

Development of distance education in Chinese higher education in perspectives of accessibility, quality and equity under COVID-19

Development
of DE in
Chinese higher
education

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Abstract

Purpose – This paper aimed to explore the development of distance education (DE) in Chinese higher education as well as the three significant themes: accessibility, quality and equity in Chinese DE and the performance of these three themes in Chinese DE.

Design/methodology/approach – Document analysis was used as the major research method in this study to examine the development and challenges in terms of accessibility, quality and equity in Chinese DE. In this study, national-level official policy documents and reports from the Chinese government were collected and analyzed. Also, scientific articles from CNKI were analyzed to find out the evolution of the Frontier topics on Chinese DE in accessibility, quality and equity.

Findings – There are three major findings. First, the Chinese government has shown its positive attitude toward DE in higher education. Second, compared with the other two themes: quality and equity; the number of articles in the accessibility of DE was lower than the other two themes and the problems of accessing online courses were insufficiently caused by two reasons due to lack of basic ICT literacy and poor Internet infrastructure. Third, there was a gap between Chinese policies and research articles mainly because of the unbalanced development of accessibility in policy management and research articles.

Research limitations/implications – Although this paper has summarized the development of the DE in Chinese higher education, it was clear that accessibility, quality and equity were three critical issues in DE. However, there are still other essential factors that contribute to the development of DE that requires further investigation, such as learner satisfaction, different features of learning platforms and instructional strategy.

Practical implications – The findings of this paper can be used to identify the attitude toward the DE of the Chinese government. Besides, the accessibility could be a research and practical focus for Chinese DE in the future.

Originality/value – This study showed some significant policies released by the Chinese government toward DE in higher education and revealed the achievements, trends and challenges in the accessibility, quality and equity of Chinese DE.

Keywords Chinese higher education, Distance education, Accessibility, Quality, Equity

Paper type Research paper



Introduction

According to UNESCO (2020a), 72% of the world's student population is impacted by school closures due to the COVID-19 outbreak. Governments around the world have closed educational institutions in an attempt to combat the global pandemic. Suddenly, online

learning mode via distance education gains popularity worldwide. Higher education is a field that cannot be ignored under this health crisis. Many higher education institutions might regard this health crisis as an opportunity to test online pedagogy. For example, Harvard University offers several online teaching platforms and norms as options for teachers and students, including real-time video teaching, MOOCs.

Distance education (DE) is not new with several phases of development over the decades due to advanced technology. In general, DE had undergone the stages of television emergence in the 1950s and 1960s, computer-based instruction in the 1970s and 1980s, multimedia (1980s and 1990s) and teleconferencing (1990s) (Bernard *et al.*, 2004).

Traditionally, DE used to be treated as a supplement of classroom learning. Sun *et al.* (2008) indicated that DE used telecommunication technology to provide information for education and training. With the development of information and communication technology, DE is regarded as a new paradigm of modern education. Under the global pandemic 2020, distance learning turned out to be the mainstream method in education. Yet, many experts raised their concerns about DE. For example, Zhong *et al.* (2020) challenged if online education is sustainable; if it is parallel to normal school teaching; if it would fundamentally change the nature of school teaching; and if online teaching would vanish after the pandemic.

On February 1978, the radio and television university was formally established, which kicked off the modernization of DE in China (Zhang, 2019). Following global development of DE, at the end of the last century, Chinese DE has entered a new period: network DE, that is, so-called modern DE. After two stages of correspondence education and radio and television education, China carried out the exploration and practice to reform education with advanced information technology (Nan, 2005). On January 13, 1999, the State Council approved “The Action Plan of Education Revitalization for the twenty-first Century” formulated by the Ministry of Education (MOE). It not only proposed to implement the modern distance education project but also construct a lifelong learning system as one of the key tasks of the action plan of education revitalization (Chen *et al.*, 2016).

Chinese higher education did not apply the Internet to provide DE until 1999. Pressured by an increasing number of students and geographic dispersion, DE had great potential development in Chinese higher education. Indeed, much progress in DE has been made by Chinese higher education (Li, 2009). In 2020, as the “epicenters” of the COVID-19 outbreak, 1,454 colleges and universities nationwide immediately launched online teaching, with 1.03 million teachers offering 1.07 million courses online. 12.26 millions of college students, or 2.3 billion of people, had taken part in the online learning process for a total of 17.75 million times (Xinhua, 2020). Nowadays, students in China are returning to school, but it is very interesting to explore if China’s DE will replace the traditional teaching mode after Covid-19?

Therefore, this paper aimed to rethink whether the traditional face-to-face educational paradigm will be replaced by DE in Chinese higher education, by an examination of the nature and characteristics of DE in terms of accessibility, quality and equity. After the health crisis, if DE would become something of a wishing well, filled with hopes for Chinese higher education would be explored. Based on the above, the research questions are addressed as follows:

- (1) How was DE developed and challenged Chinese higher education?
- (2) How were the three themes: accessibility, quality and equity of DE performing in Chinese higher education?
- (3) How would DE be implicated in Chinese higher education after the COVID-19 health crisis?

Literature review

Theoretical framework – three themes of DE in higher education – the relevance among accessibility, quality and equity

Several significant themes in DE arouse the attention of researchers, such as satisfaction, motivation and engagement. Yet, three themes: accessibility, quality and equity have been discussed most by different studies. In particular, several developing countries, such as China, attempt to alleviate education problems of access, equity and quality throughout DE (UNESCO, 2002).

Accessibility identified as a necessary feature of DE (Townsend *et al.*, 2007) has different dimensions, and one of them is digital divide. Digital Divide, means “web accessibility”, which everyone in society, especially those disabled people, can have access to a website to use a product or service. Web accessibility allows access to the site so that all users can perceive, understand, navigate and interact with the site (Luján-Mora, 2013). Yet, accessibility can cause many challenges to DE. It is more complicated for those with low-level information and communication technology (ICT) literacy skills in web accessibility (Mamary and Charles, 2000). The instructors who lack IT literacy can exacerbate the digital divide problem between teachers and students (Geer, 2000). Also, cultural and gender factors can prevent a student’s success from DE. According to Breslow *et al.* (2013), they found that most reported 88% of the students were male in MIT’s first MOOCs course (Reich and Ruipérez-Valiente, 2019). People who lived in rural areas felt marginalized in accessing higher education, and a part of the students who feel disadvantaged in the on-site classroom also feel marginalized in the virtual classroom (Damarin, 1998; Marsden, 2000; Mates, 2000; Stoicheva, 2000). To resolve, students need to acquire basic computer skills before a DE course. Besides, students are required to equip competent in problem-solving in the DE courses (Clarke, 1999). Administrators and faculty members need to be trained and provided technical support to facilitate students’ accessibility in DE courses (Khan, 2000; Brown, 2000).

Secondly, the quality of DE is fundamental. Quality means different things to different stakeholders, such as learners, instructors, employers and society (Chaney *et al.*, 2009; Jung and Latchem, 2007; Mariasingam and Hanna, 2006) and it has been discussed for a long time, some efforts have been made by governments and universities to seek ways to offer quality online courses. Therefore, how to maintain the effectiveness of education, learning motivation and learning outcomes has become a significant issue of the quality of DE. Given the fact that DE is not limited by space, time and location, it indeed brings many benefits to the stakeholders, such as providing instructors with effective and convenient methods to achieve teaching goals (Sun *et al.*, 2008; Chen *et al.*, 2010; Junco *et al.*, 2010, 2013; Parsad and Lewis 2008). However, a study conducted by Harvard University found that it is much harder for a learner to pay attention to a screen rather than in a classroom (Harvard University, 2020). Reich *et al.* (2019) also pointed out that the low completion rate of DE, particularly MOOCs. In comparison, the DE students likely engaged less in team works, collaborative activities and interaction with instructors and other peer students than in a traditional face-to-face discourse (Dumford and Miller, 2018; Chaney *et al.*, 2010). During the COVID-19, universities should learn how to assure the quality of DE while campuses were closed. Much literature demonstrated Equity is one of the emerging issues in DE. The Sustainable Development Goals (SDGs) by UNESCO aims at ensuring an inclusive and equitable quality education as well as enhancing lifelong learning opportunities for all people (UNESCO, 2020b). Gale (2009) believed that DE should support the population with limited access to education, such as Open Educational Resource (OER) (Willems and Bossu, 2012). Throughout DE opportunities for education would be provided equitably worldwide (Robinson, 2008). Yet, there remain several challenges unsolved, such as not all OERs were open completely; not all learners can access the Internet and computer (McGill, 2010). Moreover, Bates and Bates (2005) noted that DE should also respond to the diverse needs of the students:

Learners are not a homogenous mass, but vary considerably in terms of educational background, income, age, and learning experience. This diversity of the student body is growing fast. It will become increasingly important for educational organizations to be able to deliver their teaching in a variety of technological formats, depending on the needs of the individual, the teaching context, and the target groups to be reached (p. 211).

To conclude, on one hand, accessibility, quality and equity have had significant influences on the development of DE respectively; on the other hand, there is a high level of relevance among the three themes of DE. It was found that accessibility is often regarded as the precondition of the quality and equity of DE, which would support DE to flourish. On the top, equity is the sustainable development goal of DE to continue its long-term development. Based on the relationship discussed, a conceptual framework of the study is presented in [Figure 1](#).

Research methods

Document analysis was used as the major research method in this study to examine the development and challenges in Chinese DE. Document analysis is a method for collecting and reviewing the contents of existing written documents related to research, so that, the research can facilitate impartial and consistent analysis of written documents rigorously and systematically ([Institute of Development Study, 2013](#)). Since the year 1999 was considered as the beginning of Chinese DE by many researchers, the time span of document analysis was limited to the period from 1999 to 2020 (as of July 10, 2020). Several key official policy documents and reports from the Chinese government were collected and analyzed for these national-level documents presented the development, changes and transformations of Chinese DE (see [Table 1](#)).

In addition, scientific articles from China National Knowledge Infrastructure (CNKI), a nationally built database, were selected and analyzed to perceive the evolution of the Frontier topics on Chinese DE in accessibility, quality and equity. Document type was determined as “journal articles”, and refined the retrieval keywords and eliminated irrelevant research areas. Eventually, there were 3,851 articles related to quality, 21 articles accessibility and 255 articles equity. This paper chose three highly cited articles as in each theme for content analysis (see [Table 2](#)). By comparing the data collected, the gap between Chinese policies and research articles in DE was examined and analyzed in terms of accessibility, quality and equity.

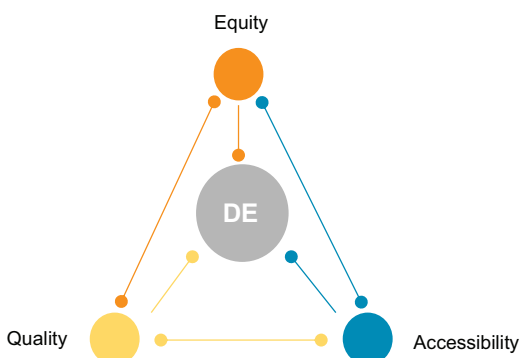


Figure 1.
The conceptual framework for relevance among accessibility, quality and equity in DE

Development
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| Year | National governmental policy documents |
|------|--|
| 1999 | 1. The Action Plan of Education Revitalization for the 21st Century |
| 2001 | 2. The Tenth Five-year Plan |
| 2006 | 3. The National Informatization Development Strategy from 2006 to 2020 |
| 2010 | 4. The Outline of the National Mid- and Long-Term Plan for Education Reform and Development (2010–2020) |
| 2016 | 5. The Outline for the National IT Application Development Strategy 6. The 13th Five-year National Informatization Plan |
| 2017 | 7. The 13th Five-year Plan for The Development of China's Education |
| 2018 | 8. The Action Plan of Education Informatization 2.0 |
| 2019 | 9. China's Modernization of Education 2,035 10. The Guidelines on Promoting the Healthy Development of Online Education |
| 2020 | 11. The Guidance on the Organization and Management of Online Education in Institutions of Higher Learning During the Epidemic Prevention and Control Period 12. The Norms for Digital Campuses in Vocational Colleges 13. The Comprehensive Reform Plan for Open Universities |

Table 1.
List of policy
documents collected

| Themes | The most influential articles |
|---------------|--|
| Quality | He (2011) . New progress in educational informationization theory research in China. <i>China Educational Technology</i> , Vol. 288 No. 1, pp. 1–19 |
| Accessibility | Sun and Qu (2007) . Design of accessibility in modern distance education for people with disabilities. <i>Chinese Journal of Special Education</i> , Vol. 88 No. 10, pp. 31–34 |
| Equity | Liu (2017) . “Live + education”: a new form of “Internet plus” learning and its value inquiry. <i>Journal of Distance Education</i> , Vol. 35 No. 1, pp. 52–59 |

Table 2.
List of research articles
collected (as of July
10, 2020)

Major findings

Chinese policies of DE development and challenges faced by reviewing the research productivity in DE

Establishing and improving national and local policies played a crucial role in the development and maturity of distance higher education. To guide and regulate the development of DE, the Chinese government has released several documents to support the development of DE in terms of three major phases.

Developmental and conceptual phase from 1999 to 2005. In early 1999, “*The Action Plan of Education Revitalization for the 21st Century*” was first issued by the State Council, which China pointed out that DE would play an active role with various educational resources to support educational institutions in the rural areas nationwide. Also, the modern distance education project could not only build a lifelong learning community but also constantly strengthen the quality of digital education (MOE, 1998). In 2001, the National People’s Congress launched the so-called *The Tenth Five-Year Plan*, proposing that national efforts should be made to develop modern DE, to provide modern information technology for education and to improve the accessibility of Chinese DE. As a matter of fact, the Internet infrastructure in China was still weak during this period. Generally speaking, DE in higher education at this stage remained planning and developing.

Sprout and strategic phase from 2005 to 2019. In the document titled “*The National Informatization Development Strategy from 2006 to 2020*”, for the first time, China has put forward a development strategy that took the development of teaching and research information as a national priority. This document also pointed out that it was necessary to build an accessible education system and develop a multi-level interactive network education and

training system to facilitate citizens' self-regulated learning. It emphasized that the government and society should create an environment for equal learning opportunities and coordinate varying resources to ease the digital divide (Central people's government of P.R.C, 2006). In response, 11 governmental departments, including the Ministry of Education, jointly issued "The Guidelines on Promoting the Healthy Development of Online Education" in 2019. The guidelines made a declaration on the deep integration of modern information technology and education. Accessibility, quality and equity of DE were identified clearly in this document for building a society that "anyone can learn, anywhere can learn, and anytime can learn" (MOE, 2019, para. 2). Moreover, expanding the supply of high-quality online education resources has been the direction of policies. January 2018, Chinese MOE launched the first batch of 490 "national high-quality online courses". At the end of 2018, The MOE has recognized 1,291 national high-quality online courses and 8,100 MOOCs (MOE, 2020a). Also, the policies tended to be more systematic and comprehensive than ever. For example, some documents, such as "The Opinions of The General Office of the State Council on Standardizing the Development of Off-campus Training Institutions" and "The Notice on the Construction of Demonstration Universities for Deepening Innovation and Entrepreneurship Education Reform in 2019" were issued to manage and promote DE at varying levels of education, including early childhood education, K12, vocational education, higher education, etc. Concurrently, Chinese DE in higher education remained challenging at this phase, such as unbalanced development in the Internet infrastructure, and low quality of some online courses, etc.

Health Crisis phase after 2020. Under the COVID-19 health crisis, on February 4, 2020, Chinese MOE issued "The Guidance on the Organization and Management of Online Education in Institutions of Higher Learning During the Epidemic Prevention and Control Period". The policy officially announced that the government would make the greatest efforts to promote online teaching in colleges and universities across the nation as well as to ensure the quality of the online learning process and multiple assessments.

In June 2020, the MOE launched "The Norms for Digital Campuses in Vocational Colleges", this document proposed the concept of "Internet + vocational education" and emphasized the quality and equity of DE in vocational education. Later on, the MOE has issued "The Comprehensive Reform Plan for Open Universities" in September, which will promote 39 provincial-level radio and television universities to be renamed as local open universities. The radio and television universities were established in 1978 and have a long history of more than 40 years, the action of renaming means the Chinese government intends to pay more attention to improve the quality of DE as well as create an environment that serves all the people in lifelong learning in the post-COVID-19 period.

Also, the new essential policies such as "China's education modernization 2035" or "The Action plan of Education informatization 2.0" demonstrated that accessibility, quality and equity were three focuses of Chinese DE.

The research productivity in Chinese DE

When it came to the research output of DE the publication of the article, notably, a number of articles in accessibility with 21 was lower than the others. The authors did attempt to use other Chinese keywords representing the similar meaning of "accessibility", the results were almost the same. Finally, the authors chose the highest number as the retrieved results of the accessibility theme. Also, the publishing trends showed that the peak of the accessibility theme was quite different from the other two. The publishing peaks of quality and equity were around 2008. Instead, the publishing peak of accessibility was in 2014.

The three most influential articles listed in Table 2 showed that many researchers made the greatest efforts to promote Chinese DE in terms of quality, accessibility and equity. In terms of quality, He (2011) explored several basic theories of education informatization, such as information technology and curriculum integration theory, teaching and learning theory and teaching design

theory in the information environment. He was trying to solve the problem of lacking theoretical support in DE so that enhancing the quality of DE from the systematical level. An increasing number of researchers started to shift their research to focus on the quality of online teaching itself. Ultimately, DE is one of the special ways of teaching and learning, but it should follow the fundamental rules of education. Teachers need to pay more attention to motivate students so that to maintain learning outcomes than in the context of traditional education.

Second, under the theme of accessibility, Sun and Qu (2007) conducted a study on the accessible design of web pages, documents, videos and interactive tools, to develop modern distance educational resources that can be feasibly applied to disabled people with different physiological disabilities. Accessibility problems did not only occur in special education but also happened in Chinese higher education overall. With the development of distance education, more and more accessibility problems emerged during online teaching. Two major issues include lacking basic ICT literacy and poor Internet infrastructure. For example, in remote areas, many college students could not access online classes during the COVID-19 outbreak. Even in urban cities, Internet delays often happened during online learning due to insufficient bandwidth.

Third, under the theme of equity, Liu (2017) provided “live + education” as a new educational method to let learning meet the individual needs of learners, as well as expand the influence of teachers to promote educational equity. Yet, the paper highlighted that that unmixed MOOCs could not enhance the quality of education, on the contrary, the one-way communication of education, such as MOOCs, can even result in the new inequity in education. Nowadays, following the development of educational informatization, the “digital divide” between urban and rural areas gradually emerged.

The gap between Chinese policies and research articles in terms of accessibility, quality and equity

It was found that the governmental policies in DE responded and followed the development of Chinese DE and both affected each other. However, there was a gap between the policies and the focus of the research articles. As indicated above, the number of research articles under the theme of accessibility was the lowest among the three themes, which demonstrated that the Chinese researchers did not pay much attention to the issues of accessibility than the other two, although the DE policies by the Chinese government put stress on accessibility at all levels of education.

Although a series of DE policies have been released in China, DE still faces several challenges. Firstly, Internet coverage in China was only 59.6% (Internet Society of China, 2019), which means around 40% population in China could not access the Internet successfully. Also, ICT literacy was insufficient in some areas of China, such as the central and western rural regions. To resolve it, “*The Action Plan of Education Informatization 2.0*” was proposed by the government to support students, teachers and schools’ digital education by 2022.

Discussions and conclusion

The gap between DE policies and themes of research papers, particularly accessibility, has emerged. To enhance accessibility would need enormous investment in the IT and Internet infrastructure across the nations. In addition, inequality indeed existed in Chinese DE. Due to insufficient educational resources, it is quite challenging for all students, teachers and schools to make good use of DE regardless of location and social-economic status.

Finally, how to control and enhance the quality of learning is one of the big challenges in Chinese DE. To ensure the quality of on-learning, government and accrediting agencies need to develop an appropriate quality assurance mechanism mainly for DE. In the long-term development, the quality of teaching and learning on DE should be employed cautiously by related stakeholders in higher education.

Generally speaking, it is hard to foresee if the traditional learning mode will be replaced by DE in Chinese higher education. Under COVID-19, DE is regarded as one of the possible solutions for learners. Encouraged by the favorable policies by the government, it is expected that DE will become a “new normal” in Chinese higher education after the post-COVID-19 period. Accessibility, quality and equity are the three critical issues in both the traditional model and DE. Yet, it would likely take a longer time for DE to demonstrate the impacts on Chinese higher education in the future.

As Wu Yan, Director of the department of higher education, [MOE indicated \(2020\)](#),

We can no longer and should not go back to the state of teaching and learning before the outbreak of the epidemic, because online teaching combining “Internet +” and “intelligence +” technology has become an important development direction of higher education in China and world ([MOE, 2020b](#), p. 1).

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