China: From "Rote Learning" to "Quality Education"

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Fractal Academy
Issue 2 (Autumn 2026) Article 3
Series: "World Experience of Educational Reforms: From the School-Conveyor to the School of Thinking (Comparative Analysis and Lessons for the CCFP Model)"
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DOI: [to be assigned]
Publication date: 1.11.2026

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Title (English): «China: From "Rote Learning" to "Quality Education"»
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Abstract

In this article, I analyze the experience of China, a country that has carried out, perhaps, the most large-scale and ambitious transformation of the educational system in modern world history over the past forty years. From the model of mechanical memorization (sijiying, "rote learning") and examination slavery (yingshi jiaoyu), China has proclaimed a transition to "quality education" (suzhi jiaoyu) [2], [4], and then to "education focused on the development of key competencies" (hexin suyang) [5], [8]. Relying on the research of Chinese and Western scholars, including the works of Olivia Fine [3], as well as an analysis of the reforms of 1985 [1], 2001 [2], [4], and 2010-2020 [5], [8], I show that the Chinese experience is both impressive and deeply contradictory. On the one hand, China demonstrates outstanding results in international PISA assessments [2], [6], has created an education system covering millions of children [9], and has proclaimed ambitious goals for developing critical thinking and creative abilities [5]. On the other hand, the gaokao - the unified state entrance examination - remains the dominant factor, nullifying many reformist aspirations [6]. Reforms face conceptual uncertainty [3], a lack of resources, conservative resistance from teachers and parents [3], and growing social inequality [7]. I also show that the Chinese model, despite its external attractiveness to supporters of "high achievement," fundamentally diverges from the communicative-cognitive framework of personality (CCFP) model: it remains exam-centric, uniform, and does not provide systemic tools for diagnosing and developing mental mechanisms through the unique abilities of each child [11].

Keywords: China, gaokao, suzhi jiaoyu, quality education, hexin suyang, key competencies, 1985 education reform, examination culture, PISA, communicative-cognitive framework of personality.

Introduction: Why China

China is a country that never ceases to amaze. Over the past few decades, it has made an economic leap unprecedented in world history. And at the foundation of this leap, as many rightly believe, lies education [2]. Millions of Chinese students who have passed through a rigid system of exams have become the engines of an economic miracle. But China is also a country where educational reform faces, perhaps, the most serious contradictions [3]. On the one hand, the Chinese government proclaims a transition from "rote learning" to "quality education," from mechanical memorization to the development of creative and critical thinking [2], [4]. On the other hand, the gaokao - the unified state entrance examination that determines the fate of millions of graduates - remains the main factor dictating the entire content of school education [6].

I have pondered this paradox for a long time. And the more I studied the Chinese experience, the more clearly I understood: China demonstrates to us not just a "special path" of educational development. It demonstrates to us the extreme form of the contradiction that is present to one degree or another in all educational systems of the world - between declarations and practice, between reforms and reality, between the aspiration to develop thinking and the pressure of the examination system [3], [6]. That is why I consider the analysis of the Chinese experience critically important for understanding what we face when trying to transition from a conveyor-belt school to a school of thinking [11].

Here it is appropriate to recall the ancient Chinese myth of the "Dragon Gate." According to legend, a carp that manages to swim upstream along the Yellow River and leap over the waterfall turns into a dragon. For centuries, Chinese youths preparing for the imperial examinations dreamed of making this "leap" - from poverty to officialdom, from obscurity to glory. The gaokao is the same Dragon Gate. It provides incredible social mobility. But it also shapes

all of education: the school becomes not a place for developing thinking, but a springboard for the leap. And a reform that tries to change the content of education, but leaves the gate in place, is doomed to crash against its stone walls.

Historical Context and Reasons for Reforms

To understand the current state of Chinese education, it is necessary to turn to its history. As researchers note, "modern school education in China is rooted in the imperial civil service system, which lasted for more than 1,300 years" [2]. This system, based on the memorization of classical texts, created a deep cultural tradition in which exams were not just a way to check knowledge, but the main mechanism of social mobility [2], [9]. Here it is impossible not to recall Confucius, who said: "Learning without thought is labor lost; thought without learning is perilous." But the Chinese examination tradition, unfortunately, placed its bet on "learning," forgetting about "thought."

After the founding of the PRC in 1949, the education system was reorganized along Soviet lines [9]. However, in 1966, with the beginning of the Cultural Revolution, the education system was practically destroyed [9]. The gaokao was abolished, universities were closed, and many teachers and scientists were repressed. The restoration of the gaokao in 1977 became a turning point. As the study notes, "the restoration of the national college entrance examination (gaokao) in 1977 marked the normalization of higher education and laid the foundation for a renewed interest in general education" [2]. This was the moment when China realized: without education there is no modernization, without exams there is no fair selection.

However, by the mid-1980s, it became obvious that a model oriented exclusively towards memorization and passing exams could not prepare people for the challenges of modernization and openness to the world [2], [4]. In May 1985, the Central Committee of the Communist Party of China adopted the "Decision on the Reform of the Educational Structure" [1]. This was the first systemic document that proclaimed the need to transition from mechanical memorization to a more holistic approach. As researchers note, "1985 was a turning point in Chinese educational policy" [2]. The 1985 Decision set several key tasks: a transition to talent cultivation (rencai peiyang) instead of mechanical knowledge transmission; expansion of the autonomy of educational institutions; decentralization of education management [1]. Following this, in 1986, the Compulsory Education Law was adopted, which formally established nine-year compulsory school education [2].

Suzhi Jiaoyu: Quality Education

The term "suzhi jiaoyu" ("quality education" or "education oriented towards quality") was first introduced in 1987, but did not become state educational policy until 1999 [2], [4]. What is "suzhi"? This is a complex concept that researchers translate as "quality," "qualities," or "human capital" [2]. As the study notes, "in the 1980s, when the focus in education shifted towards creating a globally competitive workforce, the 1986 Compulsory Education Law formally established nine-year schooling and officially introduced the concepts of suzhi (quality) into education" [2]. The suzhi jiaoyu reforms were aimed at overcoming the "excesses of examination education" (yingshi jiaoyu). Researchers characterize them as an attempt to "shift the emphasis from mechanical memorization to a more holistic development of the personality" [4].

In 2001, the "Basic Education Curriculum Reform" program was adopted, which became the most large-scale reform in China's history [2], [4]. The main changes included a transition from subject-centrism to integration (instead of separate subjects, "comprehensive courses" were introduced, which were supposed to show connections between different areas of knowledge); the introduction of "inquiry-based learning" (yanjiu xing xuexi) - students were to engage in project activities, independently research problems and find solutions; the expansion of school autonomy - schools received more freedom in developing curricula and choosing teaching methods; and the reform of the assessment system - instead of simply checking knowledge, it was proposed to assess competencies and abilities. As researchers note, "curriculum reform and 'quality education' in China were aimed at developing a more holistic approach to education" [4].

In the 2010-2020 period, the reforms reached a new level. China proclaimed a transition to "education focused on the development of key competencies" (hexin suyang) [5], [8]. As researchers note, "China's movement towards a key competencies-based curriculum represents a significant shift in curriculum orientation and stated learning goals for students" [5]. Six key competencies were defined: humanistic foundation, scientific culture, health and lifestyle, social responsibility, practical skills, innovation and entrepreneurship. For foreign languages, four subject key competencies were identified: language ability, learning ability, thinking quality, and cultural awareness [8]. As

researchers note, "the concept of 'key competencies' (hexin suyang) replaced 'student-orientation' as a fashionable academic and political term" [5].

For the CCFP model, the Chinese experience is important precisely because of its scale and its one-sidedness. China took a step from "knowledge transmission" to "competency development" - and even proclaimed "key competencies" as a state goal. But it did not take the next step - from "competencies" to "mental mechanisms." Key competencies, like the Finnish transversal competencies, remain general, cross-cutting orientations that do not have an operational definition and are not diagnosed as separate units. The mental mechanisms discussed in my model are specific tools of thinking, each of which can be diagnosed, evaluated in dynamics, and purposefully developed [11]. China proclaimed a goal, but did not create tools for its achievement. This is exactly what makes the Chinese experience particularly instructive for the CCFP model.

Positive Experience and Achievements

Chinese educational reforms have yielded impressive results that cannot be ignored. China demonstrates some of the highest results in international PISA assessments [2], [6]. As noted in the study, "in the last 20 years, Shanghai-China ranked first in the PISA rankings in 2009, 2012, and 2018" [2]. Chinese schoolchildren "have repeatedly ranked first in reading, mathematics, and science rankings." These results make a strong impression. They show that the Chinese education system is capable of preparing students who demonstrate outstanding academic achievements. As researchers note, "an analysis of the results of the international educational assessment PISA and world university rankings over several years confirms the conclusion that the course adopted by the PRC in the early 21st century to reform compulsory nine-year education through integration has fully justified itself" [2].

China has created an education system that covers millions of children [9]. Nine-year compulsory education has become a reality for the vast majority of Chinese children. As researchers note, China has "formally achieved equality in education" [7]. Chinese reforms have proclaimed ambitious goals that, in my view, deserve respect. The transition from "examination education" to "quality education," from memorization to competency development, is the right direction [4], [5]. As the study notes, "reforms have inspired innovative changes in a number of schools and have met with significant principled support." The introduction of "inquiry-based learning" (yanjiu xing xuexi) has become an important step forward [4]. Students have been given the opportunity to engage in project activities, independently research problems, and find solutions. This creates conditions for the development of critical thinking and creative abilities - those very mental mechanisms that I consider central to my model [11].

For the CCFP model, these achievements are not just "positive experience," but conditions of possibility. Outstanding PISA results, mass coverage of education, the proclamation of ambitious goals, the development of inquiry-based learning - all this creates an environment in which the formation of mental mechanisms becomes possible. But a condition of possibility is not the same as a sufficient cause. China has created the environment and proclaimed the goals, but has not created a system for diagnosing and developing specific mechanisms. Moreover, the gaokao - the central institution of the Chinese system - works against these goals, orienting students towards memorizing facts rather than developing thinking [11]. This is exactly why China's achievements remain fragile: they are held together by mass scale and target settings, but are not supported by the technology of forming a cognitive apparatus.

Negative Consequences and Challenges

However, behind these impressive achievements lie deep problems that, in my view, are no less instructive. The biggest problem of Chinese reforms is the gaokao [6]. As researchers note, "the gaokao is the world's largest standardized test, the cornerstone of China's educational selection system, and a key mechanism for social class mobility in China." Despite all the reforms, the gaokao remains the dominant factor in education [6], [7]. Researchers state: "the goals of the new curriculum are still not reflected in the exams and often conflict with the goals of teachers, students, and parents in a society where exam results have lifelong consequences" [6]. This creates a fundamental contradiction: reforms talk about developing thinking, but exams require memorizing facts [3], [6]. Teachers, parents, and students are forced to adapt to examination requirements, which creates a gap between the declared goals of the reforms and real practice [3].

The second serious problem is conceptual uncertainty [3]. What is "suzhi"? What is "quality" in education? Researchers note that "the implementation of reforms is hindered by insufficient resources, conceptual uncertainty, and conservative resistance" [3], [4]. A study conducted based on the analysis of 1,644 posts on the Chinese platform

Zhihu showed that "most Zhihu users believe that the suzhi jiaoyu discourse reflects not so much real changes as an 'illusion'." Researchers conclude that "most internet users use the key discourse of 'quality education' to criticize the unequal distribution of resources and, implicitly, the failure of state initiatives to eliminate these inequalities" [3]. This means that the very concept of "quality education" remains vague and does not provide clear guidelines for pedagogical practice.

The third problem is resistance from teachers, parents, and even students [3]. As researchers note, reforms face "conservative resistance" [3], [4]. Teachers who grew up in the "examination hell" system often do not understand the goals of the new reforms and do not possess the methods of active learning. Parents, who themselves went through the gaokao, demand the preservation of the familiar learning format, because this is the only way they know to achieve success. Students, in turn, are oriented towards passing exams, not towards developing thinking [6]. The fourth problem is the growth of social inequality. As the study notes, "the gaokao system has always faced deep institutional contradictions, such as the unequal distribution of educational resources and opportunities" [7]. Researchers state that, despite "achieving formal equality in education in the country," real inequality remains and is even intensifying. Students from wealthy families have access to better schools, tutors, and preparatory courses. Students from poor families and rural areas find themselves at a disadvantage. The study on the Zhihu platform showed that "users perceive the previous national curriculum as more fair, noting the lack of sufficient state intervention in this area" [3].

The fifth problem is the "toxic level of stress" in the education system. As researchers note, "the academic stress arising from such competition has led to a large number of students developing psychological disorders, self-hatred, and suppressed personalities." The study also shows that "teachers experience enormous stress due to the close link between their financial well-being and students' exam performance." Parents, in turn, "participate and invest significantly in their children due to high anxiety related to the possibility of falling behind other students" [6].

The sixth and, in my view, the most fundamental problem is the gap between declarations and practice [3], [6]. China proclaims a transition to "quality education," but in practice remains an "examination education." Researchers state that "at a broader level, the implementation of reforms is hindered by insufficient resources, conceptual uncertainty, and conservative resistance" [3], [4]. The goals of the new curriculum "are still not reflected in the exams" [6]. This creates a situation where the school says one thing but does another. Teachers are forced to prepare children for exams, not to develop their thinking. Parents demand high scores, not deep understanding. Students memorize facts, not learn to think.

For the CCFP model, these negative consequences are not just "problems of the Chinese school." They are symptoms of a deeper phenomenon: a reform that changes declarations and structures, but does not change the cognitive apparatus of the participants, inevitably reproduces the old paradigm [11]. The gaokao, conceptual uncertainty, conservative resistance, growing inequality, toxic stress, the gap between declarations and practice - all this is a consequence of the fact that the Chinese reform did not place the diagnosis and development of specific mental mechanisms at the center. It changed the "what" and "how" of education, but did not change the "with what" - the cognitive tool used by both the teacher and the student. Moreover, the gaokao as the central institution of the Chinese system actively reproduces a cognitive apparatus inadequate for solving "hard problems" [11].

Contradictions with the CCFP Model

Now I want to move on to what is most important to me: the fundamental differences between the Chinese model and the communicative-cognitive framework of personality (CCFP) model [11]. The first and most fundamental difference: the Chinese model remains exam-centric, while mine is oriented towards the development of thinking [6], [11]. In the Chinese model, everything is determined by the gaokao. The content of education, teaching methods, assessment of success - everything is subordinated to one goal: successful passing of the exam. The development of thinking, if it occurs at all, is a side effect, not a goal. In my model, on the contrary, the development of mental mechanisms is the central task of education [11]. Knowledge is not the goal, but the material for developing thinking. Exams (if they exist) should assess the dynamics of skill development, not a static level of knowledge.

The second difference: the Chinese model is a model of uniformity [6]. All students must study the same things, take the same exams, and meet the same standards. Differences between children are seen as a problem that needs to be overcome. My model, on the contrary, is built on individualization [11]. Every child is unique, and their unique

abilities should become the "entry point" for the development of all other mental mechanisms. The school should not unify, but identify and develop what makes each child special.

The third difference: the Chinese model proclaims formal equality - all children have equal access to education and equal opportunities to take the gaokao [7]. However, in practice, this equality turns out to be formal, because the real opportunities of children differ greatly. My model is oriented towards the real development of each child [11]. Diagnostics of mental mechanisms allows us to see where each child is now and determine how to help them move forward. This is not "equality of results," but "equality of opportunities for development." The fourth difference: the Chinese model lacks systemic diagnostics of mental mechanisms [6]. The gaokao assesses knowledge, not thinking. It does not show how the student reasons, what mistakes they make, how they progress in the development of their abilities. In my model, the diagnostics of mental mechanisms is central [11]. I propose assessing not a static level of knowledge, but dynamics - progress in the development of each of the eleven mechanisms. This allows us to see not only "what" the student knows, but also "how they think" and "how they are changing."

The fifth difference: the Chinese model is rooted in cultural conservatism, which goes back to the Confucian tradition [2]. The teacher is an authority, knowledge is something to be memorized, the exam is the main mechanism of social mobility [2], [6]. These cultural attitudes create a powerful conservative barrier that is difficult to overcome [3]. My model, on the contrary, implies radical pedagogical innovation [11]. It requires a revision of the teacher's role (from transmitter to facilitator), the student's role (from passive recipient to active researcher), and the role of assessment (from static checking to dynamic diagnostics). And finally, the most important difference. The Chinese model, like most other educational models, does not realize the epistemological significance of developing thinking [11]. As I substantiated in the article "Epistemological Recursion in Cognitive Science" [10], modern neuroscience is stuck in the "trap of correlations": we record the results of brain activity, but we do not understand the mechanism of its self-organization. The way out of this dead end lies not in the plane of creating even more powerful scanners, but in the plane of the evolution of the knowing subject itself. The Chinese model does not set itself this task [6]. It does not understand that the development of mental mechanisms in children today is the preparation of the very cognitive apparatus that tomorrow will be able to deconstruct the logic of its own brain [11]. It remains within the framework of pedagogy, without reaching the level of epistemology.

It is precisely here that the Chinese experience leads us to the key distinction that I discuss in detail in the article on epistemological recursion [10]. The hard problem is not a problem of missing data, but a problem of an exhausted conceptual framework. China tried to solve the problem of education within the existing framework - through new competencies and gaokao reforms. But the framework remained the same: the school still prepares thinkers with linear, reductionist thinking, rather than subjects capable of an act of re-conceptualization [11]. For the CCFP model, this means: the Chinese experience shows the boundaries of reforms that do not reach the epistemological level.

Conclusions and Lessons

What can we take away from the Chinese experience? The first lesson: the examination system is a powerful brake on development [6]. The gaokao, despite all its merits as a mechanism of social mobility, is the main obstacle to the development of thinking. As long as the exam determines the entire content of education, reforms remain at the level of declarations [3], [6]. The second lesson: educational reforms cannot be only "top-down" [3]. Chinese reforms are a classic example of "top-down" reforms. They are proclaimed at the state level, but face resistance at the level of teachers, parents, and students. Without the involvement of all stakeholders, reforms remain formal. The third lesson: conceptual uncertainty kills reforms [3]. What is "quality education"? What are "key competencies"? Without a clear, operational definition of these concepts, reforms remain vague and do not provide guidelines for practice [3], [4].

The fourth, and most important lesson for me: without a systemic approach to the development of thinking, any reforms remain cosmetic [11]. China proclaimed a transition to "quality education," but did not create a system for diagnosing and developing mental mechanisms. It introduced "inquiry-based learning," but did not give teachers the tools to implement it [4]. It proclaimed the development of competencies, but left exams that require memorizing facts [6]. The Chinese experience shows that educational reforms are not just a change of slogans and curricula. It is a change in the culture of education [3]. And this change requires time, resources, patience, and - most importantly - a clear understanding of what exactly we want to develop in children [11].

It is this clear understanding that the CCFP model provides [11]. It answers the questions that Chinese reforms left unanswered. Which specific thinking mechanisms should we develop? Eleven mental mechanisms, each of which is operationally defined [11]. How will we diagnose their development? Through dynamic diagnostics, evaluating progress rather than a static level. How will we take into account the uniqueness of each child? Through individualization, where unique abilities become the "entry point" for the development of all other mechanisms. Why do we need all this? Not only for "successful exam passing," but so that humanity can solve the "hard problems" of the 21st century, including the mystery of consciousness [10].

China has shown us that educational reforms are possible even under the most difficult conditions - with a huge number of students, deep cultural traditions, and a powerful centralized system [2], [9]. But it has also shown that without changing the paradigm itself - from exam to development, from uniformity to individualization, from memorization to thinking - these reforms remain superficial [3], [6]. It is precisely this paradigm shift that the CCFP model offers.

References

1. Central Committee of the Communist Party of China. Guanyu jiaoyu tizhi gaige de jueding (Decision on the reform of the educational structure). - 1985.
2. Borisenkov V.P., May Han Cheng (eds.). Russia - China: Trends in the Development of Education in the 21st Century: A Comparative Analysis. - M.: Nauka, 2019. - 662 p.
3. Fine O. The "Illusion of Suzhi Jiaoyu": A Grounded Analysis of Zhihu Discourse Surrounding Reactions to China's National Curriculum // The China Quarterly. - 2026.
4. Curriculum reform and 'Quality Education' in China: An overview // Infona.
5. Zhao W. Nationalism and Globalism as Epistemic Entanglements: China's Suyang Curriculum Reform as a Case Study // Euro-Asian Encounters on 21st-Century Competency-Based Curriculum Reforms. - Springer, 2021.
6. Social impact of Gaokao in China: a critical review of research // Language Testing in Asia. - 2025.
7. Pei Yang. Reform of the policy of all-China state university entrance examinations and educational inequality // Vestnik Moskovskogo universiteta. Seriya 18: Sotsiologiya i politologiya. - 2025. - Vol. 31, No. 4. - P. 172-193.
8. China's movement towards a key competencies-based (hexin suyang) curriculum reform // Special Issue. - 2022.
9. Chen J., Kong M. Elementary Education in China // Education in China and the World. - 2024. - P. 57-97.
10. Kleymenov A. Epistemological recursion in cognitive science: mental mechanisms as a tool for overcoming the "hard problem" of consciousness // Fractal Academy. - 2026. - Issue 3. - Art. 1. https://fractal-academy.com/articles/article-3-1/
11. Kleymenov A. Basic mental mechanisms: the structure of the communicative-cognitive framework of personality // Fractal Academy. - 2026. - Issue 1. - Art. 5. https://fractal-academy.com/articles/article-1-5/

Conflict of Interest
The author declares no conflict of interest related to the publication of this article.

Funding
The research was conducted without external funding.

Data Availability Statement
The data discussed in the article are contained in the text of the publication. Additional materials can be requested from the author.

Author Contributions
Aleksandr Kleymenov - concept, research, text writing, final editing.

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