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EDITORIAL

Classic Reflection in *Best Evidence in Chinese Education*

Editorial Office of *Best Evidence in Chinese Education*

IN the long history of educational development, many representative figures have emerged, and many representative works and expositions have been circulating. These characters and discourses have had a huge impact on the development of education. Plato's *Utopia*, Comenius's *Large Teaching Theory*, and Dewey's *Democracy and Education* were representative of them.

Many commendable representative figures and discourses have also appeared in the history of China's education development. For example, the world's earliest educational monograph *Xue Ji* was born in China. Seriously studying these celebrities' masterpieces is of great practical significance to the development of today's education, helping us to further understand the relationship between history and modernity, and to understand the inheritance and innovation of the development of contemporary education.

As an academic educational journal, *Best Evidence in Chinese Education* is dedicated to the introduction of Chinese educational practice and research results; the journal offers a new column of "Classic Reflection". It is an attempt to introduce the best modern Chinese education researchers and their representative works to the world through this column, in order to let the world better understand the results of China's educational practice and research.

Due to the differences between Eastern and Western cultures and education systems, many researches in China focus on different issues from those of the West. These research results may be somewhat different from Western research methods in research methods, but these research results point to the same, that is, in order to enable the next generation to receive better education and cultivate more talents for the development of human society. These results are a long time ago, but due to the limitations of the specific language

of the original journal, these research results may not be widely understood by the world. For this reason, the editorial office of the journal welcomes researchers from all over the world to recommend the outstanding researches of outstanding Chinese scholars to the journal, and they will be published in English to spread them out for the world.

The journal would like to express its sincere gratitude to the authors of these outstanding results, and also to the original contributions of those outstanding research results!

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ORIGINAL ARTICLE

The Impact of High School Entrance Examination Competition on Students' Participation in Extracurricular Tutoring in the Compulsory Education Period: An Empirical Analysis Based on the Data of China Family Panel Studies

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Abstract*. We used the Hierarchical Linear Bernoulli Model based on China Family Panel Studies (CFPS) 2016 data and provincial high school acceptance rate data. We explored the relationship between provincial high school entrance examination competition and students' extracurricular tutoring participation during compulsory education. The study found that the high school acceptance rate and occupational high school acceptance rate have no significant effect on the participation rate of students' extracurricular tutoring in the compulsory education stage. However, the high school acceptance rate has a significant positive impact on the participation rate of students' extracurricular tutoring, and there is a heterogeneous effect on the participation rate of students' extracurricular tutoring from families of different social classes. The higher the high school acceptance rate, the greater the probability of students from families with higher social strata participating in extracurricular tutoring. The demonstration high school acceptance rate has a significant negative impact on students' extracurricular tutoring participation rate. It has a heterogeneous influence on students' extracurricular tutoring participation in different school stages and social class families. The education administration department should actively expand high-quality, high school educational resources and increase the demonstration high school acceptance rate. And to increase the number of admissions for the demonstration high school to disadvantaged families with lower social strata to alleviate the pressure of families and stu-*

dents from the high school entrance examination competition. This can not only reduce the participation rate of students' extracurricular tutoring during the compulsory education stage, but also promote the equalization of high-quality high school entrance opportunities for children of different classes of families.

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***Keywords**: Extracurricular Tutoring, High School Acceptance Rate, High School, Demonstration High School, Education Competition*

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***Conflict of Interests**: None.*

Introduction

EDUCATION equity is an essential foundation of social equity. China's high school education has made remarkable achievements. The gross enrollment rate of high school has increased from 1.1% in 1949 to 91.2% in 2020; simultaneously, the gross enrollment rate of higher education in China in 2020 is 54.4% (Chu, 2020; Ministry of Education, 2020). It can be seen that there is not a significant gap in entrance opportunities for high school education in China. However, there is still a big gap in entrance opportunities for higher education. From a dynamic perspective, the gap in higher education enrollment opportunities is the accumulation and continuation of unequal opportunities for basic education. Receiving an excellent elementary education will help students enter a better middle school and a high-quality high school, giving them a tremendous advantage in entering universities and even elite universities. The result of gradual stratification means that students entering different levels of schools will have different educational outcomes, which will directly affect their subsequent academic mobility and even social mobility (Yang, 2000). In the hierarchical diversion, middle school is the critical stage. After graduating from middle school, most students receive high school education, some receive secondary vocational education, and a small number directly enter society. It can be seen that the diversion effect of the high school entrance examination is pronounced. Since the admission rate of middle school entering high school is much higher than that of high school entering university, entering a "good high school," that is, demonstration high school,[1] receiving high-quality high school education becomes especially important for middle school students.

Because the demonstration high school is loved by parents and students and recognized by society, for children to gain an advantage in the high school entrance examination competition and receive high-quality high school education, extracurricular tutoring has become an important choice for parents and students. As an essential way of education competition and family education investment, extracurricular tutoring or shadow education has evolved into a worldwide phenomenon, particularly in developing countries and East Asian countries (Bray & Kwok, 2003; Dang & Rogers, 2008; Song et al., 2013). In China, the extracurricular tutoring rate of middle school students has reached 47.3%, and nearly half of middle school students have participated in extracurricular tutoring (Xue, 2016). Extracurricular tutoring is becoming an effective means of competition between students and their families (Song et al., 2013). However, few scholars currently research the relationship between high school entrance examination competition and students' participation in extracurricular tutoring. This study used CFPS 2016 data and collected high school acceptance rate data from various provinces, based on EMI and MMI theories, and through the establishment of the Hierarchical Linear Bernoulli Model, explored the high school acceptance rate that reflects the intensity of high school entrance examination competition and the participation of students in extracurricular tutoring during compulsory education to provide empirical evidence for better formulation of extracurricular tutoring-related policies.

Literature Review

Educational competition is an essential social choice, which mainly revolves around educational opportunities, high-quality school education opportunities, and well-paid employment opportunities with different academic diplomas (Liu, 2004). For students in the compulsory education stage, since China's average high school acceptance rate is above 90%, high school education opportunities are not the focus of education competition. The educational competition mainly revolves around obtaining high-quality high school education opportunities. Therefore, to gain an advantage in the competition, families with higher socioeconomic status will receive additional educational resources through extracurricular tutoring (Lee & Shouse, 2011). Wu (2014) found that because China's high school and university admissions follow the competitive principle of merit-based admissions, qualified families purchase points, "abilities," and "opportunities" by purchasing additional educational resources, that is, extracurricular tutoring. This allows students to gain an advantage in the high school entrance examination competition, damages the right of children from families who cannot provide extracurricular tutoring to enjoy high-quality education and interferes with educational equity (Wu, 2014). Xue (2015) studied the extracurricular tutoring activities of Chinese students in the compulsory education stage and found that extracurricular tutoring enabled the children of the superior class to obtain more quantity and higher quality education so that their children could succeed in the future education and employment competition (Xue, 2015). Zhang and Bray (2017) used data from middle school students in Chongqing to analyze the relationship between high school entrance examination competition and extracurricular tutoring. They pointed out that China's college entrance examination is highly competitive and has high stakes. It puts tremendous pressure on high school students aspiring to go to university.

Consequently, this pressure promotes the school's competition, making the high school entrance examination a high-stakes examination (Zhang et al., 2017). In addition, the uneven distribution of educational resources between regions and schools also forces families to use extracurricular tutoring to gain or maintain a competitive advantage. Zhou and Wu (2018) pointed out that due to the "hothouse effect," students have tremendous pressure to improve academic achievement and the pursuit of elite diplomas. This "atmosphere" full of educational competition will lead to extracurricular tutoring demand (Zhou & Wu, 2018).

Extracurricular tutoring has become a global phenomenon, especially in Southeast Asia, which is particularly prevalent and has aroused widespread concern among scholars. The increasingly fierce competition between students and families around extracurricular tutoring has not only aggravated the academic burden of students and consumed a large number of family and social resources, but also may weaken the government's policy effectiveness in advancing education equity, maintaining and expanding social inequality (Xue & Ding, 2009; Bray, 1999). However, there are few empirical studies on educational competition and students' participation in extracurricular tutoring. Because of this, this article uses the Hierarchical Linear Bernoulli Model based on the

CFPS2016 data to explore the relationship between the high school acceptance rate reflecting the intensity of high school entrance examination competition and the participation of students in extracurricular tutoring during the compulsory education stage. The research conclusions will help us understand the underlying reasons behind extracurricular tutoring and provide a theoretical basis for the government to govern the extracurricular tutoring problem.

Theoretical Basis and Research Hypothesis

The theory of maximizing maintenance of inequality (MMI) (Raftery & Hout, 1993) and the theory of effective maintenance of inequality (EMI) (Lucas, 2001) provide an excellent theoretical idea in the elaboration of the relationship between middle school entry competition and extracurricular tutoring. According to the theory of MMI, when compulsory education is not universally available, the educational opportunities of children of different social classes are various. To maintain their children's competitive advantage in entering higher education, families with higher social strata will strive to maximize their children's educational opportunities. Only when compulsory education is universally available or reaches saturation can educational opportunities for children of different social strata families decrease. Lucas (2001) further proposed the EMI theory based on the MMI theory. According to the EMI theory, when compulsory education is universally available, due to the imbalance and inadequacy of mandatory education in China, the quality of compulsory schooling differs between urban and rural areas, between regions, and between schools. Thus, the core of education competition shifts to the quality of education rather than the only opportunity of an education. Because Chinese school education needs to take care of every student, it is challenging to achieve differentiated teaching. The teaching time is relatively fixed, which is not very different for students, so extracurricular tutoring has become the "first choice" for parents and students in the education competition. To allow their children to maintain an advantage in the future competition for higher education, families with higher social strata will obtain additional educational resources of higher quality and quantity through extracurricular tutoring.

Currently, China's high school enrollment rate has reached more than 90%. When families of different social classes can receive high school education, they no longer seek high school education opportunities but higher quality high school education. Therefore, for families of different social classes, the core of their education competition lies in going to a "demonstration high school," not a "general high school," let alone a "vocational high school." As China's high school education has been universally available, and even the high school enrollment rate in some provinces has reached 100%, there is less competition for high school enrollment opportunities. In addition, due to the low threshold of vocational education, and in recent years, China has vigorously expanded the enrollment of secondary vocational education, so there is less competition around vocational education entrance opportunities. Therefore, families of different social classes compete mainly around "high school" and "demonstration high school." When the high school acceptance rate of some provinces and cities rises, stu-

dents have a greater chance of enrolling in high school education, which will increase students' anxiety going to a "better high school." Especially for families with higher social strata, facing the increasing competition in education and the lack of high-quality educational resources, they have aggravated their sense of anxiety and sense of urgency (Xue & Fang, 2020). Therefore, to effectively maintain their social status, families with higher social strata will be more sensitive to the high school acceptance rate and encourage students to participate in extracurricular tutoring, which further increases the participation rate of extracurricular tutoring. Only when the demonstration high school acceptance rate increases will this ease the education anxiety of families and students, thereby reducing the participation rate of extracurricular tutoring. Based on this, this article proposes research hypotheses on the relationship among "high school enrollment rate," "vocational high school enrollment rate," "high school acceptance rate," and "demonstration high school acceptance rate" and the participation rate of extracurricular tutoring:

Research hypothesis 1: The high school acceptance rate has no significant effect on the participation rate of students' extracurricular tutoring during the compulsory education stage.

Research hypothesis 2: The occupational high school acceptance rate has no significant effect on the participation rate of students' extracurricular tutoring in the compulsory education stage.

Research hypothesis 3: The high school acceptance rate has a significant positive effect on the participation rate of students' extracurricular tutoring during the compulsory education stage.

Research hypothesis 4: Demonstration high school acceptance rate has a significant negative impact on the participation rate of students' extracurricular tutoring during the compulsory education stage.

Research hypothesis 5: The high school acceptance rate has a heterogeneous effect on the participation rate of extracurricular tutoring of students from different family social classes in the compulsory education stage. As the high school acceptance rate increases, students with higher family social classes are more likely to participate in extracurricular tutoring.

Methodology

Data Source and Variable Description

The data used in this article all come from CFPS data funded by the "985" project of Peking University and implemented by the Chinese Social Science Survey Center of Peking University in 2016. The CFPS sample covered 25 provinces / municipalities / autonomous regions. The target sample size was 16,000 households, and the survey objects included all family members in the sample households. The sample of this study was compulsory education students, a total of 4,158 students, including 2,935 elementary school students, 1,233 middle school students.

This study used occupational high school acceptance rate, high school acceptance rate, demonstration high school acceptance rate, and high school acceptance rate to measure the intensity of high school entrance examination competition. The smaller the acceptance rate was, the more intense the high school entrance examination competition was. On the contrary, the larger the value was, the smaller the high school entrance examination competition was. Since the participation of students in extracurricular tutoring in 2016 is more affected by the educational opportunities in the past year, this study used the high school acceptance rate in 2015 to measure the high school entrance examination felt by middle school students in the province in 2016 as the intensity of the competition.

The total high school acceptance rate of a province in 2015 = The total number of students enrolled in the province's high school in 2015/the number of middle school graduates in 2015.[2]

The vocational high school acceptance rate of a province in 2015 = The number of students enrolled in the province's vocational high school in 2015/the number of middle school graduates in 2015.

The high school acceptance rate of a province in 2015 = the number of students enrolled in the province's high school in 2015/the number of middle school graduates in 2015.

The acceptance rate of a province's demonstration high school in 2015 = the number of students enrolled in the province's demonstration high school in 2015[3]/ the number of middle school graduates in 2015 (**Table 1**).

Research Methods

Since whether students participate in extracurricular tutoring is affected by multiple levels and factors such as family, province, and city, the data used in this study has a cofounding relationship. In addition, since whether students participate in extracurricular tutoring is a dichotomous variable. This study established an estimation model for individual students and provinces, and cities:

• Zero Model

This model has decomposed the total difference in students' extracurricular tutoring participation into two levels: individual students and inter-provincial differences. It was mainly used to explore significant differences in students' extracurricular tutoring participation between provinces. The model is as follows:

$$\text{Student layer: } Y_{ij} = \beta_{0j} + r_{ij},\ r_{ij} \sim N(0, \delta^2) \quad (1)$$

$$\text{Provincial level: } \beta_{0j} = \gamma_{00} + \mu_{0j},\ \mu_{0j} \sim N(0, \tau_{00}) \quad (2)$$

Among them, Y_{ij} indicates whether the i-th student in the j-th province participates in extracurricular tutoring. β_{0j} represents the average participation rate of extracurricular tutoring among students in province j. γ_{00} represents the overall student partici-

Figure 1. Variable Description.

Type	Variable	Description
Individual Level	Participate in extracurricular tutoring	0=No,1=Yes
	Gender	0=Female，1=Male
	Schooling stage	0=Elementary School，1=Middle School
Family Level	Parent's highest professional status	1=Lower，2=Middle，3=Upper
	Parent's highest education	1=Illiteracy，2=Elementary School，3=Middle School，4=High School，5=Associate，6=Undergraduate，7=Master's，8=Doctorate
	Net income per capita	1=Lowest 20%，2=Mid/Lower 20%，3=Middle 20%，4=Mid/Higher 20%，5=Highest 20%
Provincial Level	GDP per capita in 2015	Continuous Variable
	Total High School Acceptance Rate in 2015	Continuous Variable
	Vocational High School Acceptance Rate in 2015	Continuous Variable
	High School Acceptance Rate in 2015	Continuous Variable
	Demonstration High School Acceptance Rate in 2015	Continuous Variable

pation rate of extracurricular tutoring. μ_{0j} represents the random effect between provinces and cities. δ^2 represents the difference in the participation rate of extracurricular tutoring at the student level. τ_{00} represents the difference in the participation rate of students' extracurricular tutoring between provinces and cities.

- **Full Model**

On the basis of the zero model, the student-level and provincial-level variables were added to construct a full model. It was mainly used to examine the influence of variables at the student and provincial levels on students' extracurricular tutoring participation rate. The model is as follows:

$$\text{Student level: } Y_{ij} = \beta_{0j}+\beta_{1j}\text{gender}+\beta_{2j}\text{zdx}+\beta_{3j}\text{xxjd}+\beta_{4j}\text{fmzy}+\beta_{5j}\text{fmxl}+\beta_{6j}\text{rjsr}+r_{ij}, \quad r_{ij}\sim N(0,\delta^2) \qquad (3)$$

$$\text{Provincial level: } \beta_{0j} = \gamma_{00}+\gamma_{01}\text{GDP}+\gamma_{02}\text{lqv}+\mu_{0j}, \ \mu_{0j}\sim N(0,\tau_{00}) \qquad (4)$$

The Relationship between High School Entrance Examination Competition and Students' Participation in Extracurricular Tutoring

Table 2 presents the basic situation of the participation rate and high school acceptance rate of extracurricular tutoring in various provinces and cities. The average participation

Table 2. Participation Rate of Extracurricular Tutoring and Various Total High School Acceptance Rates by Provinces and Cities.

	Participation Rate of Extracurricular Tutoring (%)	Total High School Acceptance Rate (%)	High School Acceptance Rate (%)	Vocational High School Acceptance Rate (%)	Demonstration High School Acceptance Rate (%)
Heilongjiang	64.50	96.32	67.76	28.56	9.41
Tianjin	62.50	109.41	64.14	45.27	14.37
Jiangsu	59.40	89.56	52.20	37.37	4.78
Shanghai	58.20	97.83	56.68	41.14	18.41
Liaoning	52.90	95.16	62.19	32.96	6.67
Zhejiang	49.00	93.45	54.33	39.12	13.78
Shandong	37.80	85.52	55.86	29.66	18.69
Hunan	36.10	88.33	54.35	33.98	14.20
Jilin	35.80	89.69	67.10	22.59	14.72
Beijing	35.70	90.38	61.16	29.22	17.73
Shanxi	34.00	85.90	58.10	27.80	19.38
Anhui	33.80	104.55	56.68	47.86	39.14
Hubei	33.30	89.12	60.39	28.74	21.20
Henan	32.30	85.59	54.99	30.60	24.21
Shaanxi	28.80	97.69	69.64	28.05	6.70
Hebei	27.80	94.07	58.92	35.14	33.92
Fujian	20.90	98.15	59.38	38.76	9.93
Gansu	20.40	84.62	60.00	24.62	20.76
Guangdong	18.90	81.97	51.39	30.58	12.57
Sichuan	18.90	101.06	55.59	45.47	12.41
Chongqing	18.00	97.68	61.08	36.61	43.30
Jiangxi	12.40	85.80	57.57	28.23	21.95
Yunnan	10.70	77.98	47.56	30.42	15.05
Guizhou	8.20	81.38	48.90	32.48	20.36
Guangxi	8.10	90.41	49.47	40.94	20.40
Average	32.74	91.66	57.82	33.85	18.16

rate of extracurricular tutoring in China has reached 32.73%. The participation rate of compulsory tutoring students in Heilongjiang was the highest, reaching 64.5%, and the participation rate of students in Guangxi province was the highest lowest, at 8.1%. In general, the participation rates of students in the three northeastern provinces, the Yang-tze River Delta and the Beijing-Tianjin region, were relatively high. In contrast, the participation rates of students in the central and western areas were relatively low. This was consistent with the results of Xue et al. (2019; Xue & Fang, 2019). The average high school acceptance rate across China reached 91.66%. Among them, the high school acceptance rates in Tianjin, Anhui, and Sichuan exceeded 100%. The reason may be that some middle school students returned to high school after working, which caused the number of high school admissions to exceed the number of middle school graduates. The average high school acceptance rate in China was 57.82%, the highest

was Shanxi Province, which reached 69.64%, and the lowest was Yunnan Province, which was 47.56%. The difference between the two was about 20%. The national average vocational high school acceptance rate was 33.85%, the highest in Anhui Province was 47.86%, and the lowest in Jilin Province was only 22.59%. China requires the admission ratio of high schools and vocational high schools to be 1:1. At present, the high school acceptance rate was much higher than the professional high school acceptance rate. However, the demonstration high school acceptance rates of different provinces and cities were quite different. The national average demonstration high school acceptance rate was 18.16%, the highest was 43.30% in Chongqing City, and the lowest was only 4.78% in Jiangsu Province.

Figure 1 presents the trends in the participation rate of extracurricular tutoring, total high school acceptance rate, high school acceptance rate, vocational high school acceptance rate, and demonstration high school acceptance rate of each province/city/autonomous region. The participation rate of students' extracurricular tutoring in the compulsory education stage of each province increased with the increase of the total high school acceptance rate, high school acceptance rate, and occupational high school acceptance rate of each province. On the other hand, with the increase in the province's demonstration high school acceptance rate, it had declined.

To further explore the relationship between the participation rate of students' extracurricular tutoring in the compulsory education stage of each province and the total high school acceptance rate, occupational high school acceptance rate, high school acceptance rate, and demonstration high school acceptance rate, Pearson correlation was used for analysis. Correlation analysis results (**Table 3**) showed that students' extracurricular tutoring participation during compulsory education in each province was significantly positively correlated with total high school acceptance rate, professional high school acceptance rate, and high school acceptance rate. At the same time, there was a significant negative correlation with the demonstration high school acceptance rate relationship.

The Impact of High School Acceptance Rate on Students' Participation in Extracurricular Tutoring

Using the Hierarchical Linear Bernoulli Model to analyze the impact of high school acceptance rate on the participation rate of compulsory education students' extracurricular tutoring, a zero model without any explanatory variables was first constructed. The results show that the variances of the participation rate of students' extracurricular tutoring within and between provinces and cities are 0.1167 and 0.0065, respectively, and the intra-group correlation coefficient is 0.0528, indicating that 5.28% of the total variation in the participation rate of students' extracurricular tutoring came from the inter-provincial difference. At the same time, from the point of view of the significance level, the p-value of the significance test was zero, indicating that the participation rate of students' extracurricular tutoring had highly significant differences between provinc-

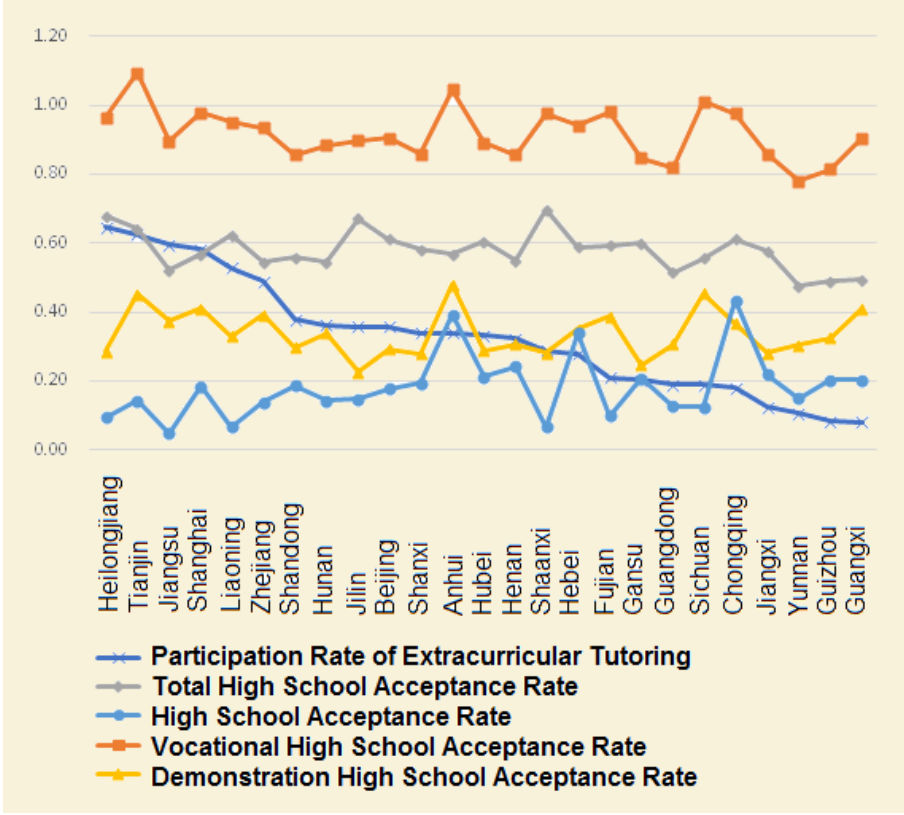

Figure 1. Participation Rate of Extracurricular Tutoring and Total High School Acceptance Rate.

Table 3. Correlation Analysis between Participation Rate of Extracurricular Tutoring and Total High School Acceptance Rate.

	Participation Rate of Extracurricular Tutoring	Total High School Acceptance Rate	Vocational High School Acceptance Rate	High School Acceptance Rate	Demonstration High School Acceptance Rate
Participation Rate of Extracurricular Tutoring	1	0.563**	0.183**	0.462**	-0.240**
Total High School Acceptance Rate	0.563**	1	0.567**	0.582**	0.015
Vocational High School Acceptance Rate	0.183**	0.567**	1	-0.340**	0.050**
High School Acceptance Rate	0.462**	0.582**	-0.340**	1	-0.033*
Demonstration High School Acceptance Rate	-0.240**	0.015	0.050**	-0.033*	1

Table 4. Bernoulli Hierarchical Linear Model Analysis of the Influence of Total High School Acceptance Rate and Vocational High School Acceptance Rate on Participation Rate of Extracurricular Tutoring.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Student Level										
Boy (Girl as a Reference)	-0.257*** (0.083)	-0.257*** (0.083)	-0.256*** (0.083)	-0.257*** (0.083)	-0.257*** (0.083)	-0.260*** (0.083)	-0.260*** (0.083)	-0.260*** (0.083)	-0.260*** (0.083)	-0.260*** (0.083)
Net Income Per Capita	0.369*** (0.038)	0.450 (0.601)	0.370*** (0.038)	0.369*** (0.038)	0.370*** (0.038)	0.372*** (0.038)	0.501** (0.218)	0.372*** (0.038)	0.372*** (0.038)	0.371*** (0.038)
Parents' Highest education	0.339*** (0.040)	0.339*** (0.040)	0.085 (0.577)	0.339*** (0.040)	0.339*** (0.040)	0.339*** (0.040)	0.339*** (0.040)	0.181 (0.207)	0.339*** (0.040)	0.339*** (0.040)
Parents' Highest Professional Status	0.294*** (0.064)	0.294*** (0.064)	0.294*** (0.064)	-0.632 (0.982)	0.294*** (0.064)	0.299*** (0.064)	0.299*** (0.064)	0.299*** (0.064)	0.430 (0.363)	0.299*** (0.064)
Middle school (Based on Elementary School)	0.050 (0.091)	0.050 (0.091)	0.050 (0.091)	0.048 (0.091)	-0.401 (1.473)	0.046 (0.091)	0.046 (0.091)	0.047 (0.091)	0.047 (0.091)	0.418 (0.524)
Provincial Level										
GDP Per Capita	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001* (0.000)	0.001 (0.001)	0.001* (0.000)	0.001* (0.000)
Total High School Acceptance Rate	3.221 (2.347)	3.531 (3.278)	2.191 (3.317)	1.268 (3.143)	3.055 (2.408)					
Vocational High School Acceptance Rate						-3.123 (2.588)	-1.561 (3.669)	-5.080 (3.608)	-2.271 (3.479)	-2.687 (2.649)
Interaction Effect										
Total High School Acceptance Rate*Household Income Per Capita		-0.096 (0.711)								
Total High School Acceptance Rate*Parents' Highest Education			0.299 (0.678)							
Total High School Acceptance Rate*Parents' Highest Professional Status				1.092 (1.156)						
Total High School Acceptance Rate* Schooling Stage					0.533 (1.732)					
Vocational High School Acceptance rate*Household Income Per Capita							-0.469 (0.780)			
Vocational High School Acceptance Rate*Parents' Highest Education								0.571 (0.735)		
Vocational High School									-0.470 (1.283)	

Acceptance Rate*Parents' Highest Professional Status										
Vocational High School Acceptance Rate* Schooling Stage										-1.350 (1.878)
Intercept	-6.374*** (1.906)	-6.639** (2.729)	-5.493** (2.764)	-4.719* (2.600)	-6.232*** (1.960)	-3.071*** (0.707)	-3.512*** (1.019)	-2.516** (1.004)	-3.309*** (0.960)	-3.192*** (0.725)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	3,498	3,498	3,498	3,498	3,498	3,498	3,498	3,498	3,498	3,498

Note: 1., **, *** indicate significant at the level of 10%, 5%, and 1%, respectively. 2. Standard errors are in parentheses.*

es and cities. Therefore, this study constructed a multi-layer linear model to discuss and analyze the factors that affected students' participation in extracurricular tutoring.

Table 4 shows that at the student level, the participation rate of boys in extracurricular tutoring was significantly lower than that of girls. The net income per capita of the family, the highest educational background of the parents, and the most elevated occupational status of the parents all had a significant positive impact on the participation rate of students' extracurricular tutoring. There was no significant difference in the participation rate of extracurricular tutoring among students at different school stages. At the provincial level, GDP per capita had no significant effect on the participation rate of extracurricular tutoring. The high school acceptance rate had no significant impact on extracurricular tutoring. The cofounding items of high school acceptance rate and family income per capita, parents' highest education level, parents' highest occupational status, and learning stage were put into the model. It was found that the effects were not significant. This showed that students of different family backgrounds and different stages of the study had no heterogeneity in the pressure brought by competition for high school entrance opportunities. Similarly, the effect of vocational high school acceptance rate on the participation rate of students' extracurricular tutoring had also reached a similar conclusion.

Table 5 presents the high school acceptance rate and demonstration the high school acceptance rate on students' extracurricular tutoring participation rate. The results showed that the high school acceptance rate had a significant positive effect on students' extracurricular tutoring; that is, the higher the high school acceptance rate was, the higher the participation rate of extracurricular tutoring was. The cofounding items of high school acceptance rate and family income per capita, parents' highest educational background, parents' highest professional status, and learning stage were added to the model. We found no heterogeneity in the impact of the high school acceptance rate on the participation rate of extracurricular tutoring among students of different family incomes, parents' highest education level, and learning stage. However, students with other parents' professional status had heterogeneity in the influence of high school acceptance rate on the participation rate of extracurricular tutoring.

Table 5. Bernoulli Hierarchical Linear Model Analysis of the Influence of High School Acceptance Rate and Demonstration High School Acceptance Rate on Participation Rate of Extracurricular Tutoring.

	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18	Model 19	Model 20
High School Acceptance Rate	6.212*** (2.178)	4.632 (3.225)	6.729** (3.394)	2.126 (3.228)	5.476** (2.269)					
Demonstration High School Acceptance Rate						-2.789*** (1.520)	-3.826* (2.139)	-4.206* (2.266)	-3.305 (2.086)	-2.158 (1.552)
Interaction effect										
High School Acceptance Rate*Household Income Per Capita		0.535 (0.802)								
High School Acceptance Rate*Parents' Highest Education			-0.160 (0.810)							
High School Acceptance Rate*Parents' Highest Professional Status				2.465* (1.426)						
High School Acceptance Rate*Schooling Stage					2.149 (1.989)					
Demonstration High School Acceptance Rate*Household Income Per Capita							0.330 (0.478)			
Demonstration High School Acceptance Rate*Parents' Highest Education								0.422 (0.499)		
Demonstration High School Acceptance Rate*Parents' Highest Professional Status									0.286 (0.795)	
Demonstration High School Acceptance Rate* Schooling Stage										-1.984* (1.152)
Intercept	-7.300*** (1.269)	-6.398*** (1.858)	-7.596*** (1.958)	-4.975*** (1.855)	-6.878*** (1.320)	-3.153*** (0.508)	-2.967*** (0.574)	-2.896*** (0.591)	-3.055*** (0.574)	-3.285*** (0.511)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	3,498	3,498	3,498	3,498	3,498	3,496	3,496	3,496	3,496	3,496

Note: The above models control gender, household net income per capita, parent's highest education level, parent's highest occupation, schooling stage at the student level, and controls per capita GDP at the provincial level. Due to space reasons, it is omitted from the article.

In contrast, the demonstration high school acceptance rate had a significant negative impact on students' extracurricular tutoring participation. Thus, it showed that the improvement of the demonstration high school acceptance rate could reduce the participation rate of students' extracurricular tutoring. After adding the cofounding items of the demonstration high school and different family backgrounds and learning stages, the results showed no heterogeneity in the demonstration high school acceptance rate on the participation rate of extracurricular tutoring among students of diverse family backgrounds. However, students of varying learning stages had heterogeneity in the demonstration high school acceptance rate on the participation rate of extracurricular tutoring.

In the research mentioned above, there was heterogeneity in the influence of acceptance rate on the participation rate of extracurricular tutoring among students of different learning stages and the highest professional status of their parents. To further explore the profound differences of heterogeneity, this study carried out sub-sample regression on different school stages and the highest occupational status of parents. Ta**ble 6** shows the sub-sample regression results of varying school stages. Whether it is the elementary school sample or the middle school sample, the high school acceptance rate and vocational high school acceptance rate significantly affected students' extracurricular tutoring participation. However, the high school acceptance rate had a significant positive impact on students' extracurricular tutoring participation. Among them, the coefficient of the middle school sample was higher than that of the elementary school sample, indicating that the high school acceptance rate had a more significant impact on the participation rate of middle school students' extracurricular tutoring than elementary school students. On the other hand, in the elementary school sample, the demonstration high school acceptance rate had no significant effect on the participation rate of extracurricular tutoring.

In contrast, in the middle school sample, the demonstration high school acceptance rate significantly negatively affected the extracurricular tutoring participation rate. The increase in the acceptance rate of the demonstration high school could dramatically reduce the probability of middle school students participating in extracurricular tutoring. Because middle school students face direct pressure from high school entrance examination competitions, they are more sensitive to the demonstration high school acceptance rate. However, elementary school students face more competitive pressure from the beginning of middle school, so the increase in the demonstration high school acceptance rate could significantly reduce the participation rate of middle school students' extracurricular tutoring. In contrast, the impact on elementary school students was not significant.

Table 7 presents the effect of acceptance rate on the participation rate of extracurricular tutoring among students with different parents' highest professional status. In the samples of the highest occupational status of different parents, neither the high school acceptance rate nor the vocational high school acceptance rate significantly affected the participation rate of students' extracurricular tutoring. The high school acceptance rate has a significant positive impact on the participation rate of students' ex-

Table 6. Bernoulli Hierarchical Linear Model Analysis of the Influence of Total High School Acceptance Rate on the Participation Rate of Extracurricular Tutoring of Students in Different School Stages.

	Elementary School Sample				Middle School Sample			
Total High School Acceptance Rate	2.500 (2.386)				4.416 (2.846)			
Vocational High School Acceptance Rate		-4.039 (2.609)				-2.744 (3.209)		
High School Acceptance Rate			6.130*** (2.222)				7.158*** (2.562)	
Demonstration High School Acceptance Rate				-2.378 (1.585)				-3.575* (1.835)
Intercept	-5.977*** (1.932)	-3.060*** (0.705)	-7.443*** (1.303)	-3.423*** (0.537)	-7.062*** (2.308)	-2.923*** (0.882)	-7.545*** (1.502)	-3.423*** (0.537)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	2,448	2,448	2,448	2,448	1,050	1,050	1,050	1,050

Note: The above models control gender, household net income per capita, parent's highest education and parent's highest occupation at the student level, and controls per capita GDP at the provincial level. Due to space reasons, it is omitted from the article.

Table 7. Bernoulli Hierarchical Linear Model Analysis of the Influence of Total High School Acceptance Rate on the Participation Rate of Extracurricular Tutoring of Students with Different Parents' Highest Professional Status.

	Lower Level Sample				Middle Level Sample				Upper Level Sample			
Total High School Acceptance Rate	2.003 (2.803)				3.854 (2.943)				3.589 (3.001)			
Vocational High School Acceptance Rate		-4.115 (3.118)				-3.133 (3.174)				-3.458 (3.592)		
High School Acceptance Rate			5.292** (2.563)				7.056*** (2.741)				8.179*** (3.156)	
Demonstration High School Acceptance Rate				-4.350** (2.018)				-2.388 (1.834)				-0.420 (2.164)
Intercept	-4.964** (2.273)	-2.391*** (0.850)	-6.324*** (1.490)	-2.377*** (0.624)	-6.536*** (2.403)	-2.729*** (0.868)	-7.459*** (1.625)	-2.839*** (0.649)	-5.721** (2.435)	-2.125** (0.993)	-7.393*** (1.846)	-2.820*** (0.776)
Model Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Observed Value	1,794	1,794	1,794	1,794	1,326	1,326	1,326	1,326	378	378	378	378

Note: The above models control gender, per capita net income per household, the highest education level of parents, and schooling stage at the student level, and controls per capita GDP at the provincial level. Due to space reasons, it is omitted from the article.

tracurricular tutoring. Among them, the coefficient of the sample of students whose parents' occupational status with the upper level was the largest, but that of the samples of students whose parents' occupational status with the lower level was the smallest. It can be seen that the high school acceptance rate had a more significant impact on the upper samples and had a minor effect on the lower samples. In the samples whose parents' occupations were classified as more inferior, the demonstration high school acceptance rate had a significant negative impact on the participation rate of extracurricular tutoring. That is to say, the improvement of the demonstration high school acceptance rate could significantly reduce the participation rate of extracurricular tutoring for students whose parents' occupational classification was lower. However, in samples whose parents' occupations were classified as middle and upper levels, the demonstration high school acceptance rate had no significant effect on the participation rate of extracurricular tutoring.

Conclusion and Suggestion

Discussion

According to the MMI theory, when high school education is not yet widespread, people's primary goal is to get education opportunities, that is, "going to high school." Now high school education has been universally available. More than 90% of middle school students can receive high school education, and more than 50% can receive vocational high school education. As a result, the attractiveness of high school education opportunities and professional high school education opportunities is significantly reduced. This study found that the increase in the high school acceptance rate has instead promoted students' extracurricular tutoring participation. Only the increase in the demonstration high school acceptance rate can effectively reduce the participation rate of extracurricular tutoring. Combined with the EMI theory, the core of the current high school education competition is not the opportunity to receive education but the quality of education, that is, "a good high school." Thus, going to high school can no longer effectively maintain their children's dominant position in high school education and future higher education competition for families with higher social strata.

Moreover, due to the undifferentiated educational opportunities of high schools and the scarcity of high-quality high school educational resources, the expansion of high school enrollment has increased the pressure of education competition from higher-class families in the social class and further aggravated their academic anxiety. Therefore, families with higher social strata will try to get their children to participate in extracurricular tutoring, trying to help them build an advantage in the high school entrance examination competition to enter the demonstration high school and receive better high school educational resources. In addition, even if the demonstration high school acceptance rate is increased, it will only reduce the participation rate of extracurricular tutoring for lower social class families. However, students from families with higher social strata still choose to participate in extracurricular tutoring to ensure that they effectively maintain their competitive advantage in high schools. Furthermore, some do-

mestic and foreign studies have found that extracurricular tutoring can help improve students' academic performance (Xue, 2016; Dang, 2007). This will increase enrollment opportunities and high-quality high school educational resources for demonstration high schools, which are more enjoyed by children from families with higher social strata. As a result, the differences in admission opportunities for children of different social classes in the demonstration high school have been enlarged, resulting in unequal admission opportunities for the demonstration high school, which is not conducive to social mobility and educational equity.

When studying the impact of high school entrance examination competition on compulsory education students' extracurricular tutoring participation, the high school acceptance rate in the study used 2015 data, while compulsory education students' extracurricular tutoring participation used 2016 data, which can avoid two-way cause and effect to a certain extent problem. However, the problem was still not solved, leading to a certain deviation in the estimation results. Therefore, in follow-up studies, we will try to use tracking data to reduce endogenous interference further.

Conclusions

This study was based on CFPS 2016 data and collected data on high school acceptance rates in various provinces. Following the MMI and EMI theories, by constructing the Hierarchical Linear Bernoulli Model, exploring the impact of high school entrance examination competition on students' extracurricular tutoring participation in the compulsory education stage, the following main research conclusions are drawn.

First, the participation rate of students in Chinese compulsory education in extracurricular tutoring is 32.74%, and nearly one-third of students participate in tutoring. Second, China's average high school acceptance rate is 91.66%, and most middle school students can receive a high school education. Third, China's average high school acceptance rate is 57.82%, and the average vocational high school acceptance rate is 33.85%. This is quite different from the policy objective of maintaining roughly the same enrollment scale for high schools and secondary vocational schools during the high school stage in China. Fourth, the average demonstration high school acceptance rate in China is 18.16%, indicating that China's high-quality high school education resources are relatively scarce.

Second, the high school acceptance rate and vocational high school acceptance rate significantly affect students' extracurricular tutoring participation. Increasing the high school acceptance rate and vocational high school acceptance rate cannot reduce the participation rate of students' extracurricular tutoring. It shows that there is less competition between high school admission opportunities and vocational high school admission opportunities. Moreover, students of different family backgrounds and different stages of study have no heterogeneity in the competitive pressure brought by high school education entrance opportunities and vocational high school entrance opportunities. It shows that the core of education competition among families of different social classes is not high school education entrance opportunities and vocational high school education entrance opportunities.

Third, the high school acceptance rate has a significant positive effect on students' extracurricular tutoring; that is, the higher the high school acceptance rate is, the higher the participation rate of students' extracurricular tutoring is.

Fourth, the demonstration high school acceptance rate has a significant negative impact on students' extracurricular tutoring; that is, increasing the demonstration high school acceptance rate can significantly reduce the student's participation rate of extracurricular tutoring.

Fifth, the impact of high school acceptance rate on the participation rate of extracurricular tutoring of students from families of different social classes is heterogeneous. The higher the high school acceptance rate, the greater the probability of students from families with higher social strata participating in extracurricular tutoring. The high school acceptance rate has no heterogeneous influence on students at different school stages. Whether it is the elementary school sample or the middle school sample, the high school acceptance rate significantly positively affects students' extracurricular tutoring participation.

Sixth, the demonstration high school acceptance rate has a heterogeneous effect on the participation rate of extracurricular tutoring among students from different social classes. For example, the demonstration high school acceptance rate has a significant negative impact on the participation rate of extracurricular tutoring for students whose parental occupation is classified as lower but has no significant effect on the participation rate of extracurricular tutoring for students whose parental occupation is classified as middle and upper. Finally, the demonstration high school acceptance rate has a heterogeneous effect on students at different school stages. For example, the demonstration high school acceptance rate has no significant impact on the participation rate of extracurricular tutoring for elementary school students. Still, it has a significant adverse effect on the participation rate of extracurricular tutoring for middle school students.

Suggestion

First, expand high-quality high school educational resources, increase the demonstration high school acceptance rate, and reduce the participation rate of students' extracurricular tutoring during the compulsory education stage. As China's high school education has been universally available, the high school entrance examination competition is more about the quality of high school education, that is, "a good high school," not just "a high school" education opportunity. However, the scarcity of high-quality high school resources has caused Cohort Crowding in the admission opportunities of demonstration high schools. The supply elasticity of the demonstration high school is relatively small, which makes its competition more intense (Bound & Turner, 2007). To allow their children to enter the demonstration high school, families with higher social strata seek out-of-school education, that is, extracurricular tutoring, to help their children maintain their advantages in the competition for further instruction. Therefore, we must try our best to expand high-quality high school educational resources, increase the supply capacity of demonstration high schools, and increase the acceptance rate of demonstration high schools so that a broader range of families can enjoy high-quality high

school educational resources. It can relieve the pressure of parents and children from high school entrance examination competitions to a certain extent. It can also reduce the participation rate of students' extracurricular tutoring during the compulsory education stage.

Second, to target disadvantaged families with lower social strata to increase enrollment quotas for demonstration high schools, weaken the social reproduction role of extracurricular tutoring, and promote the equalization of high-quality high school enrollment opportunities for children of different classes of families. This study found that to maintain their competitive educational advantage effectively, families with higher social strata let their children participate in extracurricular tutoring to increase their chances of entering the demonstration high school. In addition, the increase in the demonstration high school acceptance rate has reduced the participation rate of extracurricular tutoring for students whose parents' occupational classification is lower. However, middle-class and upper-class families still choose to participate in extracurricular tutoring. Therefore, even if the demonstration high school acceptance rate increases, families with higher social classes will still allow their children to participate in extracurricular tutoring. This will make it easier to increase the number of places in the demonstration high school to be more occupied by higher social class students and expand the inequality of opportunities for children of different families to obtain high-quality high schools. At present, some provinces have introduced similar policies, such as the "target to school" and "spot allocation" of Beijing high school admission and the "spot allocation to school" policy of Shanghai. Therefore, while increasing the acceptance rate of the demonstration high school, the enrollment of the demonstration high school should be increased for disadvantaged families with lower social strata to weaken the social reproduction effect of extracurricular tutoring. Furthermore, allowing children from more disadvantaged families to enjoy high-quality high school educational resources will promote equalizing high-quality high school enrollment opportunities for children of different classes of families. This will create conditions for breaking the solidification of classes and realizing the rational flow of different social classes.

Notes

1. *Demonstration high school is the abbreviation of "demonstrative general high school that implements quality education." It is the comprehensive implementation of the education policy and the exemplary performance of education laws, regulations, and related policies. School-running ideas are correct, moral education is strengthened, and education and teaching reforms are actively carried out. Teachers' quality and school-running conditions are good, school-running has characteristics, and students' morality, intelligence, and physical development are comprehensively developed. Society and colleges, and universities have a good evaluation of students. The school has a high management level, has a long history of running a school, and has a high reputation in and outside the province (autonomous region, municipality).*

2. *The total number of high school enrollment in the province and city was vocational high school enrollment and high school enrollment. The number of vocational high school enrollment, the*

number of high school enrollment, and the number of middle school graduates were all derived from the 2015 education statistics file of the Ministry of Education. See: http://www.moe.gov.cn/s78/A03/moe_560/jytjsj_2015/

3. *The number of students enrolled in the demonstration high schools of each province and city is announced by the demonstration high schools of each province and city.*

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ORIGINAL ARTICLE

How Does Physical Exercise Affect Academic Performance? The Mediating Role of Non-Cognitive Abilities

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Abstract*. Previous studies have found that good physical exercise can promote academic performance, but the underlying mechanism behind this lacks large-scale empirical data. Based on this, we used the 2020 Jiangsu Province academic quality monitoring data to construct an OLS regression. Then, the non-cognitive abilities variable was built with the NEO-FFI Theory, and the mediation effect diagram was drawn through the Amos22.0 software. The study found that: (i) Physical exercise brought academic improvement to elementary and middle school students. (ii) The influence mechanism of physical exercise was different between elementary school and middle school. Students at the elementary school were directly and indirectly affected. (iii) In non-cognitive specific dimensions, openness played a significant and great mediating role.*

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Literature Review and Questions

ENHANCING the physique of the national citizen has always been a livelihood issue of the country's focus. As an essential means, physical exercise has been highly valued at different times. Since the launch of "Sunshine Sports" in 2007, the value of physical exercise has been universally recognized. However, the question parents and teachers are more concerned about is if physical exercise can promote the improvement of academic performance and that is still unclear. Physical exercise can strengthen the body, but spend time on physical exercise instead of extracurricular learning, parents will inevitably worry that the physical exercise "occupies" the study time and causes children's academic performance to decline. Especially in the critical stage of entering higher education, many schools will even suspend physical exercise courses and increase academic courses. In recent years, the "quiet large class breaks" have also become a microcosm of the embarrassing position of physical exercise. Physical exercise seems to be "unrelated" to improving academic performance, and there is a general situation of "emphasizing academics and neglecting sports" throughout China. In the embarrassing public opinion, what is the relationship between physical exercise and students' academic performance? High-quality empirical research is urgently needed to find the answer to it. Especially in the context of reducing student's burdens and increasing students' efficiency, what physical exercise can bring to education is related to every student, parent, and educator.

The discussion on the relationship between physical exercise and students' academic performance can be traced back to the 1950s. Based on the sample data of students in third and fifth grades, Gleason et al. (1958) found a weak correlation between physical exercise and students' academic performance. Subsequent studies have mostly adopted experimental research methods and found that physical exercise can promote academic performance to a certain extent. Such studies were often based on physiology or psychology for theoretical construction. From the perspective of Arousal Theory, it was believed that the physical exercise that students engage in could effectively improve their brain's execution level and make them have better task performance. How-

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ever, the control of confounding variables in this kind of study was not comprehensive, and the attributes of a single discipline were evident. Thus, it had failed to achieve the intersection and breakthrough of theories between disciplines.

With the development of measurement technology and the continuous progress of cognitive psychology and neurobiology, the studies on the relationship between physical exercise and the academic performance had become more systematic and mature. On the basis of controlling some of the confounding variables, many researchers have found that students engaging in specific physical exercises can effectively improve their cognitive abilities or academic performance. The value of physical exercise in education quality and fairness has been effectively demonstrated. For example, Fang Liming, based on adolescent samples in the CEPS database, used the PSM method to control the endogeneity of the samples and found that physical exercise can not only improve the academic performance of adolescents but also effectively improve the academic performance of students from economically disadvantaged families and achieve educational equity. Such findings have also been verified in the study of Fang Chao et al. (2021). Quantile regression results found that physical exercise can reduce the difference between high and low quantile students and has a fair value that cannot be ignored. In addition, many researchers based on the sampling of regional samples also found that the frequency or duration of physical exercises of students was highly correlated with academic performance. The meta-analysis results also showed that allowing students to engage in physical exercise is conducive to improved academic performance.

The studies, as mentioned above, have formed two sets of mechanisms of physiology and psychology in terms of the influence mechanism of physical exercise. The former emphasized the "strengthening" of physical exercise and believed that students improve their health through physical exercise and thus improve their academic performance. For example, Zhang et al. (2016) found that physical exercise can improve the quality of sleep of students and improve the academic performance of high school students. The latter focuses on the "mental health" effect of physical exercise. It was believed that physical exercise effectively relieves students' inner pressure and improves self-efficacy, which in turn enhances classroom performance and promotes academic performance. For example, the study of Zhang et al. (2021) selected peer relationship and self-confidence as the mediating variables and found that physical exercise promoted the improvement of both and thereby improved academic performance. Zhou (2018) used self-esteem as an intermediary variable and found that it played an essential role between physical exercise and academic achievement of college students.

Taken together, the existing research has provided sufficient evidence for the positive effects of physical exercise. However, there are still apparent shortcomings behind these pieces of evidence. On the one hand, the sample size was not enough, and high-quality, large-scale data analysis was still needed to verify this positive effect. On the other hand, many studies were not adequate in controlling confounding variables. They failed to control variables such as family background, which may cause bias in the regression results. In terms of influence mechanism, there may be multiple influence paths between physical exercise and academic performance. Many studies often select a

single intermediary variable. Most of them were psychological or physical variables related to cognitive ability but ignored the non-cognitive abilities highly correlated with students' academic performance. As a concept corresponding to cognitive abilities that emerged during the development of human capital theory, non-cognitive abilities were often regarded as critical abilities in the 21st century (Huang et al., 2017; Xu, 2017). In empirical research, many empirical studies had also selected non-cognitive abilities as the core explanatory variable. However, the theoretical frameworks they were based on are relatively vague. They often defined self-efficacy, peer relationships, and other existences unrelated to cognition in a broad sense as non-cognitive abilities. These concepts did not have the attribute of "ability." Therefore, in terms of mechanism research, the number of existing studies on the mediating variables is insufficient. The theory is not yet systematic, and the exploration of non-cognitive abilities is not comprehensive. Based on this, this study will adopt the more popular NEO-FFI Theory (Neuroticism Extraversion Openness Five Factor Inventory). We subdivided non-cognitive abilities into openness, conscientiousness, extraversion, agreeableness and neuroticism (Costa et al.,1985; Meng, 2003; Wang, 1994). The following questions are verified and discussed by constructing the non-cognitive abilities variable and assuming it as a mediating variable between physical exercise and academic performance.

1. *Can physical exercise improve students' academic performance?*
2. *Can physical exercise promote students' academic performance through non-cognitive abilities?*
3. *Which non-cognitive abilities does physical exercise mainly use to promote students' academic performance?*

Methodology

Research Ideas

This study first verified the relationship between physical exercise and academic performance by constructing a regression model and calculating regression coefficients. Subsequently, intermediary variables are included to explore possible influence mechanisms and demonstrate the vital role of non-cognitive abilities in students' academic performance. Finally, the mediation effect is calculated, and the path coefficient diagram is drawn. The effect size of each path is compared to explore the role of each dimension in the non-cognitive dimension in more detail.

Variable Selection

Core Explanatory Variables

- **Physical Exercise**

Students need to answer the daily physical exercise frequency in this test. They choose from five options: "No", "Less than 1 hour", "1-2 hours", "2-3 hours" and "3-5 hours".

In the elementary school sample, 26.9 percent of students failed to meet the one-hour exercise standard while in the middle school sample this accounted for 41.1 percent.

• Non-Cognitive Abilities

This study used the NEO-FFI Theory to subdivide sub-cognitive ability into five dimensions: openness, conscientiousness, extraversion, agreeableness, and neuroticism. Among them, neuroticism is a negative personality, which has been transformed into an upbeat personality. Openness mainly refers to students' ability to accept new things and use methods to solve problems. Conscientiousness primarily refers to the degree of effort that students have to accomplish their goals and whether they persist in the end. Extraversion refers to the enthusiasm and vitality of students, higher extraversion indicates that students have better peer relationships. Agreeableness refers to the ability of students to show altruistic behavior. Finally, neuroticism refers to the power of students to control emotions. Since the above five dimensions are all latent variables, it isn't easy to measure intuitively. Therefore, the five dimensions were all set with 3-4 questions for measurement, and the principal component method was used to fit the score. The elementary school and middle school samples were tested separately. The α indicators of the five dimensions were all in the interval of [0.6, 0.8], indicating that the data has good reliability. In terms of validity, the RMSEA indicators of the five dimensions were all less than 0.07, meaning a good fit, and the CFI and TLI are both greater than 0.9, and the validity is good. More statistics can be found in **Table 1**.

• Explained Variable

The academic performance middle school students participating in were divided into Chinese, mathematics, English, biology, geography, and physics; and the elementary school was divided into Chinese, mathematics and English. Considering the academic burden and other reasons, each student in the middle school only tested two subjects and the elementary school only tried one subject. Considering that there are apparent differences between subjects, it is impossible to simply take the subject scores of the students as the total score. Moreover, regression by the subject may cause the lack of a large area of samples. Therefore, after collecting the data, we decided to fit a regression model based on other items in the questionnaire that may be related to the results; and then performed multiple imputations on the results of the test subjects that the sample did not take to generate the general scores. Such methods are often used to deal with large areas of missing values in the sample. After getting the results of each subject, considering that the policies for the high school entrance examination in various regions of Jiangsu Province are different, and the examination methods of biology and geography are also different, the middle school's general scores only used the total scores of Chinese, mathematics, English and physics. In contrast, the elementary school used the total scores of Chinese, mathematics and English. As a result, the average score of all subjects in middle school was 555.22, and the average score of all topics in elementary school was 515.19.

- ***Control Variable***

To avoid missing variables cause biased estimation of regression coefficients, this study incorporated students' family background variables, demographic variables, and school background variables into the regression model to control bias. In sociological research, students' stock of family capital can influence students' academic performance through intergenerational inheritance. These capitals cover three forms: economy, culture, and society. In this study, we averaged the number of students' reports about the items owned by student families and used it as proxy variables of economic capital. Students needed to answer the number of particular items (such as televisions, computers, cars, etc.) owned by the family. A total of nine questions were set. In terms of society capital, using the "*Chinese Occupation Classification Dictionary (2015)"* as a reference, the parents' occupations were assigned, sorted (scores of 1-8) and standardized, and the highest score of the parents was taken as the social capital in the family background. Finally, the parents' academic qualifications represented the cultural capital. First, the parents' academic qualifications were converted into years of education and assigned values of 9, 12, 16, and 19. After standardization, the highest scores of both parents were taken as the cultural capital of the student's family. In addition, the gender of students was 1 for girls and 0 for boys; the only child status was 0 for only children and 1 for non-only children. The school type was 1 for public and 0 for private. The school area was 1 for urban and 0 for rural areas. The specific sample descriptive statistics were shown in **Table 1**.

- **Model Setting**

This research will first conduct descriptive statistics on samples of the fifth and eighth grades in Jiangsu Province, locate the physical exercise situation, and construct an OLS regression model, Including core explanatory variables, control variables, and mediation variables to analyze the positive effects of physical exercise and the role of non-cognitive abilities in the impact mechanism. The specific model expression is as follows:

$$Score_i = \beta_0 + \beta_1 Exercise_i + \beta_2 non-cognitive_i + \beta_3 Control_i + \varepsilon_i$$

Among them, $Score_i$ is the average grade of the subject of the *i-th* student. β_1 is the regression coefficient of the student's physical exercise situation. β_2 is the regression coefficient of students' non-cognitive abilities. β_3 is the regression coefficient of the control variable. Finally, ε_i is the residual of the regression equation.

- **Data Source and Processing**

This study used the 2020 monitoring data of students' academic quality in compulsory education in Jiangsu Province. The project is carried out once every two years. Two-

Table 1. Descriptive Statistics.

		Mean	Standard Deviation	Minimum	Maximum
Elementary School					
	Only Child	0.63	0.48	1.00	2.00
	PE Time	2.88	0.80	1.00	5.00
	Public School	0.64	0.48	0.00	1.00
	Urban	0.87	0.34	0.00	1.00
	Female	0.48	0.50	0.00	1.00
	Economic Capital	0.03	0.99	-3.04	4.21
	Social Capital	0.69	0.29	0.00	1.00
	Cultural Capital	0.49	0.33	0.00	1.00
	Openness	0.03	1.00	-4.19	0.80
	Responsibility	0.04	0.98	-3.88	0.89
	Extraversion	0.01	1.00	-4.26	0.79
	Pleasant	0.05	0.97	-4.55	0.71
	Neuroticism	0.03	0.98	-3.41	0.84
Middle School		**Mean**	**Standard Deviation**	**Minimum**	**Maximum**
	Only Child	0.55	0.50	1.00	2.00
	PE Time	2.62	0.66	1.00	5.00
	Public School	0.86	0.35	0.00	1.00
	Urban	0.66	0.47	0.00	1.00
	Female	0.47	0.50	0.00	1.00
	Economic Capital	0.57	0.10	0.25	1.00
	Social Capital	0.60	0.29	0.00	1.00
	Cultural Capital	0.31	0.30	0.00	1.00
	Openness	0.00	1.00	-3.39	1.16
	Responsibility	0.01	1.00	-2.87	1.49
	Extraversion	-0.01	1.00	-3.33	1.38
	Pleasant	0.04	0.94	-4.00	0.98
	Neuroticism	-0.01	0.99	-2.41	1.38

stage stratified sampling was used to conduct a sample survey of students, teachers, and school leaders in 13 cities in Jiangsu Province. Among them, a sample of students was randomly selected from the sampled schools, and a total of 213,334 questionnaires for fifth-grade students and 147,432 questionnaires for ninth-grade students were collected. After deleting the samples that failed the polygraph test and missing important information, a total of 156,657 valid elementary school questionnaires and 127,738 useful student questionnaires from middle school were obtained.

Results

Regression Analysis Result of Physical Exercise

In this study, students' average scores were selected as dependent variables, and model 1, model 2, model 3, and model 4 were constructed respectively. Model 1 only incorpo-

Table 2. OLS Regression Results.

		Model 1	Model 2	Model 3	Model 4
Elementary School	(Constant)	484.50***	509.99***	501.13***	520.70***
		(0.548)	(0.786)	(0.867)	(0.893)
	Physical Exercise	10.78***	10.14***	8.69***	3.47***
		(0.184)	(0.176)	(0.176)	(0.185)
	Non-Only Child		-23.48***	-20.74***	-19.81***
			(0.302)	(0.303)	(0.305)
	Public School		-2.07***	1.29***	0.75
			(0.307)	(0.314)	(0.318)
	Urban		19.32***	13.87***	12.33***
			(0.534)	(0.529)	(0.535)
	Female		8.24***	6.71***	4.19***
			(0.287)	(0.285)	(0.289)
	Economic Capital			11.49***	10.29***
				(0.154)	(0.156)
	Social Capital			8.06***	6.79***
				(0.545)	(0.553)
	Cultural Capital			11.06***	9.51***
				(0.498)	(0.505)
	Openness				10.34***
					(0.242)
	Responsibility				4.17***
					(0.229)
	Extraversion				-0.21
					(0.245)
	Pleasant				5.76***
					(0.213)
	Neuroticism				0.22
					(0.188)
	R^2	0.03	0.11	0.17	0.27
	F	3431.12	3236.64	3149.63	2832.05
		Model 1	**Model 2**	**Model 3**	**Model 4**
Middle School	(Constant)	503.42***	545.11***	466.53***	497.41***
		(0.833)	(1.032)	(1.534)	(1.533)
	Physical Exercise	4.51***	3.70***	3.50***	-3.58***
		(0.309)	(0.296)	(0.292)	(0.296)
	Non-Only Child		-20.90***	-13.41***	-12.42***
			(0.396)	(0.398)	(0.39)
	Public School		-33.70***	-24.22***	-19.99***
			(0.56)	(0.556)	(0.544)
	City		20.07***	10.62***	10.14***
			(0.418)	(0.423)	(0.416)
	Female		16.87***	14.81***	10.97***
			(0.391)	(0.384)	(0.385)
	Economic Capital			81.31***	59.93***
				(2.168)	(2.129)
	Social Capital			12.26***	11.28***

				(0.816)	(0.801)
	Cultural Capital			44.22***	36.71***
				(0.807)	(0.793)
	Openness				27.95***
					(0.303)
	Responsibility				9.27***
					(0.284)
	Extraversion				-10.49***
					(0.325)
	Pleasant				4.44***
					(0.319)
	Neuroticism				-7.23***
					(0.23)
	R^2	0.002	0.09	0.16	0.29
	F	213.088	2288.96	2653.349	3159.02

*Note: () is the standard error of the coefficient; * represents the significance level, where * is P < 0.1, ** is P < 0.05, *** is P < 0.01.*

rated physical exercise variables; models 2 and 3 incorporated background control variables to estimate the positive effects of physical exercise; model 4 incorporated non-cognitive abilities variables to build a full model, analyzed the positive impact, and initially discuss the impact mechanism of physical exercise. Before regression, the white collinearity test was performed on the sample data. There was no collinearity problem between the variables, and there was no obvious heteroscedasticity. The regression coefficients and standard errors of the samples are shown in **Table 2**.

From the results in **Table 2**, physical exercise had different effects in elementary schools and middle schools. In models 1-3, physical exercises all positively predicted the academic performance of elementary and middle school students. As the model variables increased, the regression coefficients decreased. The regression coefficient in the elementary school sample was always positive; in the middle school sample, after adding non-cognitive variables, the student's academic performance was significantly negatively predicted by the physical exercise, the regression coefficient was -3.60, and the significance level reached 0.01. On the whole, regardless of whether there was a mediating effect, the positive impact of physical exercise existed in the elementary school stage. However, after controlling the influence of background variables and non-cognitive abilities in the middle school stage, the positive effect of physical exercise turned into an "inhibition" effect. Each time a student's physical exercise time was increased by one unit, their academic performance dropped by 3.60 points instead.

Regression Analysis Results of Non-Cognitive Abilities

In addition to the high correlation between physical exercise and students' academic performance, this research also demonstrated the high correlation between non-cognitive abilities and academic performance. First of all, from model 4 of the elementary school and middle school samples, we found that the three dimensions of openness,

conscientiousness and agreeableness all positively and significantly predicted students' academic performance, which was consistent with the results of foreign empirical research. The effect sizes of the three dimensions were further calculated. In the elementary school sample, the effect sizes of the three dimensions were 0.195, 0.076 and 0.104, respectively, while the middle school sample were 0.379, 0.129 and 0.056, respectively. The above results showed that non-cognitive abilities could help students improve their academic performance. In its interior, the effects of each personality trait were different in different stages, but the openness was always in a higher position. That means students who is enthusiastic about new things and willing to challenge often promotes academic performance the most.

Regression Analysis Results of Other Variables

In terms of background variables, while controlling for the influence of other variables, the results of all models showed that students with non-only-child status had lower academic performance than students with only-child status. This may be because only-child families often have more investment space for students' academic or non-academic tutoring. In addition, the academic performance of urban students was higher than that of rural students, and the regression coefficient interval was located in [9.53, 19.99], indicating that the issue of regional education equity needs to be improved. Previous studies had agreed that a good family background would improve students' academic performance. In this study, the higher the stock of economic, social, and cultural capital of a student's family, the higher their academic performance would be, consistent with previous research results.

Analysis of the Impact Mechanism of Physical Exercise

From the regression coefficients of model 1 to model 4, the coefficient of physical exercise gradually decreased, especially after adding the five dimensions of non-cognitive abilities; the coefficients of elementary school and middle school decreased significantly, which preliminarily explained mediating effect statistically. In order to visually present the role of each non-cognitive dimension in the influence mechanism, amos22.0 software was used to construct an intermediary model to draw a path diagram. The regression path diagram is shown in **Figure 1**.

From the path diagram of the elementary school sample, the five non-cognitive dimensions would be significantly positively predicted by the physical exercise, and the regression coefficients were similar. All were significant at the level of 0.01, indicating that physical exercise can effectively shape all aspects of personality traits. The second half of the path was significant at the 0.01 level. The mediation effect calculation showed that the mediation effect of openness, conscientiousness, and agreeableness was more prominent, which were 28.43%, 10.95%, and 14.00%, respectively.

But unlike elementary schools, there were certain differences in the effects of physical exercise on the five non-cognitive dimensions in the middle school samples. **Figure 2** showed that in terms of regression coefficients, the entire five dimensions

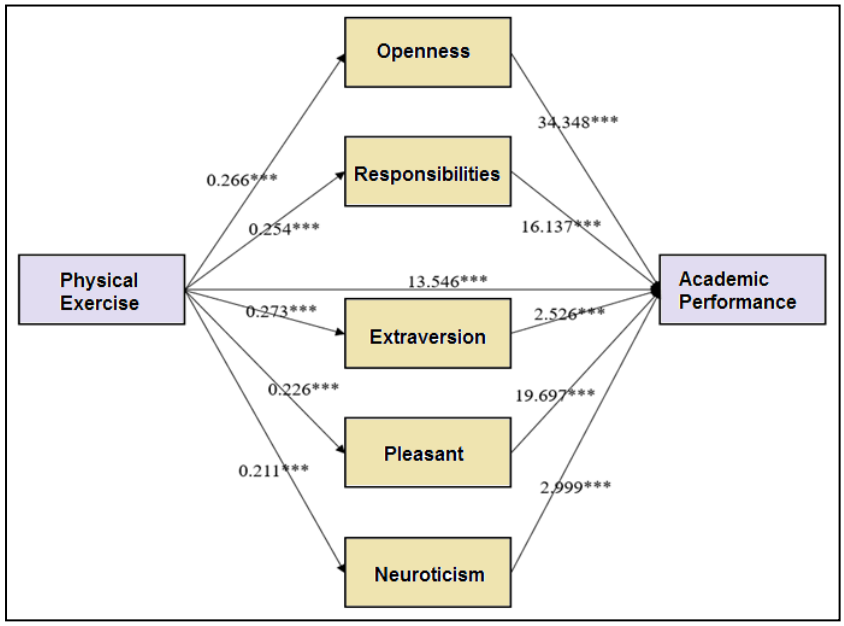

Figure 1. Elementary School Stage Road Map.

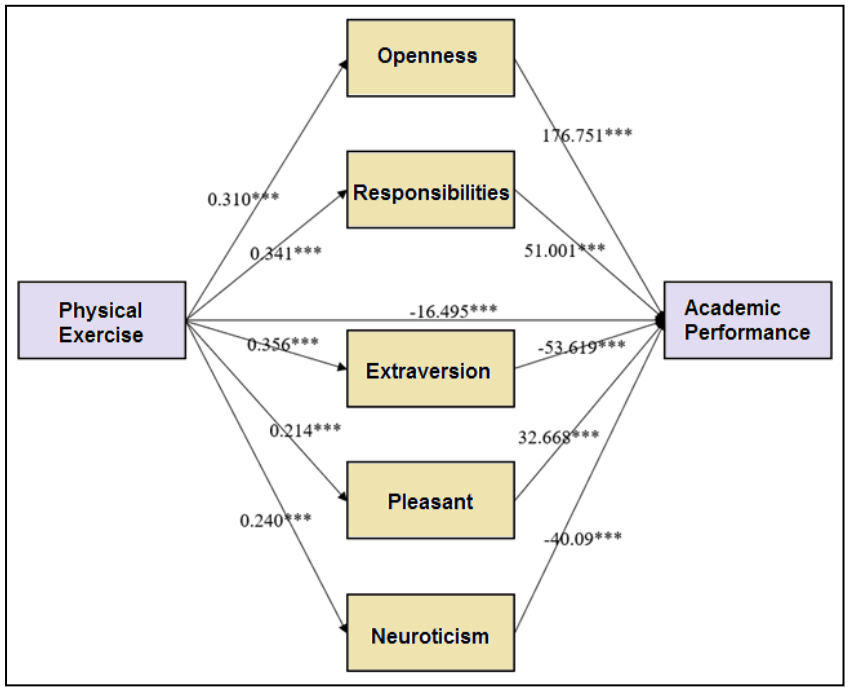

Figure 2. Middle School Stage Road Map.

could be affected by physical exercises, which were all significant at the level of 0.01. In the second half of the path, the entire dimension could predict academic performance while the extraversion and the neuroticism predict negatively. Among them the openness could predict academic performance much more strongly than other dimensions. After calculating the mediation effect, the mediation effect of the openness was the largest, reaching 41.17%, second of which is extroversion, only reach 13.52%. Conscientiousness, agreeableness and neuroticism were 12.45, 6.44% and 8.61%, respectively. Moreover, the direct effect is negative. The above results showed that students at the elementary school could directly improve academic performance through physical exercise and could also indirectly improve academic performance to a greater extent by shaping the personality traits of openness, conscientiousness, and agreeableness. Through shaping extraversion and neuroticism personality, physical exercise could indirectly promote academic performance to a lesser degree. However, middle school students are under the burden of academic burden, the relationship between academic performance and physical exercise was very delicate. On the one hand, physical exercise did not directly promote the improvement of academic performance. On the other hand, physical exercise could greatly indirectly promote academic performance by shaping openness personality whose mediating effect was more significant than the direct effect of physical exercise.

Discussion

Physical Exercise Can Directly or Indirectly Promote the Improvement of Academic Performance

"Sports have the power to change the world." However, physical fitness is just the tip of the iceberg of the value of physical exercise. In the regression and mediating effect analysis of this study, physical exercise, whether in the elementary school sample or the middle school sample, was found to directly or indirectly improve academic performance. In the elementary school sample, physical exercise could reduce the burden and increase adolescents' academic work efficiency and alleviate the educational equity brought about by the differences in students' family backgrounds. This was consistent with the early research results of Yin et al. (2014), focusing on the positive effects of long-term physical exercise. However, we have again demonstrated this view under the influence of other variables under better control. In addition, this study also found that the direct effect of physical exercise in middle school samples is negative, which is contrary to the conclusions of many studies (Fang, 2020; Fang et al., 2021; Lu et al., 2014). The reason is that, on the one hand, we believe that this research has selected more intermediate variables and brought the variable of non-cognitive abilities into the regression model. This effectively stripped off the effect of physical exercise statistically and obtained more accurate coefficients (Wen et al., 2004; Wen et al., 2014).

On the other hand, in theory, middle school students and elementary school students have differences in psychology, physiology, and cognition, or there may be

two different influence mechanisms. This ultimately leaded to the fact that physical exercise cannot directly promote students' academic performance among middle school students. However, the mediating effect of non-cognitive abilities allows physical exercise to improve students' academic performance indirectly. Therefore, physical exercise seems to "squeeze" students' academic time but the relationship between academic time and performance is not linear (Shen, 2014; Zou & Tan, 2013). Therefore, finding the best advantages of academic time and proper planning of time investment can maximize the marginal effect of chemical industry time and effectively exert the positive impact of physical exercise. Therefore, the concept of family education should shift from the original "focusing on academics and neglecting sports" to "grasp both academics and sports"; to achieve mutual complement, reduce burdens and increase efficiency.

Differences Exist in the Impact Mechanism of Physical Exercise between Elementary School and Middle School.

As mentioned above, middle school and elementary school may have two different influence mechanisms. The academic performance of elementary school students is directly and positively promoted by physical exercise and can be positively promoted by physical exercise through the five non-cognitive dimensions. On the other hand, the improvement of the academic performance of middle school students depends on physical exercise through the indirect effects of openness and agreeableness. Research on the role of non-cognitive abilities in the influence mechanism of physical exercise is scarce in China. The only study that failed to consider the multidimensional and complex concept of non-cognitive abilities, instead of using a single variable, the results obtained are not robust (Dong et al., 2020). This study built the dimension of non-cognitive abilities based on the NEO-FFT Theory and deeply analyzed the role of each sub-dimension in the influence mechanism. Middle school students rely on indirect effects, and we believed it might be that middle school students have higher non-cognitive abilities than elementary school students. Previous studies found that students of different ages have significant differences in the scores of the five dimensions (Nie et al., 2011), which made the marginal effect of physical exercise on non-cognitive abilities decline. Therefore, the promotion of academic performance will not be as apparent as the elementary school stage. But on the whole, there is a very high correlation between physical exercise and non-cognitive abilities. Physical exercise effectively shapes students' positive personality, helps students accept new things and better restraint ability, and finally, through these abilities, effectively promotes academic performance.

Open Personality Traits Play a Key Role

The immense theoretical contribution of this research is to compare the effects of the five dimensions of non-cognitive abilities rather than simply discussing whether non-cognitive skills play a role. At present, the academic circle is still inconclusive as to

which dimension of the five personality can effectively promote the improvement of academic performance. Under the premise of the independent variable of physical exercise, this study found that the mediating effect of openness personality is the greatest. This can show that physical exercise can help shape students' openness personalities and it also shows that students with more assertive openness personalities are more likely to exert the positive effects of physical exercise. Students with strong openness personalities can often use "wisdom" to summarize their behavior (Liu, 2001), and they are willing to actively seek solutions to problems and win external support (An, 2017). Specifically, in this study, students with open personality traits are less afraid of difficulties, have higher expectations of themselves, and can effectively use the learning methods learned in the classroom. These positive behaviors can effectively promote the improvement of academic performance. In physical exercises, especially in competitive sports activities, students have ample opportunities and possibilities to try new methods while striving to achieve competitive goals and develop a behavioral pattern that uses new methods rationally and is not afraid of difficulties. This experience will also be transferred to classroom learning to help them no longer be fearful of the challenges in the classroom learning so that they can communicate with teachers and parents, seek methodological support, and ultimately achieve the improvement of academic performance. In other words, physical exercise can improve academic performance because it has the effect of enhancing students' classroom performance, such as enhancing attention, which is consistent with the conclusions reached by some foreign studies (Grieco, 2009; Mahar et al., 2006).

Study Limitation and Perspective

This study demonstrated the positive effects of physical exercise and analyzed the mediating impact of non-cognitive abilities with the help of the NEO-FFI Theory. In response to the three problems established in the study, the following conclusions are drawn: physical exercise positively can improve students' academic performance. Furthermore, this positive effect is achieved by physical exercise through non-cognitive abilities. Among them, the openness personalities shaped by physical exercise are the most important. But this study still has limitations.

Firstly, the measurement of NEO-FFI Theory is incomplete compared with the measurement in psychological research and includes fewer questions. Secondly, the physical exercise variable is set as a level variable, not a continuous variable that can characterize the duration, which may make the research results miss some valuable findings, such as the optimal interval and nonlinear relationship of physical exercise. Thirdly, the direct effect in the midlle school sample was negative, which is somewhat contradictory to previous studies. In addition to the mediating effect of non-cognition, we believe endogeneity is what makes this happen and some matching methods should be used in later studies.

Conclusion and Suggestion

Change Ideas, and Promote the Development of both Academics and Sports

Health and education are both essential components of human capital, and the two should be equally important. This study verified the positive effects of physical exercise. Educators need to realize that physical exercise has a role that other academic investments cannot replace as a health investment. Therefore, we should abandon the educational concept of "emphasizing academics over sports," leaving enough time for students' physical exercises and providing necessary support. Parents can regularly participate in physical conditioning with their children, enhancing the parent-child relationship and improving their academic performance. Teachers can use sports activities or competitions to cultivate children's competitive spirit to develop positive behavior patterns and personality qualities and thus have better classroom performance.

Pay Attention to Non-Cognitive Abilities and Open the "Black Box" of Physical Exercise

This research has discovered the mediating role of non-cognitive abilities in the influence of physical exercise, which shows that in the black box of physical exercise and academic performance, previous studies have indeed overlooked some key variables. As a critical skill, non-cognitive abilities will be one of the core qualities of future students. Therefore, all educators and researchers should integrate students' non-cognitive abilities into scientific research and classroom teaching and strive to find efficient and quick ways to improve non-cognitive abilities.

Pay Attention to the Cultivation of Openness Personality and Realize Efficient Classroom Learning

Open personality was found to play an essential role in the influence mechanism of physical exercise in this study, and it has a considerable effect on academic performance. Therefore, in daily family education, parents should attach importance to communication with their children and allow children to be open to competition and difficulties. Teachers should "teach students how to fish, not just give fish." It is necessary to emphasize the importance of methods and let students develop the habit of using strategies to learn knowledge, which improves classroom efficiency and benefits students' long-term development.

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REVIEW

Exploration of the Research-Based "New Basic Education" Experiment by Lan Ye

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Abstract. *"New Basic Education" as a localized strategy in China was produced during the social transformation. It aims to stimulate the internal development motivation of schools, principals, and teachers and promote the upgrading and transformation of classrooms and schools. To get through theory and practice connection, taking root in schools, doing "ground-based" research, and exploring a new path for the ecological growth of regional school groups. Starting from the background of the "new basic education" research, this paper elaborates the content, history, ideological system, and influence. It hopes to provide a more comprehensive and objective overview of the "new basic education" research to inspire most educators. Help everyone explore the practical way to improve the quality of education.*

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Background of "New Basic Education"

FROM a historical perspective, whenever society underwent a significant transformation, people's criticism of education often started from value criticism, from a re-recognition of the value and purpose of education, and using this as the basis and starting point then to realistic educational activities. Eventually, they made a more specific evaluation and proposed new principles, plans, and methods (Ye, 2002).

From the end of the 20th century to the beginning of the 21st century, China was in a particular period of social development and transformation, and its spirit of the times had the characteristics of "focusing on the future, emphasizing development, and basing on change." At the same time, genuine reform had brought about the inherent need of "focusing on choice" and "calling people's subjective spirit (Ye, 2006A). In the early 1980s, Lan Ye was engaged in basic theoretical research on pedagogy, and she felt that our pedagogical thinking was rigid and the conclusions were too simple. What's more serious was that there were no real people or only "one-sided" people in pedagogy. We only studied how to teach people to understand the outside world and forgot that the most important half is how to make people learn to know and develop themselves. In 1994, Professor Ye once again went deep into reality and believed that the metaphysical understanding of the existence and development of human life in education should not treat students as things and should not treat students differently. It was necessary to regard the enhancement of people's consciousness of life as the important provisions of the times on education. She started the research on "new basic education" (Li, 2004). Her research aimed to create a new type of primary education that conforms to China's spirit. The study of contemporary development and changes in Chinese society made a big impact on school education reforms.

At the same time, China launched the eighth basic education curriculum reform.[1] This "curriculum reform" clearly proposed the "new curriculum reform." It can be said that the "new" in the "new basic education" is a response to this "new curriculum reform," and it is also a discussion and practice of contemporary Chinese social development and educational values reform (Ye, 1994).

Research Content of "New Basic Education"

The research content of "new basic education" includes two aspects: theory and practice. These two aspects are intertwined and grow together in the process of research. In the research and exploration stage, a moderately leading theory and close integration of theory and practice were proposed. The research process has evolved into promoting the experimental research results of the "new basic education," continuously researching the combination of theory and practice. Therefore, the main contents of developmental research are as follows:

The Background and Overall Research of School's Transformational Change

The developmental research of "New Basic Education" is dedicated to revealing the internal relationship between social transformation and school transformation, revealing the fundamental aspects of school transformation and the essential characteristics of new schools, as well as the basic strategies and paths to achieve school transformation, and then forming the theory of "school transformation." In this sense, it can be said that the "new basic education" theory is a theory of educational change about school transformation (Ye, 2004).

The Basic Theory and Practice Update in the School's Transformational Reform

In the stage of exploratory research, through a critical analysis of the problems in school education and their causes, the theoretical discussion was focused on the renewal of the educational concept system, the renewal of the school education training target system, and the renewal of the basic activities of school education (Ye, 1999). On the one hand, developmental research strengthens the theoretical research on the reform of school management and the academic research on the development of teachers and students in the "dual transformation" of contemporary society and schools to form a relatively complete "new basic education" theory. At the same time, it has strengthened the basic issues of a series of educational theories involved in the "new basic education" and updated research on school training goals, classroom teaching, class construction, teacher development, school management evaluation, and other aspects.

Systematic and In-Depth Study of the Teaching Reform of Basic Subjects in Elementary and Middle Schools

The "New Basic Education" experiment has researched the teaching reform of three basic Chinese, mathematics, and foreign languages in primary and middle schools and has expanded in-depth systematization and application. It enables the theory of classroom teaching reform in the "new basic education" to be embodied in the teaching reform theory of significant disciplines. It also enriches and develops with the help of theoretical research on teaching reform of marked fields. At the same time, it also has a pivotal role in the teaching reform practice of experimental schools (Ye & Wu, 2004).

Methodological Research on the Path and Strategy of School Transformational Change Research, Educational Theory, and Educational Practice

In the research and development process of "New Basic Education," on the one hand, breakthroughs have been made in the understanding of the relationship between educational theory and practice. On the other hand, the research also reflects the richness of the relationship between academic theory and educational training. Researchers deeply

feel that the multiple and rich connections between educational theory and educational practice are an essential issue that cannot be avoided in the development of pedagogy and educational practice in contemporary China. It is a reflective issue of academic research itself and belongs to scholarly research. It is also a methodological study of "New Basic Education" as a research project.

"New Basic Education" Research History

The "new basic education" reform can be roughly divided into five internally connected development stages. They are the exploratory research stage, the developmental research stage, the shaping research stage, the grounded research stage, and the ecological research stage.

Exploratory Research Stage (September 1994-September 1999)

In the early 1990s, after conducting a series of in-depth reflections and theoretical constructions on basic education, Lan Ye began to turn his research perspective to the field of basic education practice. At the beginning of the study, Professor Ye and several other researchers from East China Normal University discussed Shanghai Wai Gao Qiao Free Trade Zone Experimental Elementary School Guodong Chen and vice-principal Yu Zhang to carry out a voluntary collaborative study. In the pilot research stage, the research team members determined the research plan on the one hand. They proposed the basic theoretical concept system ("Three Views and Ten Characteristics")[2] related to the overall reform of contemporary school education. Under the existing conditions, carry out limited basic research (Ye, 2006B).

At this stage, the breakthrough was to change the original classroom teaching pattern of "teacher speaks for words, and a few good students play the leading role." The "time," "space," "tools," "right to question," and "right to comment" were returned to students to form a new classroom space-time structure. Structural adjustments were made to the teaching content, and a "teaching structure" was proposed in the classroom so that students could learn to "use the structure," forming a "long-term two-stage teaching."

In 1997, the "New Basic Education" research was approved as the National Educational Science "Ninth Five-Year Plan" project of the Ministry of Education. Since then, the "New Basic Education" experiment began to be studied in a broader range. By 2000, there were 55 core experimental schools in Chongming County, Shanghai, and more than 200 schools were radiated.

In May 1999, Shanghai New Basic Education Research Institute was established. In the same year, the "Developmental and Promotional Research on New Basic Education" was officially launched.

Developmental Research Stage (September 1999-May 2004)

When the developmental research on "new basic education" started in September 1999, it did not establish a project in the country. The study was carried out by the East China Normal University project team, 17 schools in Minhang District, and four schools in Chongming County. In the past five years, since inheriting the original experience, the research team members have developed and deepened the systematic research of the school change theory. From the core of research and its impact on practice, the "new basic education" still focuses on classroom teaching (Ye, 2004), forming a series of new indicators for teaching evaluation, guiding teachers' teaching design, teaching process, and teaching reflection.

In addition, during this period, the research was extended to many provinces and cities in coastal areas and received support from relevant regional leaders. The East China Normal University research team members traveled to pilot schools and regions every semester, and pilot schools were held in an area every semester. In the exchange seminars, the research tradition of the "new basic education" community has been formed.

In May 2004, the "New Basic Education" theory and the promotion and developmental research topic problem-solving conference were held in Shanghai, and at the same time, it hosted a nationwide on-site seminar. "Developmental research" results were reflected in a series of "new basic education" developmental research books edited by Lan Ye.

Shaping Research Stage (June 2004-June 2009)

This stage is where the "new basic education" research begins to reflect and refine the theory and practice. The focus of research has been shifted from "classroom" to "basic education reform and overall school transformational reform."

The research team has done research and practice in the school leadership to improve leadership team reform, such as institutional reform, system reform, leadership concept system update, and overall school reform planning, and deepen the reform of the teaching system based on disciplines. At the same time, the research team has also strengthened the evaluation research and "checking" each experimental school by grade to promote the involvement of more teachers in deepening research (Ye, 2020). On this basis, the "Guidelines for Teaching Reform of Subjects" such as Chinese, Mathematics and English are refined to realize the systematic structure of rich, original experience and typical cases in the daily teaching reform research of "New Basic Education."

In May 2009, the "New Basic Education" Formability Research Achievement Release and On-site Seminar were held in Shanghai. The "New Basic Education" Shaping Research Series was launched at the conference.

Grounded Research Phase (October 2009-May 2012)

The notable changes in the research subject, research methods, and research horizons of the research in the formability stage have activated the initiative and creativity of each school in the symbiote. Some schools have created typical experiences in different fields and achieved significant development results. Grounded research is a test of whether the "new basic education" system theory can bring about the accelerated development and high-quality completion of the school after its formation.

Therefore, the main research task is to transform the current results into the daily education and teaching research process through "forward and follow-up" discussions, become the conscious change of behavior of principals and teachers, and extend it to all disciplines. Model research and quality courses are the carriers to deepen and improve the research results, making this achievement rooted in every teacher, every school, and every regional action.

In May 2012, 9 "new basic education" base schools were selected as the first batch of "life-practice" pedagogy cooperative research schools.

Ecological Research Stage (2012-Present)

Since 2011, the Minhang District of Shanghai took the lead in carrying out the "New Basic Education" ecological zone research; four regions across the country (Shanghai, Changzhou, Huaiyin, and Qingdao) have formed 14 ecological groups of varying sizes and numbers. All participating schools are jointly developed to create a "new basic education" ecological national symbiosis. Therefore, at this stage, research is no longer taking a school and an area as an environmental area, but with the cultivated cooperative schools as the core, forming a permanent leader school, a rotating leader school, and a backbone school, etc. The echelon development pattern of the ecological zone in China and promote the reform results. At the same time, through ecological activities, local teaching and research forces in experimental schools and regions have been cultivated. In Minhang District, Shanghai, 256 principals, and teachers have become part-time researchers and formed the district's evaluation team.

In May 2018, at the 10th National Symbiosis Conference of "New Basic Education," Professor Lan Ye reported on the theme of "Research on 'New Basic Education' in the New Era," re-establishing the "life-practice" pedagogy The highest goal of education-"naturally." Under its influence, this research has continued to this day.

"New Basic Education" Theoretical System Construction

The Construction of New Basic Education Values

Education has the role of guiding the value of life. It gives students correct life guidance, builds a pillar of the spiritual level of students, and lays a foundation for students' knowledge, ability, and moral foundation. At the same time, it should also cultivate students' living abilities, communication skills, etc., and comprehensively improve stu-

dents' abilities. It teaches students to love life, study, and work and helps students establish a positive and healthy life goal.

Under the view of life education, education should focus on students' spiritual growth and then impart knowledge to students. Therefore, the value of the new basic education must be reflected in people's knowledge level and based on people's life development and promote the comprehensive development of students' moral, intellectual, physical, aesthetic, and labor. The comprehensive sublimation from knowledge education to emotional education can cultivate people who meet the needs of modern values ("New Educational Experiment" research group, & Zhang, 2006).

The Construction of the Value of Students in New Basic Education

The concept of students constructed in the new basic education is as follows: First, respect for students' differences in education is the primary criterion, proceed from reality, and teach students by their aptitude. Use a unified educational mechanism and model to be applied to students with individual differences in a targeted manner. Second, attach importance to the cultivation of students' initiative and constantly cultivate students' active learning ability to change from passive to active. At the same time, students must be able to think deeply, be strong, optimistic, and have a positive attitude. Third, fully tap the students' potential and let them realize their unlimited potential (Wang, 2018).

The Construction of the Value of Teachers in New Basic Education

The concept of teachers constructed in the new basic education is: First, clearly recognize the role of teachers, emphasize the meaning and value of teachers' lives, respect teachers and their labor. At the same time, we must respect our development, enhance our spiritual needs, and work for education to provide an excellent educational or research environment and academic funding support. Second, pay attention to teachers' differences, point out teachers' education mistakes, correct them to educate students correctly, mobilize teachers' educational significance with the most incredible enthusiasm, and respect each life and individual with a broad mind.

The Construction of Curriculum Value in New Basic Education

The main goal of education and teaching is curriculum education. The curriculum is the foundation of students' learning, the key to students' mastery of skills, and the carrier of students' knowledge and shaping their character. Therefore, the rationality of curriculum design is the key to education. The curriculum concept of the new basic education construction is as follows: First, the content of the curriculum should be expanded with theory, theory combined with practice, academic integration with life, and natural inte-

gration with humanities. It is necessary to teach students professional knowledge and skills and to broaden students' horizons. Second, set up a reasonable curriculum structure, strengthen the comprehensive curriculum, expand students' thinking ability and thinking ability, deeply tap students' learning potential, encourage students' innovative spirit, observe the details of daily life, and integrate life into the curriculum. Life is the source of knowledge (Ye, 2002).

The Construction of the Teaching Value in New Basic Education

Compared with the traditional teaching process where the teacher is the instructor, and the student is only the role setting of the learner, the new basic education emphasizes the teacher's teaching ability, teaching initiative, and teaching advancement. Teaching activities, "teaching" and "learning" must be integrated and cannot be carried out independently. Teachers and students should incorporate into each other's roles. Teachers should interact with students in the classroom, cultivate mutual understanding, learn from each other, complement each other, enhance and promote each other, teachers and students grow together.

The overall teaching process is necessary to strengthen the teacher-student interaction and stimulate teachers' and students' creativity. The teaching concept of the new basic education construction is: First, the primary task of education is to "put people first" and change the traditional view of "emphasis on cognition and light of emotion" and "emphasis on education and education." The new basic education should emphasize emotion and pay attention to experience life, the formation of students' good morals, and the cultivation of personality. Second, change the viewpoint of imparting knowledge from passive to active. Transform "Teaching knowledge to students" into "Guiding students to learn knowledge." As a result, traditional teaching methods are transformed into valuable teaching methods so that students can experience a meaningful learning state (Zhao, 2009).

The Impact of "New Basic Education" Research

From the exploratory research in the 1990s to the extensional and developmental research in the first five years of the twentieth century, to the subsequent shaping research, the "new basic education" has always focused on the social and educational issues in the transitional period of China. From the classroom and class level to the school level, the theory and logic continue to advance, and the research and practice continue to expand. Through a comprehensive reflection on traditional school education, the theoretical and practical concept of "new basic education" was put forward, leading the trend of basic education research and practice in China at the turn of the century, and directly spawning China's first localized education school, namely "Life-Practical Education School," a feasible way for China's educational innovation (Ji & Shen, 2009).

The theoretical and practical research on the "new basic education" initiated and led by Professor Lan Ye still attracts most elementary and middle schools. It is re-

ported that the new basic education has been deeply involved in the education and teaching reform of more than 200 schools in 12 provinces and cities, including Shanghai, Beijing, Jiangsu, Zhejiang, Shandong, and Henan, and has driven more than 3,000 teachers and tens of thousands of students to conduct research together. It has had a wide range of influences at home and abroad (Wang, 2019).

However, we must also see that the "new basic education" research is not strictly rigorous evidence-based research in education. Compared with similar foreign studies, such as the "Success for All" reform of American schools carried out by American scholar Robert Slavin and others, the "new basic education" research mainly focuses on observation method, conversation method, and case method. Less use of test methods, experimental methods, etc., which is essentially more similar to the promotion and practice of a teaching method and idea, leading to some conclusions of its research is also open to question.

Notes

1. *China's new round of basic education curriculum reform was officially launched in 1999. From January to June 2000, the development group of curriculum standards for various disciplines was established through the application and review. From July 2000 to February 2001, each development group formed the first draft of the curriculum standard based on unique research. In March 2021, the Department of Basic Education of the Ministry of Education will solicit opinions from educators, experts, and scholars in 9 regions to revise the curriculum standards of various subjects further. In July, the Ministry of Education promulgated the "Basic Education Curriculum Reform Outline (Trial)." A few days ago, the national curriculum standards covering 18 subjects of compulsory education in elementary and middle schools had been developed and entered the basic education curriculum reform experimental area on September 1. The new round of basic education curriculum reform will promote the comprehensive implementation of quality education in basic education, objectives, and content. The new curriculum reform has continued to this day.*
2. *Lan Ye et al. proposed in 1999 that it refers to the future, vitality, and sociality of basic education in values; the initiative, potential, and difference of students in the view of students; the bilateral synchronicity of educational activities in the opinion of school educational activities Flexible structure, dynamic generation, and comprehensive permeability.*

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CLASSIC REFLECTION

Rebuild Classroom Teaching Values

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Abstract. *Educational activities cannot avoid the issue of value. The research on "new basic education" also discusses contemporary Chinese social development and educational values reform. This article proposes to rebuild classroom teaching values. This value's core concept is: the current value of classroom teaching in China's primary education needs to be transformed from a single transmission of ready-made knowledge presented in textbooks to a generation that can actively and healthy development in contemporary society. Its primary contents are: expand the rich educational value of subjects; reorganize the teaching content according to the realization of the educational value; comprehensively design flexible teaching content.*

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Question and Task

EDUCATIONAL activities cannot avoid the question of value. This is a presumption of our judgment on the relationship between value and fact in education research. From a historical point of view, whenever society undergoes a significant transformation, people's criticism of education often begins with value criticism. Starting from a re-understanding of the value and purpose of education and using this as the basis and starting point, it then makes a more specific evaluation of the actual educational activities and proposes new principles, programs, and even methods. Today, we are in such an era. The research on "New Basic Education"[1] also discusses contemporary Chinese social development and educational values reform.[2]

However, when reform research enters school practice, through a lesson, what we (referring to all members participating in the "new basic education research") see is that in the field of subject teaching, most teachers' choices of educational value are still Stay on "transmitting knowledge." Although some teachers have paid attention to the development of students' skills, even abilities, and intelligence, most of them are merely embellishments. As for the goals outside the scope of understanding, it is less involved. Interestingly, this kind of value is not manifested in teachers' remarks in writing articles or theoretical studies but in teaching goals and classroom behaviors in the preparation notes.

Usually, in terms of teaching objectives, the most clearly defined and understood, most of which are the "key points" and "difficult points" of the teaching of this lesson, the "skills" and "techniques" that need to be mastered. Other aspects may be mentioned simply or abstractly, or clicked with similar empty words almost every time. In more cases, it is not written at all. In the classroom, severe and responsible teachers often spend their energy on clarifying knowledge and implementing exercises so that students can have a firm grasp of knowledge and make no mistakes in exams. In short, the teaching values discussed abstractly by teachers are not consistent with the values they pursue in teaching practice, and they are far from each other.

To point out this phenomenon is not to accuse teachers of inconsistency in words and deeds, but to show that we deeply feel the change in the concept of teaching reform in the reform research. This includes the transformation of teaching values, which must not be separated from teachers' teaching practice and must pay attention to the process of how they realize internalization in their teaching practice. Only the teacher's inner concept has the fundamental role of guiding the teacher's teaching goal formulation and orientation practice behavior. Therefore, we need to work with teachers to reflect on teaching practice critically, find out the teaching values hidden and existing behind teaching behavior and speech, and then understand such values' problems. It is further necessary to discuss the basis and rationality of the new classroom teaching values with teachers, rebuild the classroom teaching values in the teachers' minds, and realize them consciously and persistently in teaching practice. The new basic education classroom teaching reform regards the connection, co-creation, and interpretation between teachers' new values and new teaching behaviors as the requirements throughout

the reform and is also one of the essential indicators for evaluating whether the reform is happening.

The Core Idea of the New Teaching Values

The reconstruction of the new teaching values must start from the level of general common understanding, that is, to re-understand the value of teaching in educating people and the question of what kind of people it serves. The core concept of the common values of teaching formed by the "New Basic Education" is: The values of classroom teaching in China's primary education need to be transformed from a single transmission of ready-made knowledge presented in textbooks to a generation that can achieve an active and healthy development in contemporary society. We believe that subject book knowledge is a resource and means of "education" in classroom teaching, serving the fundamental purpose of "education." "Teaching" and "education" are not two things; they are different aspects of one thing. In teaching, teachers realize "education" through "teaching." In order to teach well, teachers need to understand what kind of people to educate. Teachers who only pay attention to the value of existing knowledge transfer are actually "educating" people who passively accept, adapt, obey, and execute others' thoughts and will as their primary way of living. The active spirit and desire to explore young students' lives are often suppressed or even obliterated in such classroom teaching. If this situation does not change, education will become an opposing force hindering social and personal development. The "New Basic Education" advocates that today's elementary and middle school education in China should take the formation of students' awareness and the ability for active and healthy development as the core value, and this value must be reflected in all educational activities. Among them, "active" is a further focus and is a popular formulation of "education should be based on student development." Here, it is necessary to explain the basis for this focus.

"Student development" is a frequently discussed issue in education. In the past ten years or so, educational theorists have first discussed whether education should be based on social development or individual development. Later, when it comes to the latter, we will further discuss the "what development" of students should be based on. Each has its own opinions, such as "harmonious development," "subjective development," "free development," and "multi-faceted development," and so on. These views give people inspiration from different angles. However, it seems that there is only an ideal state that humans are expected to achieve to explain "development." In our view, "development" as an open and generative dynamic process is neither external nor internal. Human development can only be realized in the interaction of various human relations and activities. Therefore, we should not only set the requirements for development from the perspective of isolated individuals but should use "relationships" and "activities" as the framework to think about the "what development" of students should be the basis for education. Furthermore, as an individual, the most fundamental relationships and activities fall into two categories. One category points to the outside world (extroverted). It refers to the individual's relationship with the surrounding world and practical activities. The other is internal (introverted), that is, the relationship between the

individual and the self, reflection, and reconstruction activities. There are only two primary ways that individuals can take in these two types of relationships and activities: active or passive. Naturally, people cannot take the initiative actively all the time, everything, and everywhere. However, from the perspective of self-development, individual initiative is a significant key factor. This initiative includes the relationship and activities of the above two dimensions. They are indispensable to the development of the individual and are closely related and interact with each other. Individual initiative is always a choice and action made after understanding the outside world, self, relationship, the value of the behavior that will occur, and generating a desire. Regardless of whether the final subject actively chooses to "forward," actively choose to "backward," or chooses to "unchanged," it is all based on the individual's knowledge and will. The initiative of individual practice is significant for everyone in an era of rapid changes in the current environment and an increase in uncertainties in the living environment. The life course of everyone living in contemporary Chinese society has more opportunities and possibilities than before the reform and opening up, but there are also more risks and crises. Therefore, people's awareness and ability of self-selection under complex backgrounds are more important and necessary for the meaning and value of life.

The possibility of active human development can be explained using the biological subject and self-organization theory proposed by the famous contemporary French thinker Edgar Morin. Morin believes that living things can self-organize and regenerate themselves. This ability is realized by processing a series of information, by oneself and for one's calculation. "The minimum actions of living beings are based on the premise of 'self-calculation.' Through this calculation, the individual processes all objects and materials according to itself in a self-centered manner. The subject is such a computing existence."[3] This is to talk about the subject's "self-organization" in the sense of living organisms. What Morin wants to explain in this way is: the subject "is not just a philosophical concept, a problem in the spiritual domain, but also an ontological concept with material substance, and it is also a scientifically provable conclusion[4]; the subject is not just a human characteristic The unique characteristics are the characteristics shared by living things." When talking about "humans," Morin affirmed that humans are not separated from the biological realm, so they still retain the essential characteristics of living things, but humans are different from living things. He emphasized the emergence of extraordinary new forms in human beings, who are the subject of consciousness. He said: "As for us, human beings, we have consciousness, language, and culture. We are computing/knowing individuals: subjects, who can make decisions, make choices, make policies, enjoy freedom, and create inventions.[5]

Morin's above statement has at least two cognitive values: First, it redefines the concept of "subject" from a scientific perspective and extends it to the entire biological field, providing a new perspective for subject research. It is a perspective that stays in the field of speculation and rethinks the subject matter involved in philosophy connected with science. Second, while communicating the relationship between man and the biological world, it also highlights the human subject's uniqueness. This unique concentration shows that people have consciousness and calculation: cognitive ability, which

makes people show a series of behavioral characteristics far beyond the biological world. The inherent power is that people can consciously and autonomously choose, plan and create.

From the perspective of education, it is more important that this kind of knowledge-calculation activity points to the environment and objects of human material existence and points to the environment and objects of human spiritual existence. It points to the external world of the individual and points to the internal world of the individual. When it points to the understanding and calculation of the inner world and directly focuses on the individual's development, the individual actively thinks and criticizes his development. When choosing goals, planning processes, and preparing for implementation, people have the individual development awareness and ability to take the initiative to control their own life and destiny. This is the essential possibility a person has. It is the most critical "self-generation and self-regeneration" ability different from any living creatures, and it is also the inner guarantee for a person as an individual to realize the value of life and obtain a happy life. Therefore, cultivating individuals' ability to develop actively has been designated by the "new basic education" as the essential primary education task to develop people's life potential.

It can be seen from this that we use the term "active" to define "development" because it not only embodies the state of activity but also contains the self-consciousness of the subject, points to relational things, and expresses the pursuit of expectations. This is our answer from the overall framework of relations and activities, based on the integration of the essential power of human beings and the needs of contemporary Chinese social development, and that education should be based on "what development of students." Also, we added the word "health" after the word "active." This is a restrictive definition, mainly to avoid misunderstandings, to avoid accusations such as "to take the initiative to do bad things, only care about personal interests, and undermine the interests of the collective and others, is it also the active development expected by education?" Here, "health" expresses a positive direction that requires individual behavior to help develop the individual's body and mind and human society. Maybe this is an unnecessary "restriction." If we regard the word "development" as inherently containing the meaning of change positively and upward, this restrictive word becomes even more superfluous.

Reconstruction of Subject Teaching Values

The second level of the reconstruction of classroom teaching values is the reconstruction of subject teaching values. This is a transformation that teachers must realize whether they can implement the new teaching values at the general level after they agree with the new teaching values. Because it is related to how each teacher recognizes the specific value of the subject he teaches. Only when the understanding is clear it is possible to implement the understanding of teaching values into the planning of specific teaching behaviors from the design activities before the teaching process and provide a "blueprint" in line with the value orientation for the development of teaching practice.

Otherwise, the new teaching values at the general level will still be just verbal empty talk.

The new basic education realizes the conversion and infiltration of common teaching values recognized by teachers into subject teaching values through the research of subject teaching reform plan, case design, practice and evaluation, and research on subject teaching design.[6] Here, we would like to explain the main content of the reconstruction of subject teaching values with the reform requirements of teachers' teaching design and show how the general theories we put forward are transformed and permeated into the evolution process of teachers' actual work.

Extend the Rich Educational Value of Subjects

For a long time, the educational value of subjects has been limited to mastering knowledge. In practice, due to the value orientation caused by the intense pressure of "exam-oriented education," subject teaching tends to memorize or strengthen the content that may be tested in practice to achieve the explicit goal of solid memory, proficient response, and successful test. From the perspective of traditional subject syllabus and textbook presentation, the main highlight is the basic knowledge that has been formed in the subject field. It appears in front of students in the face of objective truth and requires students to understand, master and use. The main consequence of this presentation of the subject is that it has caused the subject's educational value impoverishment. First, it cuts off two connections: one is the rich and complex connection between abstract book knowledge and people's life; the other is the rich and complex connection between abstract book knowledge and people's discovery, problem-solving, and knowledge process. The knowledge encountered by students and teachers in teaching is a solidified truth, lacking knowledge of "popularity" and a bunch of "dead" symbolic conclusions. They serve as the "original materials" that make up the subject's primary content and bring about the original poverty of education resources.

Also, what is worth thinking about is that the selection of the traditional subject teaching content of elementary and middle school is based on the related scientific subject. From this point of view of the ultimate goal of subject teaching in elementary and middle school, it is also to let students master the subject's basics (including knowledge, skills, and methods) and prepare for further learning or future professional learning. Although the arrangement of teaching content and the compilation of textbooks also emphasize the need to pay attention to the students' cognitive level, characteristics, and acceptability, which cannot be entirely compiled according to the logic of the subject, but its purpose is to make it easier and better for students to learn the subject know-how. In short, the subject itself is the center of attention of subject teaching.

This creates a vital lack: the lack of attention to the needs of elementary and middle schools of different ages. On the one hand, most learning subjects' content lacks an internal connection with students' growth today. The content of classroom teaching has become a specialized field isolated from the daily life of students. It seems to belong to another world. On the other hand, the confusion, curiosity, questions, expectations, interests, and many potential abilities that students often appear in the process of

growing up are not reflected in the subject setting. After all, the subject is directly set for students to enter higher school. Students' development in learning is inevitable and indirect results of learning. The issue of "education" as the school's fundamental value, as the main body of development and growth: students' needs, from the student's need subject to the compilation of the syllabus and textbooks, have not entered the minds of the creators and compilers. As a primary, critical, prerequisite question, it is considered the basis, primary reference, and entire teaching subject's content. In curriculum reforms, people often call for the following: The society has developed, and new subjects need to be added; the science has developed, and the existing subject knowledge is outdated, and the teaching content needs to be updated. How many curriculum reforms are often completed in "additions and subtractions, additions and replacements?" However, the relationship between students' growth and development needs and the curriculum reform has not yet been studied as the core issue of curriculum reform. In our opinion, the content of curriculum and subject teaching lacks vitality, which is a deeper reason for the impoverished value of subject teaching and education.

Based on reason analysis, the "new basic education" gradually formed an action strategy to expand the value of subject education: the starting point of reform is to develop the value of existing subjects rather than creating new courses. This is a possible action strategy for the school as the basic unit and the actual school teaching reform. It is also a feasible strategy for teachers to create and realize their changes and development in research reform. However, it is necessary to further study the "color of life" in the overall reform of elementary and middle school curriculum from a long-term perspective. For now, in school practice, this task can be studied from the self-developed curriculum of some schools with relatively weak macro-control and social intervention. With the improvement of China's elementary and middle school curriculum and implementation policy openness, the school's power and ability to select and compile courses independently are enhanced. The school-based curriculum has genuinely become a universal need and action for elementary and middle schools. Furthermore, a life-rich curriculum focusing on the development and growth of young people will undoubtedly be created.

To expand the educational value of the existing subjects, the new basic education requires teachers to carefully analyze the subject's unique development value for students when designing teaching, instead of first grasping the critical points of knowledge and teaching in this lesson. We do not believe that subject knowledge is of no value to students' development and can be ignored. On the contrary, it is the primary content that must be finally mastered by students in teaching. However, the value of teaching to students should not stay here, let alone think that students exist for learning this knowledge, and teachers exist for teaching this knowledge. Teaching to serve the students' active development in many aspects is the most basic foothold. Therefore, the subject's unique educational value should be based on students' development to analyze the unique role that different subjects can play. Specifically, the development value of each subject to students, in addition to knowledge in one field, from a deeper level, at least it can also help students understand, explain, feel, understand, change their lives in

it and continue to interact with them A rich and colorful world (including nature, society, people, life, occupation, family, self, others, groups, practice, communication, reflection, learning, inquiry, creation, etc.). Moreover, form and realize their wishes, provide different paths and unique perspectives, discover methods and thinking strategies, and unique operational symbols and logic. Provide a kind of experience and experience that can only be obtained in this subject's study; enhance the unique subject's beauty discovery, appreciation, and expression ability. Only in this way can the development of students' spiritual world be nurtured in many aspects from different subjects' teaching. While developing the ability to feel, experience, understand, appreciate, change, and create the external world, they can constantly enrich and perfect their lives. Finally, experience a rich learning life and meet the growing needs of life.

Reorganize Teaching Content According to the Needs of Realizing the Value of Education

With the above understanding, the development of subject education resources also requires teachers to reorganize and process existing teaching content in two aspects during teaching design.

First, the subject's book knowledge is composed of simple to complex structure chains according to its inherent logic. The organization of teaching content is based on the structure as a large unit so that the main cognitive thread that runs through the teaching is the gradual complexity of the structure. When teaching content related to a knowledge structure, it is divided into two teaching stages. The first stage is teaching a specific structure with knowledge as the carrier, and the second stage is the stage when students use this structure to learn and expand related knowledge with a similar structure. The design of the teaching content of this organization is called the "long-term two-stage" design. Its purpose is to enable students to actively participate in learning in the teaching process and form an active learning mentality and ability. We believe that in order for students to master the initiative in learning, the most efficient way is to master and use knowledge structures. The structure has much more robust organizational and migration capabilities than knowledge points. The goal we expect to achieve is the students' firm grasp and proficient use of structure-related knowledge until internalization, but more importantly, students can discover and form structures and master and use structures flexibly. Each subject has its structure group. The learning and internalization of different subject structure groups will help students from many different interlinked structure groups and structural thinking methods. This has a fundamental role for students to discover, understand, and solve problems with a comprehensive vision in a new, unfamiliar, and complex environment. It is essential learning required for people's survival and development in a complex and changeable era. Ability is also an essential basis for students' learning ability to be self-proliferating.

Second, re-activate the structured book knowledge with symbols as the primary carrier. The purpose is to achieve communication with three aspects: book knowledge and human life; communication with students' experience world and growth needs;

communication with people who discover and develop knowledge and history. In layman's terms, it is to restore knowledge to a new state closely related to human life and life, to present a state of life. Knowledge of the inner life state can most activate and arouse students' inner needs, interest, and confidence in learning and enhance their desire and ability to explore actively. While searching for these three connections, teachers have also expanded their field of knowledge and turned their attention from studying the teaching content to the students' pre-existing state, potential state, life experience, and development needs. This is a crucial step in the transition from "teaching" to "education" through teaching.

After the teacher has completed the above two aspects of teaching content, making an overall arrangement of the subject teaching time during the semester is possible. The "new basic education" requires breaking the "uniform movement" type of chapter-by-chapter and section-by-section distribution plan in the distribution of teaching time. Instead, it advocates dividing each structural unit's learning according to the "long-distance two-stage" design requirements. The teaching "structure" phase and the application of the "structure" phase. In the "structure" stage of teaching, the method of discovery is mainly used to allow students to start from real problems, gradually find out the structure of knowledge and the steps and methods for discovering the structure, and then form a comprehensive "class structure" of knowledge, methods, and steps through summary mode. The teaching time in this part can be moderately slowed down so that most students have a whole experience of the process of discovering and constructing a "class structure." In this way, the "class structure" is formed so that students and teachers interact gradually through the teaching process and become the student's own "class structure." On this basis, the subsequent teaching phase with "structure" can be carried out in an accelerated manner. According to the actual results of the reform experiment, on the whole, not only will the teaching progress not be slowed down due to the slowdown in the first stage, but it will also be ahead of the original schedule. We use the remaining teaching time brought by the reorganization of the structure and the improvement of students' learning ability to hold the "subject activity" and the "subject comprehensive activity" that combines the relevant subjects. These activities provide students with a more expansive, richer, vivid, and personalized possible space and stage for active development.

Comprehensively Design Flexible Teaching Programs[7]

In order to promote the active and healthy development of students, subject teachers under the guidance of values should complete the last synthesis in teaching design. It is to combine each lesson's specific teaching content with the teaching process's prior planning to form a "flexible teaching plan." The new basic education emphasizes the dynamic generation of lessons in the teaching process but does not advocate that teachers and students ride with loose reins in the classroom. On the contrary, it requires the design of the teaching plan, and in the design of the teaching plan, time and space are reserved for students' active participation to create conditions for the dynamic generation of the teaching process. The teaching plan is necessary to set teaching goals, but the

goals are not limited to cognition but also involve other goals that students may achieve in this class. The setting of goals should be based on teaching content and student status, and possible expectations. Goals have "flexible intervals," which consider the differences between students and consider the possible differences between the expected goals and the actual results. The teaching process's design focuses on the whole-process-related planning of where to start, how to advance, and how to turn. As for the end, when it abruptly stops is not absolute. The important thing is that it will happen naturally, not that the teaching schedule should be set in step with the class. The process design should also have "flexible intervals," which can be reflected through different assignments, exercises, and activities. The process design also needs to plan a series of aspects such as teacher activities during the teaching process, related student activities, the form and method of organizing activities, the prediction of activity effects and the assumption of expected effects, the way of interaction between teachers and students, etc., and finally form a comprehensive and flexible teaching plan.

Compared with the style of a typical traditional teaching plan, it designs detailed questions, predetermined standard answers, writes down every sentence the teacher wants to say in class, and accurately calculates the time allocation of different class links. However, this new design requirement seems to be rougher, leaving too much uncertainty, flexible targets, space, and time that can be changed. However, it introduces these uncertainties and variable factors that make classroom teaching possible to be closer to each student's actual state. It is possible to make students' minds flying and interested, and it is possible to make teachers and students interact actively, create sparks of creation, and emerge new questions and answers.

The "new basic education" is precisely through the in-depth development, recombination, and multi-directional activation of uniformly formulated deterministic teaching content. It is precisely by introducing modifiable factors and uncertainties into the design of the teaching process that the teaching design leaves the possibility of active participation, active interaction, and creation for the practice of teacher and student classroom teaching. In this way, the values of teaching to serve students' initiative and healthy development can be implemented and transformed into teachers' pre-planning of their teaching behaviors. Moreover, for this value to finally infiltrate and reflect into teaching practice, it provides "combat plan" support.

Notes

1. *"Research on New Basic Education facing the 21st Century" is a comprehensive basic education reform research project hosted by the author. The research explores a series of significant issues in the transformational transformation of primary education during the transition period of Chinese society at the turn of the century to combine theory and practice. The research started in September 1994 and was carried out in two stages. The first stage is "exploratory research." At the beginning of 1997, the project was formally approved as a critical project of the Ninth Five-Year Plan of China's National Educational Science Plan. In 2000, the project results of exploratory re-*

search were awarded the first prize of Shanghai Municipal Educational Research Project Excellent Achievement. In September of the same year, the research entered the second phase: "Extensional and Developmental Research," which was completed in 2005. At present, this research has been listed as a critical subject of the National Philosophy and Social Science Research "Tenth Five-Year Plan."

2. *Ye, L. (1994). The spirit of the times and the construction of new educational ideals. Educational Research, 1994(10):3-8. [Chinese] https://www.cnki.com.cn/Article/CJFD1994-JYYJ199410000.htm*
3. *Edgar Moran Morin, E. & Chen, Y. (2001) Complex thought: conscious science. Beijing: Peking University Press. pp261. [Chinese] ISBN: 9787301049327.*
4. *Here, "science" is relative to "philosophy" and falls within the category of classical science. That is, science is characterized by the conclusions obtained through empirical research and can be tested.*
5. *Edgar Moran. Complex thought: conscious science. Beijing: Peking University Press, 2001. 261. [Chinese]*
6. *"New Basic Education Research" has conducted a comprehensive subject teaching reform plan for the three subjects of elementary school Chinese, mathematics, ideology and morality, and junior middle school Chinese, mathematics, and foreign language since the exploratory stage. The ongoing "new basic education" extension and developmental research continue to deepen the research on the relevant reform plans. The ultimate goal of program research is not a template but to provide a way of thinking and methods. This paper did not discuss specific subject reform plans and cases.*
7. *The guiding ideology of teaching plan design is related to classroom teaching values and the classroom teaching process view. This is also an important theoretical and practical issue in studying the "new basic education" classroom teaching reform, which the author will discuss in a future article. Therefore, the discussion in this aspect of this article can only be summarized.*

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NEWSLETTER

Super High Schools: Improving or Reducing the Educational Quality of High Schools in Different Provinces?

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WITH the extremely high enrollment rate and the high rate of being admitted by Peking University and Tsinghua University, to some extent, Super High School is usually considered as the opportunity to realize the intergenerational social mobility upwards. However, it could cause serious damage to the ecology of the high schools' education within the region, aggravating the exam-oriented education phenomenon in high school education, exacerbating the disadvantages of education inequity, etc., as a result, it has become a hot topic in all sectors of the society in recent years.

Recently, a study published in Educational Research, based on the data from the freshmen in University A between 2007 and 2017, defined a Super High School as a school whose admission rate for University A exceeds 2 standard deviations of the provincial average, measuring the degree of super high schools' monopoly in each province by constructing an educational monopoly index, and evaluated the quality of upper secondary education by using the college entrance examination scores for sciences fixed by the first batch of universities enrolling senior high school students，and the college entrance examination scores for sciences fixed by Peking University and the University of Science and Technology of China. The researchers used the two-way fixed-effect model to analyze the status quo and the trends of the educational monopoly in China's super high schools and based on this, probe into the effect of educational monopoly on the quality of upper secondary education in different provinces. The results show the following:

- Over the past few years, 34% of the freshmen from University A averagely come from super high schools, which indicating a serious educational monopoly phenomenon.
- In the mainland, the data of 26 provinces shows the educational monopoly at a moderate level or above; while in the western provinces, the situation of one certain high school always possesses the strongest status of university admission; as for those provinces with developed education

and economy or a large population, a situation of tripartite confrontation will emerge.

- The educational monopoly indexes tend to rank oppositely to the college entrance examination scores for sciences fixed by the first batch of universities enrolling senior high school students, which indicates that the increased educational monopoly by super high schools will significantly reduce the educational quality of local upper secondary education.

To break the educational monopoly, besides improving educational quality and promoting the balanced and high-quality development of regional education, it is strongly recommended to improving the educational quality of disadvantaged senior high schools, guiding junior high school students and their parents to choose senior high schools rationally, and accurately and effectively consummating the special policies for college admissions, on the condition of strictly prohibiting the cross-regional enrollment of super high schools. The suggestions are as follow:

- Educational administrative departments must truly eliminate "schools in schools" and strictly prohibit public schools from enrolling students across cities and counties in the name of private schools.
- Comprehensively evaluate the quality of high school education and promote the diversified development of high schools.
- Consolidate the team construction of disadvantaged high school teachers to retain the good teachers and recruit new teachers.
- Guide students and parents to choose schools rationally, and encourage parents to choose the most appropriate education for their children.
- Further increase the number of students enrolled in various special programs to improve the accuracy and effectiveness of policies.

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NEWSLETTER

A Comparative Analysis of Large-scale Online Education between Urban and Rural K-12 Schools in China during the COVID-19

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UPON the emergency of the COVID-19, the unconventional mode of pandemic-battle has been adopted around China. According to the Information Technology Education Subcommittee of the Chinese Society of Education, the researchers conducted an investigation on the online teaching situation of primary and secondary schools during the epidemic in China. On the basis of questionnaire inquiry and interview, the researchers designed questionnaires respectively to collect data of the personnel within the basic education, including the principals, teachers, and students under the situation of "School's out, but Class's on". Through the SPSS 22.0, the researchers preprocessed the collected data and then using the descriptive statistics analyzed the present situation of online teaching, so as to compare the results with the variation analysis of the rural-urban differences. The research results show that:

- Among all participant schools, 89.8% of them have conducted the online teaching of all the curriculum, except courses like P.E., or Art cannot be taught online due to the unsuitable learning methods or lacking the corresponding platform.
- The chi-square test was adopted to examine whether urban or rural schools have the basic conditions for online learning. The results show that there are still significant differences in basic hardware conditions, network conditions, and venue conditions between urban and rural students. Judging from the existing problems, it is concluded that equality of opportunity has not been achieved yet. There are also certain differences in the proportion of time spent on organizing online teaching in urban and rural schools. Although both urban and rural schools mainly adopt online live broadcasts and online discussions between teachers and students during the epidemic, the two types of teaching are different in emphasis. Urban schools spend a larger proportion of

time online lessons, while rural schools tend to concentrate on the online discussions between teachers and students. Although schools in different areas have organized the collective preparation for the lesson, there is a certain gap in the focus and implementation of rural schools in curriculum resource construction, ICT strategies, and teaching design in the process of lesson preparation compared with urban schools.

- Statistics show that in terms of financial support, there is a gap between rural schools and urban schools. As for the other safeguards measures, the degree of humanistic care and institutional support of urban and rural schools are both relatively high.
- Compared with students in urban schools, students in rural schools have higher self-reported scores on learning effects and interests, especially on the aspect of the effects of interaction with classmates and online learning motivation in the online learning process, also they are better in self-perception.
- The information technology literacy of urban school students scored higher than that of rural school students. A further T-test was conducted on the difference in information technology literacy, and a significant difference was found. Students in rural schools are up against more technical difficulties in the process of online learning, and the mastery degree of them in new technologies compared with students in urban areas. About mental health, urban school students scored higher in mental health than rural school students. The T-test of urban and rural school students showed that there are significant differences in the mental health of urban and rural school students. This difference is reflected in the family-supportive environment and the safeguard measures provided by the school. Compared with rural school students, urban school students have better family support and timely psychological, academic, and technical assistance from the school.

Therefore, from the perspective of providing "fair and quality" teaching and learning, on the one hand, it is necessary to reconstruct the way of resource organization and optimize the ecology of rural teachers' professional development. On the other hand, it is necessary to cultivate students' digital resilience and provide high-quality platforms and resources to serve lifelong learning.

Source: Distance Education in China, 2021; 2021(05):13-21+76-77.

NEWSLETTER

The Influence of School Climate on Job Satisfaction of Rural School Teachers

By Wang, Z., Zhang, Y., He, K., & Yuan, L.
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A RECENTLY published study in *Teacher Education Research* explored the mediating effects of teacher leadership and self-efficacy on school climate perception and job satisfaction, hence the researchers adopted software include the SPSS24.0 and Amos21.0 for data management and analysis, setting up the sampling investigation and mediation model, and putting forward pertinence suggestions according to the results of the study.

The researchers took the rural teachers' job satisfaction as dependent variables and considered teacher self-efficacy and leadership as the mediating variables of school climate perception. At first, this article described statistical variables, and then model checking the two meditation paths, including "school climate→teacher leadership→job satisfaction" and "school climate→teacher leadership→job satisfaction".

The results are as follows:

- Rural teachers' satisfaction with the working environment is lower than that of the occupation itself, so a variety of measures should be taken to improve the quality of rural teachers' working environment.
- The school climate perceived by rural teachers has a significant predictive effect on their job satisfaction, in other words, a good school climate of cooperation and trust is helpful to improve teachers' job satisfaction.
- The role of teacher leadership plays a part in school climate perception, which gradually affects the satisfaction degree through the function as a bridge.
- The school climate perceived by rural teachers affects their job satisfaction through the mediating role of teacher self-efficacy.

Source: Teacher Education Research, 2020; 32(6):84-90+98.

NEWSLETTER

How Does Family Labor Promote the Ability Development of Junior High School Students?

By Fang, C., & Cao, L.
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STrengthening labor education is an indispensable part of the comprehensive development of students. However, the family, as an important field of student labor education, is failed to realize the effect. Recently, a study published in *Journal of Educational Science of Hunan Normal University*, on the basis of the baseline data of the China Education Panel Survey, analyzing the junior high school student's family labor situation in China by constructing a multi-layer linear model, and then explored the relationship between family labor and the development of junior high school student's ability.

The results show that:

- There is a phenomenon of "absence" in family labor education in our country. 12.1% of junior high school students do not participate in family labor, and there are significant differences in the family labor time among different characteristics junior high school students.
- There are significant differences in family labor among students from different family backgrounds and urban and rural areas. Students from disadvantaged family backgrounds and rural students have a greater proportion of family labor with a longer time than other students.
- Family labor within one hour can help improve the academic performance and cognitive ability of junior high school students, but more than one hour will lead to decreases in grades and cognitive ability.
- Family labor has a significant positive impact on students' non-cognitive ability, such as openness, extraversion, agreeableness, and a sense of responsibility. It can also reduce neurotic negative emotions.

Therefore, the researchers suggest:

- Parents should attach importance to labor education and integrate labor education into family education. By setting up a good example for children by labor practice, parents can subtly nourish

the labor character of students, and create a good atmosphere to optimize the labor habits of students.

- Follow the pattern of students' physical and mental development to carry out appropriate family labor. For students with different characteristics, parents should allocate an appropriate amount of family work that conforms to the law of their physical and mental development, rather than allocate some repetitive and heavy physical labor. The key to family labor is to improve the quality of labor education.
- All parties should actively build an internal and external interweaving multiple coordination family labor education system with family as the main body, school as the guide, and community as the support.

Source: Journal of Educational Science of Hunan Normal University, 2021; 20(02):56-63+89.

NEWSLETTER

Can Physical Exercise Promote the Development of Teenagers' Cognitive Ability?

By Fang, C., & Huang, B.
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A STUDY published in *Journal of East China Normal University (Educational Sciences)* explored the relationship between physical exercise and the student's cognitive ability. The study selected variables related to the student's cognitive ability from the China Education Panel Study (CEPS), taking the daily average exercise duration of students as the core independent variable, and setting the cognitive ability test score of students as the dependent variable. The researchers used techniques such as the Least Square Regression, Propensity Score Matching, Quantile Regression to explore the influence of physical exercise on students' cognitive ability. The results are as follows:

- The result of the Least Square Regression shows that the standard score on the cognitive ability test of the adolescents who exercise more than 3 days a week was 0.149 points higher than those who exercise less. While after controlling the pre-ability, the standard score on the cognitive ability test increases 0.049 points every time the exercising time increases per unit.
- Quantile Regression indicates that engaging in physical exercise has the most significant promoting effects on teenagers with a median score, and spending more time exercising will not widen the gap of low-high cognitive with the same group. What's more, encourage teenagers with the low cognitive ability to actively participate in physical exercise is helpful to narrow the gap of teenagers' cognitive ability within the group.
- According to the Propensity Score Matching results, frequently participate in physical exercise improves 0.095-0.117 points on the test, which was lower than the 0.149 in the baseline regression, suggesting that the net effect of physical exercise would be overestimated if the selective bias was ignored.

Based on this, the researchers believe that physical exercise can not only help build a strong body for teenagers but also improve their

cognitive ability to some extent. In family education, parents should abandon the traditional concept of "academics comes first" and form a beneficial closed-loop of "encouragement, support, guidance and feedback" for teenagers to participate in physical exercises.

Source: Journal of East China Normal University (Educational Sciences), 2021; 39(03):84-98.

NEWSLETTER

A Stratified Study of the Sports Participation of Migrant Students

By Liu, M.
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ON the basis of the China Education Panel Survey (CEPS), a study published in *China Sport Science* analyzed the sports participation situation of migrant children in urban and rural areas. A total of 1602 migrant children's samples were collected and the results are as follows:

- According to the descriptive statistics, the average time of migrant students' daily physical exercise in junior middle school just reached 24.41 minutes, which was seriously insufficient. The internal differentiation of migrant children is serious, to be specific, the difference between urban areas and rural areas, family classes are extremely significant.
- The regression analysis found that, in terms of demographic characteristics, gender inequality exists, and boys participate in physical exercises more than girls, but whether the individual is the only child in his or her family did not have an impact. As for the urban and rural areas, the difference in physical exercise participation was determined by the living communities, school attended, and family status. Compared with traditional and village-mixing communities, students living in commercial residential buildings with better community environments participate more in sports. In terms of family effect, family cultural capital plays a significant role. The longer education years of the mothers, the more collection of books within the family, the better the situation of migrant children's sports participation will be.
- Considering the differences between urban and rural students, the researchers conducted a sample regression for the two, and the results show that there exists a significant difference in the stratification mechanism of the two groups. The stratification tendency of urban migrant children only relates to schools, while rural migrant children's tendency diversified in schools, families, and communities, which indicates that both the stratification and ine-

quality degree rural migrant children are higher than the urban migrant children.

Broadly speaking, the researchers suggest that to promote the sports participation of migrant children in junior high schools, on the one hand, it is necessary to jointly formulate a balanced development of sports policies, as well as supporting education and urban planning policies. On the other hand, it is also important to increase the cultural capital of migrant children's families in order to improve the inequality of sports participation caused by social transformation and social structural division.

Source: China Sport Science, 2020; 40(12):39-53.

NEWSLETTER

Effects of E-reading on Reading Literacy

By Li, W., & Yao, J.
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IN the information society, more and more students are reading through electronic devices. However, there is no consistent conclusion about the influence of the change of reading style on the reading effect. In addition, the current discussions on the merits of "screen reading" and "book reading" are mostly based on experience rather than scientific evidence. A small amount of empirical research still has a large room for improvement in the authoritativeness and representativeness of data and the robustness of conclusions. In this case, the research published in *Open Education Research* analyzed the influence of the different ways of reading on the reading literacy of students. The researchers selected variables related to the reading in the PISA2018 database, using the least-square regression method to establish the baseline. The selection bias is controlled by the Coarsen Exact Matching technique. Furthermore, the quantile regression and the mediation effect model are used to explore the heterogeneity of e-reading and its influencing mechanism. The findings of the research are as follow:

- The "screen disadvantage" does exist, whether the selection bias is controlled or not, which indicates the effect that "screen reading" is not up to "book reading".
- Quantile regression results show that the different levels of students have significant differences under the influence of e-reading, and students under the influence of e-reading at different quantiles have a significant decline trend. The effects of e-reading on students at the lower and upper quantile of the reading literacy experiment were distinctly different. Moreover, there may be a "Matthew Effect" in the process of e-reading.
- The results of mediation effect analysis show that metacognitive strategies can play an important role in promoting and mediating reading, and good reading metacognitive strategies can help students effectively eliminate the negative effects of e-reading.

Source: Open Education Research, 2021; 27(2):110-120.

NEWSLETTER

Research on the Home-School Collaboration Reform Mode in the Post-Epidemic Era

By Bai, R., Zhang, W., Guan, Y., & Xie, Q.
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HOME-based learning during the epidemic period has brought challenges to home-school cooperation and also the opportunities to review the home-school relationship. In order to further reveal the influence of family support factors on students' home-based learning and clarify the relationship between the depth of parental involvement in home-based learning and students' home-based learning achievements, this study took the primary school students as the research object and conducted an empirical investigation through the questionnaire survey.

The results are as follows:

- Home-based learning performance was significantly different among pupils who were accompanied by different family members. To be specific, the performance level of pupils' home-based learning accompanied by their parents was significantly higher than those accompanied by other guardians or those unaccompanied.
- Pupils' home-based learning performance is correlated with factors of the student, school support, and family support, but among all the factors parental involvement shows the strongest correlation.
- The overall family support has a significant impact on home-based learning performance; still, parental involvement has a greater influence.
- According to the characteristics of parental involvement, family members were classified into three types: companions, instructors, and spectators. The average learning performance of pupils with family members as companions was significantly higher than those as instructors or spectators. What are more, different types of family members showed unique characteristics in terms of attitude and behavior, which were influenced by various factors, such as parents' educational concepts, occupations, and family burden?
- Above all, it is concluded that the overlapping influence of home-school collaboration is very crucial, while parental involvement is an important guarantee for students to study at home. Therefore, the re-

searchers put forward the implementation strategy of home-school cooperation from four aspects:

First, guarantee the institutionalization development through laws and regulations, because the institutional guarantee is the foundation of establishing home-school cooperation;

Second, technology should be used to realize the connection of a multi-education community, and it is also important to support the precision and individuation of home-school collaboration.

Third, schools should lead the generation of new forms of home-school collaboration;

Fourth, improve the empirical research through the efforts in a policy-making promotion.

Source: China Educational Technology, 2021; 2021 (03):30-37.

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