

A Systematic Review on Massive Open Online Courses in China from 2019 to 2023

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Abstract

Over the past two decades, China has witnessed substantial growth in its Massive Open Online Courses (MOOCs), which are now available in the formats of quality courses and Massive Open Online Courses. Both course types serve as digital educational resources that cater to a wide range of individuals, and both provide a significant complementary function in relation to conventional forms of higher education. This article employs the keywords "MOOC," "quality courses," "MOOC+ premium courses", and "higher education" to conduct a search for publications that contain these specific keywords in their Title, Abstract, and Keywords sections. The PRISMA protocol was employed to examine the literature obtained from the China National Knowledge Infrastructure (CNKI) database, spanning the years 2019 to 2023. This facilitated a comprehensive and systematic analysis and synthesis of the current state of Massive Open Online Courses (MOOCs) in Chinese universities. This study aims to examine the benefits and constraints associated with Massive Open Online Courses (MOOCs) and offer unique perspectives on the optimal utilization of MOOCs within the context of Chinese higher education.

Keywords: Massive Open Online Course (MOOC), Quality Courses, Higher Education, Education Digitalization, Systematic Literature Review

Introduction

The Massive Open Online Courses (MOOCs) movement, tracing its origins back to the early twenty-first century, commenced with David Wylie's groundbreaking large open online course at Utah State University in August 2007 (Zhang & Gao, 2018). This significant event was acknowledged in 2012 when Time Magazine bestowed upon MOOCs the title of "MOOC of the Year." Meanwhile, 2013 marked the inaugural year of MOOCs in China, with prominent institutions like Hong Kong University of Science and Technology, Peking University, Tsinghua University, and the Chinese University of Hong Kong all offering online courses (Hao, 2013). By November 2022, China had emerged as a global leader in the MOOC landscape, boasting 62,000 MOOCs and a staggering number of users, learners, and students (Baidu Encyclopedia, 2023).

The inception of quality courses in China can be traced back to the Massachusetts Institute of Technology's Open Courseware (OCW) initiative in 2001, signifying the genesis of the quality course creation movement (Xu & Shi, 2007). Subsequently, the Ministry of Education spearheaded the development of national quality courses in 2003. Quality courses, recognized for their openness, online accessibility, interactivity, and free availability, laid the groundwork for the emergence of MOOCs in China. As asserted by Liu and Wang (2014), MOOCs and quality courses share fundamental characteristics. Notably, the Chinese Ministry of Education released 490 "National Quality Online Open Courses" in January 2018, with a significant proportion of these courses established by renowned universities (Ministry of Education, 2020, 2023).

In the Chinese educational landscape, quality courses and MOOCs currently coexist. While China commenced its quality course development in 2003, MOOCs emerged prominently in 2013. Despite their coexistence, quality courses are comparatively less recognized. Nonetheless, the Chinese University MOOC platform, also known as the National Quality Course Platform, offers an extensive array of national-level quality courses across various disciplines (data from the Chinese University MOOC website). During this period, substantial research has been conducted on both quality courses and MOOCs.

The Ministry of Education declared in November 2020 that 5,116 courses were rated and recognized as the national quality courses for undergraduate students (Ministry of Education, 2020). In June 2023, another 5,750 courses had been designated as the national quality courses for undergraduate students (Ministry of Education, 2023). For more information, see Table 1.

Table 1
Details of the national quality courses

| Types of Courses | National quality courses of 2020 | National quality courses of 2023 |
|--|----------------------------------|----------------------------------|
| Online courses | 1873 | 1095 |
| Offline courses | 1463 | 1800 |
| Blending courses | 868 | 2076 |
| Social practice courses | 184 | 307 |
| Virtual simulation experiments courses | 728 | 472 |
| Total | 5116 | 5750 |

Although the primary focus of this study centers on MOOCs, the literature review encompasses keywords such as "MOOCs" and "quality courses" to provide a comprehensive analysis (Ministry of Education, 2020, 2023). The coexistence and development of MOOCs and quality courses have laid a foundation for enhancing the quality of higher education and promoting equitable learning opportunities in China. Despite their shared characteristics and the progressive evolution of quality courses towards MOOCs, unified studies on the two remain scarce. Therefore, this study aims to bridge this gap by conducting a comprehensive literature review of their development in China from 2019 to 2023, analyzing prevailing norms and trends. The objectives of this research are twofold:

- I. To identify the primary research scope of MOOCs and quality courses in higher education in China.
- II. To analyse the trend of MOOCs research in Chinese higher education.

This research aims to answer the following questions.

- I. What is the primary research scope of MOOCs and quality courses in higher education in China?
- II. What is the trend of MOOCs research in Chinese higher education?

Methodology

This study utilized the PICOT protocol—Population, Intervention, Comparator, Outcome, and Time frame—to define the research questions and scope of the systematic literature review. The detailed protocol is outlined in Table 2.

Table 2

SLR research scope based on PICOT framework

| Concept | Definition | Keywords |
|--------------|---|------------------|
| Population | Articles on national quality courses and MOOCs in China | - |
| Intervention | MOOCs | “MOOCs” |
| Comparator | Quality Courses | quality courses |
| Outcome(s) | the primary research interests of China's MOOCs and quality courses in higher education | higher education |
| Timeframe | 2019 - 2023 | 2019 - 2023 |

A systematic literature review focusing on MOOCs and quality courses was conducted, encompassing articles published between January 2019 and October 2023 in the China National Knowledge Infrastructure (CNKI) database.

All articles concerning Massive Open Online Courses (MOOCs), quality courses, and their combination that have been published in Chinese were included. The initial stage involved reviewing titles, abstracts, and keywords, followed by a comprehensive examination of full-text articles. The incorporation of all five components of the PICOT format in formulating research questions was evaluated and scored on a scale of 0 to 5. The primary metric of interest will be the percentage of research projects that effectively and comprehensively report all five components of the PICOT framework.

The Study Searching and Selection

This study searches the literature on MOOCs, quality courses, and “MOOCs” AND “quality course” of China in the CNKI database, analyzing the content of the literature and developing research conclusions, as shown in table 3.

Table 3

The searching terms used for each database

| Databases | Searching string and searching terms | No of Articles | Date of acquisition |
|--------------|--------------------------------------|----------------|---------------------|
| CNKI | “MOOCs” | 41 | 15/10/2023 |
| Database | “quality course” | 37 | 15/10/2023 |
| | “MOOCs” AND “quality course” | 18 | 15/10/2023 |
| Total | - | 96 | - |

Assessing the Study Quality

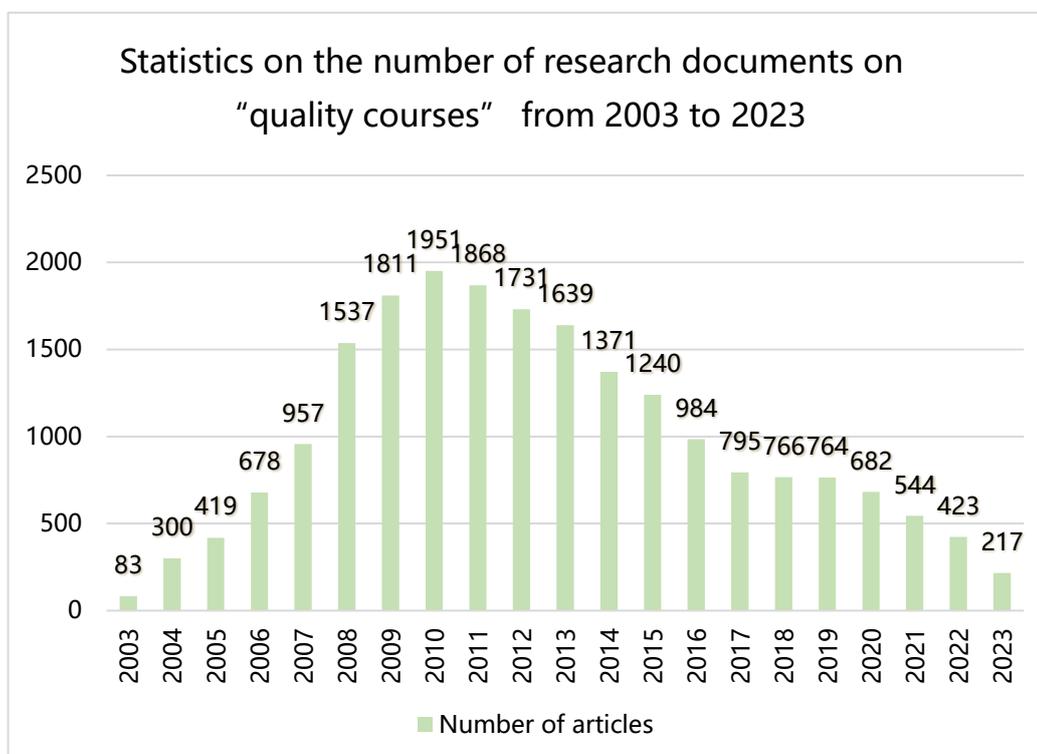
The inclusion and exclusion criteria that have been used to filtering the article are stated in Table 4 (Gough, 2007).

Table 4

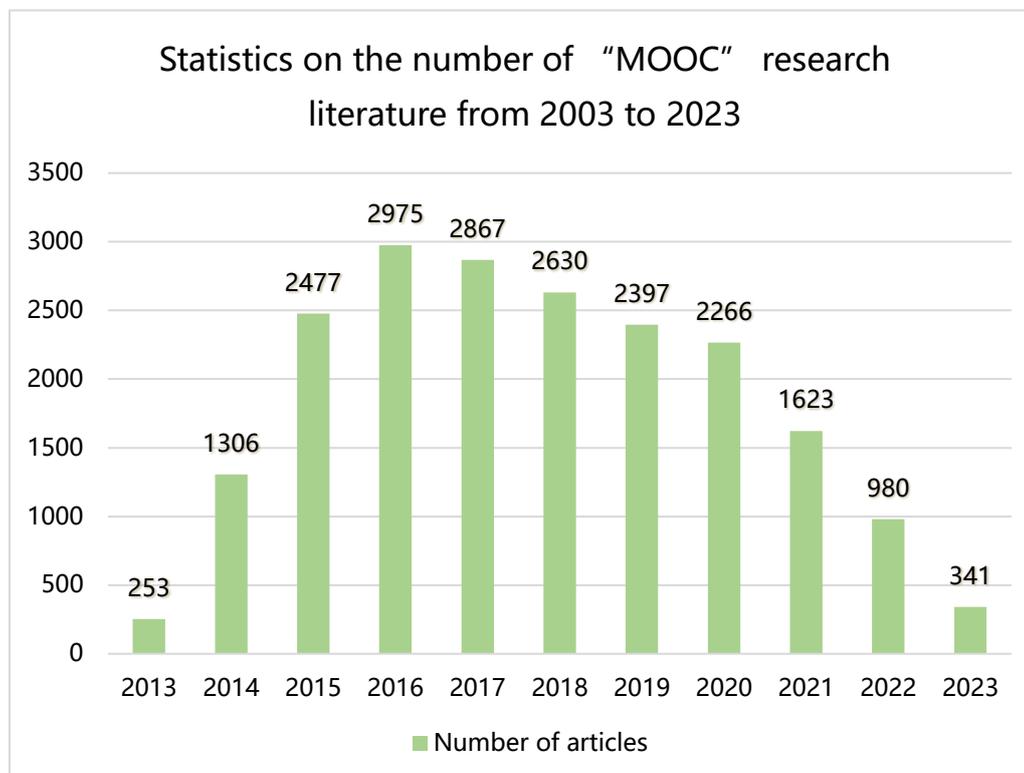
Inclusion and exclusion criteria

| Criteria | Decision |
|--|-----------|
| When the predefined keywords exist as a whole or at least in title, keywords or abstract section of the paper. | Inclusion |
| The paper published in a scientific peer-reviewed journal | Inclusion |
| The paper should be written in Chinese | Inclusion |
| Studies that present pieces of evidence on MOOCs | Inclusion |
| Papers that are duplicated in content by the same author(s) | Exclusion |
| Papers that are not on Chinese, but on other countries | Exclusion |
| Papers that are relevant to vocational education or primary and secondary education | Exclusion |
| Papers that got published before 2019 or 2023 | Exclusion |

Using CNKI as database, a search for the term "quality courses" yields 24,103 documents during 2003~2023, with 2010 being the peak year for paper publication, with a total of 1,951 documents. Cause 2003 is the beginning year of quality courses in China. Following that, the research revealed a downward trend in popularity year after year after 2010, as illustrated in the Figure.

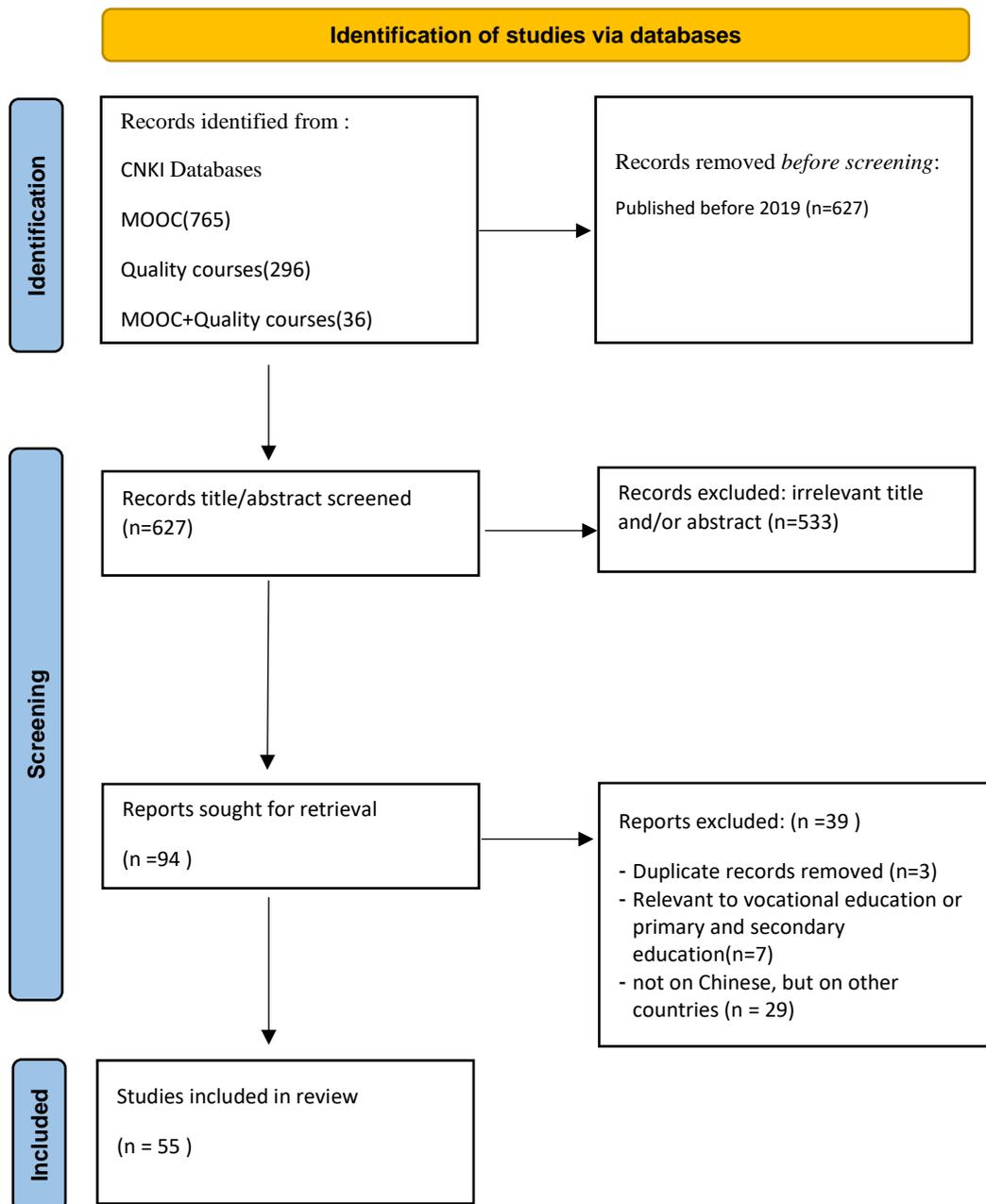


Using the keyword "MOOC" as a search term, there are 20,235 documents published between 2013 and 2023. It has showed a straight-line rising trend since the beginning of MOOC building in China in 2013. It was the year of peak paper publication, with a total of 2,975 documents published. However, research excitement has waned year by year, particularly after 2020 as can be seen in the following Figure.



The review was conducted following the step-by-step process outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, as depicted in Figure 3. The literature search for this review was performed in the CNKI database on October 15, 2023. The literature search incorporates Boolean operators (specifically, AND/OR) to combine the keywords ("MOOC" AND "higher education" AND "China") and ("quality courses" AND "higher education" AND "China") and ("MOOC" AND "quality courses" AND "higher education" AND "China").

Furthermore, the scope of this study was restricted to doing a literature search just on Chinese studies published limited to the timeframe of 2019 to 2023. In the end, 55 articles were screened and included in the analysis within the allotted time frame, which can be seen in the following PRISMA flowchart.



Data Analysis

Data analysis method that had been used to analyse the articles was deductive thematic analysis method. The research scope of each article had been identified through pre-determined dimensions on Chinese MOOCs as stated in Table 5. This study encompasses the development and implementation of specific MOOC Courses as well as the creation and utilization of quality courses. The development and implementation of Massive Open Online Course (MOOC) platforms, as well as the integration of MOOC platforms with quality educational courses.

Table 5

Pre-determined dimensions

| Pre-determined dimensions | Descriptions |
|---|--|
| Combine MOOCs with specific professional courses | Covering the combination of MOOC and different courses |
| MOOC Platform construction and application | Include the use of MOOCs, experimenting, testing, MOOC platform construction |
| Quality course construction and application | Include the use of quality courses, experimenting, testing, MOOC platform construction |
| application of the combination of MOOC platform and quality courses | Construct quality courses on MOOC platform |

Upon doing an analysis of the entirety of 55 publications that were published throughout the time frame of 2019 to 2023, the findings are presented in Table 6, which provides an overview of the research' general information.

Table 6

General Info about the studies

| Criteria | Categories | n | % |
|--|---------------|----|------|
| Years of publication | 2019 | 19 | 16.4 |
| | 2020 | 18 | 16.4 |
| | 2021 | 9 | 32.7 |
| | 2022 | 9 | 34.5 |
| Types of data sources (primary vs secondary) | Primary data | 55 | 100 |
| Research Approaches | Quantitative | 3 | 5.5 |
| | Qualitative | 49 | 89.0 |
| | Mixed-method | 3 | 5.5 |
| Research Design | Case Study | 46 | 83.6 |
| | Survey-based | 6 | 10.9 |
| | Phenomenology | 3 | 5.5 |

Results*Primary research scope of MOOCs and quality courses in China*

Though MOOCs emerged in China in 2013, open online courses had been developed for many years. They are called quality courses. The research scope can not be limited to MOOCs, quality courses and their correlation must be considered. Table 7 shows part of the studies on MOOCs and quality coursed that have been reviewed for this study.

Table 7

The research Scope

| No. | Authors | Year Published | Research design | Types of Publications | Research Scope | Findings |
|-----|------------------|----------------|--|-----------------------|--|--|
| 1 | Xie, Deng, & Sui | 2022 | Combine MOOCs with specific professional courses | Journal | development and construction practical application | The construction of MOOC platform and the use of MOOC to improve the quality of course teaching. |
| 2 | Liu, & Song | 2022 | Combine MOOCs with specific professional courses | Journal | practical application | Some problems in the teaching reform of analytical chemistry in universities, and discusses measures to promote the quality of analytical chemistry with MOOC. |
| 3 | Xie | 2022 | Research on teaching Chinese as a foreign language in universities under the background of MOOCs | Journal | Literature review | 1. The impact of MOOC ; 2. The construction of MOOCs; 3. The transformation of teachers' roles in the context of MOOCs; 4. The current situation of MOOC platform construction; 5. The role of MOOCs in the promotion of Chinese language and culture. |
| 4 | Deng & Wang | 2022 | Application of MOOCs and SPOC on tennis teaching | Conference | practical application | Using SPOC for blended learning in the post-MOOC era |

| | | | | | | |
|----|----------------------|------|--|------------|-----------------------|---|
| 5 | Gao, & Yang | 2021 | Combine MOOCs with specific professional courses | Conference | practical application | Blended teaching of martial arts using MOOC |
| 6 | Zhang, & Qiao | 2021 | Combine MOOCs with specific professional courses | Journal | Theoretical research | Improved teaching platform for innovation and entrepreneurship courses in universities based on MOOC |
| 7 | Guo, Zhang, & Zhang, | 2021 | MOOCs construction of Chinese 100 universities | Journal | practical application | Analyze the construction and application of MOOC in 100 universities in China and provide suggestions for MOOC development. |
| 8 | Li | 2021 | MOOCs construction and development | Journal | Theoretical research | Problems and suggestions in the construction of MOOCs in Chinese universities |
| 9 | Li | 2021 | Combine MOOCs with specific professional courses | Journal | Theoretical research | The application of MOOC in English teaching in Chinese universities |
| 10 | Huang | 2021 | Combine MOOCs with specific professional courses | Journal | Theoretical research | Blended teaching of ideological and political courses using MOOC |

When discussing Massive Open Online Courses (MOOCs), a group of 21 academics out of the total 55 articles conducted their research by focusing on a specific course. The user has provided a series of numerical references, namely (Xie et al., 2022; Liu and Song, 2022; Xie, 2022; Deng and Wang, 2022; Gao and Yang, 2021; Li, 2021; Huang, 2021; Suo, 2020; Cheng, 2020; Lv, 2020; Sun et al., 2020; Li, 2020; Shi, 2019; Lin, 2019; Jiang et al., 2019; Li et al., 2019; Chen, 2019; Ni, 2019; Xia, 2020; Liu, 2022; Xu, 2022). Several papers have examined the integration of MOOCs with English courses, specifically articles(Xie et al. 2022; Xie 2022; Li

2021; Wang, 2021). Additionally, there are studies that focus on the development and implementation of sports MOOCs, namely articles (Deng and Wang, 2022; Gao and Yang, 2021; Sun et al., 2020; Shi, 2019; Ni, 2019). The scholarly literature examining the development of political MOOCs encompasses the articles referenced as (Huang, 2021; Li, 2020; Shi, 2019; Chen, 2019). In addition, there are five articles that examine various subjects, including chemistry, art, biology, economics, and the creation of a general course MOOC, correspondingly (Liu and Song, 2022; Cheng, 2020; Lv, 2020; Jiang et al., 2019; Li et al., 2019).

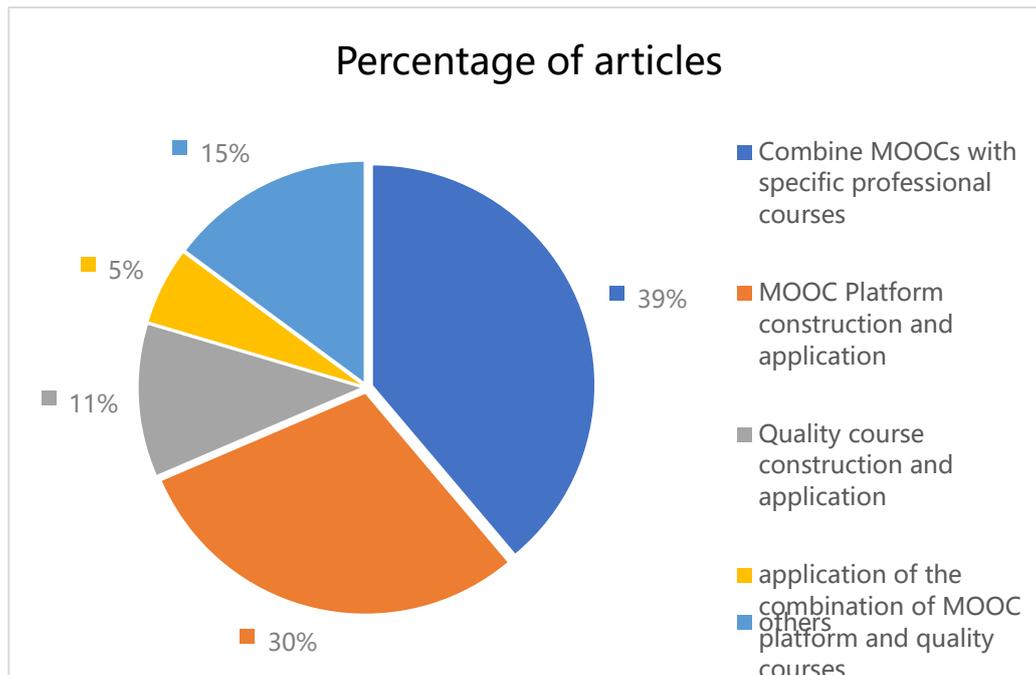
There are sixteen articles on the construction and implementation of MOOC platforms, including (Guo et al., 2021; Li, 2021; Lin, 2020; Zhang, 2020; Wu, 2020; Fan, 2020; Wang et al., 2019; Qin, and Li 2019; Zhao 2019; Du 2019; Yu and Wang 2019; Guo 2019; Ji et al. 2020; Wang et al., 2019; Sun, 2022; Wu, 2020). In addition, eight articles examine theories related to MOOCs (Zhang and Qiao, 2021; Xu et al., 2020; Hu et al., 2019; Du, 2019; Li, 2019; Zhang and Han, 2020; Miao, 2020; Zhang, 2019).

After analyzing the 10 articles about quality courses that were retrieved, it was determined that only three articles explicitly addressed the construction of quality courses (Gu et al., 2021; Liao, 2020; Zhang et al., 2019). In addition, there are four articles describing MOOC research (Sun, 2022; Wang, 2021; Xia, 2020; Wang et al., 2019). In addition, there are articles Gao(2021); Wang (2020) that neither indicate that they are high-quality courses nor are named after MOOCs, but discuss open courses and online courses. Additionally, there are two articles about SPOC (Wang, 2021; Ji et al., 2020).

Out of the 55 publications that were obtained pertaining to quality courses, five articles specifically focus on the development of quality courses in the context of MOOCs, which are referenced as (Gu et al., 2021; Wang, 2021; Liao, 2020; Xia, 2020; Ji et al., 2020). All these five articles are about how to build specific quality courses on the MOOC platform, such as biology courses Gu et al (2021); Ji et al (2020), English courses Wang (2021), cultural courses Liao (2020), and computer courses (Xia, 2020).

As depicted in the following Figure, among the articles examined, a total of 21 articles were found to integrate MOOCs with specific courses, comprising approximately 39% of the overall sample. Moreover, 16 publications were dedicated to exploring the construction and application of MOOC platforms, accounting for around 30% of the overall research output in this field. Additionally, three articles were identified that investigated the correlation between MOOC platforms and the provision of quality courses, representing approximately 5% of the overall literature on the subject. Furthermore, 40 articles, constituting 72.7% of the entire corpus, focused on MOOCs. Additionally, six studies were conducted to examine the development and implementation of quality courses, constituting approximately 11% of the entire research corpus.

Furthermore, it is worth noting that there exist nine scholarly pieces that delve into the examination of MOOC theory advancement and the evaluation of educators and learners in the context of MOOC instruction. These articles constitute around 15% of the overall body of literature on the subject matter.



The situation and trend of MOOCs and quality course research in China

Based on the analysis of the literature presented above, there were 37 studies focusing on the development and application of MOOC courses and platforms. Three articles specifically investigated the construction of quality courses on MOOC platforms or their combination with MOOC platforms. This subset represents 40 articles directly related to MOOC courses or platforms, constituting 72.7% of the total publications. The remaining 27.3% of the literature explored theoretical aspects related to MOOCs.

The findings indicate that, within the timeframe of 2019-2023 in China's higher education, there is a larger emphasis on practical research as opposed to theoretical discourse on MOOCs. Whether it is the research on combining MOOCs with specific courses, the construction and implementation of MOOC platforms, or the exploration of combining quality courses with specific courses, all of these demonstrate that for MOOCs, practical research is more important than theoretical discourse.

Second, the online forums, homework, and other learning duties associated with MOOCs remind students to maintain their learning progress. And by earning credits and learning certificates, MOOCs can reduce the dropout rate compared to quality courses (Liu and Wang, 2014). As large-scale online courses, MOOCs have progressively replaced quality courses as the subject of dwindling research. In their 2014 paper, Liu and Wang identified the primary driving force of construction and research; today, this trend is even more evident.

Third, despite the fact that there are only four papers on SPOC (Deng and Wang (2022); Suo (2020); Cheng (2020); Ji et al (2020)), SPOC tends to progressively replace MOOC with its own benefits: substantially lower dropout rates and higher completion rates (Junior et al., 2019).

Conclusion

Liu and Wang (2014) noted that MOOCs and quality courses share characteristics such as being free, open, online, interactive, etc., so this study chose to focus on "MOOCs" and "quality courses". This article focuses on an analysis of the present status of MOOC research in Chinese universities. Using the PRISMA model, we searched and screened CNKI for Chinese

articles on MOOCs and quality courses, ultimately obtaining 55 articles. We conduct content analysis and frequency analysis on the research concentration of MOOC and quality courses, the correlation between the two, and the research trends of MOOC based on the paper's content.

Ultimately, it was determined that in Chinese higher education, MOOCs are gradually replacing quality courses and becoming an instrument for online and blended learning among college students. Current MOOC research focuses primarily on the design and implementation of specific MOOC courses and the development of MOOC platforms. MOOC-related research encompasses a wide range of academic disciplines. This suggests that Chinese MOOCs are utilized extensively in university contexts.

Simultaneously, there has been a gradual decline in research on quality courses. The number of articles and research content demonstrate this development. When academicians discuss quality courses, an increasing number of individuals combine MOOC platforms with the development of research-based quality courses. This also validates the trend of MOOCs replacing high-quality courses.

Contribution of the Research

This research makes a significant theoretical and contextual contribution to the existing knowledge on MOOCs and quality courses in Chinese higher education. By focusing on the analysis of the present status of MOOC research in Chinese universities, the study sheds light on the evolving landscape of online and blended learning among college students. Through the application of the PRISMA model and rigorous content analysis, the research identifies a gradual shift towards MOOCs replacing traditional quality courses, indicating a broader trend in educational delivery methods. Furthermore, the findings highlight the extensive utilization of Chinese MOOCs across various academic disciplines within university contexts. This research not only deepens our understanding of the current state of MOOC research but also underscores the importance of considering MOOCs as integral components of educational innovation and reform efforts. By elucidating the dynamics between MOOCs and quality courses, this study provides valuable insights into the evolving educational landscape in China and offers implications for future research and practice in online learning environments.

Limitations and Future Studies

Before any restrictions were imposed, 24,103 articles on quality courses from 2003 to 2023 were discovered by searching the CNKI database. There are 20,235 MOOC-related documents between 2013 and 2023. The data was too extensive, so the PICOT model was used to restrict the literature search. Only papers written in Chinese between 2019 and 2023 were chosen, and only the development and implementation of MOOCs in Chinese higher education were analyzed. No research has been conducted on the development of primary and secondary school MOOCs as well as MOOCs for vocational education in other languages and countries. These also provide MOOC researchers with research directions and opportunities.

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Appendix

The research Scope (Table 7. continued)

| No. | Authors | Year Published | Research design | Types of Publications | Research Scope | Findings |
|-----|----------------------|----------------|--|-----------------------|----------------------|---|
| 11 | Lin | 2020 | MOOCs construction and development | Journal | Theoretical research | It is recommended to use MOOC/SPOC flipped classroom and hybrid teaching methods. |
| 12 | Xu, Li, & Peng | 2020 | Research on the role of university teachers in MOOC teaching | Journal | Theoretical research | Suggestions on the role transformation of university teachers in MOOC teaching using questionnaire. |
| 13 | Suo | 2020 | Combine MOOCs +SPOC with specific professional courses | Journal | practical research | Using blending model of MOOC+SPOC in the teaching of Chinese painting courses in colleges |
| 14 | Cheng | 2020 | Combine MOOCs with specific professional courses | Journal | practical research | Using the hybrid teaching model of MOOC+SPOC in teaching financial management courses in universities |
| 15 | Lv | 2020 | Combine MOOCs with specific professional courses | Thesis | practical research | The application of MOOC in Music teaching in Chinese universities |
| 16 | Sun, Guo, Dang, & He | 2020 | Combine MOOCs with specific professional courses | Journal | practical research | The application of MOOC in Tai Chi teaching in Chinese universities |
| 17 | Zhang | 2020 | Reviews of books | Journal | Theoretical research | Evaluation of the book "MOOC and Blended Teaching Theory and Practice" |
| 18 | Wu | 2020 | Domestic and foreign MOOC platforms and MOOC-related academic research | Journal | Theoretical research | Analyze the integration of MOOCs and teaching |
| 19 | Li | 2020 | Combine MOOCs with specific professional courses | Journal | practical research | Blended teaching of ideological and political courses using MOOC |
| 20 | Fan | 2020 | development of college teachers | Journal | Theoretical research | the application of MOOC in the professional development of college teachers |

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|----|-------------------------------|------|---|---------|----------------------|---|
| 21 | Wang & Tian | 2019 | MOOCs construction and development | Journal | Theoretical research | MOOC resource co-construction and sharing |
| 22 | Shi | 2019 | Combine MOOCs with specific professional courses | Journal | practical research | teaching of table tennis courses using MOOC |
| 23 | Lin | 2019 | Combine MOOCs with specific professional courses | Journal | practical research | teaching of ideological and political courses using MOOC |
| 24 | Hu, Wu, & Lin | 2019 | a knowledge graph for Massive Open Online Courses (MOOCs). | Journal | Theoretical research | Hot topics in MOOC research |
| 25 | Jiang, Yan, Wang, Deng, & Liu | 2019 | Combine MOOCs with specific professional courses | Journal | practical research | teaching of Tea Nutrition and Health Care courses using MOOC |
| 26 | Li, Ma, Li, & Zhou | 2019 | Combine MOOCs with specific professional courses | Journal | practical research | MOOC-based Flipped Classroom in Innovation and Entrepreneurship Course |
| 27 | Chen | 2019 | Combine MOOCs with specific professional courses | Journal | practical research | teaching of political Care courses using MOOC |
| 28 | Qin, & Li | 2019 | MOOC Platform construction | Journal | practical research | the application of MOOC in the blending learning |
| 29 | Du | 2019 | students' willingness to use MOOC | Thesis | practical research | factors influencing university students' willingness to use MOOC |
| 30 | Li | 2019 | College students' MOOC satisfaction and influencing factors | Thesis | Theoretical research | Use questionnaire to collect survey sample data and conduct descriptive statistical analysis to Six universities in Nanchang. |
| 31 | Zhao, Zhu, & Wu | 2019 | MOOC Platform construction | Journal | Theoretical research | Provide advice on the construction of MOOC |
| 32 | Du | 2019 | MOOC Applications | Thesis | Theoretical research | Use questionnaire to research MOOC Applied in Teaching Management of Colleges |
| 33 | Ni | 2019 | Combine MOOCs with | Thesis | practical research | teaching of Physical Education courses using |

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|----|------|--------------------------------|---|---------|----------------------|---|
| | | | specific professional courses | | | MOOC |
| 34 | 2019 | Yu, & Wang | MOOC Platform construction and application | Journal | Theoretical research | Regional studies in universities offering MOOC platform art courses |
| 35 | 2019 | Guo | MOOC Platform construction and application | Journal | Theoretical research | Cultivation of information literacy with the help of MOOC platform |
| 36 | 2022 | Sun | MOOC Platform construction and application | Thesis | Theoretical research | Research on MOOC user needs based on text mining |
| 37 | 2021 | Gu, Fan, Zhou, Zhu, Wu, & Qian | MOOC Platform construction and application | Journal | practical research | Construction and application of provincial MOOC in biology |
| 38 | 2021 | Gao | MOOC Platform construction and application | Thesis | practical research | Construction and application of provincial MOOC in Sports |
| 39 | 2021 | Wang | MOOC Platform construction and application | Journal | practical research | Research on the SPOC hybrid teaching model of English-Chinese translation using MOOC platform courses |
| 40 | 2020 | Liao | Combine MOOCs with specific professional courses | Journal | practical research | teaching of political courses using MOOC |
| 41 | 2020 | Xia | Research on the application of the combination of MOOC platform and quality courses | Journal | practical research | teaching of computer courses using MOOC |
| 42 | 2019 | Zhang Gao, Lu, & Zhang | Research on the application of the combination of MOOC platform and quality courses | Journal | practical research | Construction and teaching of Packaging Machinery courses using MOOC |

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|----|--------------------------------------|------|---|---------|-------------------------|---|
| 43 | Ji, Luo, & Xiang, Yang. | 2020 | Research on the application of the combination of MOOC platform and quality courses | Journal | practical research | Using MOOC platform to conduct SPOC-based online flipped classroom teaching of physiology |
| 44 | Wang | 2020 | MOOC Platform construction and application | Thesis | practical research | Design and Practice of Dance Cheerleading MOOC |
| 45 | Wang, Zhao, & Yu | 2019 | MOOC Platform construction and application | Journal | practical research | Quality courses-Sports construction and application |
| 46 | Sun | 2022 | Quality course construction and application | Journal | practical research | Research on using quality courses for blended learning of Teaching Chinese as a Foreign Language |
| 47 | Liu | 2022 | MOOC Platform construction and application | Thesis | Theoretical research | Combine MOOCs with Physics courses |
| 48 | Xu | 2022 | Combine MOOC and quality courses | Thesis | practical research | Quality courses on MOOC Platform construction and application |
| 49 | Zhao, Zhang, Han, Cui, & Wu | 2022 | Quality course construction and application | Journal | practical research | Construction and application of Digital Electronic Technology courses |
| 50 | Zhang, & Han | 2020 | Quality course construction and application | Journal | practical research | Quality courses construction and application |
| 51 | Miao | 2020 | Quality course construction and application | Journal | practical research | Blending learning with MOOCs and quality courses |
| 52 | Wu | 2020 | Analysis to MOOC | Thesis | Theoretical research | Characteristics of Online Course Based on the MOOC Platform |
| 53 | Sun | 2020 | Quality courses construction and application | Journal | practical research | Quality courses-Basic Accounting construction and application |

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|----|------------|------|---|---------|----------------------|---|
| 54 | Zhang | 2019 | Students' performance with MOOC | Thesis | Theoretical research | Students' Learning Attitude and Academic Performance in MOOCs |
| 55 | He, & Xiao | 2019 | Quality course construction and application | Journal | practical research | Quality courses-Physics construction and application |
