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Differences in Education Models Between China and the United States and Their Impact on Students' Thinking Patterns

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Abstract. While the topic of differences in education concepts and practices between China and the United States has sparked widespread discussion, there has not been sufficient amount of comparative study focusing on its impact on student's thinking patterns. Hence this article will analyze the impact, the characteristics, and the factors contributing to the differences between the two countries. The analysis finds that differences in educational approach create varied impacts on student's critical thinking ability in terms of creativity, problem-solving skills, and communication ability, whereas while US students shows advantages in terms of creativity and verbal communication ability supported by student-centered teaching approach in the classroom, Chinese students shows advantages in terms of problem-solving and written communication skills supported by solid knowledge foundation and repeated practice. The article also found that various environmental and sociocultural factors, including differences in school environment, family, social and political ideologies also significantly contribute to shaping the different thinking modes of the students in China and the US. Based on the above findings, this paper proposes that contemporary education in China and the US can make progress by drawing on each other's successful experiences while catering to each country's unique sociocultural backgrounds.

Keywords: Education, Teaching Approach, Critical Thinking, Sociocultural Difference

1. Introduction

The education style and pedagogical method of China and the United States exhibit significant differences due to their differences in cultural customs, social system and lifestyles. China's education shows strengths and rigor in curriculum learning and exam-taking ability, but there are also shortcomings such as rigidity, lack of personalized training, and repetition; meanwhile the United States emphasizes the educational philosophy and practice of freedom, innovation, and individualization, but there are also shortcomings such as excessive emphasis on formalism and teaching outcome evaluation ambiguity. The presentation and driving forces of the differences in teaching methods and teaching outcomes are worth exploring in depth because education is the cornerstone of social development. Especially in the context of accelerated globalization, dialectically analyzing the differences in education between China and the United States and

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drawing on, integrating, and sharing resources based on their respective strengths and weaknesses will provide more possibilities and educational advantages for educators and students in the new era.

Under these premises, this paper will first focus on the impact of teaching differences between the two countries on students' thinking patterns, particularly students' critical thinking ability assessment in terms of creativity, problem-solving and exam-taking ability, as well as communication/ expressive ability. Then the article will delve deeper into factors that contribute to such thinking modes differences by analyzing the fundamental reasons and manifestations of educational differences between the two countries in terms of school environment influence, family influence and social influences. Recommendations will also be followed by reflecting on the discussed impacts of the two countries' distinct pedagogical styles on students' learning outcomes.

2. Different teaching impact on students' thinking patterns

One key dimension that can be used to assess the students' thinking pattern is their critical thinking ability, a thinking skill and tendency originating from psychology that determines how an individual will approach information and problems [1]. This chapter will analyze how different manifestations of critical thinking ability, including creativity, problem solving and test-taking ability, as well as communication ability, are impacted by different educational approaches adopted by China and the US.

2.1. Critical thinking ability and creativity

Creative thinking refers to providing new perspectives and potential problem-solving solutions for critical thinking through divergent thinking, cross-disciplinary associations, and risky attempts [2]. It is suggested that the assessment of students' critical thinking ability and creativity would be discussed together as critical thinking and creative thinking present a complementary relationship in the thinking process: critical thinking provides rational evaluation for innovation, while creative thinking drives the generation of new ideas [3]. There is a significant difference in the cultivation of students' critical thinking and creative thinking abilities between Chinese and American education. The study by Cai et al. found that the historically more exam-oriented and teacher-centered teaching practice of Chinese classrooms tends to show less sufficient than the student-centered and exploratory teaching practice in the US classroom in terms of stimulating students' creativity/divergent thinking ability [2]. A recent study by Chen and Hesketh also suggested that changing pedagogy in China by integrating pedagogical methods that allow more autonomy and encouragement of novelty can promote creative measures amongst students [4].

2.2. Problem-solving and exam-taking abilities

The improvement of problem-solving ability is an important manifestation of critical thinking, as logical thinking is the foundation for building critical thinking. This section will also discuss problem-solving and exam-taking abilities together as the two abilities share the same foundation of mastering content knowledge and comprehension skills. It mainly differs in the way that problem-solving directs the ability and willingness to engage with non-routine problems, whereas test-taking ability is more directed towards domain or format-specific problems [5]. This argument can be further supported by Fu's synthesis of exam-taking ability as a multi-faceted ability that allows individuals to cope with exam scenarios through various skill training and psychological qualities such as knowledge mastery, time management, answering strategies, and stress resistance [6].

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Statistical research conducted by OECD found that U.S. students on average show a lag behind East Asian students' performance in raw computation and problem-solving processing, despite that the U.S. classroom puts more emphasis on reasoning cultivation [7]. However Cheng and Hamid also warned that the tradeoffs of training extensive test-taking ability may pose negative impacts on students' ability to engage with deep learning and open-ended problems falling outside of the exam spectrum [8].

2.3. Communication ability

Communication skills, or expressive abilities, are another important dimension for assessing students' critical thinking skills development. Well-developed critical thinking can help individuals express their views more clearly and explicitly, while also gain better understanding of the other person's perspective. Chinese classrooms' adaptation of a teacher-centered, exam-oriented approach tends to promise more content accuracy amongst students, especially when expressed in the form of written expression, but less effective in enhancing students' oral communication and argumentative discussion skills; whereas U.S. classrooms' adaptation of a student-centered, discussion/project-based approach tends to produce the opposite outcome [9]. One main factor that contributes to this learning outcome difference is that the student-centered approach allows students more time to exercise their communication skills in open inquiries and group discussion activities, while the teacher-centered approach promises less opportunity for students to engage in spontaneous communications. The study particularly focused on the critical dialogue skills of Chinese students, suggested that implementing interventions such as argumentative instruction and student-centered teaching can improve the students' argumentation abilities in both written and oral communication, as well as improve the overall oral communication ability of students to engage in argumentative discussion and express their views [10]. It also implies that the communication ability of students, especially the argumentative communication skill set, is a learning outcome that can be improved over time with appropriate interventions and assessment.

3. Factors contributing to educational differences

This chapter will further explain how environmental and sociocultural factors contribute to, or consolidates the impacts brought by teaching approaches on students' critical thinking ability cultivation, including school environment, family environment, and social and political ideology.

3.1. School environment

3.1.1. Teaching goals and teaching outcome evaluation

While cultivating students with excellent academic performance and comprehensive qualities is a common pursuit of education in various countries, the implementation paths of China and the United States significantly differ from each other. Education in China places great emphasis on the transmission of knowledge and the ability to cope with exams, focusing on the cultivation of learning abilities and knowledge reserves, which is in line with the emphasis on cultural inheritance and traditional values in Chinese society and culture. Education in the United States focuses on cultivating students' critical thinking and practical abilities, which is in line with the emphasis on individualism and practicality originating from its cultural and historical background. In aligning with the learning goals, the teaching evaluation system in China generally takes students' grades as the main and single evaluation criterion [11]. While the learning evaluation system in the United

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States adopts a diversified evaluation system, it needs to be combined with students' extracurricular performance. For instance, in terms of mainstream admission channels, Chinese universities mainly determine admission based on students' college entrance examination scores, while U.S. universities often need to consider students' extracurricular activities, social responsibility, and social practice experiences comprehensively.

The absolute importance that Chinese society and families place on students' academic performance and enrollment rates directly affects the current education measurement system, and has a direct impact on teachers' teaching methods and concepts. Chen's research pointed out that subject grades, enrollment rates, and admission rates to top schools are directly related to the job evaluation and income of Chinese teachers, resulting in a lack of innovation in teaching methods among teachers and a tendency to overlook the shortcomings of students' comprehensive qualities [12]. Meanwhile the American education evaluation system is also facing critique such as the decline of academic standards in basic education, vague evaluation criteria for educational effectiveness, and deepening polarization in educational quality [12].

3.1.2. Classroom communication

In order to align with different teaching goals and evaluation criteria, educators in China and the US have adopted distinct displays of teaching modes in the classroom. Chinese teachers play an authoritative role in the class classroom where discipline is highly valued, and knowledge transmission mainly relies on one-way teaching by teachers, with teaching emphasis placed on standard answers and consistency [13]. This teaching method aligns with the teaching goal by efficiently transmitting a large amount of knowledge and information, ensuring that students master the fundamental subject content. The Chinese educational approach also emphasizes repetition in practice [5]. Chinese students are often assigned with considerable amount of practice exams and homework to deepen their understanding and memory of classroom knowledge, as well as to strengthen their mastery of knowledge through repeated practice. U.S. teachers generally adopt the facilitative teaching strategy where teachers are viewed as a guide and share an equal status with the students, and teaching goals are often achieved through two-way communication, open group discussions, and impromptu teacher-student interactions. In practice, students in the U.S. are encouraged to express their personal opinions, and teachers and students invest more classroom time in open discussions; the homework content will focus more on practical exercises such as case analysis and reading reflections.

China's educational methods have significant advantages in imparting fundamental knowledge. Through systematic curriculum design and repeated practice, students can solidly grasp the basic knowledge of various subjects; however, prolonged learning, a large amount of homework, and frequent exams also impose greater physical and mental burdens on students. The mainstream teaching method adopted by American classrooms is student-centered and open discussion is encouraged. This teaching method has been traditionally evaluated as having multiple benefits, including facilitating students' development in terms of individual personalities, encouraging them to explore their potential, interests, and unknown fields through exploratory learning, and actively cultivating their comprehensive qualities such as critical thinking, creativity, and personal expression abilities. It is also warned that such a teaching approach adopted by mainstream American classrooms also comes with problems such as insufficient homework, insufficient exam difficulty, and overly vague assessment of learning outcomes, resulting in students lacking a solid knowledge foundation [2]. These points made about the Chinese and American classroom communication align with findings discussed in the previous chapter.

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3.1.3. Curriculum design and classroom scale

The differences in curriculum design between China and the United States are also a reflection of the differences in teaching traditions, methods, and goals between the two countries, resulting in the learning outcomes of students from the two countries developing towards distinct directions. The research by Zhang and Koshmanova suggested that such differences have taken root as early as elementary level education [14]. The study reflected that the curriculum of public primary schools in China mainly focuses on basic subjects such as Chinese, mathematics, and foreign languages, with emphasis on in-depth learning of subject knowledge and the cultivation of exam-taking skills. Although the school also provides some other auxiliary courses, overall, its focus is still on the accumulation of subject knowledge and the improvement of academic performance. Public elementary schools in the United States not only emphasize students' academic development in their curriculum, but also strive to cultivate their multiple intelligences and creativity. The courses offered by the school are not limited to language, mathematics, and science, but also cover multiple fields such as social sciences, arts, music, and sports, with all courses receiving the same level of emphasis. This curriculum design allows students to be exposed to a wide range of subject knowledge in primary school, and at the same time, schools actively encourage students to develop their comprehensive qualities and interests [15]. A common critique faced by the Chinese curriculum design is that although it can improve students' exam scores, it may limit their creative thinking development [13].

The class division system is also a major difference between Chinese and American classrooms [15]. Chinese schools often implement a class division system, which means that a group of students is taught the same series of courses in a fixed unit of class. However, in the United States, schools generally do not adopt this class division system, but instead adopt a flexible class division system. Students will be assigned to different batches of classes based on their individual abilities to study different subjects. It can be seen from this that there is a high degree of consistency between the classification methods, teaching philosophies, and curriculum design that are implemented by each country.

The differences in teaching approaches and focuses are also strengthened by different teaching loads individual teacher bears in the two countries. The study by Tan and Hairon found that a teacher in China is typically responsible for leading classrooms that are three to four times larger than those in the United States [16]. The difference in classroom scale has resulted in Chinese teachers having to invest more time and energy in extracurricular teaching tasks such as lesson preparation and grading compared to American teachers. Therefore, Chinese teachers need to adopt teaching methods that are more in line with their teaching environment due to resource limitations caused by classroom size and pressure to achieve teaching goals, namely teacher-centered approach that emphasizes discipline, standard answers, and consistency. In contrast, smaller classroom sizes allow American teachers to implement teaching methods that encourage open discussion and exploratory learning.

3.2. Family and parental role

The difference in family units is another factor that directly impacts students' thinking mode, as well as shaping the educational disparities between China and the United States. In terms of parental role, the hierarchical system of seniority emphasized by Confucianism still plays a mainstream role in modern Chinese families, where parents (the elders in the family) play an authoritative role in providing direct guidance and supervision to their children. On the contrary, the role of parental

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guidance in the United States adopts a more open and auxiliary style, which takes roots in the philosophy of individualism. The core of the auxiliary parental role is to assist children's individual growth through interaction and communication that treats children as equal individuals, which gives American children more autonomy compared to Chinese children [17]. In addition, as a country highly influenced by collectivist culture, the education of Chinese families often focuses on cultivating children's team spirit, sense of collective honor, and obedience to authoritative figures of organization (i.e., parents, teachers). Therefore, students' learning outcomes and personal achievements are often regarded as part of organizational honors such as family and school. In this regard, American family education that advocates individualism presents completely different or even opposite attitudes. American families tend to encourage children to develop personal character, critical thinking ability, and argumentative thinking skills that can allows individuals to break free from or even resist the constraints of collective thinking [17].

There are also significant differences in educational content between families in the two countries. The content of Chinese family education often has the drawback of overly focusing on academics and neglecting the personal growth needs of students beyond academic performance. Bray's study pointed out that the huge investment of Chinese families in out-of-school learning is often not aimed at truly encouraging children to explore and develop their interests in extracurricular fields, but rather another disguised effort devoted to enhancing children's academic achievement [18]. In contrast, the content of American family education is more extensive. In addition to studying, sports hobbies, personal interests, and social life are also the focus of American family education.

3.3. Social and political ideologies

Finally, social and political ideologies are two major macro-environment factors that also contribute to shaping the educational differences between China and the United States. Using Hofstede's cultural dimension theory, China can be assessed as a highly collectivistic society that emphasizes family, unity, and social responsibility over individuality, whereas the U.S. is a representative country that highly values individualism and prioritizes individual interests. This social value discrepancy has led to individual achievements in China often being seen as part of collective honors and responsibility, including academic achievements.

The historical trajectories of the two countries have resulted in great differences in the contemporary political systems and ideology. China being an ancient country with a history of several thousand years of monarchical development, the social morality and role values rooted in Confucianism are still the cornerstone of modern Chinese society; At the same time, the establishment and development of the People's Republic of China after World War II led the country to implement a socialist system that emphasized leadership and planning led by the state [19]. On the contrary, the United States, being a relatively young country established on the foundation of exploration and a free economy, adopts a democratic system emphasizing market economy and diversified development [17]. These sociocultural roots and political ideologies significantly influenced the two countries' choices and paths in building their national education systems.

4. Conclusion

In conclusion, there are differences in education methods and outcomes between China and the United States. Academic research results have also confirmed that the distinct pedagogical approaches adopted by China and the US produce different outcomes in terms of students' critical

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thinking ability, creativity, problem-solving ability, exam-taking ability, and communication ability, with each country's teaching tradition exhibiting its own strengths and weaknesses. The paper also suggests that the school environment is one of the main factors that contribute to producing the differences in students' learning outcomes and thinking modes, as well as shaping the teaching approaches that seem to be most feasible for the school resources available in China and the US. On top of different school environments, differences in family, parental role, sociocultural values, and political ideologies are the other major micro and macro environmental factors that contribute to shaping the different teaching traditions and learning outcomes between China and the US.

Based on the above findings, this article will propose recommendations to achieve progress and reform that better meet the needs of modern education by combining and referencing the characteristics and advantages of two teaching methods while adhering to different cultural backgrounds and social needs. In the process of constructing an improved educational system that aims to better cultivate the critical thinking ability of students, educators and policy makers should reiterate the core argument, which is that the complexity of the learning experience should be approached critically and objectively, as it does not follow the theme of a single universal educational model. Exploring the structure, operational methods, and teaching systems adopted by different school systems reveals the complexity of the learning experience. Modern teaching should adopt an objective and dialectical attitude to examine these differences, and to draw on each other's experiences while combining each country's unique sociocultural backgrounds to create a modern teaching system that keeps up with the times in the context of globalization.

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