

Analysis of The Transformation of China's K12 Education Model under The New Trend

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Abstract. Education for children is a fundamental part of the country, and China is committed to reforming education for fair, public, and public welfare. Based on the global trend of digitalization and the implementation of China's "double reduction" policy, China's K12 education model has undergone a new transformation. This paper has found through extensive literature research that the implementation of the double reduction policy, the outbreak of Covid-19, and the spread of digitalization have all had a certain degree of impact on the teaching and learning models of Chinese schools and supplementary education, and have accelerated the transformation of China's K12 education model. For example, school education has started to adopt a hybrid education model, and the subject-based training institutions in supplemental education have started to transform to other aspects such as quality education.

Keywords: New trend; K12 education model; Education change; Transformation path.

1. Introduction

1.1 Research background

According to the seventh national census survey in China, it is found that 15,467 out of per 100,000 people in mainland China will educate university education level [1]. All of this is inseparable from the initiatives such as the vigorous development of compulsory education and the popularization of middle and high school education in China. Even though the number of educated people in China is rising, the average level of education can vary greatly depending on regional differences, for example, in 2000 in Xizang the average population aged 15 and above had 6.75 years of education, while developed regions such as North, Guangzhou, and Shenzhen were all above 10 years [1]. Therefore, China is constantly transforming its basic education model in order to reduce education level differences and improve the quality level of the whole population.

K12 education is most commonly referred to as 12 years of compulsory basic education in Western countries. However, with the spread of globalization, K12 education in China also refers to basic education, which includes early childhood education, nine-year compulsory education, high school education, etc. In China, the K12 education model mainly includes education within the system and education outside the system and the two main play complementary roles. Intra-system education is the education within the school, which is covered by the government. The extra-system education can also call supplementary education, which is what most students and parents perceive as out-of-school tutoring institutions, including subject training, hobby training, summer camps, and other institutions. Making a profit is the target for most private individual institutions. The huge student base in China has led to strong competition among students at the basic education level. Supplementary education plays an important role in order to make students excel. Thus, complementary education has formed a certain scale of the industry chain, which mainly includes extracurricular courses outside the system, trusteeship, and pre-examination courses.

1.2 Literature review

For the transformation of the K12 education model, a number of scholars have done relevant studies. In his article writing about the transformation of K-12 education in the United States for analysis, Hu Yongbin (2016) shows that the traditional teaching model is difficult to do to solve the

problem of educational balance. Therefore, with the vigorous development and popularity of interconnection, the United States has transformed American education through teaching models, institutional innovation, and other aspects of the hybrid and online education model. The United States through online education and face-to-face education mixed ways to reduce the problem of uneven distribution of resources and so on. With the promulgation of China's double reduction policy, it has played a catalytic role in the transformation of the K12 education model [2].

Double reduction policy in addressing the development of quality education in China and reducing the problem of uneven distribution of educational resources, Zhou Hongyu and Qi Yanlei (2022) analyzed the focal points and difficult issues for the implementation of the double reduction policy and provided the following suggestions for the implementation of the double reduction policy: balanced education development, improving the quality of education at the compulsory education stage, guiding the reasonable and efficient transformation of supplementary education institutions, etc. In the focus of the implementation of the issue, it is clearly pointed out that the need to implement the standardization of out-of-school training institutions, strict governance, and other issues. At the same time, the double reduction policy on the implementation of difficult points raised: whether the fundamental governance of out-of-school training institutions and so on [3]. Yu Hong (2022) did a study on the strategy of primary and secondary school education under the "Internet Plus Education models" using Qingdao as an example. The article mentions future education development trends such as balanced education development, integration of artificial intelligence into school education, etc. In Qingdao, the Internet has already been integrated into school education and campus construction. Even though the "Internet Plus Education models" is developing rapidly now, there are still problems such as inefficiency of online teaching, uneven distribution of resources in online teaching platforms, and so on [4].

1.3 Research content and significance

Based on the aftermath of the double reduction policy, there has been a major new shift in China's K12 education model. The main affected parts are schools and supplementary educational institutions and K12-related industry chains. Therefore, the main purpose of this paper is to analyze the transformation trend of school education and supplementary education in China's K12 education model based on the double reduction policy and the trend of digital informatization. This essay focuses on the following three aspects of the analysis. First, it defines the new trend and the importance of the transformation of the K12 education model for the development of education in China. Second, the impact of the new trend on the existing K12 education model is analyzed. Finally, the trend of K12 education transformation is analyzed, and transformation suggestions are made for future K12 supplementary education institutions.

2. Basic concepts

2.1 Definition of New Trends

The new trend is defined in this article as digital penetration. According to the Digital China Development Report (2021) released by the State Internet Information Office, it is found that China has achieved remarkable results in digital development. First, in terms of infrastructure in China by the end of 2021, 1.425 million 5G base stations have been built, and the number of 5G users reached 333 million households. China has also achieved the construction of "the same network and speed" in rural and urban areas, and the same broadband rate in administrative villages, the village out of poverty has reached 100%. This result shows that China's urban and rural network resources share and provide the convenience of a networked classroom. Secondly, China's big data industry is also increasing rapidly, with data production from 2.3 ZB in 2017 to 6.6 ZB in 2021, and China's cloud computing, blockchain, and other technology fields are among the first echelon in the world [5].

On July 24, 2021, the General Office of the CPC Central Committee and the General Office of the State Council issued the "Opinions on Further Reducing the Academic Burden of Students in

Compulsory Education and the Burden of Off-Campus Training," which is the acronym for the double-reduction policy [6]. The double reduction policy mainly reduces homework pressure on students and subject-based off-campus training institutions, while improving after-school school services. The reduction of homework pressure is mainly accomplished by improving the quality of homework and reducing the total amount of homework. The reduction of subject-based out-of-school training is mainly to prevent capitalizing on the operation of K12 education. Based on the double reduction policy, can reduce the financial burden as well as the mental burden of parents.

2.2 Necessary conditions for reforming the K12 education model

The Ministry of Education held the fifth conference on "Education in this decade", director Lu Yugang indicated that compulsory education in China is the most populated segment of the entire education system, including 207,000 schools and 158 million students [7]. For such a huge base of compulsory education students, it is not only the future of the country but also the interested block of most businessmen. As the economy continues to grow, people's needs not only for material goods but also for education are increasing. Therefore, in order to meet the needs of a large number of students and parents for education, more and more capitalists and businessmen are turning their attention to the supplementary education segment of K12.

At the present stage of basic education in China, there are still certain problems, the following are listed. First, China still has the problem of uneven distribution of educational resources. The current situation of urban-rural education differentiation in China is analyzed, and it is pointed out in the article that the problem of education differentiation still exists at the present stage in China. The causes of urban-rural education differentiation are pointed out in the article as follows: the difference in income between urban and rural residents and the uneven distribution of educational teachers caused by the uneven distribution of educational teachers. Second, quality education is still lacking in China at this stage. With the updating and reform of the curriculum, quality education in China's basic education stage has been significantly improved. However, the traditional idea of judging students by their grades is still solidified in people's minds. Finally, there is the problem of homogenization of complementary education models [8]. Although basic education is a huge base body, the needs are roughly the same for students at the basic education level. So for companies in the supplemental education industry chain, homogenization is serious. All seek to improve the academic performance of students.

3. K12 education model changes under the new trend

3.1 Impact of digitalization popularity on the K12 education model

3.1.1 Rapid development of online education

Online education has existed in China since the late 1990s, with the founding of Hongcheng 101 Online School in 1996. At that time, the Internet had just entered the public's view, and people's understanding of online teaching was shallow. But with the continuous improvement of our digital infrastructure, online education was in a booming phase during the period from 2013 to 2017. Although the growth rate was slow between 2016 and 2019, the overall trend is still on the rise. And based on the impact of Covid-19 in late 2019, online education is back to rapid growth in 2020.

The main context of K12 education in China is the general trend of combining institutional schooling and complementary educational institutions with each other. Prior to Covid-19, school education in China was mainly school-based, aided by the Internet, which helped link parents with schoolteachers. Outside the system, most of the out-of-school supplementary education institutions were based on a combination of offline education and online education. But with the accelerated pace of people's lives and parents who are looking for efficient, higher teacher requirements, online teaching is the most efficient way that parents can help their children do all of this. Therefore, online

education is more widely accepted and adopted by parents as digitalization becomes more popular and the network signal is strengthened.

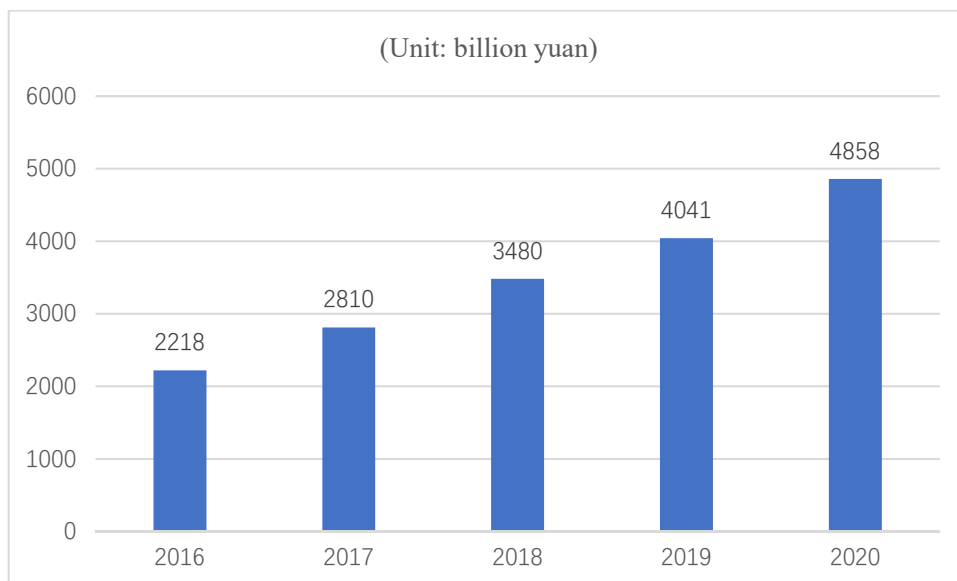


Figure 1. China Online Education Market Size 2016-2020 [9]

As shown in the chart below, the K12 online education market in China has been on an upward trend, especially in 2020, showing dramatic growth. The main reason behind this is attributed to the Covid-19 outbreak. Due to the stronger and faster spread of the epidemic, people try to prevent large crowds from gathering, so online education becomes the main way for children to learn at the basic education level.

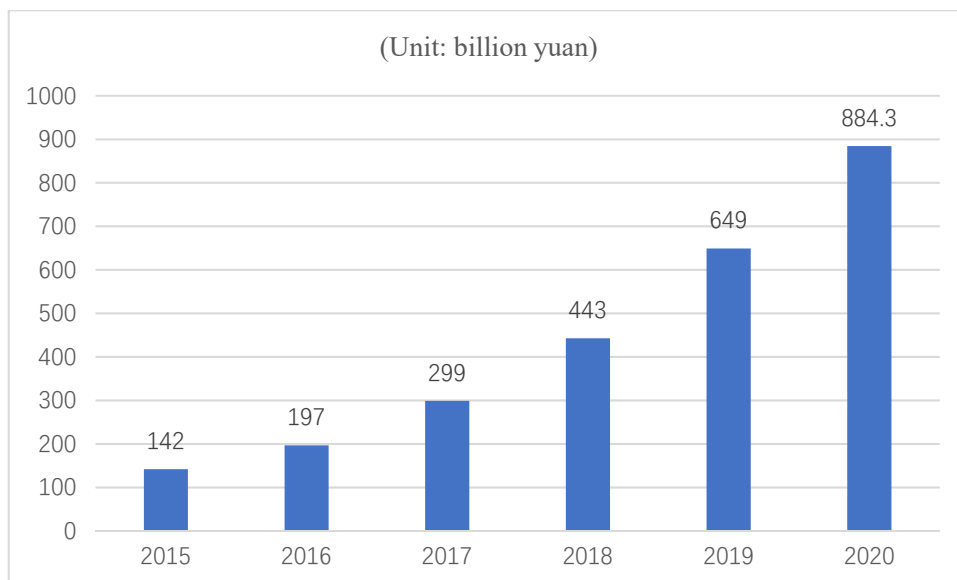


Figure 2. Changes in China's K12 online education market between 2015 and 2020 [10]

3.1.2 Solved the problem of not being able to take a face-to-face class

The outbreak of Covid-19 in late 2019 affects the face-to-face education model in our schools on a large scale. In the context of widespread digitalization and in order to suspend classes without stopping school, most schools of compulsory education turned on the online teaching model in the spring semester of 2020. Schools will mainly conduct the semester's relevant courses through online teaching, and students will have online classes at home. Thus, avoiding the high transmission rate due to population concentration. In the statistics of AiMedia 2018, there are about 276 million school students, 518,800,000 schools of all levels, and 16,728,500 full-time teachers. At the same time, the

research found that about 300 million people will resume classes online in 2020 [11]. Almost 100 percent of students and teachers will be teaching online in 2020. Before Covid-19, even though online education has been growing rapidly, there are still some parents who do not know about online education. The huge school student base body makes online teaching in school education an important node in the advancement of online education development.

Online education according to the survey found that the biggest benefits are reducing the speed of the spread of the epidemic, achieving the benefits of stopping classes without stopping school, and convenience for students and teachers, but there are still certain problems with online teaching model. In the survey, it was found that 53% of the surveyed users indicated that the online teaching model was much less effective than the face-to-face teaching model. In an absolute survey of students' and parents' feedback on the disadvantages of online classes, it was found that students' easy distraction was the main factor causing the ineffectiveness of online classes. Other reasons include the environment in which students learn at home and the fact that online teaching teachers have more difficulty in judging the real situation of students, which is why the pure online education mode is less effective [12].

3.2 Impact of the "double reduction" policy on K12 supplementary education

Before the emergence of the double reduction policy, there were several major out-of-school tuition institutions: New Oriental, Lithia, Xueda Education, etc. According to the 2018 data survey, the number of tutoring institutions nationwide reached 200,000 in the first half of 2018. The large size of the market has led many tutoring institutions to speculate, recruit students without the quality of schooling, set course prices haphazardly, etc. Therefore, the state introduced the Opinions on Regulating the Development of Out-of-School Training Institutions in 2018, which has rectified nearly 50,000 institutions during its landing in 2018, and the scale of users is even involved to 2 million households [12].

Until after the double reduction policy in 2021, a large number of K12 out-of-school remedial education institutions in China fell away. The main purpose was to use schools as the main place of learning. According to China Education News, the national subject-based out-of-school training was suppressed by over 90%. Training fees are 40% lower than before. 25 related listed companies are 100% no longer engaged in compulsory education level subject-based training. The relevant departments of the Ministry of Education have continued to carry out inspections and enforcement, with a total of more than 440,000 enforcement and inspection personnel deployed. According to a third-party survey of 750,000 teachers, students, and parents in 32 provinces, 79.42% of students did not participate in discipline-based training [13].

All this data shows that China's K12 out-of-school subject-based tuition institutions have been severely hit by the promulgation and implementation of the double reduction policy. In response to the closure of large-scale K12 out-of-school subject-based tuition institutions, the massive closure of tuition institutions has also had an impact on China's overall economy. The size of China's K12 education market has reached 762.8 billion yuan in 2019 [10]. The landing of the double reduction means that a large part of the market size of China's K12 education industry will be directly reduced. This will not only affect the total economic output of our country but will also have a certain degree of impact on our unemployment rate. A large number of our remedial teachers are unemployed and facing unemployment.

4. Analysis of the transformation of the K12 education model

4.1 Hybrid teaching model under digitalization

The development of information and digital technologies can help students to complete their academic tasks more efficiently. Meanwhile, due to the continuation of Covid-19 in the past two years, the development of the digital economy is more widely used in basic education. It is mainly reflected in online teaching, online homework correction, and other aspects. Online classes are the most

intuitive path for students and teachers to feel the arrival of digitalization, and informatization. At the same time, with the arrival of information technology and digitalization, the efficiency of both students and teachers has improved. Currently, many students are studying online through applications such as Tencent Meeting and Nails. And after-class homework and other completion status are online feedback. Also, students' grades and deviations can be supported by data to give feedback to students, teachers, and parents. Students can study in the learning software according to their strengths and weaknesses, and the big data will be analyzed by various types of accurate practice questions, tutorial video push, etc. This improves students' learning efficiency and helps teachers to quickly analyze students' strengths and weaknesses and make up for any gaps in time.

However, there are many problems in the pure online classroom mode during the epidemic, such as a lack of learning atmosphere, low efficiency of classes, and no way to communicate with teachers in a timely manner. Therefore, in the context of digitalization and informatization, new models of K12 education have been innovated - online and face-to-face hybrid teaching, as well as intelligent pen and paper classrooms, etc. Its main model is to turn manual into intelligence, which can save a lot of time for teachers to correct homework and use artificial intelligence to correct homework instead of teachers. And when practicing, specific student specifics can be analyzed by data to give specific contact push. In Hou Zhonglin's master's research thesis, it was found that there is still some variability in the deployment of teachers in China at this stage. For example, the number of rural teachers at this stage is not enough and the teaching level is not high [14]. A combination of online and offline teaching modes can be used so that students can experience teaching by teachers with higher quality competence through the Internet, thus sharing resources and achieving a higher quality teaching mode.

4.2 Quality Education Transformation

The double reduction policy is mainly aimed at improving the quality of education management in schools, thus improving the overall quality of our students in compulsory education. The guidelines of the policy mainly include extending the after-school service hours and providing students with club activities, including the opening of school-based interest classes, etc. Returning to the school landing policy, most primary and secondary schools add self-study sessions in order to extend the after-school service hours, and teachers tutor students to complete homework during the self-study sessions, thus reducing the pressure of homework when students go home. In order to enable students to develop holistically, schools offer various interest classes courses and psychological counseling, etc.

Improving the quality of students was one of the objectives of the double reduction. After the double reduction, 93% of parents reported a reduction in spending on subject-based training, with 76% of families reducing their training spending by half. The percentage of students completing written homework within the prescribed time has increased from 46% before the "double reduction" to over 90%. After-school services were basically fully covered, with 91.75% of teachers participating in after-school services [13]. The percentage of students who voluntarily participated in after-school services exceeded 90%. According to a survey conducted by Ai Media Consulting, the market size of China's quality education industry is growing year by year until 2021, which will be 523.92 billion yuan [15].

In the quality education industry, the scope included is relatively wide. According to the data analysis of Ai Media, China's quality education industry market is divided into art education, language skills training, STEAM education, mathematical thinking education, physical education, and so on. According to the data analysis, it can be found that as time advances, more and more parents in China pay more attention to their children's sports-based quality education. Starting from 2017, the overall quality education industry is on an upward trend, with sports accounting for a large market share.

Based on the landing of the double reduction, a large number of subject-based education tuition institutions have been forced out of business. Subject-based training institutions had to drop their

main business like other new tracks. The main thing is the adjustment of the main business structure. Most subject-based educational tuition institutions have shifted their main business to the quality education industry. This kind of transformation is not only based on the promotion of national policies but also based on the underlying thinking of the contemporary young generation of parents. Contemporary 80s and 90s parents pay more attention to their children's education investment, which includes not only academics but also part of the money spent on quality education. For example, to improve their children's physical immunity quality, hope that the child's all-around development. Therefore, the quality education industry has become a new way of transformation for most subject-based educational institutions.

4.3 Examples of successfully transformed companies

An example of a successful transition is New Oriental, which closed 1,500 teaching locations after the double reduction policy took hold. Closing teaching points is not only closing tutorial schools but also facing refunding anti-student tuition and paying teachers' salaries. In this series of expenses, New Oriental has pointed out nearly 20 billion RMB in that year. All this did not repel the founder of New Oriental, Yu Minhong, who indicated the establishment of Oriental Selection on November 7, 2021. Yu Minhong will bring some teachers to the Oriental selection platform to do online live with the platform, mainly by helping farmers live to increase income. At the same time reduced the problem of excessive unemployment due to the closure of teaching stores. Even though there are many difficulties, Oriental selection through unremitting efforts on June 16, 2022 fan volume broke ten million and made to bring goods sales degree accounted for the first in Shake. In addition, New Oriental also put a lot of money into overseas study business and so on [16].

The transformation of the new East is based on the double reduction background forced to move. However, in front of the national policy, New Oriental made the transformation to avoid homogenization through digital background. Therefore, this transformation of New Oriental is an example of transformation for subject-based education training institutions.

5. Conclusion

5.1 Key findings

This paper is inspired by reading the literature related to digitalization and the epidemic's impact on the transformation of China's K12 education model by relevant scholars in recent years. During the research process, this paper finds that China's education model has gradually changed from a co-existing relationship between school education and out-of-school training institutions to a school-based education model. Digitalization and the landing of double reduction are the main driving factors that prompted the education model reform in China. Based on the current stage of education model reform, China has achieved further improvements in quality education, and the impact on out-of-school subject-based training institutions is the most extensive.

5.2 Future Outlook

In summary, this paper argues that the transformation of China's K12 education model will take some time to explore. On the one hand, school education within the system can offer a large number of interest-based school programs, thus promoting more comprehensive development of students. Schools should also establish a better regulatory system to reduce the total amount of homework in the implementation of the double reduction policy. On the other hand, supplemental education should be transformed in a responsive manner, and out-of-school subject training institutions should adjust their main business according to national policies, such as under the double reduction policy. At the same time, off-campus institutions should also complement schools in accordance with the changing direction of school development. They should develop toward quality education. It should also change to avoid homogenization of the transformation, as the name implies, is to go looking for new breakthrough points in the existing industry chain and make the transformation. Due to the rapid

development of China's economic market, more and more homogeneous enterprises appear, in this case, there is a high risk of vicious competition. Therefore, in order to reduce the risk of transformation failure, homogenization in transformation should be avoided as much as possible.

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