar & El Adnani, 2022). In this context, MOOCs have gradually emerged as innovative training mechanisms that are fully integrated into the movement to reinvent teaching methods.

One of the main advantages of MOOCs is their ability to provide access to quality education for learners from diverse geographical and socio-professional backgrounds. These initiatives, which aim to broaden access to higher education and continuing professional development, have played a key role in radically reshaping the global educational landscape (Kaplan & Haenlein, 2016). They are based on distance learning methods that combine online courses and digital

tools, offering greater flexibility in learning modes and providing users with a diverse range of educational features (Boboc & Metzger, 2019).

In addition, flexibility is a major advantage of hybrid learning systems that incorporate MOOCs. Learners have the opportunity to access educational resources and complete tasks at their own pace, which is a considerable advantage for those seeking to balance various activities in their daily lives, such as studying and working (Prasetyo et al., 2022). This organizational flexibility stimulates learner participation, as learners are more likely to engage with the material when it is tailored to their lifestyle (Kumarasamy et al., 2020). With regard to higher education, Lu and his co-authors confirm that this flexibility proves to be a particularly appropriate tool for supporting educational curricula (Lu et al., 2023).

According to Djean and Mangenot on page 421, exchanges in language teacher training via MOOCs guarantee both sharing and sometimes exchange in transmissive xMOOCs, as well as cooperation or collaboration in connectivist cMOOCs (Dejean & Mangenot, 2016).

Furthermore, facilitating the flow of information and contributing to skills improvement through a wide range of digital support tools are all advantages of online training (Yaacoubi & Bennani, 2022).

With regard to assessment, although the majority of French MOOCs are based on automated assessments rather than peer assessments (Cisel, 2018, p. 10). We can observe that reciprocal interaction in MOOCs designed for language teacher training generates two forms of mutualization similar to those mentioned by Dejan and Mangenot in 2016 on page 425, namely plural and singular mutualization (Dejan and Mangenot, 2016). Plural assessment involves several teachers sharing their assessment experience regarding the practice of one of their colleagues. However, when teachers provide assessors with a description of their own practice, they engage in a unique process of mutualization (Kandeel, 2020). Assessment and discussions between language teachers promote professional development by examining their teaching methods and practices. This is a form of collaboration in MOOCs designed for FLE teachers (Pellegrino & Vaccaro, 2019, p. 82).

Given all its benefits, the time has come to leverage this platform in education and professional training by adopting its various tools and approaches for the personal and professional development of future teachers (Khazraj & Saqri 2025).

3. Teacher training in the Moroccan context

Teacher training remains a very important issue in the plan to overhaul education systems. This challenge is sparking significant global debate by highlighting the relationship between teacher competence and the performance of education systems (Lahchimi, 2015).

In Morocco, the Ministry of National Education and Vocational Training continues to place paramount importance on training teachers in the integration of ICT in education. However, despite all efforts, the political determination to successfully expand ICT in education faces various limitations (Kheraz & El Hajjamine 2016).

Several national strategies have been implemented through various digital plans, including the “Idarati” program in 2003, “e-Maroc” in 2010, and more recently, the “Maroc Digital” strategy in 2020. The ultimate goal of these initiatives is to stimulate the digital transition of the Moroccan economy and establish the country as a dominant digital hub in Africa (El Anouar & EL Adnani, 2022).

In addition, there is also the “E-takwime-tanmia” project, a distance learning platform dedicated to improving the skills of education professionals. This online training program is being implemented in partnership with the Millennium Challenge Account (MCA) and is aimed at secondary schools and regional education and training centers (CRMEF). The aim of this project was to improve staff skills through high-quality training that promotes self-learning and the development of professional skills.

Building on the momentum generated by the “Morocco Numeric 2013” strategy, the “Morocco Digital 2020” vision aims to accelerate the country's digital transition to ensure its long-term place in the knowledge society. Its goal is to make Morocco a regional digital hub in the Middle East and Africa while addressing the challenges of the digital divide, in particular by increasing the number of trained professionals and expanding access to information technologies. From this perspective, the overhaul of public administration and the rapid implementation of digital projects in various fields should ensure widespread connectivity for the benefit of all citizens.

Along the way, improvements to the legal framework and the launch of numerous projects have supported this movement, particularly in terms of modernizing the Moroccan education system (EL Anouar & El Adnani, 2022).

As part of this modernization process, the use of distance learning tools, particularly MOOCs, appears to be a strategic response to the structural and territorial challenges that characterize teacher training in Morocco.

However, their performance is deeply linked to their relevance to the concrete requirements in the field, the quality of the teaching methods used, and the support provided to learners. In the Moroccan education system, these mechanisms also pose significant pedagogical and institutional challenges, particularly in relation to the synergy between techno-pedagogical skills, teaching practices, and the axiological aspects of training. This requires a careful analysis of the conditions for sustainable and relevant integration into national teacher training policies.

II. Challenges and prospects for integrating MOOCs into the training of future teachers in Morocco

In Morocco, incorporating MOOCs into teacher training appears to be a strategic tool for teacher training, while also raising tensions and questions. MOOCs, integrated into a movement to transform initial and continuing training systems, meet essential needs such as professionalization and openness to international standards. This transformation brings with it various challenges in terms of pedagogy, institutions, technology, and values, influencing the performance and sustainability of Morocco's education systems. It is essential to examine not only the challenges associated with integrating MOOCs, but also the opportunities they offer for developing the professional skills of future teachers.

1. Educational and professional challenges

Several authors argue that MOOCs offer a variety of educational content, not to mention information and communication technologies to support learning (Garrison et al., 2014; McAuley et al., 2010).

As a result, MOOCs represent a flexible and accessible learning option that overcomes the geographical, temporal, and economic limitations of traditional educational approaches (Downes, 2012; Kop & Fournier, 2011).

Hybrid teaching models are designed to encourage critical thinking, collaborative work, and other important benefits such as self-learning and the development of skills essential for thriving in the 21st century (Şentürk, 2020). In addition, they offer flexibility in terms of timing and location by

allowing staff to learn at their own pace and according to their own schedule, which is particularly beneficial for professionals and those with busy schedules (Lones et al., 2021).

When it comes to integrating MOOCs into educational curricula, there are various methods considered effective, such as the flipped classroom (Len-Urritia et al., 2018). This teaching method is highly effective in transforming class time into a space for active learning and reinforces students' engagement and responsibility for their own learning. From this perspective, Garrison and his co-authors have shown that the educational and professional challenges associated with integrating MOOCs go beyond simply distributing content. They fundamentally challenge the methods of learning and skill development among teachers and students. MOOCs, as open and hybrid learning platforms, contribute to the professionalization of educators by encouraging them to update their knowledge and develop cross-disciplinary skills in the teaching-learning process (Garrison et al., 1999).

However, the educational potential of MOOCs depends on well-structured instructional design that combines digital resources and authentic activities to promote sustainable learning that can be transferred to the workplace. These mechanisms therefore represent a strategic tool in the field of teacher training, facilitating the evolution of trainer training towards more reflective and collaborative methods while meeting the requirements for continuous professional development imposed by rapid changes in education systems and teaching technologies (Downes, 2012; Dejean & Mangenot, 2016).

2. Institutional issues

Framework Law No. 51-17 published by the Higher Council for Education, Training, and Scientific Research in August 2019, specifically on page 5, emphasizes “the adoption of an educational model [...] that develops critical thinking, promotes fulfillment and innovation, and educates students about citizenship and universal values.” This integration is consistent with the 2015-2030 Strategic Vision and the 2022-2026 Roadmap, which emphasize the educational use of digital technology.

In this context, and in accordance with the institutional guidelines governing the education system in the Kingdom of Morocco, several pilot e-learning initiatives for the continuing education of professional education staff have been adopted. These initiatives aim, on the one hand, to meet the training requirements of professional education staff and, on the other hand, to contribute to their professional development. In this

context, in 2002, the Ministry of Education, Preschool, and Sports established an entity affiliated with the National Center for Pedagogical Innovation and Experimentation (CNIPE) dedicated to distance learning. Numerous platforms designed to improve attitudes and consolidate the skills of future teachers, such as e-Takwine-Tanmia, MOOC GenieTICE, and Compractice (EL Anouar & EL Adnani, 2022).

In the same vein, on November 13, 2025, a collaboration between the Ministry of National Education, Preschool Education, and Sports and the Agence Universitaire de la Francophonie (AUF) officially launched the “Apprendre” program through a MOOC entitled: “Mastering the Key Skills of a Professional Trainer,” designed for the Moroccan educational community to strengthen trainers' skills through digital technology. Mastering the Key Skills of a Professional Trainer," designed for the Moroccan educational community to strengthen the skills of trainers through digital technology.

From an axiological perspective, MOOCs as distance learning tools convey values of openness and equal access to knowledge, although these values are ambivalent. In principle, they encourage the dissemination of knowledge, making education accessible to all. These various factors indicate that Morocco is gradually moving towards the digitization of its university system, even if additional efforts are needed to ensure the successful and inclusive integration of educational technologies (El Hmami, 2025).

3. Institutional challenges

Despite initiatives to promote training for trainers based on information and communication technologies (ICT) and despite the benefits mentioned above, various structural and pedagogical challenges and certain issues remain, in particular the uncertainty surrounding trainer requirements and the technical difficulties faced by adults when learning online (Marceau et al., 2019).

In order to adapt to rapid advances in educational technology, teachers must first and foremost cultivate a critical self-analysis approach to the use of these training tools (EL Hmami, 2025). This requires the establishment of effective continuing education systems and appropriate infrastructure, such as centers dedicated to educational innovation (UNESCO, 2023). Furthermore, the approach used, based on the training model, arouses a certain mistrust among teachers and could lead to a loss of information, jeopardizing the effectiveness of the system as a whole (Kheraz & El Hajjami, 2016).

The recent article by Cisel and his co-author Wujczak announced a very important confirmation: simply registering for a MOOC does not guarantee the acquisition of knowledge, as many individuals never accessed the course after registering and therefore learned nothing (Cisel & Wujczak, 2025).

Another challenge often encountered with any kind of transition is the psychological and financial costs associated with migrating to online learning environments, as documented by Nabolsi et al. (2021) and Soliman et al. (2023), highlighting the need for institutional support and resources. Issues such as self-confidence and anxiety also have a significant impact on learners' experiences and online training. This suggests that training institutions need to address these psychological barriers in order to optimize the effectiveness of e-learning (Namaziandost et al., 2022).

Despite the acquisition of certificates through MOOCs, a major problem remains regarding their value and the level of academic recognition they receive. Although the majority of resources remain available free of charge to learners, revenue generation is based primarily on the marketing of certificates or online degrees. Take 2020, for example, when the main MOOC platforms offered more than 2,800 courses, 360 micro-certifications, and 19 online degrees, signaling a growing diversity in the offerings (Farrow et al., 2021), particularly through paid specializations and online master's degrees. At the same time, official recognition is improving. Some MOOCs aimed at professional development offer continuing professional development (CPD) certificates or digital badges attesting to the skills acquired, thereby increasing their credibility in the professional market (Farrow, 2021; Shah, 2021). Thus, providing recognized and certified certificates can be costly (not only to certify identity but also to attest to performance), and although a diploma is required for a teacher's main activity (related to their subject if they are teaching at secondary level), a certificate or recognition of skills may sometimes and only correspond to specific roles (Bruillard, 2014).

We should also add that Formanek and his co-authors (2017) quantified an approach described qualitatively in an article by Bruillard (2017), in which the author demonstrated how easy it was to obtain a certificate for a series of MOOCs without watching any videos. This work calls into question the value of the certificates awarded and the number of people certified.

Ultimately, MOOCs have played a major catalytic role in transforming teacher training: they have accelerated the transition to digital technology and stimulated a review of the organization of teaching methods and institutional strategy.

They embody the principles of open access to knowledge and educational innovation, but also raise important ethical and institutional issues. The rise of MOOCs raises questions about equal access, teaching quality, and the role of education from an economic perspective. At the university level, the challenge is to harmonize this digital revolution with academic objectives by adapting teaching and economic models while preserving scientific integrity and educational principles.

4. Prospects for integration and areas for improvement

Given these advantages and limitations, it is now necessary to consider the prospects for the development of MOOCs and the levers for improvement that will strengthen the criteria for more effective use, including credibility and integration into formal training programs. What we believe to be the most important factor, without which nothing can be achieved, is essentially the active participation of teachers in the professional development of MOOCs. Indeed, MOOCs as training tools for teachers help to broaden their pool of pedagogical knowledge by providing methods and tools. They encourage teachers to question their epistemology regarding the subject they teach and to reflect on their beliefs about knowledge (Berthiaume & Watson, 2015).

There is also a need for educational scripting within MOOCs:

In his book "Online Training and MOOCs: Learning and Training Languages with Digital Technology," François Mangenot argues for a shift away from the tool itself and challenges technology-centric discourse in order to focus on the learner, the tasks, the scenario, and the support provided. On pages 48–49, the author insists that a task-based approach is essential when learning through MOOCs. It encourages the acquisition of language skills and provides a rich and meaningful educational framework. Subsequently, on pages 91–109, Mangenot emphasizes the crucial role of integrating a "supervisory scenario" to establish the tutor's role(s). Taking into account that the role of the tutor in a MOOC covers three major areas: organization, teaching, and socio-cognitive aspects (Othman, 2019).

However, Centers for Educational Innovation (CEI) play an essential role in supporting the adoption of educational technologies and guiding teachers through this transition (El Hmami, 2025). The need for teacher training is highlighted by the presence of this directive in all international and national reports, including those of UNESCO. This is mentioned in the UNESCO report published in 2011 as follows: "The major problem that arises is that of teachers' ability to use ICT effectively in their teaching [...]" (UNESCO, 2011).

With regard to assessment, it is important to highlight three complementary elements related to teachers' professional development through MOOCs. The first refers to the creation of new educational systems that integrate digital technology, in which teachers design teaching activities based on technological resources that contribute to the modernization of teaching methods (Kandeel, 2020). The second element concerns improving the types of tasks offered to learners through peer feedback (Soubrié, 2008). The final element concerns examining the challenges encountered in practice through the use of these technologies and problematizing them in the context of scientific research (Kandeel, 2020). This makes it possible to link professional practice and knowledge production.

The study of MOOCs and their valuable contribution to the professional development of trainers prompts us to reevaluate current continuing education models and consider other more functional and effective approaches (Kandeel, 2020). However, appropriate instructional design and the integration of interactive elements such as discussion forums and multimedia resources can reduce these difficulties and enrich the overall learning experience (Gao et al., 2012).

Conclusion

MOOCs are a highly effective tool that can serve as a real means of professionalization and axiological education for future trainers in Morocco. In a context of digitization and restructuring of educational models, and by examining the conceptual context of MOOCs and their integration into national education policies in the face of the pedagogical, institutional, technical, and axiological challenges they present, it is clear that these systems offer a real opportunity to diversify training provision by improving professional development and exposing teacher training to international standards. However, persistent tensions related to equity of access, quality, and the meaning of learning remain.

From an axiological perspective, MOOCs explicitly convey various values, including innovation, sharing, collaboration, and openness. However, these values remain ambivalent as long as the systems are not integrated into a clear institutional context on how to approach these values. Conflicts between commercial logic and the danger of reducing training to a collection of “credentials” underscore the importance of critically examining the objectives of these systems and the image of the teacher that they help to shape. Furthermore, we reconfirm the need to support the idea of a hybrid approach to teacher training, where MOOCs do not replace face-to-face situations but rather enhance them.

Finally, this reflection allows us to explore various avenues of research, the first of which is the need to conduct empirical research on the axiological impacts of MOOCs designed for teacher training. Furthermore, comparative studies on various types of instruments (XMOOC, CMOOC, SPOC, etc.) could help us better understand the pedagogical and institutional conditions that promote the development of professional skills and the establishment of value benchmarks. With regard to the Moroccan context, the development, implementation, and evaluation of different hybrid training models based on current platforms and complying with national institutional guidelines are a major priority. This would reconcile the digital transition by improving the training of educational staff and implementing the axiological project within institutions.

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