Education

"Double-Teacher Classroom"
A Successful Practice of Digital Education in China

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In the age of information, digital education has become a crucial avenue for educational transformation. The "double-teacher classroom" is an exemplary model of digital education, with the potential to optimize educational resource distribution and advance the development of balanced education. This article expounds on the fundamental components of the "double-teacher classroom" model and its advantages as a digital education paradigm, with the purpose of further popularizing its application.

Keywords: Double-Teacher Classroom; Digital Education; Instructional Model; China

Introduction

AS A RESULT of the integration of emerging technologies in education and the widespread use of educational technology, digital education has made great strides in China. 2018's "Digital Education Action Plan 2.0" sets the objective of completing the "Internet Plus Education" Platform by 2022 and proposes to develop novel education paradigms, new internet-based education services, and educational technology-based governance frameworks in the "Internet Plus" era (1). "The 14th Five-Year Plan for China's National Social and Economic Development and Long-term Goals 2035" emphasizes that it is imperative to utilize data elements to their full potential to accelerate the development of the digital economy, society, and government and to drive the reform of living, production, and governance patterns through digital transformation in a bid to advance the construction of China as a cyber power (2). In 2023, "advancing digital education" was included in the government report for the first time, and explicit action plans were set forth for the future development of digital education (3).

The popularization of the Internet and mobile terminal devices, as well as the proliferation of online education platforms, have brought about tremendous changes to students' methods and avenues for knowledge acquisition. Traditional teaching paradigms can no longer adequately serve the education needs of the new era. The Chinese education community has endeavored to explore more effective, flexible, and personalized instructional models. In this context, the "double-teacher classroom" model emerged as a significant experiment in digital education. It is aimed at providing high-quality education services by leveraging information technology (IT) to dismantle geographical barriers to top-notch educational resources. This article focuses on elaborating on the basic components of the "double-teacher classroom" model and its benefits for education implementation.

Basic Components of the Double-Teacher Classroom Model

The "double-teacher classroom" is an exemplary product of the

"Internet Plus Education" Initiative. The concept of "double-teacher classroom" was first raised by Professor Tang, a counselor of the State Council, to address the question of how to enhance the quality of rural education via the double-teacher classroom. In a rural double-teacher classroom, teaching is carried out by an online, prestigious instructor and an in-class rural teacher with the assistance of the Internet (4). Currently, the general conception of the "double-teacher classroom" is that it is an online and offline blended instructional model in which teaching is performed by an online anchor teacher from a core school in collaboration with an on-site tutor at a terminal school. The former is responsible for course planning, the creation of teaching materials, and teaching activity design, and the latter for face-to-face tutoring along with manipulative demonstrations. In the class implementation, the online teacher conducts instruction through a high-definition LCD screen or all-in-one touch machine; the on-site tutor undertakes classroom management, answers students' questions, and gives supplementary explanations (5). The "double-teacher classroom" model helps to transmit top-notch teaching resources to underprivileged schools and to diminish the inter-regional, urban-rural, and inter-school divide in education development (6).

Internet-based Teaching Facilities

Wide coverage, low susceptibility to natural disasters, strong capacity for image and audio restoration, two-way data transmission, cost-effectiveness, and user friendliness are among the features of Internet-based technologies. The "double-teacher classroom" provides an efficient platform for multi-dimensional sharing of educational resources based on the combination of traditional education facilities and IT (7). Generally, the host school of the project (the output end) has video and audio recording, information processing, and multimedia equipment stored in its live broadcasting classrooms to transmit class instruction; the terminal schools (the input end) set up signal-receiving multimedia equipment to synchronously broadcast the host school's classes. The host school uses normal teaching classes as the live broadcasting classes. According to the school curriculum plan, each live broadcasting class is assigned an anchor teacher for the subject. The live broadcasting system broadcasts the chosen classes live and the remote terminal classes receive them. Teachers of corresponding subjects staff each terminal class and assume the responsibilities of classroom organization, management, tutoring, and evaluation. Thus, this instructional model successfully combines the teaching of excellent online teachers with meticulous offline tutoring (8).

Technological Support Systems for Resource Sharing

Using smart education platforms, schools in a "double-teacher classroom" community create the digital teaching resource system to support teachers' tailored instruction. Teachers use the question bank to prepare for the lesson before class; diverse digital aids can be drawn on to facilitate in-class instruction; learning analytics are employed to generate feedback on students' mastery of knowledge, to stratify students for personalized tutoring, and to formulate the learning profile for each individual student. Learning analytics are also applied to produce students' personal reports of wrong answers, which can be used for their regular review and for the teacher to design targeted assignments to reduce students' schoolwork burdens. (9)

Instruction, Learning, and Evaluation Integrated Implementation Mechanisms

In accordance with the principle of synchronous pre-class preparation, class implementation, assignment completion, and tutoring, the output and input class teachers formulate scientific rules and procedures for online teaching research, class live broadcast, and offline communication to ensure the efficacy of the double-teacher classroom, which blends the anchor teacher's instruction and in-person precision tutoring (10). A plan titled "Six Norms" has been implemented among the host and terminal schools to standardize their course planning, teaching materials, lesson preparation, instruction, test/evaluation, and feedback (11).

The "double-teacher classroom" model places a high premium on the cooperation and collaboration between teachers on both ends. For common professional development, teachers at the host and terminal schools undertake scheduled online collective teaching research and lesson preparation every week; the host school regularly holds theme-based seminars and academic exchange meetings to promote the growth of teachers in the educational community; and schools in the community carry out activities such as teacher mutual visits and anchor teacher demonstrations to enhance the common level of education and teaching (12). By using its new educational ideas, the core school helps terminal schools specifically with their efforts to change how they teach, so that those schools can fully use outside factors to improve how they teach (13).

The "Double-Teacher Classroom" Model is a Significant Practice of Digital Education in China.

Advanced Educational Ideas in the "Double-Teacher Classroom" Model

The "double-teacher classroom" model represents an innovative education concept. It is advantageous to integrate high-quality education resources to promote educational equity and advance the digital transformation of education.

A Student-Centered Classroom

The "double-teacher classroom" model focuses on students' needs in determining teaching materials and methods, paying attention to their interests, capabilities, and learning objectives. Under this model, students are active participants throughout the teaching process rather than passive receptacles of knowledge. The "double-teacher classroom" places emphasis on fostering students' capacities to learn autonomously over simply transmitting information. Both online and offline teachers dedicate efforts to guiding them to exercise self-regulation, self-determination, and self-evaluation. In addition, the "double-teacher classroom" pays attention to student emotional development, assisting them in building self-confidence through positive communication and evaluation. A multi-dimensional evaluation is administered to assess students' comprehensive competence

and practical application ability, as well as their mastery of course content. Evaluation components include online tests, group work, individual reports, and more to give a holistic picture of student performance (14).

Leveraging Digital Technology to Improve the Level of Education

The advancements in digital technology make distant education possible. Under the "double-teacher classroom" model, online anchor teachers deliver distant instruction through HD visual devices to share high-quality teaching resources and state-of-the-art learning strategies with students in underdeveloped areas, which is effective in closing the inter-regional gap in educational resources and having more students benefit from quality education service. Digital technologies such as the intelligent platform and instant communication enable instant interaction, online debate, and collaborative learning, allowing students to be more active in learning and thus significantly boosting their learning outcomes. Anchor teachers can create diverse online teaching materials by means of instructional PPT, videos, and exercise questions to help students attain a deeper grasp of course content (15).

Advocating Educational Equity

The primary purpose of the "double-teacher classroom" is to address the shortage of high-quality teaching staff and the imbalance in education resource distribution to significantly advance educational justice. Through this model, remote terminal schools attain excellent teaching resources to compensate for the gap in teaching staff quantity, composition, and competence. Take No. 1 Middle School of Zhengzhou as an example. It has transmitted its high-quality teaching resources to a large number of schools across Henan Province. Over the past eight years, 20 thousand students have graduated from the school's "double-teacher classroom" program. At present, the program spans more than 40 senior secondary schools. The majority of the students in the "double-teacher classrooms" are from county or village high schools. Experimental High School of Luanchuan County saw a more than 300% increase in undergraduate admissions after joining the project. No. 1 High School of Nanle County opened a trial "double-teacher" class with 59 students in 2010, and 58 of them were admitted into universities. Due to the extraordinary results, the number of "double-teacher" classes rose to eight in this school. Ruzhou No. 1 High School's "double-teacher classroom" successfully regained its high-achieving students who had left Ruzhou for a better education and doubled its university admissions. No. 1 Middle School of Zhengzhou's "double-teacher classroom" program proves that the model can help drive balanced development in education and thus increase educational equality (16).

Sharing High-quality Educational Resources

With the support of advanced Internet technology, the "double-teacher classroom" model achieves the distant delivery of high-quality educational resources, benefiting the maximum number of students (17).

First off, the "double-teacher classroom" is an effective response to disparities in educational resources between urban and rural areas. In some lonely areas, students have difficulty accessing high-quality teaching resources due to geographical and economic constraints. Via the Internet, the "double-teacher classroom" can introduce valuable resources from developed areas to underdeveloped ones. According to He's investigation, Hebei Province's Shahe municipal area has 205 primary and junior secondary schools. Among them, 173 are located in villages or mountainous areas with an incomplete curriculum. In 2014, Shahe municipal education authorities initiated the "double-teacher classroom" project, using newly devised recording and broadcasting rooms and multimedia classrooms to connect the Xiandewang School District as terminals to Shahe No. 6 Middle School, Gaochun Middle School, and the Primary School Affiliated to No. 2 Middle School as host schools. The implementation of the "double-teacher classroom" project successfully recovered and improved courses such as English and science in these underprivileged rural schools, leading to satisfactory instructional outcomes (18).

Second, the "double-teacher classroom" model is helpful in addressing the inter-school imbalance in teacher staffing. For example, Henan Province's Wei County experienced a shortage of qualified teachers while expanding its basic education. To guarantee the quality of education in the region, the Ministry of Education supported Wei County to initiate a "double-teacher classroom" program in 2019, based on Internet technologies. Under this program, excellent teachers were hired from foreign areas or selected from local schools to act as the host lecturers, who deliver lessons to multiple classes in the pattern of "one + N." Thereby, a system of "non-local schools, local central schools, and village teaching sites" was established, substantially alleviating the shortage of qualified instructors and helping raise the local level of education (19).

Furthermore, the "double-teacher classroom" model helps resolve the problems induced by large classes. In certain cities, due to the increased population density, schools have expanded classes in size, resulting in insufficient attention that the teacher pays to each individual student. With the "double-teacher classroom," students at the terminal schools can enjoy a more meticulous education. For instance, in a 2019 investigation of a "double-teacher classroom" project involving Y School in Changsha City and three primary schools in the Ningxiang municipal area under its aid, 80% of the students at the terminal schools reported that they experienced more intriguing learning materials and broadened their knowledge horizons (5).

Advantageous Teaching and Learning Approaches in the "Double-Teacher Classroom" Model

From the viewpoint of teaching outcomes, the "double-teacher classroom" model has the advantages of enhancing instructional quality, augmenting students' learning experiences, and promoting teacher professional development. First, in a "double-teacher classroom," the collaboration and coordination as well as the reasonable division of teaching work between the two teachers can significantly enhance the instructional quality and products. For example, the anchor teacher may concentrate on the elaboration of theoretical knowledge, while the on-site tutor focuses on directing students on how to conduct hands-on manipulation.

The collaborative instruction allows students to gain a deeper understanding and a more complete mastery of the learning materials. In the meantime, the two teachers can timely resolve issues with their instruction through mutual evaluation and feedback, thus further increasing the quality of teaching (20). Second, the "double-teacher classroom" has the potential to provide richer, more diverse learning experiences for students. Teachers at both ends may adjust their teaching materials and methods to students' needs and interests; students can acquire more enlightenment and learning opportunities through interactions with both teachers. The augmented learning experiences help stimulate students' interest and motivation in learning (21). In addition, there is a mutually beneficial relationship between the two teachers in a "double-teacher classroom." The anchor teacher spots and corrects problems with the terminal class through observing and guiding the on-site teacher, which may lead to the improvement of their own instructional level; the latter has the opportunity to upgrade their teaching techniques and professional expertise via collaboration with the former. Hence, the partnership promotes the professional development of teachers at both ends (22).

From students' standpoint, the "double-teacher classroom" model fully recognizes their diverse needs and respects the differences between them, thus successfully enhancing their learning motivation as well as efficiency and effectiveness. Class instruction under two teachers takes into consideration the differential capacities, personalities, learning styles, and interests of students and provides corresponding directions and tutoring. This has the potential to help students overcome difficulties with their studies and, moreover, boost their confidence and sense of achievement (23). In addition, the "double-teacher classroom" model requires teachers to design intriguing, challenging, and interactive activities and tasks based on the diverse needs of students to elicit their active engagement and reflection. This can significantly foster self-motivation in students (24). In sum, the teaching and learning techniques entailed in the model contribute to upgrading students' learning efficacy and quality.

Conclusion

As digital education in China advances, the "double-teacher classroom" model is set to gain wider recognition and application. With increasingly popularized online educational platforms, the "double-teacher classroom" will become more workable, flexible, and efficacious. Moreover, in the context of the continuous development of technologies such as artificial intelligence and big data, it will provide a more intelligent, precise, and tailored service for every learner.■

References

1. Ministry of Education of China. Notice of the Ministry of Education on Issuing the "Digital Education Action Plan 2.0." 2018. Available at: http://www.moe.gov.cn/srcsite/A16/s3342/201804/t20180425_334188.html

2. State Council of China. The 14th Five-Year Plan for China's National Social and Economic Development and Long-term Goals 2035. 2021. Available at: https://www.gov.cn/xinwen/2021-03/13/content_5592681.htm

3. State Council of China. Adhering to Socialism with Chinese Characteristics and Striving for the Construction of a Modernized Socialist Country: The Report at the 20th National Congress of the CPC. 2023. Available at: https://www.gov.cn/xinwen/2022-10/25/content_5721685.htm

4. Tang M. Transforming rural teacher training with the "double-teacher classroom" model. Teacher J 2015; 2015(19):78-80. Available at: https://kns.cnki.net/kcms2/article/abstract?v=KaAwsYWd1tIa7VUvADT_Dd5vHxoiOrCyC1TsSATc5QFyeXL3DsDnFvsg0Z_8xrfig7Z2DyFUI7S7FQbpcVNMkvzbCtGFvQDkzzDAHWSlAJqkdZHyT7MPF6m-KFkRRJMEWabAfe8eWxY=&uniplatform=NZKPT&language=CHS

5. He Y. Implementation of the "Double-Teacher Classroom" Model under the Concept of Shared Development (master's thesis). Hunan Normal University. 2020. DOI: https://doi.org/10.27137/d.cnki.ghusu.2020.001894

6. Song J. Promoting the high-quality and balanced development of regional education using the "double-teacher classroom" model. Beijing Educ 2022; 2022(6):2. Available at: http://qikan.cqvip.com/Qikan/Article/Detail?id=7107384939

7. Tao Y. Effects of Internet Use on the Alleviation of Multidimensional Poverty (doctoral dissertation). Southwest University. 2022. DOI: https://doi.org/10.27684/dcnki.gxndx.2022.004120

8. Liu D. Investigation of the Current State of "Synchronous-Interaction Classroom" Teaching. Inner Mongolia Normal University. 2023.

9. Zhang N, Mu J, Xiong R, Luo Y. Paths to high-quality and balanced development of compulsory education in the intelligent era: Roles of the "Three Forms of Classrooms." China Educational Technology 2022; 2022(12):18-26. https://kns.cnki.net/kcms2/article/abstract?v=Ij1AjTyXPBvvFLJJN7zO5sxzNlV8bgtqtHOEp07jratuKpdMV0nN0DuyQqoXMFA4P7pNpl0GYFxBL7-9CHlkgeksHBPpLdGdMx0wvC0N62UmCV4NdK7j7tPld_Q_FjqCv9Qslc6CZwM=&uniplatform=NZKPT&language=CHS

10. Zhang H. Building an IT-based new teaching environment for the "double-teacher classroom" model. Prim Second Sch Educ Technol 2023; 2023(9):32-34. Available at:

https://kns.cnki.net/kcms2/article/abstract?v=LD-WYsOa3DiKqmFkBMvkYonEb2DQzsyC_8TTVyV8RC77Xvt5STfz0MLpPPqmvAk4bNlwiNchPP1JnajLBteHxNY0bjVnscpWtR4CFfH552yQWP892dG7K8VRVN5Uld0&uniplatform=NZKPT&language=CHS

11. Yang H. Blended Teaching in the "Specialized Delivery Classroom" (master's thesis). Central China Normal University. 2023. DOI: https://doi.org/10.27159/d.cnki.ghzsu.2022-002276

12. Guo S. The Construction and Application of the Synchronous Classroom Model from the Perspective of Collaborative Teaching (master's thesis). East China Normal University. 2022. DOI: https://doi.org/10.27149/d.cnki.ghdsu.2022.001725

13. Li Y, Ma F, Zhang Y, Wu Y. The historical position, theoretical implication, and practical application of the "Internet Plus Educational Research Innovation" initiative. Digit Teach Prim Second Sch 2023; 2023(11):5-10. Available at: https://kns.cnki.net/kcms2/article/abstract?v=rNedIcCUbLAlb_kgAwbpNGqrin5aJsUQcm_mOlWQz4HpE9M7UkWMHNctCnjvH5ktHDGNMfDSOXa_990ci4tiSk-PPmdvZyo5uJCaLfRPH1lb1kRdnaVW9LN4x4gqNOyi&uniplatform=NZKPT&language=CHS

14. Zhou X, Wang H, Li Q, Chen B. Collaborative teaching in the "double-teacher classroom": Constructing a task-driven double-teacher instructional model. Sichuan Educ 2023; 2023(17):45-47. Available at: https://kns.cnki.net/kcms2/article/abstract?v=rNedIcCUbLDS7l8cmXx3r9UiEL9fmmFRGXl6i2lBkDPNekK0guWxHnLlXDketx4PBZ8jBlRe4uB3Tqb2QO4ZM2r2rdB04Fs9hKtmRQ6HL-X_JhkQlQa4H8SVyhmfMap8&uniplatform=NZKPT&language=CHS

15. Liu X. Design and implementation of the live broadcasting platform for K12 education. Digit Technol Appl 2023; 2023(9):193-195. DOI: https://doi.org/10.19695/j.cnki.cn12-1369.2023.09.60

16. Ministry of Education of China. No.1 Middle School of Zhengzhou: Satellite live broadcasting classes benefit tens of thousands of rural children. 2014. Available at: http://www.moe.gov.cn/jyb_xwfb/s5147/201405/t20140514_168804.html

17. Yi J, Zhang H. Reflections on rural schools' practice of the "double-teacher classroom" model. West Chin Qual Educ 2023; 9(20):26-30. DOI: https://doi.org/10.16681/j.cnki.wcqe.202320006

18. Hao H. Implementing the "double-teacher classroom" to promote balanced development of rural education: A case study of Shahe City in Hebei Province. China Educational Technology & Equipment. P. 1-3. Available at:

http://kns.cnki.net/kcms/detail/11.4754.t.20230816.0851.002.html

19. Xu C. An Empirical Study on the Effectiveness of the "Double-Teacher Classroom" Model in Wei County of Hebei Province (master's thesis). Hebei University. 2022. DOI: https://doi.org/10.27103/dcnki.ghebu.2021.000691

20. Liu H. Application of the "Double-Teacher Classroom" Model (master's thesis). Shanghai International Studies University. 2021. Available at: https://kns.cnki.net/kcms2/article/abstract?v=rNedIcCUbLC0KjaOnhM7nBGDpujK1tLaX3ar0x1FVBRuAhU6Cy3WYDWbdY52VuQpFlz1zob6jSc0P7z6w0X4RXok3cK583TZ26w7yGGTVPq0mirtYmdD0KYxTPMEvgZFEmtwrPCh3T6EV6zT8xyoUw==uniplatform=NZKPTlanguage=CHS

21. Zhao X, Lyu H. "Double-teacher classroom" instruction in the intelligent era: Definition, features, and practice. J Educ Sci Hunan Norm Univ 2021; 20(3):90-97. DOI: https://doi.org/10.19503/j.cnki.1671-6124.2021.03.012

22. Hu Y, Li B, Zhang J, Chen L. Teacher professional development under the "double-teacher classroom" model and development paths. Prim Second Sch Educ Technol 2022;2022(11):5-7. Available at: https://kns.cnki.net/kcms2/article/abstract?v=rNedIcCUbLD7b8eVxI3CtzzOabTEVIDWOw-RiYt3VVRCoFG9Lx6wFIFAJitB8DjEd0Li0VrWjaJgSJ6d3oM0tSOh1ZpjpyFykloy4Ghhx5vh9w0-rcbpwFm0P_tm5hNXqyUcDM00cn8=&uniplatform=NZKPT&language=CHS

23. Zhong Z, He W, Chen Y. Teacher professional development under the "double-teacher classroom" model in ethnic minority areas: Advantages and challenges - A case study of Diqing D Middle School in Yunnan Province. J Res Educ Ethn Minor 2022; 33(4):75-84. DOI: https://doi.org/10.15946/j.cnki.1001-7178.2022.04.04.019

24. Li R, Song Z, Jin M. "Double-teacher classroom"-supported English teaching in rural primary schools: An empirical analysis based on data from 25 rural primary schools in Guizhou Province, Sichuan Province, and Xinjiang Uygur Autonomous Region. J Shan'xi Preschool Teacher Univ 2021; 37(7):125-132. Available at: https://kns.cnki.net/kcms2/article/abstract?v=rNedIcCUbLDEbt4zEmH2E922O3BVX4znho6HWOWeOZN3j3dIwg2cY7EHOqZ7CpN5MlJDjY0ozjezH7q541uc0zorp2s2yzy04mCmJUGYo0fKumt6YLKbRZTr-WPoYzwSBmzoEzD8npE=&uniplatform=NZKPT&language=CHS