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MOOCs as trainer systems in Morocco: challenges and perspectives

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Abstract

This study will examine the function of MOOCs as training and professionalization tools for future teachers in Morocco in a context where the education system is deeply influenced by the digital transition. They highlight their diverse pedagogical and professional contributions while questioning their attitude to include an axiological dimension in the development of teacher identity. By jointly examining theoretical frameworks and educational policies in Morocco, we highlight the advantages offered by MOOCs in terms of flexibility and skills development. However, we also point out some constraints that seem to us to be the main ones, such as equity, certification recognition and institutional coherence.

Keywords: MOOC – Training of trainers – professionalization – digital education – axiological dimension.

Introduction

The use of intelligent systems and their tools in online learning have radically changed the educational landscape, making lessons more participatory and engaging. These technologies represent a performance and efficiency that facilitates learning styles for a large mass of the target audience (Almufarreh & Arshad, 2023).

After the global health crisis of Covid-19, the advancement of distance learning has been largely shaped, which has precipitated the adoption of online educational platforms (Blyznyuk et al., 2021; Schreiber, 2022).

During this period, the transition to digital technology can be associated with temporal fragmentation, which leads to a dispersion aggravated by operational constraints for students on the one hand, and for trainers on the other hand, a challenge to manage their availability while seeking to balance the autonomy of participants and their supervision (Boboc & Metzger, 2019).

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

In 2005, the Moroccan government put in place a nationwide strategy to make information and communication technologies accessible in all public schools. In this context, teachers are perceived as essential protagonists in any transformation. According to the National Charter for Education and Training (2009), the reform guarantees these professional staff a balance between motivation and value; "social and professional conditions that allow them to devote themselves fully and with dignity to what is more than just a job, a vocation". Such teacher participation also requires

professional qualification in line with new teaching models (Ben Seghir & Abdelouahed, 2022).

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

Therefore, the central issue of our study is the following:

In a context of digital and pedagogical transformation, how can MOOCs constitute real professionalization and axiological training devices for future teachers in Morocco?

To answer this problem, the article is divided into two complementary parts. The first proposes an analysis of the theoretical foundations of MOOCs as well as their inclusion in educational policies and teacher training systems. The second examines first the challenges, then the limits and finally the prospects for an effective and contextualized integration of MOOCs by emphasizing their professionalizing and axiological potential.

I. MOOCs in teacher education: a framework concept

1. Definition and typology of MOOCs

Various authors in their research confirm that it would be too ambitious and complex for the time being to introduce MOOCs given the profusion of literature dedicated to them (Cisel and Bruillard, 2012; Daniel, 2012).

Cependant, la notion MOOC maintient son prestige et est désormais considéré comme une marque générique définissant un type spécifique d'apprentissage. Bruillard dans son article sur les MOOC a précisé quelques points à retenir :

Premièrement les MOOC sont des cours en ligne, plus précisément des leçons à distance basées sur des vidéos destinées à un vaste éventail d'apprenants sans exigences d'inscription et sans suivi spécifique. Deuxièmement, les MOOC englobent différentes sortes de conversations, principalement entre pairs, et se manifestent sous une structure plutôt académique avec des travaux à rendre et un encadrement temporel strict. Finalement, la dimension importante incite à préférer des méthodes d'évaluation

automatisées ou réalisées par les apprenants eux même (Bruillard, 2014).

In addition, their innovative teaching is not only due to their breadth, but also to their ability to give each participant the chance to interact remotely with their peers. As with accessibility, their partially free nature largely contributes to their rapid development (Depover et al., 2017) In reality, it is an essential humanistic progress that truly allows universal learning.

As far as the types of MOOCs are concerned, there are generally two main categories in the MOOC universe: XMOOCs (eXtended MOOCs) and CMOOCs (Connectivist MOOCs). These two groups are distinguished by notable variations in their principles and techniques, which influence their development and their effects on learners.

As far as CMOOCs are concerned, this type respects the fundamental principles of MOOCs favouring characteristics such as independence, transparency and learner interaction (Bates, 2015; Daniel, 2012; Knox, 2013; Peters, 2016). Conversely, XMOOCs are generally provided by platforms such as Coursera, edX and Udacity, which emphasize the transmission of knowledge and are organized around learning guided by specialists (Tourou University, 2013). They usually rely on pre-recorded video seminars and assessments such as quizzes and exams in a more conventional style of teaching (Bates, 2014).

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

SPOCs aim to improve peer-to-peer communication by combining the benefits of online teaching with smaller course sessions. They compensate for the inadequacies of MOOCs by offering study programs intended for smaller audiences, thus promoting a more direct exchange and personalization of education (Monteréal, 2023). SPOCs are frequently used to enrich traditional face-to-face teaching by generating synergy between digital and physical learning modes (Mutawa, 2017).

These training courses promote the realization of effective activities established on digital technology, provided that the teacher considers the needs, expectations, perceptions and questions specific to his or her educational environment. The objective is to stimulate teachers and promote interaction and mutual aid between professional staff (Koukis and Jimoyiannis, 2017). The effectiveness of mass courses in the training of trainers is recognized (Manning et al., 2014).

Thus, the variety of MOOC formats, whether CMOOC, XMOOC or hybrid formats such as SPOC, demonstrates the flexibility of these systems and their ability to meet various

educational objectives. This diversity encourages us to go beyond a purely technological vision of MOOCs to consider them as real pedagogical tools whose effectiveness is strongly based on the organizational and institutional decisions that guide their creation. In this perspective, the study of the particular challenges associated with their application in the Moroccan framework of the training of trainers seems to be a necessary step in order to grasp their contributions of use and their constraints and limitations.

2. MOOCs as training devices

Our world is pursuing 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 competences associated with the "Knowledge Deepening" approach focus on the teacher's ability to organize information by defining the tasks to be accomplished and incorporating free software tools as well as field-specific applications 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 devices accessible to a wide audience. This progression has promoted the popularization of knowledge by removing restrictions on time and space, thus making educational resources more accessible (El Anouar & El Adnani, 2022). In this perspective, MOOCs have gradually emerged as innovative training mechanisms that are fully integrated into the movement to reinvent teaching methods.

One of the main strengths of MOOCs is their ability to provide access to quality education for learners from diverse geographical and socio-professional backgrounds. These initiatives to understand access to higher education and continuing professional development have played a key role in radically reshaping the global education landscape (Kaplan & Haenlein, 2016). They are based on distance learning methods combining online courses and digital tools offering increased flexibility in learning modes and offering users 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 significant advantage for those looking to balance various activities in their daily lives such as study and work (Prasetyo et al., 2022). This organizational flexibility stimulates learners' participation,

who are more likely to interact with the material when it is adjusted to their lifestyle (Kumarasamy et al., 2020). With regard to higher education, Lu and his co-authors confirm that this flexibility is proving to be a particularly appropriate tool to support educational curricula (Lu et al., 2023).

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

In addition, facilitating the flow of information and contributing to the improvement of skills through a diverse range of digital solutions are all advantages of online training (Yaacoubi & Bennani, 2022).

Regarding evaluation, although the majority of French MOOCs are based on automated evaluations rather than peer evaluations (Cisel, 2018, p. 10). We can observe that the reciprocal interaction in MOOCs intended for the training of language teachers generates two forms of mutualization similar to the one mentioned by Dejean and Mangenot in 2016 on page 425, these are plural and singular mutualization (Dejean and Mangenot, 2016). Plural evaluation consists of several teachers sharing their evaluation experience concerning the practice of one of their colleagues. On the other hand, when the professor sends a description of his or her own practice to the evaluators, he or she engages in a singular process of mutualization (Kandeel, 2020). Assessment and discussions between language teachers promoting professional development by examining their teaching methods and practices. It is a collaboration in MOOCs designed for teachers of French as a foreign language (Pellegrino & Vaccaro, 2019, p. 82).

For all its benefits, the time has come to exploit this platform in education and professional training by equipping itself with its various tools and approaches to 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 review education systems. This challenge is sparking important global discussions by highlighting the relationship between teacher competence and the performance of education systems (Lahchimi, 2015).

In the Moroccan context, the Ministry of National Education and Vocational Training still attaches paramount importance to teacher training in the integration of ICT. However, despite all efforts, the political determination to succeed in the

expansion of ICT faces various limits (Kheraz & El Hajjamine 2016).

Several national strategies have been implemented through various digital plans, including the "Idarati" program in 2003, "e-Morocco" in 2010 and more recently the "Digital Morocco" strategy in 2020. The ultimate goal of these initiatives is to boost 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, we also have the "E-takwime-tanmia" project as a distance learning platform dedicated to improving the skills of education professionals. This online training program is set up in partnership with the Millennium Challenge Account (MCA), and is aimed at secondary schools as well as regional centers for education and training professions (CRMEF). The objective of this project was to improve the skills of staff through quality training that promotes their self-learning and the development of their professional skills.

In line with the momentum given by the "Maroc Numeric 2013" strategy, the "Maroc Digital 2020" vision aspires to accelerate the country's digital transition for sustainable anchoring in the knowledge society. Its objective is to make Morocco a digital centre of regional importance in the Middle East and Africa while responding to the challenges of forming the digital divide, in particular by increasing the number of trained professionals and expanding access to information technologies. From this perspective, the overhaul of the public administration and the rapid implementation of digital projects in various areas must ensure a broad connection for the benefit of all citizens.

Along the way, the improvement of the legal framework and the launch of numerous projects have supported this movement, in particular to support the modernization of the Moroccan education system (El Anouar & El Adnani, 2022).

As part of this modernization process, the use of distance learning tools, and in particular MOOCs, seems 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 of the field and to the quality of the didactic engineering implemented and the support provided to learners. In the Moroccan education system, these mechanisms also give rise to significant pedagogical and institutional challenges, particularly in connection with the synergy between techno-pedagogical skills, teaching practices and axiological aspects of training. This requires a careful analysis of the conditions for sustainable and relevant integration into national teacher education policies.

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

In Morocco, the incorporation of MOOCs in teacher training would appear to be a strategic tool for teacher training while raising tensions and questions. MOOCs, integrated into a movement to transform initial and continuing education systems, meet essential needs such as professionalization and openness to international standards. This transformation entails various challenges at the pedagogical, institutional, technological and axiological levels, influencing the performance and sustainability of Moroccan education systems. It is essential to examine not only the challenges related to the integration of MOOCs, but also the opportunities they offer for the development of professional competences of future teachers.

1. Pedagogical and professional issues

Several authors argue that MOOCs offer a variety of educational content without forgetting 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 developed to encourage critical thinking, collaborative work, and other important benefits such as self-learning and the development of skills needed to thrive in the twenty-first century (Şentürk, 2020). In addition, they offer flexibility regarding timing and location by allowing benefiting staff to learn at their own pace and schedule, which is particularly beneficial for professionals and those with busy schedules (Lones et al., 2021).

Regarding the integration of MOOCs into educational curricula, there are different ways considered effective such as the flipped classroom (Len-Urritia et al., 2018). This pedagogical method is a very effective method in transforming classroom time into a space for active activities and reinforces the commitment and responsibility of students in their learning. From this perspective, Garison and his co-authors have shown that the pedagogical and professional challenges associated with the integration of MOOCs go beyond the simple distribution of content. They are deeply questioning the ways in which teachers and students learn and develop their skills. MOOCs, as open and hybrid learning platforms, contribute to the professionalization of those involved in the educational field by encouraging the updating of knowledge and the development of transversal skills among

those involved in the teaching-learning process (Garrison et al., 1999).

However, the educational potential of MOOCs depends on a well-structured pedagogical design capable of combining digital resources and authentic activities in order to promote sustainable learning that is transferable to the professional environment. These mechanisms therefore represent a strategic tool in the field of teacher education to facilitate the evolution of the training of trainers towards more reflective and collaborative methods while satisfying the requirements for continuous professional development imposed by the rapid transformations of education systems and pedagogical 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 published in August 2019 and precisely on page number 5 insists on "*the adoption of a pedagogical model [...] which develops critical thinking, promotes development and innovation and educates in citizenship and universal values*". This integration is consistent with the Strategic Vision 2015-2030 and the Roadmap 2022-2026, which insist on the pedagogical use of digital technology.

In this context, and following the directives of the institutional documents governing the education system in the Kingdom of Morocco, several pilot e-learning initiatives for the continuing education of professional educational staff have been adopted. These initiatives have the objective of meeting the training requirements of professional educational staff on the one hand and contributing to their professional development on the other. In this context, in 2002, the Ministry of Education and National Education, Preschool and Sports established an entity affiliated with the National Center for Pedagogical Innovation and Experimentation (CNIPE) dedicated to distance learning. Numerous platforms aimed at improving the attitudes and consolidating the skills of future teachers such as e-Takwime-Tanmia, MOOC GenieTICE, Compractice (EL Anouar & EL Adnani, 2022).

In the same perspective, on November 13, 2025, a collaboration between the Ministry of National Education, Preschool and Sport and the Agence Universitaire de la Francophonie (AUF) launched the official start of the "Learn" program through a MOOC entitled: "Mastering the Key Skills of a Professional Trainer" designed for the Moroccan educational community to strengthen the skills of trainers through digital technologies.

Axiologically, MOOCs as distance learning devices convey values of openness and equal access to knowledge, although

these are ambivalent. In principle, they encourage the dissemination of knowledge that makes education accessible to all. These various factors indicate that Morocco is gradually moving towards the digitalization of its university system, even though additional efforts are essential to ensure the successful and inclusive integration of educational technologies (El Hmami, 2025).

3. Institutional challenges

Despite the initiatives to promote the training of trainers based on information and communication technologies (ICTE) and despite these benefits just mentioned above, various structural and pedagogical challenges and issues remain, including uncertainty related to the requirements of trainers and the technical difficulties faced by adults during online learning (Marceau et al., 2019).

To adapt to the rapid progress of educational technologies, teachers must cultivate as a first condition a posture of critical self-analysis in the face of the use of these training tools (EL Hmami, 2025). This requires the establishment of high-performance continuing education systems and appropriate infrastructure such as centres dedicated to pedagogical innovation (UNESCO, 2023). Also for the approach used based on the training model, it arouses a certain mistrust among teachers and could cause a loss of information jeopardizing the effectiveness of the system as a whole (Kheraz & El Hjjami, 2016).

The recent paper by Cisel and his co-author Wujczak announced a very important confirmation; Simply enrolling in a MOOC does not guarantee the acquisition of knowledge, many individuals have never accessed the course after enrolling and therefore have not learned anything (Cisel & Wujczak, 2025).

Another challenge often encountered accompanying any kind of transition lies in the psychological and financial costs related to the migration to online learning environments, as documented by Nabolsi et al. (2021) and Soliman et al. (2023), thus highlighting the need for institutional support and resources. Also, issues such as self-confidence and anxiety have a significant impact on the learning experiences and online training of stakeholders. This suggests that training institutions need to address these psychological barriers to optimize the effectiveness of e-learning (Namaziandost et al., 2022).

Despite the acquisition of certificates through MOOCs, a major problem persists regarding their value and the level of academic recognition attributed to them. Although the majority of resources remain available at no cost to learners, revenue generation is mainly based on the marketing of

certificates or diplomas online. Take as an example the year 2020 when the main MOOC platforms made available more than 2800 courses, 360 micro-credentials and 19 online diplomas signalling a growing diversity of the offer (Farrow et al., 2021). In particular through paid specialisations and online master's degrees. At the same time, official recognition is improving.

Some MOOCs for professional development offer continuing education certificates (CPDs) or digital badges attesting to the skills acquired, thus increasing their credibility in the professional market (Farrow, 2021; Shah, 2021). Thus, providing recognized and attested certificates can be expensive (not only to certify identity but also to attest to the performance achieved) being subject to a cost and although a diploma is required for a teacher's main activity (in relation to his or her discipline if it is the second degree), a certificate or recognition of skills can sometimes and only correspond to specific roles (Bruillard, 2014).

It should also be added that Formanek and his co-authors (2017) quantified an approach qualitatively described in an article by Bruillard (2017) where the author demonstrated the simplicity of acquiring the certificate of a series of MOOCs without having consulted any video. This work calls into question the value of the certificates awarded and calls into question the number of people certified.

Ultimately, MOOCs have played a major catalytic role in the transformation of the training of trainers: They have accelerated their transition to digital and stimulated the revision of the organisation of pedagogy and institutional strategy. They embody the principles of openness to knowledge and pedagogical innovation, but also raise important ethical and institutional issues. The rise of MOOCs raises questions about equity of access, the quality of teaching and the role of education from an economic perspective. At the university level, the challenge is to harmonize this digital revolution with their academic objectives by adapting their pedagogical and economic models while preserving scientific integrity and educational principles.

4. Integration prospects and areas for improvement

Faced with these advantages and limitations, it is now necessary to question the prospects for the evolution of MOOCs and the levers for improvement to strengthen the criteria that will allow them to be used more effectively, including credibility and integration into formal training systems. What seems to us to be the most important thing, and without which nothing can be achieved, is essentially the active participation of the professor in the professional development of MOOCs. Indeed, MOOCs as training tools for teachers contribute to expanding their pool of pedagogical

knowledge by providing methods and tools. They insist on questioning their epistemology regarding the discipline to be taught and reflecting on their beliefs about knowledge (Berthiaume & Watson, 2015).

There is also the need for pedagogical scripting within MOOCs:

In his book "Online training and MOOC: Learning and training in language with digital technology", François Mangenot argues for a decentring in relation to the instrument and challenges discourses focused on technology in order to emphasize the learner, the tasks, the scenario and the assistance. On pages (48 – 49) the author insists that any task-based approach to learning through MOOCs is essential. It encourages the acquisition of language skills and offers a rich and meaningful educational framework. And subsequently, in pages (91 – 109) Mangenot insists on the primordial role of the integration of "a management scenario" to establish the tutor's function(s). Taking into consideration that their role as a tutor in a MOOC extends over three major axes: organization, teaching and socio-cognitive aspects (Othman, 2019).

However, Pedagogical Innovation Centers (CIPs) have a critical role in supporting the adoption of educational technologies and guiding teachers through this transition (El Hmami, 2025). What shows the need for teacher training is the presence of this directive in all international and national reports, including UNESCO. And this is what is mentioned in the UNESCO report published in 2011 as follows: "*The major problem that arises is that of the ability of teachers to effectively use ICT in their teaching [...]*" (UNESCO, 2011).

As far as evaluation is concerned, it is important to highlight three complementary elements related to the professional progression of teachers through MOOCs. The first refers to the creation of new educational devices integrating digital technology where the teacher designs pedagogical activities based on technological resources contributing to the modernization of teaching methods (Kandeel, 2020). The second element concerns the improvement of the types of tasks offered to learners through peer feedback (Soubrié, 2008). The final element concerns the examination of the related challenges encountered in practice through the use of these technologies and their problematization in the context of scientific research (Kandeel, 2020). This makes it possible to link professional practice and the production of knowledge.

The study of MOOCs and their valuable contribution to the professional development of trainers pushes us to re-evaluate current models of continuing education and to consider other approaches that are more functional and effective (Kandeel, 2020). However, appropriate instructional design and the

integration of interactive elements such as conversation forums and multimedia resources can reduce these challenges and enrich the overall learning experience (Gao et al., 2012).

Conclusion

MOOCs represent a highly effective device capable of serving as real tools for professionalization and axiological education for future trainers in Morocco. In a context of digitalization and restructuring of educational models, and by examining the conceptual context of MOOCs, their integration into national education policies in the face of the pedagogical, institutional, technical and axiological challenges they present, we can see that these systems offer a real opportunity to diversify the training offer by improving professional development and exposing teacher training to standards international agreements. However, persistent tensions related to equity of access, quality and meaning of learning remain.

Axiologically, MOOCs explicitly convey various values, including innovation, sharing, collaboration and openness. Nevertheless, these values remain ambivalent as long as the mechanisms are not integrated into a clear institutional context on how to address these values. The conflicts between commercial logics and the danger of reducing training to a collection of "credentials" underline the importance of a critical examination of the objectives of these systems and the image of the teacher they help to shape. In addition, we reconfirm that it is necessary to support the idea of a hybrid approach to the training of trainers where MOOCs do not replace the present situations but rather improve them.

Finally, this reflection allows us to move towards various avenues of research, the first of which is the need to conduct empirical research on the axiological impacts of MOOCs intended for teacher training. On the other hand, comparative studies on various types of instruments (XMOOC, CMOOC, SPOC, etc.) could help to better understand the pedagogical and institutional conditions that promote the development of professional skills and the establishment of value benchmarks. As far as the Moroccan framework is concerned, the development, implementation and evaluation of different hybrid training models established on the current platforms and which comply with the guidelines of the national institutional documents represent a major priority. This would reconcile the digital transition by perfecting the training of educational staff and implementing the axiological project within schools.

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