



The Impact of New Gaokao Reform on the Implementation of High School Teaching in the Context of Educational Objectives

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Abstract. China's new Gaokao reform started in 2014 and has undergone much adjustment and development in the past ten years, serving as guidance on education reform in China. It aims to satisfy the national needs for development and to cultivate the all-round development of high school students with high cultural self-confidence and outstanding talent in scientific and technological realms. This paper explores the influence of the new Gaokao reform on the implementation of high school teaching and some possible suggestions on the unsolved issues. By using literature research, this paper finds that higher requirements have been put forward for high school education to adapt to the new educational objectives and challenge traditional teaching and management modes. High schools should take measures to innovate management methods and play the role of teachers who had been getting less attention than students before reform, so that high school education can guide students to develop their creativity and learning initiative, improve problem-solving skills, and promote well-rounded human development in China, getting rid of traditional test-oriented and score-oriented education.

Keywords: New Gaokao Reform; High School; Educational Objectives.

1 Introduction

To promote the all-round development of students, reduce students' academic burden, as well as to cultivate needed talent, the State Council of China issued the Implementation Opinions on Deepening the Reform of the Examination and Enrollment System in September 2014 and planned to carry out pilot reforms in Shanghai and Zhejiang provinces in 2014. According to the Opinions, by 2020, a modern education enrollment examination system with Chinese characteristics will be established [1]. In actual practice, 29 provinces across the country have launched the comprehensive reform of Gaokao in five batches by 2023 and will continue to adjust and develop this reform [2]. Based on the above, this paper analyzes reform key contents, the changing education goals, and challenges to secondary education, attempting to explore the effect of Gaokao reform and possible solutions.

2 Three Focuses of New Gaokao Reform

There are three salient changes in the new Gaokao. First, the new Gaokao adopts a new mode of examination—course selection, transforming the traditional division between liberal arts and sciences into a "3+3" model, which later develops into a "3+1+2" mode. In the "3+1+2" mode, students possess the autonomy to select their Gaokao courses based on personal interests and expertise. Apart from three compulsory subjects (Chinese, Math, and Foreign Language), students need to choose 1 "preferred subject" between physics and history and 2 "re-selected subjects" among chemistry, biology, politics, and geography. The adjustment in the test mode aims to avoid problems generated in the pilot. In Zhejiang province, the number of students choosing physics in the "3+3" mode dropped suddenly and high schools attached less importance to physics [3,4]. It can guarantee the significance of physics as a basic science subject, catering to national demands for developing advanced technology, promote equity in Gaokao in case opportunists might choose subjects easy to learn, and reduce the difficulty of test papers, as well as respect students' personal development and autonomy. The development of a course selection system reveals national expectations of striking a balance between individual development and social needs.

Second, the new Gaokao adopts a new marking system—a graded scoring system, which applies to 2 re-selected subjects. It is designed to mark the relative position of individual students in the examinee group and stabilize the relative distribution of Gaokao results across the province [5]. The raw grade on the test paper will be classified into different grades and recalculated according to its ranking in the whole examinee group of a subject. For example, if there are 200,000 students in a province taking biology, the top 1% of the examinees will gain 100 points, which means that 2,000 people can get 100 points, which avoids the previous situation that every point counts and reduces students' academic burden [3]. But this scoring system also leads to several unsolved problems: it fails to distinguish students in the same rank, especially failing to tell the best students apart from the second-best students and select outstanding talents with professional expertise for universities because the graded scoring system ignores the differences of latent competence reflected by students' paper-based answers [3]. Moreover, the significance of "preferred subjects" is challenged by "re-selected subjects" in this scoring system because both of them are based on a hundred-mark system and it is more likely to get higher grades in exams of "re-selected subjects", due to which, students may pay more attention to the study of "re-selected subjects" instead of studying hard at physics or history [3]. To solve the problem, Zhejiang Province announced in 2021 that the score gap between two adjacent ranks would be reduced from 3 points to 1 point [6]. In short, through a graded scoring system new Gaokao indicates its preference for top-notch personnel and its purpose of reducing study load but it still needs to confront remaining problems.

Third, the new Gaokao attaches great importance to the holistic development of students and regulates the establishment of a standardized file as a formative assessment for each student to record their synthetical quality in senior high [1]. The file covers five dimensions of a person, ranging from ideology and morality, physical and mental health, academic performance, and artistic achievements to experiential prac-

tices, which emphasizes a student-oriented reform trend to cultivate the practical capability of the young rather than just focusing on the test scores [7]. Universities can refer to the performance recorded on a student's file, combined with the Gaokao results, to enroll proper students. This approach builds a two-way selection platform for students and universities and both sides can have a better understanding of each other before the final decision. What's more, it provides more opportunities for students to be admitted into a university and contributes to cultivating a variety of talents for society.

3 Analysis of the New Educational Objectives Reflected in New Gaokao Reform

3.1 Consolidate the Confidence in Chinese Culture

The new Gaokao emphasizes the importance of Chinese learning and puts forward new requirements for students' Chinese ability, while the status of foreign language learning is relatively reduced. Since 2014, candidates can have two opportunities to take foreign language exams and choose one of the results to count towards their Gaokao scores. Foreign language subjects include 6 languages ranging from English, Japanese, Russian, German, and French to Spanish, and students can choose one according to their learning situation and future university professional requirements. This change can ease the problem of "one test determines life" in the past, reducing the pressure on students in English learning, and students can focus on the study of Chinese and Math before the final Gaokao.

What's more, to improve the Chinese level of young people and enhance students' patriotic enthusiasm and sense of national identity, the Ministry of Education continues to raise the difficulty of the Chinese exam papers in the college entrance examination. The number of ancient texts that students must recite has increased from 14 to 72, and the total number of words in Chinese test papers has increased from 6,100 words in 2012 to 10,000 words in 2018, which puts higher requirements on students' reading speed and their ability to solve questions and shows the expectations for the young to strengthen cultural self-confidence [8].

3.2 Cultivate Talents in Science and Technology

The new Gaokao reveals the country's demand and preference for outstanding talent in scientific and technological fields, in a realistic situation where technological innovation and scientific breakthroughs are much needed to improve national productivity under the downward pressure on the Global economy. Compared with students choosing history as their "preferred subject", students studying physics have much more options for university majors, and can apply for more than 97% of the majors in science and technology universities [8]. However, the status of traditional liberal arts students, who select history, geography, and politics, declines in the reform because those students can only apply for 52.9% of the majors, which implies a narrower

range of employment options and higher employment difficulty after graduation [8]. Thus, the preference for young scientific talent forces students to expose themselves to science knowledge, as even if they choose one science subject, they can have more opportunities in the future, which provides the possibility for training potential scientific and technological talent. For instance, the combination of history, chemistry, and politics can allow students to apply for 88.6% of the majors [8].

This preference is also embodied in extra opportunities for students with special scientific competence to enter top universities even though they might get lower scores in Gaokao. "Strong Basic Plan" launched in 2020 is one of the examples. This national project involves 36 top universities in China to promote the development of basic subjects, aiming at selecting students with innovative thinking and problem-solving abilities, different from previous knowledge talented persons [9]. For example, in the practice of a "Strong Basic Plan", Zhejiang University pours national resources into science education, cooperating with national major research platforms and utilizing national major science infrastructure as well as national key laboratories to develop students' science innovation capability, which shows special attention paid to cultivating science talents [9].

What's more, the significance attached to students' Youth Science Olympiad performance by top universities in "Strong Basic Plan" also shows national encouragement to students to work at mathematics, physics, chemistry, biology, and information technology instead of liberal arts, providing more opportunities for students with scientific literacy. Therefore, the new Gaokao reveals an urgent demand for scientific talent with innovative ability, and the satisfaction of this demand might also be accompanied by sacrificing the opportunities for liberal arts development to some extent.

3.3 Promote the All-round Development

The new Gaokao reform shows the demand for science students, but it also hopes to promote the integration of the knowledge structure of high school students, which means that students are expected to command both arts and science knowledge. After the abolition of the liberal arts and science branches, the 14 high school courses stipulated by the state are all included in the high school academic level examination, and students should not only focus on the study of science or humanities knowledge but should seriously study each course [10]. Thus, they can be cultivated into people with scientific talent and aesthetic ability to appreciate arts.

The reform establishes a formative assessment system to examine the comprehensive quality of high school students and to promote whole-person education and all-round development of students. The state requires the establishment of standardized students' comprehensive quality files, including five aspects—students' ideological and moral character, academic level, physical and mental health, interests and talents, social practice, highlighting the process evaluation, to promote quality education and students' individual development [11].

4 New Challenges for High School Teaching and Possible Suggestions

4.1 Shift System Challenges High School Education

To adapt to the reform trend of the new Gaokao, adapt to the different requirements of different selected subjects, and promote the all-round development and personal development of students, the teaching mode and teaching organization of senior high schools have undergone great adjustment: from the traditional administrative class to the "shift system", which means "students flow to classes in different classrooms according to different disciplines or different teaching levels" [12,13]. It reflects the development of student-orientated concepts and the demands of individualized teaching and is also conducive to giving play to students' dominant position in the classroom, improving their learning autonomy and enthusiasm, and then contributing to the training of national innovative talents.

However, in practice, the shift system challenges traditional high school education mode from three aspects—management, subject teaching, and resource allocation. In terms of management, the shift system increases the difficulty of class management, and the sense of class belonging as well as the relationship between teachers and students is weakened. Teachers pay more attention to students' knowledge mastery and neglect the educational function of the classroom in morality [12]. Schools still adopt the traditional way of manage, such as teacher calling roll, and do not actively adopt scientific and technological means to innovate management methods, and a "tutor responsibility system" cannot be effectively established in high schools [11].

In terms of subject teaching, the increased mobility of students reduces the opportunities for teachers to tutor students after class, making it difficult for teachers to fully understand students' situations [12]. At the same time, the shifting system increases the workload and work pressure of teachers, especially in schools with insufficient teacher resources. A teacher originally has to assume the teaching tasks of different grades, but the shift system puts higher requirements on teachers and classroom resources, exacerbating the tension of resource allocation, and the pressure will be eventually transferred to teachers. In an interview about the impact of Gaokao reform on the working lives and professional identity of high school teachers in Zhejiang Province, a teacher points out that the reform increases her current workload and she is too stressed to care for students as before [4]. In addition, the learning progress of different hierarchical students is non-uniform, and teachers need to design and prepare for differentiated teaching content, which undoubtedly increases teachers' teaching pressure.

In terms of resource allocation, the implementation of the shift system needs rich teacher resources and facility resources in senior high schools. High schools with insufficient educational resources are often unable to complete the shifting system of all subjects, only putting into practice the hierarchical teaching of compulsory exam subjects—Chinese, Math, and Foreign Language, which results in unbalanced resource allocation among disciplines and fails to meet the requirement of comprehensive development [12].

To ease the tension between traditional educational methods and new Gaokao reform, modern scientific technology should be introduced into high school education which can alleviate the burden of both administrative teachers and front-line teaching teachers and carry out data-based intelligent management. Traditional methods like roll call to check student attendance can be replaced by a more real-time and efficient method. And government should enlarge teacher establishment to adapt to the increasing workload general teachers are facing due to the reform. High schools should improve the performance evaluation system of teachers and establish new workload accounting standards suitable for new Gaokao [13].

4.2 High School Teachers Undergo New Identity Transition

From Cramming Educator to Curriculum Innovator.

New Gaokao requires classroom teaching to realize the transformation from "teaching what is tested in the exam" to "teaching what students need" [14]. Cramming education which features a knowledge impartment is outdated but new teaching models have not yet been established. Every teacher is a pioneer and innovator of classroom teaching. However, in practice, teachers often passively accept the teaching process formulated by the school's decision-making level to carry out teaching, while schools often lack an in-depth interpretation of the new Gaokao policy, resulting in conflicts between teachers' teaching and school arrangements [11]. A teacher in Zhejiang Province points out in one interview that a weekly fixed-time test arranged by her school often disrupts her assessment schedule for students [4].

Given the above problems, front-line teachers should be given the time, space, and opportunity to innovate teaching, otherwise, high school education will continue to follow the previous drawbacks of test-oriented education or score-oriented education, unable to fully cultivate students' ability and promote students' all-around development. High schools also need to take flexible measures to satisfy various demands of different subjects instead of taking one-size-fits-all approaches.

From Simple Obedience to Active Participants in Management.

New Gaokao puts forward new requirements on the identity of teachers, introduces the tutor responsibility system in practice, and carries out the management system of "class teacher + tutor", which encourages teachers to take on new functions as managers [12]. Not only headteachers but also ordinary teachers have to take part in teaching management to share the responsibility and workload brought by shift systems and other new management methods. However, teachers might be accustomed to focusing on their teaching and proving their value by improving teaching quality in traditional mode and have difficulty transforming from obedient followers to managers. In some schools, the communication opportunities between teachers and their leaders are reduced, and their work opinions and feedback cannot be effectively conveyed upward, which dampens the enthusiasm of teachers [4].

Therefore, teachers should enhance their awareness of participating in school management and possess certain decision-making rights, which implies corresponding

efforts to learn modern management knowledge. High schools should also widen the information communication channels between upper and lower levels and provide a platform for teachers to conduct their management ideas as well as distribute a more balanced workload among teachers instead of piling too much burden on class teachers.

From People Left Out to Seekers for Personal Professional Development.

High school education practice has always shown the characteristics of attaching importance to students' development needs and ignoring teachers' professional development needs, but the new Gaokao reform has put forward higher requirements for courses, students, and teachers [12]. Educational progress and student development closely depend on teachers' professional competence and pedagogy knowledge.

Therefore, high school teachers should conform to the development needs of the Times, actively accept new things, take the initiative to constantly update teaching concepts and pedagogical methods, and pursue the improvement of personal and professional ability to promote the diversified and personalized growth of students.

4.3 New Adjustment in Teaching Objectives

Different from the traditional college entrance examination, which focuses on the knowledge reserve of students, the new Gaokao conforms to the training requirements of talents urgently needed by the country, highlights the quality inspection of modern scientific and technological talents, and meets the requirements of the diversified talents with comprehensive quality in contemporary society. It shows a brand-new concept of talent quality: comprehensive quality as the base, subject core quality as the main part, and innovation and practice quality as the key [14]. Innovation quality matters a lot in future personnel cultivation and selection for China.

In the process of training students, emphasis should be placed on giving play to students' subjectivity. Students are encouraged to develop naturally and independently, take the initiative to participate in practice, improve their problem-solving ability, and truly become the masters of their learning. Student-oriented teaching mode should be established to inspire independent study and autonomic learning so that students can eventually apply what they have learned into practice and create scientific and technological breakthroughs for national development.

5 Conclusion

In conclusion, the new Gaokao reform symbolizes a remarkable transformation of education in China, setting up new educational objectives to promote holistic education and cultivate needed talents for national development. This paper summarizes the development of the new Gaokao reform and analyzes the trajectory of changes in educational goals reflected by the reform, which is in line with the needs of national development. It also points out the remaining problems in practice in terms of current Gaokao regulations and high school education.

The course selection system endows students with autonomy in their study and the possibility of individual development, and the graded scoring system reduces students' academic burden so that students can put more time and energy into developing comprehensive quality and cultivating innovative thinking abilities and problem-solving ability. New Gaokao reform guides high school education to consolidate students' cultural self-confidence by raising the difficulty of Chinese exams in Gaokao and reducing students' pressure of learning English, to cultivate special talents in science and technology to further promote national scientific and technological innovation and breakthroughs, as well as to achieve the all-round development of students. To adapt to the new Gaokao reform, high school teaching has to confront the new challenges brought about by it. High schools can adopt modern intelligent management mode to implement the shift system teaching and reduce the workload of high school teachers, and pay more attention to the identity transition of high school teachers who are often neglected compared with students and given little right to make a difference to educational management and regulation. What's more, the brand-new concept of talent quality also requires high schools to innovate teaching methods based on student needs and respecting the proactivity of students themselves to learn, practice, and create.

References

1. State Council. https://www.gov.cn/zhengce/content/2014-09/04/content_9065.htm, last accessed 2024/2/21.
2. Ministry of Education. http://www.npc.gov.cn/npc/c2/c30834/202310/t20231024_432553.html, last accessed 2024/2/22.
3. Liu, H., Tang, B., Wei Y.: Pilot advancement and effectiveness evaluation of the New College Entrance Examination Reform for ten years. *Journal of the Chinese society of education* 12, 28-35 (2023).
4. Xu, J., Huang, Y. T.: Identity transformation of Chinese secondary school teachers during educational reform. *Asian Journal of Social Science* 49(2), 101-108 (2021).
5. Lang, P.: Research on the policy of grading system under the background of New College Entrance Examination Reform. *Teaching and Management* 4, 65-70 (2024).
6. People's Government of Zhejiang Province. https://www.zj.gov.cn/art/2021/2/26/art_1229400168_59084862.html, last accessed 2024/2/28.
7. Liu, C.: Analysis of New Gaokao Reform under the context of "Suzhi" education for high school students. *Journal of Education, Humanities and Social Sciences* 23, 227-232 (2023).
8. Xu, K.: Course selection guide, change analysis and development trend analysis of New College Entrance Examination Reform. In *International Conference on Modern Educational Technology and Innovation and Entrepreneurship (ICMETIE 2020)* 279-284 (2020).
9. Zhang, X., Li, J.: Exploring Chinese Strong Base Plan policy development in pilot universities: A policy implementation analysis. *Beijing International Review of Education* 5(4), 455-459 (2023).
10. Tan, C., Ng, C. S.: Assessment reform in Shanghai: Issues and challenges. *International Journal of Educational Reform* 27(3), 291-309 (2018).
11. Zhang, M.: Difficulties and suggestions on the implementation of the hierarchical class-selection system in senior high school: A case study of the a school in Hainan province. Jinan: Shandong Normal University (2023).

12. Shi, L.: A Study on the problems and countermeasures of senior high school class management under the background of the New College Entrance Examination—A case study of h middle school. Wuhan: Central China Normal University (2023).
13. Jiang, F.: Research on the influence of the New College Entrance Examination Reform on teachers' workload. Shanghai: East China Normal University (2020).
14. Long B. X.: Senior high school classroom teaching reform toward the New National College Entrance Examination System. *Contemporary Educational Science* 6, 3-13 (2023).

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