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Synergy Between MOOCs and Digital Competency Frameworks: A Case Study of the MOOC« Teach remotely » for Continuing Education in Morocco

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Abstract

This article examines the interaction between MOOCs for teacher continuing education and digital competency frameworks in Morocco. The objective is to understand how frameworks such as NUMEFA, UNESCO's ICT framework, and DigCompEdu influence the design and deployment of self-paced online courses. To achieve this, we conducted a case study of the MOOC «Teach remotely » offered on the « e-takwine» platform. An in-depth documentary analysis of its objectives, pedagogical content, and assessment methods was carried out to evaluate their alignment with framework requirements. The analysis reveals that while some aspects of the MOOC meet expectations, significant discrepancies exist in content structuring and assessment methods. These findings suggest areas for improvement, particularly a pedagogical reengineering approach to optimize content structuring and integrate assessments better suited for digital competencies. The proposed recommendations aim to provide Moroccan teachers with more effective and relevant continuing

education programs aligned with national educational requirements.

Keywords: MOOC, Competency Frameworks, Digital Skills, Continuing Education.

Introduction

Distance education has become a key tool for teacher preparation and support in the digital age, which is characterized by the rapid digital transformation of educational systems. In this regard, MOOCs (Massive Open Online Courses) provide teachers freedom, autonomy, and access to specialized resources, making them an inventive answer for their ongoing professional growth (Hew & Cheung, 2014).

The National Strategy for Distance Learning in Morocco¹ places a strong emphasis on the value of using educational technology into both initial and ongoing teacher training. This tactic emphasizes the necessity of implementing quality standards to guarantee the creation of efficient digital training

¹ Published by the Distance Education Division, which is a division of the National Preschool and Sports Education Ministry (2024).

curricula that satisfy the particular demands of the educational setting.

The MOOC «Teaching Remotely», which was created to assist Moroccan educators in incorporating educational technology into their teaching methods, is the subject of our study. This program culminates in an official credential from the CNIPE² and is hosted on the institutional portal «e-takwine tanmia», which is specifically designed for teachers from the MENPS³. However, as stressed by the national plan for remote learning, its structure, pedagogical organization, and evaluation techniques need to be examined to confirm that they correspond to international standards for online quality and are in line with digital competency frameworks.

Research Problem and Questions

Although MOOCs unquestionably offer a chance for teacher preparation, a number of research have revealed that their efficacy and pedagogical quality differ significantly (Lowenthal & Hodges, 2015). According to these studies, instructional structuring, participant engagement, and the applicability of evaluation techniques all have a role in efficacy in addition to content quality (Margaryan et al., 2015). A thorough evaluation of their efficacy and quality, conformity to international quality standards, and alignment with acknowledged competency frameworks are necessary measures to guarantee their applicability and influence on the teaching profession in order to steer clear of these dangers. As a result, the following formulation of our study's main research question is possible:

To what extent does the MOOC «Teaching Remotely» satisfy the quality standards and pedagogical requirements unique to online training?

The following follows from this main question:

- Does the MOOC «Teaching Remotely » guarantee a logical, forward-thinking, and successful pedagogical structure?
- Do the evaluation techniques meet the requirements for online training quality?

² The National Center for Educational Innovation and Experimentation/Division of Distance Education.

³ Ministry of National Education, Preschool, and Sports.

⁴ Standards and Applications of Multimedia for Adult Education and Development.

- What are the advantages and disadvantages of the MOOC under study with regard to professional influence on teachers, certification, and pedagogical interaction?

This study adopts a quality-oriented perspective, considering that the effectiveness of digital teacher training relies on a continuous process of pedagogical re-engineering. By evaluating the alignment of the Moroccan MOOC with international standards, we aim to contribute to the global debate on quality assurance in online education for trainers.

To answer these concerns, this research uses the NMEFA⁴ framework, which was created to assess the technical and pedagogical quality of online training in a Francophone setting, to answer these concerns. This reference framework was chosen because it enables a more thorough examination of MOOCs than the European framework DigCompEdu⁵, which only concentrates on enhancing teachers' digital competencies. This analysis consists of:

- Learning progression and pedagogical structure.
- Interactivity and involvement of learners.
- Certification and evaluation techniques.

Furthermore, incorporating the ISO 29924⁶ and Quality Matters (QM)⁷ criteria into our research guarantees a thorough assessment of the MOOC's quality in comparison to global norms.

1 Literature review and theoretical framework

In order to place the study of MOOCs «Teaching Remotely » within the context of existing academic research, we will concentrate our literature review on two axes: MOOCs and teacher continuing education and online quality frameworks for training.

1.1 MOOCs: A Strategic Lever for Continuing Teacher Education

The rapid development of digital technologies and their integration into the educational field, along with the rapid

⁵ Framework for Digital Competencies for Teachers.

⁶ The ISO standard specifies the quality requirements unique to online training service providers (e-learning).

⁷ International reference center focused on online training quality verification, with a focus on educational conception.

evolution of online learning platforms, have created an environment that is conducive to the transformation of teaching practices and the evolution of teachers' expectations regarding their professional development. In response to their expectations and growing training needs, MOOCs were implemented as a way to help teachers develop their skills without being limited by time or location (Boullier, 2015).

The success of MOOCs varies depending on a number of factors, despite the fact that they provide special chances for ongoing training. Among the main difficulties with MOOCs are:

- Learner motivation is adversely affected by inadequate mentorship and contact between trainers and students.
- Training uniformity is made more difficult by the heterogeneity of learner profiles and different proficiency levels.
- Use of automated assessments for evaluation in the absence of formative feedback and official acknowledgement of learned skills (Margaryan et al., 2015).

To address these issues and enhance the effectiveness of MOOCs, criteria such as structured pedagogical approaches, rigorous evaluation, and active learner mentoring must be integrated (Lowenthal & Hodges, 2015), particularly in teacher training contexts, where the goal extends beyond acquiring knowledge to include applying pedagogical methods suited for online learning.

1.2 Integration of MOOCs with Digital Competency Frameworks

MOOC integration into continuing teacher education necessitates strict adherence to norms for digital competency. There are three globally accepted frameworks: UNESCO ICT-CFT, DigCompEdu, and NUMEFA. Making the right reference framework choice is essential to guaranteeing a cogent and pertinent analysis.

Teachers' digital competences are often evaluated using the European DigCompEdu framework (Elaasri & Bouziane, 2019), which identifies six competency areas ranging from pedagogical interaction in digital settings to the integration of digital tools (Redecker, 2017). It focuses on how educators incorporate digital tools into their teaching methods, but it doesn't evaluate MOOCs' effectiveness as training resources directly. There is no discussion of crucial factors like

instructional structuring, content evaluation, and the caliber of educational resources.

A more thorough framework is required for the MOOC under analysis because assessing the growth of teachers' digital competencies alone is not enough; DigCompEdu is unable to measure the pedagogical quality and alignment with real training needs.

The NUMEFA framework, in contrast to DigCompEdu, is especially tailored to the demands of Francophone instructors in terms of continuing education. It offers a thorough method for assessing the quality of online training that is centered on four key areas:

- Pedagogical organization (content and learning progression coherence);
- Teacher participation and interaction (discussion boards, instructional assistance, trainer comments);
- Techniques of assessment (range of tests, formative feedback, and conformity to learning goals);
- Institutional acknowledgment (approval and incorporation into training programs)

Therefore, NUMEFA is the best framework for this study since, unlike DigCompEdu, which is still centered on developing individual competencies, it tackles particular problems associated with assessing online training for instructors.

International requirements for the quality of online training are also included in this study:

- Coherence between learning objectives, material, and assessments is emphasized in Quality Matters (QM), which establishes strict criteria for assessing online courses (Lowenthal & Hodges, 2015). By incorporating Quality Matters into MOOCs, their influence on teachers' learning is improved and digital training is structured (Margaryan et al., 2015).
- Online training certification is governed by ISO 29924, which guarantees evaluation criteria openness and certificate recognition through stringent requirements:
 - Strict course design and accessibility.
 - Adoption of suitable teaching methods.

- Accurate assessment of certification and gained competencies.

This literature review highlights the significance of aligning MOOCs with recognized quality standards like Quality Matters and ISO 29924 as well as digital competency references. The goal of the MOOC analysis is to ascertain how well it satisfies these requirements and to pinpoint areas that could use improvement.

2 Methodology

2.1 Methodological Approach

In order to analyze the pedagogical, structural, and evaluative qualities of the MOOC "Teaching Remotely," this study takes a qualitative and evaluative method. An ex-tensive case study of the MOOC serves as the basis for the analysis, which uses global frameworks and criteria to gauge its efficacy. The main goal of this technique is to respond to the study questions that were posed in the introduction, specifically: How well does the MOOC «*Teaching Remotely*» satisfy online training quality standards and pedagogical requirements? The study uses a three-step procedure to do this:

- ✓ Examination of instructional design and material to confirm conformity to online learning best practices.
- ✓ Assessment of teacher involvement and interactions through an analysis of trainer-teacher exchange modes.
- ✓ Analyzing suggested evaluation kinds and their compliance with international standards, as well as the certification procedure and assessment methodologies.

These three dimensions are assessed using an analysis grid based on the NUMEFA framework and supplemented by Quality Matters (QM) and ISO 29924 to ensure rigorous and systematic evaluation.

2.2 Analysis Tools and Criteria

The MOOC is evaluated using an analytical grid that looks at five key areas: certification, interaction and instructor engagement, content and resources, pedagogical structuring, and learning assessment.

Table 1: Evaluation criteria applied to the MOOC.

Evaluation Criteria	Observed Indicators	Framework Utilized
Pedagogical Structuring	Clarity of learning objectives	NUMEFA, QM
	Content coherence and pedagogical progression	NUMEFA
	Alignment between objectives, activities, and evaluations	QM
Content and Re-sources	Quality of educational materials (videos, documents, activities)	NUMEFA, QM
	Accessibility and resource interactivity	NUMEFA
Interaction and Engagement	Forum participation and exchanges with trainers	NUMEFA
	Mentoring and tutoring methods	NUMEFA, QM
Assessment of Learning	Presence of formative and summative assessments	QM, ISO 29924
	Trainer feedback and personalized responses to work	NUMEFA, QM
Certification and Recognition	Presence of a recognized institutional certificate	ISO 29924
	Transparency of evaluation criteria for certification	QM

2.3 Data Collection and Analysis

The MOOC platform's instructional materials and interactions serve as the basis for the analysis. A variety of data kinds were gathered:

- ✓ Educational resources (films, modules, activity materials, and PDF documents);
- ✓ Platform interactions (activity in forums, answers to inquiries from teachers by trainers);
- ✓ Modes of assessment (final project, submitted tasks, and formative exams);

- ✓ Procedure for certification (requirements for receiving the certificate and institutional acceptance).

The evaluation grid was used to qualitatively analyze the data in order to determine the MOOC's advantages and disadvantages.

3 Results analysis and discussion

Based on the evaluation criteria specified in the methodology and in line with the body of research on the efficacy of online training for educators, the analysis of the MOOC «*Teaching Remotely*» identifies both significant areas for improvement and noteworthy strengths. By contrasting these findings with scholarly research and e-learning pedagogical principles, this section puts them in context.

3.1 Pedagogical Structure: Effective Alignment with Pedagogical Models

Based on tried-and-true educational paradigms like ADDIE⁸ and TPACK⁹, which are known for their efficacy in creating online courses, the MOOC evaluation exhibits a carefully considered pedagogical structure (Reeves & Reeves, 2015).

From the fundamentals of remote teaching to more complex subjects like instructional design and online evaluation, the MOOC's method makes sense and helps teachers gradually improve their skills. These findings are consistent with the instructional design principles of online learning, highlighting the significance of a well-defined pedagogical progression in MOOCs for successful learning (Conole, 2013).

Even though the MOOC under study has a well-defined modular structure, analysis shows that some of the modules that seem unduly theoretical need more contextualization and real-world application. MOOCs' pedagogical design ought to encourage experimentation and real-world application of acquired knowledge (Laurillard, 2012). To further anchor learning, a more participatory method that incorporates simulations or real-world case studies is advised.

3.2 Content and Educational Resources: Diversity with Potential for Enrichment

The results show that the MOOC's learning materials are varied and appropriate for educators. Content accessibility is improved through the use of informative texts, interactive tests, instructional video capsules, and hands-on activities.

This variety of resources supports the balanced use of different learning formats to fulfill the needs of learners and is in line with Quality Matters (QM) guidelines (Lowenthal & Hodges, 2015). Together with automatic comprehension-checking questions, explanatory video capsules improve idea accessibility and comprehension and allow teachers to confirm understanding before moving further. Retry and instant feedback are made possible by this adaptive learning strategy.

The MOOC's contextual adaption to Moroccan educational policies and the unique difficulty of remote instruction is another advantageous feature.

However, the investigation finds that instructor engagement is limited by a lack of immersive and interactive formats. Resource interactivity is a major determinant of MOOC efficacy (Hew & Cheung, 2014). Videos already offer instant understanding checks, but they might be enhanced with interactive situations and pedagogical simulations to allow teachers to evaluate concepts in real-world settings, increasing student engagement and retention (Kopp et al., 2019).

3.3 Interaction and Engagement: Active Support with Room for Improvement

The active participation of trainers and moderators who offer pedagogical help through forums is one of the MOOC's main advantages. This is in contrast to conventional MOOCs, which are frequently criticized for lacking enough mentorship (Lowenthal & Hodges, 2015). However, most conversations continue to be asynchronous, which limits the opportunity for in-the-moment debate.

Incorporating synchronous events, like interactive webinars or virtual classrooms, would improve engagement by encouraging more in-depth interaction and experience sharing among qualified educators. Collaborative learning is another area that needs work; incorporating group projects or activities might create a vibrant learning community.

3.4 Assessment of Learning: Well-Structured System with Room for Enhanced Feedback

With regular formative assessments using integrated video questions for instant knowledge verification, the MOOC's evaluation system is well-structured (Kopp et al., 2019). Frequent exams and quizzes that are in line with learning goals guarantee that trainers provide individualized feedback while following Quality Matters (QM) guidelines. A final

⁸ Examine, Create, Develop, Implement, and Assess.

⁹ Knowledge of Technological Pedagogical Content.

integrative project that encourages the direct application of learning is also included (Laurillard, 2012).

Learning self-regulation is greatly aided by the verification questions at the conclusion of video capsules, which permit retries in the event of an error.

However, research shows that the majority of trainer feedback consists of individual written corrections, which may hinder learner interest and advancement. Peer assessments and group comments have been shown to dramatically improve student motivation and retention (Hattie & Timperley, 2007). It is highly advised to implement collaborative assessments that facilitate feedback exchanges between teachers.

3.5 Certification and Institutional Recognition: Official Value Underutilized

The «*Teaching Remotely*» MOOC's institutional certification from MENPS is one of its main advantages. This credential is formally recognized within the framework of teachers' ongoing education, in contrast to many open MOOCs that have little certification significance. However, because it is not recognized outside of Morocco's institutional environment, recognition is still restricted.

3.6 Comparative Analysis and International Perspective

The discrepancies identified in the MOOC «*Teach Remotely*» regarding pedagogical structuring and assessment are not isolated to the Moroccan context. When compared to international teacher training initiatives, such as the French FUN-MOOC platform or European-wide programs analyzed through the DigCompEdu framework, several commonalities and divergent paths emerge.

✓ Pedagogical Contextualization and Practical Application

In the Moroccan case, the analysis revealed a gap between theoretical content and real-world classroom application. This finding resonates with studies conducted on the «*Enseigner avec le numérique*» MOOCs in France. According to Conole (2013), many teacher-oriented MOOCs focus heavily on «*technological assimilation*» rather than «*pedagogical transformation*». While the Moroccan MOOC successfully introduces digital tools, it faces the same challenge as many European counterparts: the difficulty of moving from a «*consumption of resources*» model to a «*creation of pedagogical scenarios*» model (Redecker, 2017).

✓ The Challenge of Mentorship and Social Presence

A major strength of the Moroccan MOOC is the active participation of trainers in forums, a feature that is often a weak point in massive courses. Internationally, the literature highlights that without «*human-in-the-loop*» mentorship, teacher attrition rates in digital training increase significantly (Hew & Cheung, 2014). However, the Moroccan model remains largely asynchronous. In comparison, recent teacher training frameworks in North America and some Middle Eastern contexts have started integrating «*synchronous webinars*» and «*virtual labs*» to bridge this gap. Integrating such elements into «*e-takwime*» could shift the experience from a solitary learning path to a professional community of practice.

✓ Assessment Models: From Automation to Peer-Evaluation

The assessment methods in «*Teach Remotely*» rely heavily on automated quizzes, a common feature in MOOCs due to scalability. However, global standards for teacher education are increasingly advocating Peer-Assessment » (Evaluation par les pairs) as a way to develop critical thinking and professional judgment. Studies on Quality Matters (QM) implementation emphasize that while automated feedback is efficient for «*knowledge verification*», it is insufficient for «*competency certification*» (Lowenthal & Hodges, 2015). By incorporating peer-review mechanisms—similar to those used in the MOOCs offered by the University of London or Coursera's teacher specialization tracks—the Moroccan system could better align with the highest international quality standards.

✓ Institutional Recognition and the "Open Badge" Trend

Finally, Morocco's strength lies in the official recognition of the certificate by the MENPS. Many international MOOCs suffer from a lack of «*institutional weight*», leading to low motivation (Boullier, 2015). Nevertheless, the international trend is moving toward «*Open Badges*»—digital, verifiable micro-credentials that represent specific skills (e.g. «*Expertise in Virtual Classroom Management*»). Adopting a similar micro-credentialing approach within the Moroccan digital competency frameworks would provide a more granular and portable recognition of a teacher's professional development.

3.7 Strategic Recommendations: Implementing a Quality Approach through Pedagogical Re-engineering

The discrepancies identified in this study highlight the need to transition from a simple « content delivery » model to a rigorous **quality approach**. To ensure that the « Teach Remotely » MOOC aligns with international standards, a comprehensive process of **pedagogical re-engineering** is required. This process does not merely involve updating resources but involves a fundamental restructuring of the training design based on the following pillars:

✓ **Transitioning to Scenario-Based Learning Paths**

Current content structuring relies heavily on theoretical transmission. To better align with international standards, it is recommended to adopt a « Problem-Based Learning » (PBL) approach. Instead of traditional modules, the MOOC should be organized around « pedagogical scenarios » where teachers must solve real classroom challenges using digital tools. This shift would move the training from mere « technological literacy » to true « pedagogical integration », as required by the UNESCO ICT-CFT framework.

✓ **Diversifying Assessment through Peer-Review and Portfolios**

To address the limitations of automated quizzes, the « e-takwina » platform should integrate more qualitative assessment methods. Implementing « Peer-Assessment » would allow teachers to review each other's digital lesson plans, fostering a critical community of practice. Additionally, the use of « Digital Portfolios » would enable teachers to document their progress over time, providing a more holistic view of their competency development than a single final exam.

✓ **Integrating Synchronous Interactivity and Mobile Learning**

To break the isolation of asynchronous learning, the Ministry should incorporate synchronous sessions, such as monthly webinars or live Q&A sessions with experts. Furthermore, considering the high mobile penetration in Morocco, optimizing the MOOC for « Micro-learning » via mobile applications would increase engagement. Small, bite-sized learning units (5-10 minutes) are more suitable for the busy schedules of active teachers and encourage « just-in-time » learning.

✓ **Institutionalizing a Continuous Quality Assurance Loop**

Finally, the alignment with digital frameworks should not be a one-time event. We recommend the creation of a permanent « Quality Observation Cell » within CNIPE. This cell would use the NUMEFA criteria to conduct annual audits of available MOOCs, ensuring that content remains updated with the latest technological trends (such as Artificial Intelligence in education) and pedagogical innovations. This would ensure that the Moroccan educational system remains « agile and resilient » in the face of rapid digital transformations.

4 Conclusion

Because MOOCs offer more flexible access to educational resources and online learning, they have revolutionized continuing teacher education. An important illustration of the implementation of an institutionalized and structured online training system is the MOOC "Teaching Remotely," which was created for instructors at Morocco's Ministry of National Education.

Using the NUMEFA framework in conjunction with the international standards ISO 29924 and Quality Matters (QM), this study evaluated the MOOC's quality. The analysis found both strategic areas for improvement that could maximize its impact and important strengths that contribute to its instructional efficacy.

4.1 Summary of Results

The results demonstrate that this MOOC is a well-organized system that mainly satisfies quality standards specified in online education literature. A number of significant advantages include: a structured, progressive evaluation system; an integrative final project; a variety of educational resources catered to teachers' needs; active institutional monitoring and frequent support for teachers via discussion forums; pedagogical structuring in line with tried-and-true models (ADDIE, TPACK) that ensure logical learning progression; and official certification from MENPS.

Developing collaborative evaluations that incorporate peer-review and group feedback sessions, as well as improving synchronous interactivity and diversifying instructional forms, are among the areas that need development.

The study also draws attention to the structural drawbacks of MOOCs in institutional settings, particularly the challenge of striking a balance between accessibility for a wide range of users.

4.2 Limitations and Research Perspectives

Although this study offers a comprehensive assessment of the "Teaching Remotely" MOOC, it also has methodological flaws that suggest areas for further investigation:

- ✓ A longitudinal evaluation could gauge the true effect on teachers' pedagogical practices many months after adoption, although this study was primarily concerned with evaluating the MOOC's quality.
- ✓ Best practices and the most successful pedagogical approaches for continuing teacher education could be found by comparing this MOOC with other training programs that are comparable (either hybrid or totally online).
- ✓ A more thorough examination of the variables affecting teacher involvement MOOC dropout rates are frequently high (Lowenthal & Hodges, 2015). Analyzing the variables influencing teacher persistence and engagement in this kind of training might be helpful in order to suggest methods for maximizing motivation.

4.3 General Conclusion

This research demonstrated that the effectiveness of teacher training in the digital age depends on the strict alignment between technological tools and competency frameworks. By evaluating the « Teach Remotely » MOOC through the lens of the NUMEFA and Quality Matters standards, we have initiated a quality approach aimed at continuous improvement.

In conclusion, the transition of the Moroccan educational system toward digital excellence requires more than just platform deployment; it demands a pedagogical re-engineering of training devices. This study provides a roadmap for designers to move toward a more resilient and standardized model of teacher professional development. As a perspective for future research, we argue that the institutionalization of quality assurance principles in the design phase of MOOCs is the only way to guarantee the long-term impact of digital educational reforms in Morocco.

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