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New Challenges for Information Technology Teachers in Basic Education under the "Double Reduction" Policy

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Abstract: Taking the “China Education Modernisation 2035” as the policy background, the study systematically explores the three core issues of basic education reform. Firstly, the study analyses the value of the ‘Double Reduction’ policy as a tool for the modernisation of education governance, and points out its important role in restructuring the education ecology by regulating homework and training. Secondly, using the theory of educational ecology, it reveals that the excessive academic burden stems from the imbalance between the development of the main body and the insufficient synergy of the field, and emphasises that foll-owing the law of students' growth is the key to constructing a good ecology. Finally, the study focuses on the changes in education in the information age, pointing out that technological empowerment needs to be synergised with teachers' professional competence, and alerting to the impact of knowledge fragmentation on in-depth learning. The study proposes that the core qualities should be cultivated, the curriculum system should be unified through the major concepts of disciplines, and the humanistic attributes of education should be maintained in the application of technology, so as to provide a multi-dimensional perspective for the reform of basic education in the new era.

Keywords: "Double Reduction" Policy; Educational Ecology; Core Competencies; Technology Empowerment.

1. Introduction

China's Education Modernization 2035, issued in February 2019, marks a new era of strategic restructuring in China's education development. This first medium- and long-term plan for education modernization at the national level has built a complete spectrum of reforms from “top-level design, meso-mechanisms, and micro-practices”, and its historical significance lies not only in the establishment of the strategic goal of realizing the overall modernization of education in 2035, but also in the systematic planning of the modernization of the education concepts, systems, systems, contents, methods, and governance. The document explicitly takes education informatization as the core engine of modernization, and puts forward the strategic task of “accelerating the transformation of education in the age of informatization”, whose fundamental mission is to serve the country's grand blueprint of building a strong socialist modernized country in 2050.

It is noteworthy that the plan puts “implementing the fundamental task of establishing moral character” at the top of the ten strategic tasks, highlighting the return of the essence of human education. This value orientation requires education to shift from knowledge-based to literacy-based, from scale expansion to connotative development, and from standardized training to personalized parenting (Li, 2021). This grand vision calls for a profound and systematic reform of basic education, which is the cornerstone of national talent cultivation and social progress. Basic education, as the cornerstone of the national talent strategy, carries the historic mission of training socialist builders and successors who are all-rounded in morality, intelligence, physical fitness and aesthetics. With 230 million students currently enrolled in basic education in China, the quality of development of this large group is directly related to the country's future competitiveness. Guided by the blueprint for modernization, the reform urgently needs to break through three deep-rooted contradictions: the dilemma of modern transformation in education governance, the problem of systemic repair of ecological imbalance, and the challenge of adapting education to the technological revolution. These structural contradictions call for us to build a new paradigm of reform with holistic thinking, and to promote the high-quality development of basic education through the three-dimensional linkage of system innovation, ecological restructuring and technological empowerment.

2. The Value of Implementing the ‘Double-Decrease’ Policy

2.1. The Theoretical Connotation of Governance Modernization

The modernization of education governance involves the dialectical unity of the modernization of the institutional system (the dimension of system) and the modernization of governance capacity (the dimension of capacity). The modern governance system has four typical features: in the main dimension, the main body of governance expands from the unipolar management of the education administration to the multi-dimensional co-governance with the participation of schools, families, and social organizations; in the decision-making mechanism, it realizes the transformation from vertical control to democratic consultation; in the implementation mode, it completes the transformation from administrative order to interactive consultation; in the evaluation standard, it builds a comprehensive evaluation system from single performance to multi-dimensional development In terms of evaluation criteria, the construction of a comprehensive evaluation system from single performance to multidimensional development (Jiang, 2021). The essence of this transformation is a paradigm shift from “management” to “governance”, the core of which lies in the reconstruction of the community of responsibility of education stakeholders, through the reconstruction of rights and responsibilities and mechanism innovation, the formation of a new pattern of education governance of multiple subjects

in a coordinated manner. The evolution from "education management" to "education governance" is reflected in several key shifts: the main body of governance has shifted from single to multiple; the operation of power has shifted from centralization to process democracy; the mode of implementation has shifted from coercion to interactivity; and the mode of management has shifted from controlling to cooperating (Liu, 2017). Basic education is the "foundation" of lifelong learning for young people. However, its roots have been seriously eroded by the prevalence of excessive academic burden, which has jeopardized the physical and mental health of students and damaged the educational ecology.

2.2. Crisis Representation and Policy Responses in Educational Ecology

Since the 21st century, the ecological crisis of China's basic education has centered on the spread of the "academic burden syndrome". According to the Ministry of Education's research data in 2021, the average daily homework of primary and secondary school students exceeds the standard; the proportion of secondary school students participating in subject-based out-of-school training is high; the myopia rate of students is rising year by year, and the detection rate of depression is increasing. These problems reflect a systemic imbalance in the education ecology, and there is an urgent need to reconstruct the relations of production in education through institutional innovation.

The introduction of the Opinions on Further Reducing the Burden of Homework for Students in Compulsory Education and the Burden of Out-of-School Training is of epoch-making significance. The policy restructures the education ecology through three core initiatives: firstly, through the homework revolution mechanism, a graded review system is established, written homework is completely banned in the first and second grades of elementary school, homework for grades 3-6 is controlled within 60 minutes, and daily homework for junior high school is strictly controlled within 90 minutes. The second is the training governance system, which reduces the number of national discipline-based training institutions, strictly limits training time to non-holiday hours, and establishes a dual mechanism for financial supervision and quality assessment. And collaborative parenting network, build "school - family - community" tripartite responsibility list, the formation of after-school services and family education guidance convergence mechanism. Monitoring of the effectiveness of the policy over the past two years has shown that the average daily sleep time of students has increased, the education anxiety index of parents has decreased, and the role of the school as the main position has been significantly enhanced. This proves that the leverage of the policy can reshape the relations of production in education and return the center of gravity of learning to the main channel of nurturing people on campus.

2.3. The Path of Modernization of Governance in Practice

The essence of the "double-decrease" is an experimental field for the modernization of education governance, and its deepening requires systematic institutional innovation. Future reforms need to focus on building a governance community that is "government-led, school-responsible, family-participating and socially supportive", and on promoting the transformation of the governance system from fragmentation to systematization. Therefore, the "double-decrease" policy is a basic means of modernizing education governance. Its effective implementation must be fully integrated into the reform and development process of the modern education governance system, and become a strategic lever for promoting the modernization of basic education governance. This requires not only compliance but also a shift in the mode of interaction and shared responsibility among schools, families, training institutions and regulatory bodies.

3. The Fundamental Purpose of Building a Sound Ecology for Basic Education is to Ensure the Healthy Development of Students

Systems theory views a system as a whole composed of various subsystems. Educational ecology is composed of the subject of education and its environment, and the development of the subject is composed of various elements, and its healthy growth depends on the scientific and coordinated development of the "home, school, community" and other relational fields. Therefore, from the perspective of educational ecology, excessive academic pressure is a combination of personal and environmental factors, which can be characterized from the inside out as follows: firstly, students' physical and mental health has serious problems such as high rates of myopia and depression checkups; secondly, the disorderly expansion of off-campus training institutions interferes with the normal education system; thirdly, parents' excessive pressure has led to the educational concepts and behaviors of "excessive comparison"; and thirdly, parents' excessive pressure has led to the educational concepts and behaviors of "over-comparison" and "excessive comparison". Fourth, the main position of schools has become passive; fifth, the purpose of basic education has become utilitarian and short-sighted, forming an educational ecology of "only scores" and "only promotion"; sixth, the social evaluation system has become one-sided, mainly reflecting the "one-sidedness" of the education system, with the main problems of myopia, depression and other serious problems. Sixth, the social evaluation system has become one-sided, mainly reflecting "academic qualifications above all" and "promotion rates above all". The ecosystem of basic education is out of balance, and various accumulated contradictions have erupted through the excessive burden of schoolwork. In essence, we can see that the standard of education is whether it is healthy and scientific, and a good education is one that can promote the healthy growth of young people. What does not meet the standard is what needs to be corrected in the future.

To do a good job of modernizing education, a basic premise is to follow the law. Education to achieve the purpose of "back to basics", the so-called "true", refers to the laws of education (Tian, 2019). Laws of education refers to the inevitable, essential, stable and recurring relationship between the phenomena of education, in its generalization and refinement, the final formation of the concept and understanding, can be divided into three levels: school governance laws, the law of education and teaching and the law of student growth (Peng, 2013). The most important of these is the law of student development. It should be used to promote the comprehensive and individualized development of students, and used to test the conformity and purposefulness of educational and teaching contents, methods and approaches, educational

management, and educational policies, and to amend the concepts and practices that are against the laws of education in due course, so as to better promote the development of students. The growth of students is a long process, and this process must abide by the basic laws of education, in which any part of the process that goes wrong will affect the healthy development of students. Individual growth is sequential, phases, differences and imbalance, coupled with the development of students is a very slow process, so the teaching should be "slow work", that is to say, to give students enough time to try, to feel, to experience, to explore, from frustration and failure to the joy of success is also an important part of education. It is also an important part of education. Only an educational ecology that respects science and follows the rules can enable children to grow up healthily. The series of problems brought about by the imbalance in the ecology of basic education require the Government to actively intervene and build a good education ecology for students through policy intervention, thereby "loosening" and "lightening" the burden on education and society. However, the "Double Reduction" policy is only a starting point, a starting point for solving the "pressing problems". To fundamentally eliminate the "heavy academic burden", "only promotion", "only scores", "education over-competition "The shortcomings of", we must 'think long term', for the follow-up work to prepare, so that 'stand' a good education ecology (Ma, 2022).

4. The Real Needs and Challenges of Educational Change in the Information Age

4.1. The Learning Revolution of the "Digital Natives"

According to the fifty-first Statistical Report on the Development of the Internet in China by the Internet Information Center of China, the number of Internet users in China has now reached 1.067 billion, with an Internet penetration rate of 75.6 per cent, and the Internet and information technology have become the objective environment for the growth of young people in this era. For the "digital generation" of students, their learning characteristics are different, more inclined to multi-tasking in parallel to complete, more favorable to the visual mode of presentation, preferring graphics and audio-visual, and able to quickly communicate on the Internet. Educational reform in the face of such a "digital generation" can help break the traditional "indoctrination" and "duck-filling" educational methods, leave more space for students to think, and better utilize students' initiative. It will help to break the traditional "indoctrination" and "filling in" education, leave more space for students to think, and better utilize their initiative. Information technology itself is a course of practical, logical and applied nature, due to the students do not have sufficient learning experience, in the face of this course often take a passive attitude to cope with, which leads to the students are often difficult to form the core literacy of the discipline on. From the current teaching situation of IT in primary and secondary schools, the teaching effect is still difficult to achieve the desired results, on the one hand, some schools do not pay enough attention to the course, on the other hand, the teaching methods of teachers are more traditional, so how to cut from the perspective of the "double reduction" to explore new teaching methods for teachers of information technology is particularly important. Therefore, how to explore new teaching methods from the perspective of "double reduction" is particularly important for IT teachers.

4.2. Practical Dilemmas and Breakthroughs in Technology Enablement

As modern educational technology is integrated into educational practice, we have to think about the relationship between technology and teachers, and even more so as IT teachers, we need to clarify the co-existence of technology and teachers. The Horizon 2020 Report (Teaching and Learning Edition) states that technology itself does not affect learning in any way, and that the value of technology can only be realized through careful design and planning, and integration into the learning environment of students and teachers. By analyzing data from the most recent rounds of PISA, we were able to find that while the percentage of computer students in schools is increasing, their math, reading, and science scores are decreasing (Xu, 2020). There are many factors that can have an impact on student achievement, but this also shows that technology alone cannot change learning outcomes, but also requires the combined effect of various other factors. Therefore, teachers' information literacy, digital literacy, media literacy, and technological literacy can have a direct impact on the quality and effectiveness of information technology in education. For example, the interactivity of the Internet has greatly enhanced the sharing of rich educational resources, which to a certain extent affects the voice of teachers, but it also brings about knowledge fragmentation that affects the deep learning of learners, so teachers need to think about how to integrate the fragmented knowledge and find the correlation between them, so as to ensure that the knowledge that students are exposed to is systematic and relevant. Therefore, as teachers, we need to filter and sift the knowledge fragments, and constantly improve our own ability to refine and integrate knowledge, that is, we need to realize the "secondary development" of the knowledge fragments according to the current teaching problems of the subject, and the need to achieve the teaching goals. There is a "pedagogical ceiling effect" on the utility of technology, and that when the use of technology is not supported by appropriate pedagogy, it will lead to "learning poverty under the digital boom". To break through this dilemma, it is necessary to build an integrated framework of "technology, pedagogy and subject content".

4.3. Paths to Intelligent Upgrading of the Teacher Profession

The teacher competency model in the technological era needs to be reconfigured into four pillars: information literacy: enhancing data analysis and knowledge governance skills. Digital Literacy: Enhance learning design and resource development skills. Media Literacy: Develop the ability of information critique and digital citizenship education. Technological literacy: mastering human-computer collaboration and intelligent educational application capabilities. For example, fragmented information can be transformed into "conceptual puzzle cards", and a three-stage training model of "searching for connections, organizing modules and building systems" can be designed. In the unit of "Artificial Intelligence Enlightenment", students are guided to combine the scattered concept cards of machine learning, neural networks, ethical norms, etc. into a

knowledge network of technical principles, application scenarios and social impact. This “fragmentation technique” highlights the core value of teachers as knowledge architects, the essence of which is to transform fragmented information into a structured knowledge system through instructional design.

5. Conclusion

5.1. The Path of Modernization of Governance in Practice

The current curriculum reform has entered the deep-water zone of literacy transformation, and it is necessary to establish a systematic implementation path: the mechanism of unification of big concepts: for example, the discipline of physics refines the big concept of “conservation of energy”, connects the 30 core knowledge points of mechanics, heat, electromagnetism, etc., and forms a hierarchical conceptual network. Performance Evaluation System: Developing a system of literacy observation indicators, and establishing a chain of evidence of growth that includes thinking processes, practical achievements, and social participation. Interdisciplinary integration paradigm: constructing new literacy carriers such as “ethics of science and technology” and “digital citizenship”, and designing learning programs on social science issues. For example, a three-tiered goal system of “basic-developing-challenging” is established through the dimensions of literacy, which is complemented by the development of literacy performance standards, case study resource libraries, and teacher's guidebooks. This systematic design provides a precise mapping between curriculum objectives and literacy development, and an operational framework for literacy implementation.

5.2. The Principle of Dialectical Unity of Technology and Humanity

In the face of the wave of digital transformation of education, three basic principles need to be established: the balance between instrumental rationality and value rationality: positioning technology as a tool for deepening thinking and preventing the cult of efficiency from leading to the alienation of education. Symbiosis between artificial intelligence and teachers' wisdom: clarify the boundaries of machine substitution, and adhere to the educational essence of emotional interaction and value guidance. Integration of virtual space and the real world: build a new pattern of online and offline integration of human education, and prevent the digital divide from aggravating educational inequality. Curriculum design to ensure that the application of technology always points to the comprehensive development of human beings, so that digital tools become carriers rather than masters of the humanistic spirit.

5.3. The Value of Education Ontology

In the course of modernization, education needs to adhere to three major ontological values: the original intention of educating people: be wary of the dissolution of the temperature of education by technocracy, and maintain the life field of emotional connection between teachers and students. Rhythm of Growth: Fight against the compression of the development process by utilitarianism, and respect the stage characteristics of cognitive development. Integrity of personality: transcending the fragmentation of human beings by fractionalism, and cultivating a complete personality with both scientific rationality and humanistic feelings. The deep value of China Education Modernization 2035 lies in guiding us to guard the “North Star” of education in the midst of the technological flood - to cultivate new generations who will take on the great responsibility of national rejuvenation. This requires every educator to become an “architect of humanistic technology”, balancing the effectiveness of tools and humanistic care in teaching design, infiltrating value guidance in the application of technology, and cultivating empathy and a sense of responsibility in the digital environment. Only through the deep integration of technological empowerment and humanistic infiltration can we build a warm and vital educational home in the digital wave, and ultimately realize the fundamental goal of education modernization, which is to “promote the all-round development of human beings”.

China's basic education reform has entered a new historical stage, as evidenced by the introduction of a system of core qualities for student development and the ongoing construction and improvement of the basic education curriculum system on the basis of the development of students' core qualities. To build and improve this system, core literacy must be used as a guide to refine the broad concepts of each subject, that is to say, to tap into the contributions that each subject can and should make in the process of developing students' core literacy. Therefore, teachers should take the core literacy as a guide and basis for the selection of learning contents, design the teaching process and teaching methods, and establish appropriate evaluation standards and evaluation methods according to the teaching objectives, so as to achieve the purpose of cultivating students' core literacy. Teachers and modern education technology are constantly evolving and developing in mutual influence. Modern education technology has a revolutionary impact on the education system, and its advantages in education resources, education efficiency and education venues will inevitably put teachers in a long-term passive “search” predicament. From another perspective, “technology alone is not enough. We believe that only the combination of technology and humanity can make our hearts sing” (Li, 2017). In this era of rapid technological expansion, it is necessary for teachers to assume the responsibility of guarding the self and the subject position of students, and to pay attention to the overall development of students in the spirit of humanistic care.

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