

## MOOCs Research from the Perspective of Teacher

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**Abstract.** Concerning the rapid growth of interest in understanding MOOCs (Massive open online courses, MOOCs), this article focuses on a review of MOOCs research from the perspective of teacher based on the web of science database. Altogether there are 12 records tilted as “MOOCs” in combining with “teacher” or “instructor” or “faculty”. And analysis results of relating literatures indicate that (1) considering conference titles, 2015 1st Africa Conference and 7th International Conference On Education and New Learning Technologies ranked in Top 1, accounting for 16.667% respectively; (2) the main research country/territory is South Africa, accounting for 25.000%, then followed by England and Spain of 16.667% ; (3) document types of proceedings paper ranked in Top 1 accounting for 58.333%, then followed by article of 33.333%; (4) in the view of organizations, Universidad Nacional de Educacion a Distancia Uned from Spain and University of Johannesburg from South Africa have the same record count of 2, accounting for 16.667% respectively; (5) the year of published articles mainly distributed between 2015 and 2016, accounting for 58.333% and 25.000% respectively; (6) 83.333% of the research focused on Education Educational Research, then 25.000% in Computer Science and 16.667% in Telecommunications; (7) The number of literatures from three conferences is same, accounting for 16.667%. Overall, the related research topics can be classified into two aspects, including service and development. In the end, conclusions were made for the further research direction.

### Introduction

The disruptive emergence of Massive Open Online Courses (MOOCs) has led to a redefinition of the educational landscape in online instruction [1]. MOOCs are among the latest E-Learning initiative to attain widespread popularity among many universities. Consequently, the need has arisen to investigate the role and competences of the educator in these new virtual environments [2].

In recent years, MOOCs constitute a natural evolution of former learning models but with greater attention to students than to teachers [3]. Meanwhile, previous studies on digital literacy of teachers are unsustainable and mainly focused on pre-service teachers than in-service teachers. These realities point to the need to investigate and implement effective and sustainable initiatives for improving digital literacy and online life-long learning for in-service teachers [4].

Concerning the rapid growth of interest in understanding MOOCs, the purpose of this article is to review MOOCs research from the perspective of teacher based on web of science database to take the current state and to propose directions for future research.

### Analysis Results of Relating Literatures

According to the Web of Science, 12 articles title as “MOOCs” in combining with “teacher” or “instructor” or “faculty” are found in related discipline in recent four years.

### Results of Conference Titles

As shown in Table 1, the analysis of conference titles, 2015 1st Africa Conference and 7th International Conference On Education and New Learning Technologies ranked in Top 1, accounting for 16.667% respectively.

Table 1. Conference titles.

Conference titles	Record Count	% of 12
2015 1st Africa Conference	2	16.667%
7th International Conference On Education and New Learning Technologies	2	16.667%

### Results of Countries/Territories

On basis of Table 2, the analysis of countries/territories, South Africa ranked in Top 1 accounting for 25.000%. Then it was followed by England and Spain, accounting for 16.667% respectively.

Table 2. Countries/Territories.

Countries/Territories	Record Count	% of 12
South Africa	3	25.000 %
England	2	16.667%
Spain	2	16.667%

### Results of Document Types

Based on the analysis of document type in Table 3, proceedings paper ranked in Top 1 accounting for 58.333%. Then article followed in the second place, accounting for 33.333%.

Table 3. Document types.

Document types	Record Count	% of 12
Proceedings Paper	7	58.333%
Article	4	33.333%

### Results of Organizations

In the view of organizations of Table 4, Universidad Nacional de Educacion a Distancia Uned from Spain and University of Johannesburg from South Africa, ranked in top 1, accounting for 16.667% respectively.

Table 4. Organizations.

Conference titles	Record Count	% of 12
Universidad Nacional de Educacion a Distancia Uned	2	16.667%
University of Johannesburg	2	16.667%

### Results of Publication Years

In line with the published items in each year of Figure 1, nearly 84% articles were published between 2015 and 2016, as shown in Table 5. The number of publication in 2015 is 7, more than twice that of publication in 2016.

Table 5. Publication years.

Publication years	Record Count	% of 12
2015	7	58.333%
2016	3	25.000%

### Results of Research Areas

According to Table 6, 83.333% of the research areas focused on Education Educational Research, which was followed by Computer Science of 25.000% and Telecommunications of 16.667% respectively.

Table 6. Research areas.

Research areas	Record Count	% of 12
Education Educational Research	10	83.333%
Computer Science	3	25.000%
Telecommunications	2	16.667%

### Results of Source Titles

Mostly, there are five source titles, as shown in Table VII. Each of three source titles, i.e., 2015 1st Africa Conference, European Proceedings, and 7th International Conference On Education and New Learning Technologies, has 2 records, accounting for 16.667%, respectively.

Table 7. Source titles.

Source titles	Record Count	% of 12
2015 1st Africa Conference	2	16.667%
European Proceedings	2	16.667%
7th International Conference On Education and New Learning Technologies	2	16.667%

### Results of Web of Science Categories

As shown in Table 8, Education Educational Research ranked in Top 1, accounting for 75.000%. Then Computer Science Interdisciplinary Applications ranked in the second place of 25.000%. The other four categories, i.e., Computer Science Hardware Architecture, Computer Science Software Engineering, and Telecommunications, ranked in the third place of 16.667% respectively.

Table 8. Web of science categories.

Web of Science Categories	Record Count	% of 12
Education Educational Research	9	75.000%
Computer Science Interdisciplinary Applications	3	25.000%
Computer Science Hardware Architecture	2	16.667 %
Computer Science Software Engineering	2	16.667 %
Education Scientific Disciplines	2	16.667 %
Telecommunications	2	16.667 %

### Relating Topics from Teachers' perspective

We review research areas covered by papers in MOOCs from the perspective of teacher to take the current state. Generally, relating topics and be identified from two aspects: service and development, shown as Figure 1.

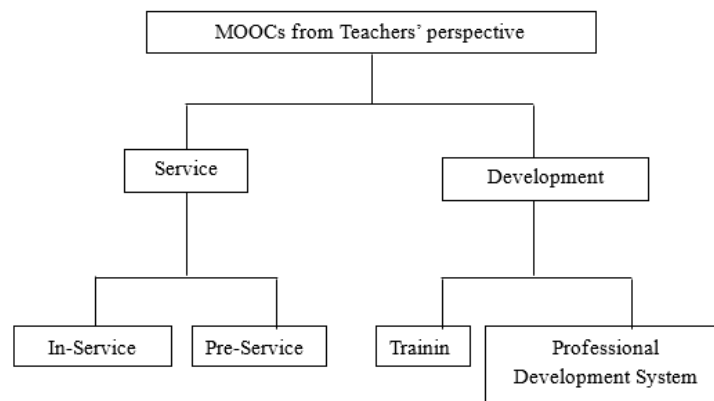


Figure 1. Classification of MOOCs research from the perspective of teacher.

### In-service and Pre-service

Research results from initial implementation of MOOCs through Teachers' E-learning Portal indicate that irrespective of age, when teachers are adequately supported internally by their schools and

externally by a university, can improve their digital literacy and subsequently engage in online life-long learning of MOOCs [5-6]. In addition, the results both in terms of high percentage of teacher participants' completions (89%) and high volume of educational e-content generated, confirm Teachers' E-learning Portal as an effective, attractive, and self-sustainable MOOCs platform for in-service teachers in resource constraint environments [7].

With the increasing accessibility to online learning for pre-service and in-service teachers, access to Professional Teacher Development is not limited to for Educators endorsed programs [8]. Teachers are opting to enroll in less structured opportunities to enhance their own learning experiences through participating in MOOCs as part of their own journey in becoming teachers in the 21st Century [9].

Specifically, MOOCs were used in the preparation of pre-service teachers as a possible way to increase their knowledge about Learning Design [10]. It is evident from the findings that the quality of the learning activities within various MOOCs has the potential to influence pre-service teachers' understanding of Learning Design [11].

### **Training and Professional Development**

Course analytics, forums and participant surveys demonstrated that MOOC pedagogy worked well and had the power to tackle the large-scale educational problem of developing what the teachers need to meet the goal of universal education. The MOOC format is to be an effective mechanism for promoting educational innovation on condition that it is able to support a co-learning model of professional development for the teachers. By utilizing the current functionality of MOOCs, it is possible to provide some of the critical features of a co-learning approach. For example, issue-focused discussion forums elicit valuable community discussions, and peer-assessed assignments enable teachers to learn from each other linked to off-platform tools for sharing resources and ideas [12].

Although collaborative learning in the form of small groups negotiating to develop a shared output is not supported within the current functionality of MOOCs, participants still gained value from discussion of the key issues and from sharing ideas and resources in the off-platform locations, which seemed to motivate innovation and provide a sense of community exploration [13].

The free and open MOOC platform can reach thousands of teachers, even those at primary level and even those in emerging economies. The significant improvement in participants' understanding of MOOCs in primary education establishes the course as a clear contribution to solving the educational challenge of integrating MOOCs effectively into primary education [14].

MOOCs are important because it is an effective way of enabling the teaching community to collaborate on keeping abreast of the potential of new learning technologies. According to an online survey created to teachers, mainly involved in higher education, research results present what is the opinion of teachers regarding these technologies and argues the importance and need of such technologies to be further developed and integrated into teaching [15].

The findings of an empirical post-course investigation indicated that the MOOC presented helped teachers to acquire the knowledge and skills to integrate Web tools in their classroom. The great majority of the teachers attending MOOCs were satisfied of their participation and the key course design and implementation issues, and they reported that this program had a positive impact to their professional development. With the MOOCs, on one hand a new format arose which offers an opportunity to address large groups of participants and on the other hand allow for flexible formats of delivery and participation. Reference [16] presents an example of an online teacher training program on MOOCs to discuss its effects and potential further developments.

### **Conclusions**

Online and open learning provides many challenges and opportunities for continuous professional development. New and emerging learning technologies are continuously disrupting educational practice. MOOCs are currently one of the most debated and dynamically evolving E-Learning topics with regards to application in practice, research and development.

The primary goal of this paper is to summarize the accumulated state of knowledge concerning the main motivations and challenges of using MOOCs, as well as to identify issues from the perspective of teacher and then to propose directions for future research.

MOOC pedagogy fits well with the combination of instruction and peer community learning found in most professional development. MOOCs are now growing trends in the professional development of teachers and enable them to build community pedagogic knowledge of how best to use technology.

The paper explores pedagogical, technical, and institutional responses to the current challenges and opportunities that MOOCs present. And further research and analysis of learning in MOOCs should be designed to support teacher professional development.

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