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INTEGRATING DIGITAL WELL-BEING INTO MOOCS: A TEN-YEAR REVIEW OF TRENDS IN CHINA'S HIGHER EDUCATION

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Abstract: Digital well-being serves as a crucial indicator of the quality and effectiveness of education across countries worldwide. In this context, the rising prominence of Massive Open Online Courses (MOOC) within China's higher education sector warrants further investigation; however, there is a paucity of studies examining how digital well-being contributes to the evolution of MOOC, with limited empirical support available. To address this gap, this study employs literature retrieval and analysis methods, selecting 20 journal articles to offer a comprehensive perspective on the development of MOOC in Chinese higher education. It elucidates background characteristics, developmental trends, theoretical frameworks, and the role of digital well-being in facilitating future advancements in MOOC to resolve value-related challenges encountered during their development process. The findings indicate that the progression of MOOC aligns with digital well-being requirements, suggesting that integration with big data and intelligent systems represents an emerging trend. This synthesis provides novel insights into leveraging digital well-being to enhance MOOC implementation within educational settings in China.

Keywords: Digital well-being, MOOC, higher education in China, educational technology trends.

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1. INTRODUCTION

Digital well-being is a multifaceted concept that assesses the impact of digital technologies on the physical, mental, emotional, and spiritual health of individuals within society [1]. This concept is categorised into three levels: goal, recognition and understanding, and mastery and control. The goal level focuses on achieving digital well-being by fostering a balanced and harmonious relationship between technology and health. The recognition and understanding level involves acknowledging digital engagement's positive and negative impacts. Lastly, the mastery and control level entails the effective management of factors influencing digital well-being [2]. As a significant aspect of the Digital Intelligence Quotient (DQ), digital well-being integrates elements such as digital citizenship, creativity, and competitiveness, which collectively enhance its development [3].

Although there is a global consensus on the importance of digital well-being, its research and application in China are relatively nascent. However, the gradual progression of digital well-being research in China and its expanding application—particularly in the realm of higher education—signal new developmental directions and perspectives. MOOC (Massive Open Online Courses), which originated in the 1960s, epitomize this shift. They promote network interconnectivity via computers, creating a vast, global platform for information sharing. The formal introduction of MOOC into China's higher education system began in 2013 when Peking University and Tsinghua University joined the edX platform. This move marked the commencement of structured MOOC development within Chinese higher education. Since then, Chinese universities have been actively developing free online courses, contributing significantly to the reform of China's higher education landscape. Table 1 provides a detailed enumeration of the number and types of courses offered by platforms such as Xuetong, Chinese University MOOC, and Good University Online. These platforms present a wide range of courses covering subjects from technology to humanities, with offerings varying from a few thousand to nearly twenty thousand courses, showcasing the extensive capability of MOOC to provide diverse learning resources.

MOOC have significantly influenced the landscape of higher education in China over the past decade, yielding impressive developmental outcomes. With digital technologies rapidly evolving, MOOC represent a transformative educational model that not only revises traditional pedagogical approaches but also facilitates the pursuit of digital well-being, impacting it at multiple levels. However, the digital divide remains a significant challenge, particularly for vulnerable student populations. As Norman et al. [4] have highlighted, the COVID-19 pandemic exacerbated these inequities, underscoring the need for more inclusive digital education strategies that ensure all students can benefit from advancements like MOOCs. This aligns with the broader objective of digital well-being in fostering equitable access to educational resources, as MOOC continue to expand their reach in Chinese higher education. Initially, at the goal level, MOOC transcend the confines of traditional classroom settings, enabling students to acquire knowledge and foster self-management and motivation within a digital framework. This shift helps cultivate healthy digital habits. All platforms support access via mobile devices, such as the interactive communities provided by Wisdom Tree and Xuetong Online, which not only facilitate anytime learning but also enhance interactivity. For instance, as detailed in Table 1, most platforms feature online forums and Q&A areas, enabling students to resolve queries in real time, thereby enriching the learning

experience. Furthermore, at the recognition and understanding level, MOOC learners engage with cutting-edge academic and industrial developments, enriching their learning experience through dynamic interactions and diverse viewpoints in online discussions and assessments.

Table 1: China MOOC Platform

Project	MOOC Website	Chinese University MOOC	Good University Online	Wisdom Tree	Xuetong	Xuetang Online
Time	2013-	2014-	2014-	2014-	2016-	2013-
Number of popular courses	1,216,537	180,642	8,016	108,638	288,738	1,443,421
Course types	3,000	15,000	3,172	3,223	19,000	7,738
Mobile platform	Supported	Supported	Supported	Supported	Supported	Supported
How to answer questions	Forums, online Q&A	Online forums	Flipped classroom, online Q&A	Forums, technology salons	Forums, online Q&A	Class comments, online Q&A
Charging method	Part free	Part free	Free	Part free	Part free	Part free
Whether to support the school cooperation	Not Supported	Supported	Supported	Supported	Supported	Supported
Whether to support the in-class course evaluation	Not Supported	Supported	Supported	Supported	Supported	Supported

Moreover, at the mastery and control level, MOOC empower students to select courses autonomously and adjust their learning pace, thereby enhancing their overall command of the educational process. The deep integration and broad application of digital well-being within MOOC have revealed distinctive mechanisms and pathways that enhance higher education in China. According to the data in Table 1, many platforms support collaborations with educational institutions and provide in-class assessments. This support helps integrate online courses more effectively into the traditional educational system, expanding the reach of educational resources and enhancing the quality and adaptability of educational outcomes.

Although, in theory, MOOC are pivotal in advancing digital well-being within Chinese higher education, reciprocally stimulating further MOOC development through the lens of digital well-being. However, the theoretical outcomes presented still require empirical validation, particularly concerning the effectiveness of MOOC and digital well-being in practice. However, at present, there are few studies on the relationship between digital well-being and MOOC, and there is still a lack of clear research on how to use digital well-being to promote the development of MOOC. In the previous studies on MOOC education, most of them analyzed the courses in a single platform or a specific field. Although the characteristics and advantages of a specific field or platform can be

deeply explored, the overall diversity and wide influence of MOOC education are often ignored. In order to understand the development of MOOC platforms in China more comprehensively and systematically, this study uses literature search and analysis to select 20 journal articles to provide a comprehensive perspective on the development of MOOC in higher education in China. And identifies a crucial research gap, proposing an exploration into the future trajectory of MOOCs in Chinese higher education from the perspective of digital well-being. This exploration aims to offer a comprehensive view and actionable insights for educational reform. Thus, the study is structured around the following research questions:

RQ1: What are the characteristics of the existing literature on MOOC teaching and development in Chinese higher education?

RQ2: What are the development trends of MOOC in Chinese higher education, as influenced by digital well-being?

RQ3: What theoretical frameworks support the role of digital well-being in enhancing MOOC in Chinese higher education?

RQ4: What research methodologies are employed to investigate the developmental pathways of MOOC in this context?

RQ5: What opportunities exist to foster MOOC development in Chinese higher education through digital well-being?

2. RELATED WORKS

Previous systematic studies have broadly examined the implications of digital well-being within higher education and MOOC teaching in China, reflecting a diverse range of perspectives. Despite numerous investigations into MOOC, their integration with digital well-being concepts remains underdeveloped. Notably, Scott [5] analyzed digital well-being using JISC guidelines from the UK and Vietnam, outlining future research directions in university education systems. The JISC report underscores both the positive and negative impacts of digital well-being, acknowledging existing challenges in higher education but noting a gap in case studies addressing stakeholder-specific digital well-being issues. Current research fails to differentiate among students' educational backgrounds and levels, suggesting a distinct need for targeted studies on the educational impacts of digital well-being.

Regarding positive effects, digital well-being is viewed as a pathway to personal growth, fostering a new generation of designers and practitioners focused on digital health and societal benefits. Educational interventions are shown to enhance students' digital well-being and inspire technological innovations for social good [6]. Similar findings highlight the role of digital education in unlocking the potential of digital transformation among older adults through tools like e-mail, e-government, and e-commerce [7]. Conversely, Steinar [8] presents the challenges young adults face with digital engagement, including addiction and intergenerational conflicts over technology usage, illustrating the dual nature of digital connectivity as both liberating and potentially enslaving.

Therefore, digital well-being can significantly contribute to educational equity and efficiency. Implementing well-designed educational programs can mitigate adverse effects such as digital dependency, thereby enhancing educational development. MOOCs, as innovative educational models, are instrumental in advancing students' digital literacy, encompassing not just basic IT skills but also the capacity to evaluate, apply, and

innovate information. MOOCs enhance the flexibility and accessibility of education, providing extensive online resources and interactive platforms that allow learning anytime, anywhere [9]. Despite traditional approaches falling short, the last decade has seen MOOC drive substantial changes in higher education, promoting learning societies, digital transformation, and international collaboration on educational resources [10]. At present, the relationship between digital well-being and the development of MOOC in China's higher education system has not been directly studied though. However, the above research shows that digital well-being provides a new goal and orientation for the development of MOOC in Chinese higher education, and broadens the connotation of MOOC development.

China's leading MOOC platforms, such as Xuetong, and China University MOOC, exemplify advancements in platform presentation, resource design, and user interaction, meeting diverse learner needs effectively [11]. However, challenges persist, including course quality variability, low student engagement, and inadequate support mechanisms [12]. Addressing these issues requires a more scientific and sustainable development approach, emphasizing the harmonious integration of technology and user-friendly design in MOOC platforms. This study aims to extend the investigation scope to gain a deeper, more comprehensive understanding of how digital well-being can drive the evolution of MOOC in Chinese higher education, as reflected in the guiding research questions of this study.

3. METHODS

This study adhered to the PRISMA 2020 guidelines [13] to methodically search, identify, select, analyze, and synthesize relevant literature, described transparently below.

3.1. Search Keywords and Sources

A systematic keyword search strategy was implemented to comprehensively gather articles relevant to the study themes. The searches were refined by concentrating on subject-specific terms found in titles, abstracts, authorship, and keywords. Key terms included 'digital well-being*', 'digital intelligence', 'digital technology', 'digital experience', and variations of 'MOOC*' such as 'MOOC teaching', 'MOOC development', and 'MOOC policy'. This methodology ensured the inclusion of literature addressing policy development, construction, and pedagogical reforms related to MOOCs within the context of higher education in China. The primary data sources utilized were Web of Science (WOS) and Scopus, both recognized for their academic rigor and extensive multidisciplinary coverage. The searches yielded 225 articles from WOS and 321 articles from Scopus, which were subsequently subjected to rigorous scrutiny based on defined inclusion and exclusion criteria.

3.2. Inclusion and Exclusion Criteria

Seven pairs of criteria were established to ensure the selection of literature directly pertinent to the research questions. These criteria were particularly stringent due to the limited number of studies focusing on digital well-being and MOOC within Chinese higher education. To contextualize the findings, studies exploring the interplay between digital well-being and MOOC in global higher education contexts were also incorporated. The inclusion criteria are as follows:

1) Articles published between 2014 and June 30, 2024.
2) Articles written in English.
3) Publications in peer-reviewed journals or books.
4) Studies that included a complete empirical investigation.
5) Research focusing on general practices in MOOC or digital well-being within Chinese higher education.
6) Studies integrating MOOC into general educational practices in China.
7) Works emphasizing innovation and enhancement in MOOC development within Chinese higher education.

Articles not meeting these criteria were excluded. Following the PRISMA guidelines, articles were meticulously reviewed for relevance to the topic and title, thoroughly reading their content. A total of 20 articles met the stringent criteria and were included for detailed analysis, designated as S1 to S20. The screening and selection process is illustrated in Figure 1.

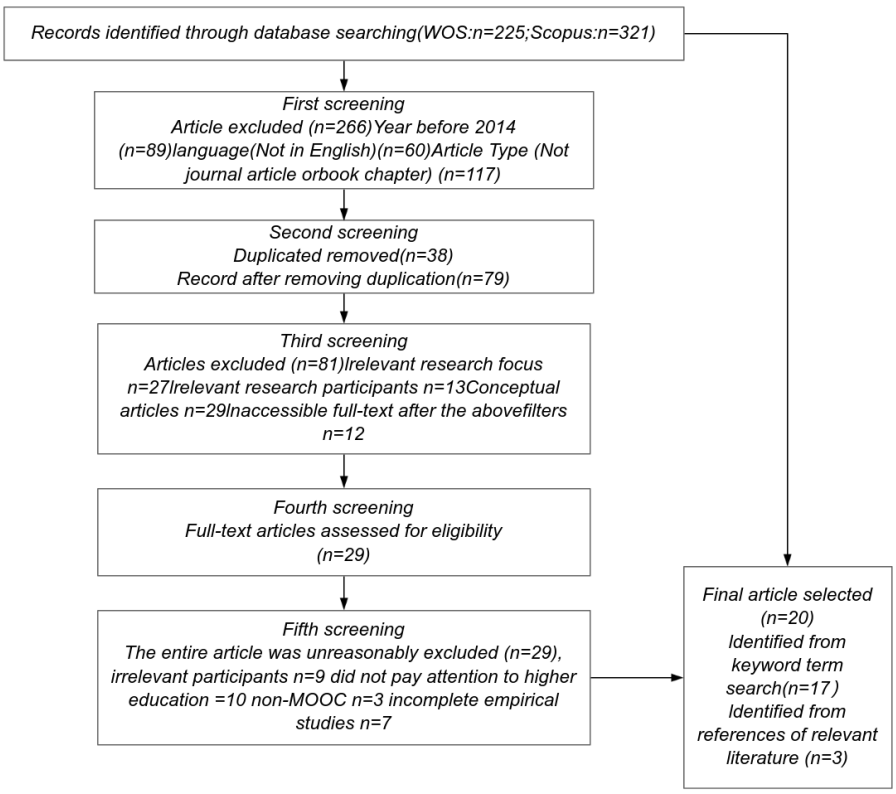

Figure 1: Data coding and analysis

Figure 1 shows the process of article exclusion. The first screening excluded literature before 2014, non-English language, and all literature published in peer-reviewed journals or books; Duplicate articles were removed in the second screening. Studies that did not contain complete empirical investigations were removed in the third screening; In the

fourth screening, the full-text articles for inclusion criteria were obtained. In the fifth screening, articles that were irrelevant participants, did not pay attention to higher education, and were not MOOC participants were deleted, and 20 articles were finally obtained.

This study utilized content analysis to classify, count, and analyze the literature pertinent to the five research questions previously outlined. Table 2 provides an overview of the selected articles. Initially, context features (RQ1) were addressed. Due to the limited number of studies directly focusing on digital well-being and MOOC in China's higher education, the literature was categorized into two segments: MOOC and digital well-being within the same context. The development background of MOOC in Chinese higher education was delineated based on the specific national and educational environmental contexts.

For MOOC characteristics (RQ2), coding was applied across various dimensions based on the observed trends in the development of MOOCs within Chinese higher education. To address the challenges presented in RQ3 and RQ4, the theoretical frameworks and methodologies of each reviewed article were consolidated. This included the recording of data collection methods, intervention measures, and data analysis techniques to enable a comprehensive evaluation of the similarities across the articles and the identification of strengths and weaknesses in their respective research approaches.

Concerning RQ5, the outcomes indicating how digital well-being has influenced MOOC development in higher education were coded. This process involved summarizing and categorizing the various promotional methods and new findings related to this area of inquiry.

Table 2: Overview of the Selected Articles

	Selected	Level	Method	Content and Process
S1	Zhu & Yan [14]	Higher education	Case	Explain the importance and the content guarantees of the MOOC mixed teaching mode.
S2	Liu et al. [15]	Higher education	Investigation	Investigate the administrators and teachers of 50 universities in China and analyze the problems existing in the development and operation of MOOCs.
S3	Li [16]	Higher education	Literature	Using papers published in the CSSCI and SCI databases from 1994 to 2018 as data sources, common word analysis and social network analysis were employed to construct a visual network map of Chinese MOOCs research to describe the dynamics of this field.
S4	Huang & Chen [17]	Higher education	Literature	A SWOT analysis of the conditions of MOOCs in China.
S5	Zheng [18]	Higher education	Theoretical	Comparing the development of MOOCs at home and abroad reveals the problems existing in English teaching in Chinese universities.
S6	Gao et al. [19]	Higher education	Literature	The PubMed, Embase, Web of Knowledge, and CNKI databases were searched until March 3, 2020, for a meta-analysis.

Table 2: Overview of the Selected Articles (cont.)

	Selected	Level	Method	Content and Process
S7	Tong & Li [20]	Higher education	Investigation	Using the big data method, the agent model of MOOC demand was built using OECD's Google Trends and China's Baidu Index.
S8	Xiong et al. [21]	Higher education	Investigation	A questionnaire survey on the timely development of online education in China and the international development of university MOOCs.
S9	Liu et al. [22]	Higher education	Theoretical	A learner-centered teaching concept, based on the existing LTSA model, to build a new interactive agent and knowledge agent platform.
S10	Yousef et al. [23]	Higher education	Experimental	Experiments were conducted using the design of the 'teaching method' bMOOC course offered by the L2P-bMOOC platform.
S11	Billsberry & Alony [24]	Higher education	Literature	A bibliometric approach was used to reveal the topics of the MOOC research and discover the key courses.
S12	Liu et al. [25]	Higher education	Experimental	An automated configuration method with integrated transformer bidirectional encoder characterization (BERT) and fuzzy set qualitative comparative analysis (fsQCA) were used.
S13	Ramírez Luelmo et al. [26]	Not clear	Experimental research	Paired results from the EduFlow-2 and Flow-Q measurement tools were distributed to MOOC participants (n = 1589, over 2 years of data collection).
S14	Tian et al. [27]	Not clear	Theoretical	The recommended MOOC self-supervised pre-training model (SSM4MR: Self-Supervised pre-training model for MOOC Recommendation).
S15	Farahnaz et al. [28]	Higher education	Investigation	A questionnaire survey and field survey to explore the relationship between students' curriculum activities and learning progress
S16	Zhang & Wang [29]	Higher education	Experimental research	By comparing experiments, this study identifies abnormal behavior in MOOC online English learning based on multidimensional data mining.
S17	Tong & Zhan [30]	Higher education	Investigation	A questionnaire survey, based on MLR method, MLP method and CART method.
S18	Gong [31]	Higher education	Investigation	A questionnaire survey, and the statistical analysis of the effects of medical MOOC teaching.
S19	Ding [32]	Higher education	Investigation	A questionnaire survey of teachers and students.
S20	Chen & Yan [33]	Higher education	Case	A distributed flip MPOC mode is proposed.

4. RESULTS AND DISCUSSION

4.1. Contextual Features

As detailed in Table 2, the existing literature discusses multiple aspects of MOOC in higher education, covering multiple dimensions such as design, operation, development conditions, teaching effect, and technology and application. These studies used different methods, including case studies (2 studies), survey studies (7 studies), literature studies (4 studies), experimental studies (4 studies) and theoretical studies (3 studies). Survey studies accounted for the largest proportion, reaching 35%, which provided us with rich insights and data support. However, there is a lack of case and theoretical research on MOOC, accounting for 10% and 15% respectively.

In design and implementation, Zhu and Yan [14] highlight the significance of the hybrid MOOC teaching model and its foundational content, offering a vital reference for educators developing new teaching strategies. Liu et al. (2019) identified practical challenges faced by universities in deploying MOOC through extensive research. Chen and Yan [33] introduced the distributed flipped MPOC model, presenting an innovative approach to MOOC instruction that underscores the potential synergy between flipped classrooms and MOOC.

Regarding the conditions for development and the current state, Huang and Chen [17] utilized SWOT analysis to thoroughly evaluate the prerequisites for MOOC development in Chinese higher education, providing a scientific framework for enhancing the MOOC environment. Zheng [18] conducted a comparative study that not only shed light on the differences and similarities in MOOC development between domestic and international contexts but also pinpointed specific challenges in college English teaching in China, thus informing educational reforms. Gao et al. [19] focused on the application of MOOC in medical education through a meta-analysis that lent empirical support to their effective implementation.

In technology and application, Tong and Li [20] developed a proxy model for MOOC demand using big data techniques, demonstrating the capabilities of big data in predicting MOOC trends. Liu et al. [22] proposed a learner-centred teaching concept integrated with the LTSA model, offering fresh perspectives on MOOC platform design. As explored by Ramirez Luelmo Sergio Ivan et al. [26], the ongoing technological advancements are progressively incorporating automated configurations and machine learning into MOOC research to enhance teaching quality and learning outcomes.

Concerning learning effects and behavior, Farahnaz et al. [28] investigated the relationship between students' course activities and their academic progress, utilizing surveys and field studies to gather critical data on student behaviors. Zhang and Wang [29] explored the identification of abnormal behaviors in online English learning through MOOCs using multidimensional data mining. This method aids in the timely detection and correction of such behaviors. Similarly, Tong and Zhan [30] and Gong [31] evaluated MOOC learning performance and the educational impact of medical MOOC, respectively, providing a solid empirical basis for improving MOOC instruction.

4.2. Development Trend of MOOC

The trajectory of MOOC development within China's higher education sector reflects several key trends: firstly, the integration of big data and artificial intelligence technologies promises to enhance the intelligence of MOOC platforms, equipping them

to offer more personalized learning resources and recommendations. For instance, Tian et al. [27] devised a knowledge-based recommendation strategy using a self-supervised pre-training model (SSM4MR) to boost learning efficiency and satisfaction. Secondly, the adoption of blended teaching models is gaining traction as educators recognize the value of integrating online and offline learning environments, as documented by Zhu and Yan [14]. Thirdly, the innovative combination of flipped classrooms and MOOC, as proposed by Chen and Yan [33], allows students to engage independently with online materials before participating in more intensive, in-class discussions and activities, thereby enriching the learning experience. Lastly, an emphasis on understanding and improving learning behaviors through empirical research, as demonstrated by Farahnaz et al. [28] and Zhang and Wang [29], ensures that educational interventions are timely and effective, fostering the overall development of learners.

These evolving trends signify a dynamic progression towards more integrated, intelligent, and learner-focused MOOC environments in higher education, promising to deliver richer and more effective learning experiences (Table 3).

Table 3: Main Views on the Development Trend of MOOC in Higher Education in China

Literature Sources	MOOC Development Trends
Tian et al. [27]	Big data and intelligence
Zhu & Yan [14]	The wide application of blended teaching model
Chen & Yan [33]	The combination of flipped classroom and MOOC
Farahnaz et al. [28]; Zhang & Wang [29]	Focus on learning outcomes and behavior

4.3. Theoretical Perspective

This review assesses the advancements of MOOC within Chinese higher education through the lens of digital well-being. It is evident from the analysis that the predominant focus across the evaluated articles is on learner-centric approaches, with many studies endeavoring to develop innovative MOOC models to enhance learning outcomes. For instance, Tian et al. [27] introduced a self-supervised pre-training model (SSM4MR) for MOOC, which leverages big data and machine learning technologies to offer personalized course recommendations, thereby elevating both learning efficiency and student satisfaction. Additionally, Ding [32] concentrated on the dynamics between teachers and students within MOOC environments, employing surveys to unearth both parties' needs and challenges, which serves as a critical resource for refining educational strategies.

In the realm of theoretical contributions, the distributed flipped MPOC model proposed by Chen & Yan [33] underscores the potential synergy between flipped classrooms and MOOC, suggesting innovative directions for MOOC pedagogy. Technologically, the research by Ramirez Luelmo Sergio Ivan et al. [26] exemplifies the application of automated configuration methods and machine learning in enhancing the quality of MOOC teaching and learning outcomes. The adoption of such advanced technologies enables MOOC platforms to more effectively meet learners' needs and provide tailored educational experiences.

In summary, the trajectory of MOOC development in Chinese higher education predominantly reflects the construction of learner-centered models, ongoing

technological advancements, and enhanced interactions between educators and students. Future research should persist in concentrating on these domains to further propel the progress of MOOC in the higher education sector. Additionally, it is imperative for scholars to consider the varied individual differences among learners, the capabilities of educators, and the adaptability of students to ensure that MOOC comprehensively cater to a broad learner base.

4.4. Methodological Perspectives

The methodologies employed in the reviewed articles encompass five primary areas: literature review, case study, survey research, theoretical research, and experimental research, as illustrated in Figure 2. Literature reviews are fundamental, focusing on the organization and analysis of existing scholarly works to establish a theoretical foundation and contextual background for further research. For instance, Huang and Chen [17] utilized SWOT analysis to thoroughly examine the developmental conditions for MOOC in Chinese higher education, thereby providing a robust framework for evaluating and enhancing the MOOC environment.

Case studies offer insights into the real-world application of MOOC, uncovering both benefits and obstacles through detailed examination of specific instances. Liu et al. [15] conducted an extensive analysis that uncovered significant operational challenges faced by universities implementing MOOC, offering valuable recommendations for both policymakers and practitioners.

Survey research, with questionnaires and interviews, gathers data on the perceptions, attitudes, and behaviors of various stakeholders, including learners, educators, and institutional bodies. A notable study by Farahnaz et al. [28] investigated the connection between student activities and their academic progression using surveys and field studies, yielding crucial insights into student engagement patterns.

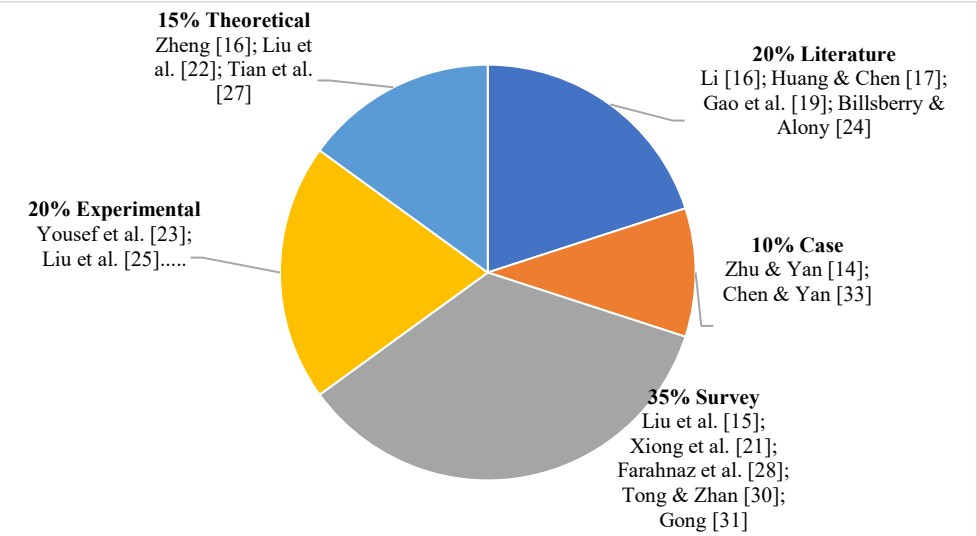

Figure 2: Trends in the application of research methods - Results of literature review

Theoretical research is directed towards the formulation and validation of conceptual models that support the advancement of MOOC. The distributed flipped MPOC model introduced by Chen and Yan [33] exemplifies this approach, suggesting a synergistic integration of flipped classrooms with MOOC that could revolutionize teaching methodologies within this domain.

Lastly, experimental research rigorously tests the efficacy of specific hypotheses or models by manipulating and controlling relevant variables. Gao et al. [19] performed a meta-analysis on the effectiveness of MOOC in the context of medical education in China, providing empirical evidence that substantiates the utility of MOOC in enhancing medical training and education.

4.5. The Possibility of Digital Well-being to Promote the Development of MOOC in Chinese Higher Education

Digital well-being is a pivotal concept emphasizing the physical and mental health of individuals within digital environments. By utilizing big data analytics to examine students' learning behaviors and preferences, MOOC platforms can tailor recommendations for learning resources and appropriately challenging content. Such targeted interventions not only alleviate learning anxiety but also enhance student satisfaction, thereby fostering a learning environment conducive to increased motivation and higher course completion rates.

Moreover, MOOC platforms facilitate collaborative learning and experience sharing through the establishment of online discussion forums, learning communities, and interactive sessions with tutors. These features not only promote knowledge exchange and innovation but also significantly enrich the educational resources and teaching effectiveness of MOOC.

Additionally, MOOCs offer diverse educational resources and a flexible schedule, empowering students to design their learning trajectories, set personal educational goals, and adapt their learning strategies through ongoing self-assessment and reflection. This enhanced autonomy and control support the development of self-management capabilities and foster independent learning skills among students in digital settings.

Finally, the strategic enhancement of MOOC platform infrastructure and the rigorous management of course quality substantially advance educational equity. Advanced analytical tools, such as big data, enable precise assessments of student engagement and learning outcomes, providing educators and policymakers with data-driven insights that support informed decisions aimed at elevating the overall quality of education.

5. THE POSSIBLE RECOMMENDATION SCHEMES

In the current trend of higher education in China, the potential for integrating digital well-being into MOOC becomes increasingly evident. To fully understand and leverage this potential, the possible recommendation schemes enabling problem solving in Trends in China's Higher Education as follows:

5.1. Technology-Driven Personalized Learning

The application of artificial intelligence (AI) and big data technology in personalized learning shows great promise. Future research should explore how these technologies can

be used to analyze students' learning behaviors and needs, dynamically adjusting course content and learning pathways to better meet the diverse needs of learners. For instance, AI could use natural language processing (NLP) to understand students' emotional states and provide timely feedback and personalized learning recommendations. Moreover, big data analysis can help predict potential challenges that learners might face and design appropriate interventions to improve learning outcomes and enhance digital well-being.

5.2. Integration and Application of Emerging Technologies

The application of emerging technologies such as virtual reality (VR), augmented reality (AR), and blockchain in education is rapidly expanding. Future research should investigate how these technologies can be integrated into MOOC platforms to enhance immersion and interactivity in learning, while also ensuring the security and transparency of learning data. The integration of these technologies will help improve the educational effectiveness of MOOC, increase student engagement, and enhance the overall digital well-being experience.

5.3. Cross-Cultural Research and Educational Equity

Given the impact of cultural background on digital well-being, future research should extend to cross-cultural comparisons to explore the adaptability of MOOC platforms across different cultural contexts. By comparing educational practices in various regions, researchers can provide valuable insights for the global design of MOOC. Additionally, research should focus on how improving digital well-being can promote educational equity, particularly in applications for disadvantaged groups, with the aim of narrowing educational gaps and advancing overall social development.

6. CONCLUSION

This study conducted a systematic review of 20 academic articles, deeply analyzing the development of MOOC in Chinese higher education over the past decade, particularly through the lens of digital well-being. The findings suggest that digital well-being is not only a crucial indicator for evaluating educational quality but also a key driver in the development of MOOC. With the rapid advancement of information technology, MOOC have significantly enriched course content and teaching methods, while also demonstrating great potential in supporting the overall health and well-being of learners.

The integration of digital well-being into MOOC has brought about multiple levels of innovation in the field of education. First, through the application of big data analysis and intelligent systems, MOOC platforms can achieve a high degree of personalized learning experiences, providing tailored educational resources for learners from diverse backgrounds. This personalized learning pathway not only improves learning outcomes but also effectively reduces frustration during the learning process, thereby further enhancing learners' digital well-being.

Second, the potential of MOOC to promote educational equity is also noteworthy. By offering extensive online courses and flexible learning modes, MOOC provide equal educational opportunities to students worldwide, particularly in resource-limited regions. The integration of digital well-being ensures that these educational opportunities are not merely equal in form but substantively support and enhance the comprehensive development of learners.

However, the study also highlights some limitations in the existing research. While the theoretical framework offers robust support for the development of MOOC, the practical impact of digital well-being on learning outcomes and mental health requires further empirical validation. Future research should prioritize the design of more rigorous longitudinal studies to systematically track changes in students' learning processes over time and assess the effectiveness of various interventions. Furthermore, as technology continues to advance, MOOC platforms must be consistently updated and optimized to address the increasingly diverse needs of learners. This entails integrating innovative teaching technologies such as virtual reality (VR) and augmented reality (AR) to foster more immersive learning environments, alongside leveraging blockchain technology to ensure the security and transparency of educational data, thereby enhancing students' trust in online education. Education policymakers and practitioners should acknowledge the significance of digital well-being and incorporate it into curriculum design and pedagogical strategies to elevate the overall quality of higher education. By broadly implementing the concept of digital well-being within MOOC, a more inclusive, equitable, and effective educational future can be anticipated.

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