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TABLE OF CONTENTS

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Poverty Alleviation: The Mission of Education

Editorial Office of *Science Insights Education Frontiers*

A T the United Nations (UN) General Assembly held in September 2000, all 191 member states unanimously adopted an action plan aimed at reducing the global poverty level by half by 2015 (using the 1990 level as a reference). The action plan promised to reduce the proportions of the world's population with a daily income of less than one US dollar and those who suffer from hunger by half by the end of 2015, and to reduce the proportion of people who cannot obtain or afford safe drinking water by the same date. It aimed to ensure that by the same date, children from all over the world, regardless of gender, can complete all elementary school courses, and that boys and girls have equal opportunities to receive all levels of education. The action plan also promised to spare no effort to help more than one billion men, women and children around the world get rid of the miserable and indignant state of extreme poverty, and eventually realize the right of individual development, so that all mankind can avoid the situation of lacking.

After 40 years of reform and opening-up, China has successfully embarked on a special poverty alleviation path, successfully lifting more than 700 million rural poor people out of poverty, and laying a solid foundation for the overall development of society. China has become the country with the largest poverty reduction population in the world and the first country in the world to complete the UN Millennium Development Goals. China's achievements in poverty alleviation are valued by the United Nations and developing countries, and they hope to learn about China's experience. China's poverty alleviation experience includes "five parts", the first is the development of production; the second is relocation; the third is ecological compensation; the fourth is the development of education; the fifth is social security. Among them, the experience of developing education for poverty alleviation is the most important, because to cure poverty, we must first cure ignorance, and poverty alleviation must first support intelligence. China's education funding continues to tilt toward poverty-stricken areas, basic education, and vocational education to help poor areas improve school-running conditions and provide special care for children from poor rural families, especially the left-behind children.

The experience of "developing education to alleviate poverty" is also called "poverty alleviation by supporting education". The implementation of education for poverty alleviation is to fundamentally solve the poverty problem in poor areas. Those poor people are poor because they lack basic litera-

cy and calculation skills, let alone modern science and technology. Education is precisely to enable the educated to master the ability of reading, writing, and arithmetic, and to enable the educated to use modern technology to transform into productive forces. Education not only lifts the poor out of poverty, but also completely cuts off the poverty chain between generations, thus realizing the transition from "blood transfusion" to "blood-making". It is exactly because of the importance of education to get rid of poverty, and thus many educational scholars pay close attention to the education poverty alleviation policy of their country, study its practice and analyze its effectiveness.

2020 is a year of a decisive victory in China's fight against poverty. To let the world understand China's practice and experience in education poverty alleviation, we specially invited Chinese educational scholars to write papers and introduce their experiences from various aspects. This issue includes both a retrospective study of the history of poverty alleviation through education, a summary of the research results of poverty alleviation through education, and a narrative study of girls' education and poverty alleviation in impoverished areas in western China. We hope that the topic of "Poverty Alleviation by Supporting Education" can attract the attention of scholars from all countries around the world and actively participate in the discussion of this topic. We also sincerely hope that all countries in the world can get out of poverty as soon as possible.

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Overview of the Poverty-Alleviation by Supporting Education in China

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Abstract*: Poverty is a complex social problem, which has always attracted attention. 2020 is the year of a decisive victory for the Chinese government to alleviate poverty. Education plays a fundamental role in the fight against poverty and is the foundation for eradicating poverty and stabilizing poverty alleviation. Based on the literature in the CNKI database, this study took "poverty-alleviation by supporting education" as the subject, and conducted a bibliometric analysis of the publications in the field of China's poverty alleviation by education during 1988-2020. Through analyzing the research time distribution and keyword, the results of poverty-alleviation by supporting education were sorted out and analyzed around three hotspots: the main framework of poverty alleviation, key models, and technical support. It is proposed that the research and development of China's poverty-alleviation by supporting education should pay more attention to its evaluation and sublimation of empirical theory.*

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Introduction

THE lack of education is called "capacity deprivation poverty" because education can affect intergenerational mobility in society. The positive effect of education is to influence the income of individuals by improving their abilities, thereby supporting the development of those at the lower levels of the social pyramid. According to the World Bank's poverty line standards, its research found that if the labor force in the family has less than 6 years of education, the incidence of poverty is greater than 16%. If the education years are increased by another three years, it will drop to 7% (Liu, 2016). However, the 2018 China Rural Poverty Monitoring Report pointed out that only 14.2% of the permanent labor force in rural areas in China has a middle school education level or above (China Statistics Press, 2019). In addition, in poverty-stricken areas, problems such as children being out of school, unequal education opportunities for men and women, and fewer opportunities for higher education are more prominent. This will lead to poverty-stricken areas that have been in a vicious circle of lack of education and low income, that is, "low education level → low labor quality → low-income → poverty → low education investment → low education level".

Education can not only improve personal qualities and promote intergenerational mobility, but effectively promote economic development. Schultz believed that economic development depends largely on the quality of people, rather than the abundance of natural resources or the amount of capital stock (Li, 2017). UNESCO's study showed that educators at different levels have different levels of improving labor productivity, with undergraduate level 300%, middle and high school 108%, and elementary school 43%. Yao (2012) further subdivided the contribution rate of the human capital of middle school and high school to economic growth from 1981 to 2006 and found that the role of human capital in high school was a lot higher than that of middle and elementary schools.

Therefore, how to improve the quality of human capital of the population in poverty-stricken areas and how to realize "poverty alleviation" through education is an important theme of China's targeted poverty alleviation. Poverty-alleviation by supporting education is a kind of poverty alleviation method, which refers to the education investment and education subsidy services for the poor people in poverty-stricken areas so that they can master the knowledge and skills of poverty alleviation, and promote the local economic development by improving the knowledge quality of the local population, and finally get rid of poverty (Xie, 2012).

2020 is the final year of China's poverty alleviation work. Poverty-alleviation by supporting education, as an important starting point of China's poverty-alleviation

strategy, is considered to be "the key to eradicating poverty and stabilizing poverty alleviation", and is also a fundamental means and an important way to block the intergenerational transmission of poverty (Bao & Zhang, 2018). Therefore, by analyzing relevant research and understanding the status quo of China's poverty-alleviation by supporting education, clarifying its progress and direction is of great significance to promoting the effective development of poverty alleviation in China. This study used the Chinese National Knowledge Infrastructure (CNKI) and the quantitative analysis software CiteSpace to organize and analyze the research in this field in recent decades. Based on this analysis, China's existing achievements in poverty-alleviation by supporting education can better clarify the direction of future improvement and provide a reference for subsequent theoretical research and related policy formulation and implementation.

Methods

The research data in this article comes from CNKI. Set the subject to "poverty-alleviation by supporting education" and the document source to "all journals". In order to show the research context and latest progress of China's poverty-alleviation by supporting education, after screening and deleting conference proceedings, reports, announcements, and other low-relevance materials, a total of 2,458 articles from 1986 to 2020 were obtained.

Analysis of the Number of Articles Published in Poverty-Alleviation by Supporting Education

From the perspective of scientific research, the change in the number of articles published in a certain field can reflect the development history and mechanism of the field, the evolution process, and the future dynamic development trend. Therefore, in this study, the literature related to the poverty-alleviation by supporting education research from 1988 to 2020 that can be searched on CNKI was screened and counted.

As can be seen from **Figure 1**, the number of articles published in China's poverty-alleviation by supporting education is roughly divided into two stages. The first stage (1988-2015) is a slow development stage, with fewer than 50 articles published each year and small changes every year. The second stage is the accelerated development stage. The number of articles published in 2016 directly rose from 47 in 2015 to 231.

This research trend is closely related to China's poverty alleviation policies. In December 2013, in response to the bottleneck restricting the development of poverty-stricken areas, the General Office of the Central Government and the General Office of the State Council issued Document No. 25 and proposed for the first time the implementation of the "Poverty-alleviation by supporting education project". However, the rapid increase in the number of articles published is more related to China's 2015 policy
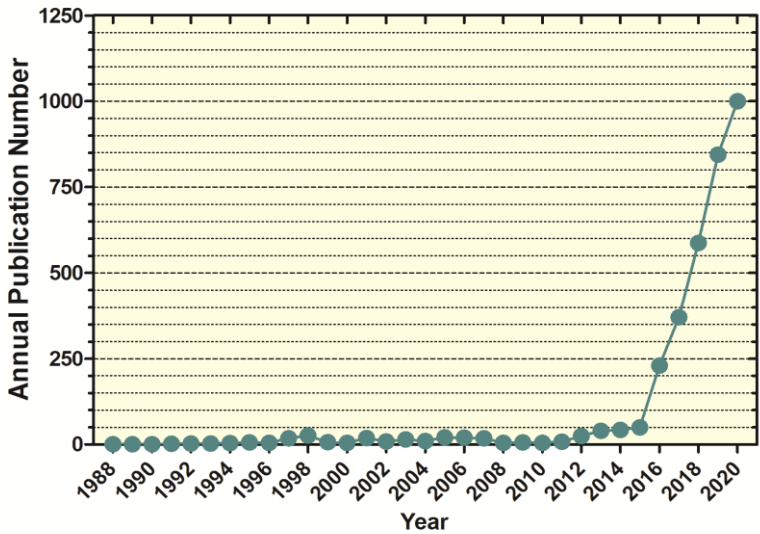
Figure 1. Annual Publication Number in Poverty-Alleviation by Supporting Education during 1988-2020.

of "Decision of the Central and State Council on Winning the Fight against Poverty". The document clearly requires that "we must focus on strengthening education to alleviate poverty, speed up the implementation of the poverty-alleviation by supporting education project so that children of poor families can receive a fair and quality education, and block the intergenerational transmission of poverty." In addition, 2016 China's 13th Five-Year Plan for National Economic and Social Development (referred to as the "13th Five-Year Plan") puts forward the goal of all poverty-stricken counties to solve the overall poverty of the region, and also promoted the research on the poverty alleviation by education.

Keyword Analysis

In research, high-frequency keywords are usually used to determine the composition of hot spots in the research field (Qi et al. 2016). Therefore, we conducted an analysis based on the CiteSpace software, and extracted the top 20 keywords with high frequency and attention for research, to further determine the hot spots of concern for researchers in the field of poverty-alleviation by supporting education in China. The results are shown in **Table 1**.

It can be seen from **Table 1** that China's related research on poverty-alleviation by supporting education is closely related to keywords such as targeted poverty allevia-

Table 1. Frontier Keyword Highlighting Statistics of Poverty Alleviation by Supporting Education.

#	Frequency	Centrality	Keyword
1	869	0.07	Targeted poverty alleviation
2	653	0.5	Poverty alleviation by supporting education
3	285	0.09	Vocational education
4	138	0.05	Targeted poverty alleviation by education
5	116	0.03	Education
6	112	0.18	Poor households
7	106	0.14	Poverty alleviation
8	76	0.04	Countermeasure
9	59	0.03	File establishment
10	84	0.09	Intergenerational transmission of poverty
11	39	0.04	Educational information
12	38	0.05	Education equity
13	37	0.01	Rural revitalization
14	36	0.03	Colleges
15	30	0.06	Compulsory education
16	30	0.03	Vocational colleges
17	29	0.01	Country teacher
18	29	0.06	School
19	26	0.02	Internet+
20	24	0.01	Left behind children

tion, education equity, education informatization, vocational education, poor households, and left-behind children. These keywords reflect the focus, hotspot, concern, theoretical basis, and application direction of the research.

Excluding the keyword results of "poverty-alleviation by supporting education" that are directly related to the search topic, the first keywords with higher frequency and centrality are "countermeasures", "file establishment", "education fairness", "rural revitalization" and "rural teachers". Reflected in the poverty-alleviation by supporting education, researchers pay more attention to its specific measures rather than theoretical construction. In terms of the implementation of the measures, it also includes government behaviors and non-governmental behaviors of society and universities. Therefore, research on participating subjects of poverty-alleviation by supporting education is one of the focuses in this field.

Secondly, the keywords of "vocational education", "compulsory education", "colleges" and "higher vocational colleges" reflect the analysis of Chinese scholars on the different roles of current education categories in poverty-alleviation by supporting education. Among them, the coordinated vocational education precision poverty alleviation system of secondary vocational, higher vocational, and technical vocation is the focus of current research. Vigorously supporting vocational education is considered one of the troikas in China's poverty-alleviation by supporting education measures (Yuan, 2013).

Finally, keywords such as "education informatization" and "Internet+" reflect the search for more efficient methods for poverty alleviation information management in the context of the times. The previous model of poverty-alleviation by supporting education largely remained at the material level such as resource development and capital investment. The main emphasis is on the role played by human, material, and financial resources, but it is impossible to judge the accuracy of the assistance target, that is, whether the assistance target really lacks material assistance, nor can it answer whether material assistance can solve the problem of intergenerational transmission of poverty (Chen, 2017).

Analysis of Research Hotspots of Poverty-Alleviation by Supporting Education in China

Through the analysis of the above keywords, we found that the research related to China's poverty-alleviation by supporting education mainly focuses on three aspects: research on the responsibilities of participating entities in China's poverty-alleviation by supporting education, and the direction of China's poverty-alleviation by supporting education and methods of informatization and targeted poverty alleviation.

Research on the Responsibilities of Participating Entities in China's Poverty-Alleviation by Supporting Education

Targeted poverty alleviation through education is a systematic undertaking, involving a wide range of interests and numerous interest groups. Facing a complicated situation, a diverse group of subjects is required to participate together. Therefore, the research on the implementation subject of poverty-alleviation by supporting education in China has become one of the hot spots of concern.

Xie (2012) started from the theory of system poverty and believed that poverty is the result of the systemic operation of many comprehensive factors, such as macro-level natural conditions, historical starting points, economic development policies, environmental and cultural qualities, and micro-level family and school education. Therefore, we not only need the government to guide the direction of poverty governance at the macro level， but also need to rely on the participation of multiple subjects to coordinate, manage and govern in order to face the multi-dimensional, diversified and dynamic poverty patterns. Xia (2020) also believed that the top-down governance model

of poverty-alleviation by supporting education is prone to rigidity, and many tasks may not truly understand its needs, so diversified forces are required to provide targeted assistance. Therefore, Dai et al. (2017) proposed that the main body of China's poverty-alleviation by supporting education should be a framework led by the government, with the participation of multiple forces such as social organizations and individuals.

Research on the Government's Responsibilities for Poverty Alleviation

As the leader of poverty-alleviation by supporting education, the government bears the responsibility to ensure the scientific formulation and effective implementation of its policies. Judging from the research status of domestic scholars, since 1994, China's first clear national poverty alleviation plan "National Eight-Seven Poverty Alleviation Plan" was proposed (Hu, 2016), through continuous enrichment and improvement of its guiding ideology, work content, and implementation Means, etc., thus forming a set of policy systems with Chinese characteristics of poverty-alleviation by supporting education (Xiang & Lin, 2018) with a full range of objects, enriched content, socialized subjects, diversified methods, and targeted methods.

In the process of implementation, through financial support and tilt, efforts have been increased to improve financial expenditure on education, and a student subsidy system from preschool to postgraduate education has been established, which effectively guarantees the smooth attendance of students from families with financial difficulties (Wu & Fan, 2020). The "Implementation Plan for Educational Poverty Alleviation in Extremely Impoverished Areas (2018-2020)" states that preschool education shall establish and implement corresponding funding policies in accordance with the principle of "local first, government subsidies"; compulsory education implements the "two exemptions and one subsidy" policy, Secondary vocational education implements tuition exemption and national scholarship policy, high school exempts students from financial difficulties from tuition and fees and implements national scholarship policy; higher education and postgraduate education implement "scholarships, bursaries, loans, work-study, subsidies, exemptions" and "green channels for admission" Such "multi-mixed" funding methods must ensure that students from poverty-stricken families in the "three districts and three states" filed and registered to get the student funding policy (Ministry of Education of the People's Republic of China, 2018).

In addition, the construction of educational infrastructure based on financial support is also one of the measures taken by the government to carry out poverty-alleviation by supporting education. In particular, improve the basic conditions for running schools and teaching sites in remote areas, and improve the teaching rooms, student dormitories, and auxiliary facilities such as laboratories, playgrounds, canteens, etc. in schools lacking compulsory education in rural areas. As far as possible, broadband networks should cover all elementary and middle schools and teaching points, so that the construction of "class-to-class access" covers all classes, so that students in poor areas can get high-quality educational resources (Yang, 2017).

Facing the problem of the shortage of teachers in poverty-stricken areas, the government has launched the "Special Position Program" and "Free Normal School Student" training measures aimed at supplementing the number of teachers in rural poverty-stricken areas. By increasing teacher salaries, encouraging outstanding teachers in the eastern region to support teaching in the central and western regions, organizing various forms of teaching and research activities between central schools and supporting schools in the region, strengthening teachers' professional capabilities, and improving the quality of teaching in poor areas (Ministry of Education, Ministry of Finance, Ministry of Personnel, etc., 2006).

Research on the Duties of Poverty Alleviation in Universities

Since universities are the centers of knowledge gathering and talent training, they must assume the responsibility of developing new technologies, cultivating and delivering outstanding talents, and providing training opportunities and platforms for poor areas. Only in this way can it effectively play its role in serving society in the process of poverty-alleviation by supporting education (Xiong, 2014).

Shi (2019) believes that when participating in poverty-alleviation by supporting education, colleges and universities should adopt strategies such as determining precise goals, developing drip irrigation methods, and improving the assessment mechanism to better assist in poverty alleviation in extremely poor areas.

Liu et al. (2019) took universities in Fujian Province as an example and proposed a four-dimensional optimization path of poverty-alleviation by supporting education in colleges and universities in the context of major poverty alleviation. This includes: optimizing the training and evaluation system of colleges and universities; enhancing the motivation of assistance; optimizing the linkage between colleges and other social forces to form a combined assistance force; optimizing the poverty-alleviation by supporting education platform of universities to realize the docking of knowledge and information between schools and villages; optimize the government's guarantee system for the government's poverty-alleviation by supporting education to ensure the stable implementation of funding policies.

Research on the Responsibilities of Social Forces for Poverty Alleviation

As an integral part of society, social forces can make up for the lack of government poverty-alleviation by supporting education to a certain extent and inject vitality into targeted poverty alleviation through education.

School-enterprise cooperation is also one of the important ways for society to promote poverty-alleviation by supporting education. Li et al. (2017) viewed enterprises as an important tool for poverty alleviation from the perspective of the mechanism design and model innovation of enterprises' participation in poverty alleviation. Generally speaking, excellent managers or technologists of enterprises come to the school to teach, promote mutual employment between the school and the enterprise; the engineers of the enterprise walk into the school to teach the students, and the school teachers train the

employees of the enterprise to improve the quality of the employees. Through mutual employment between the school and the enterprise, the process of students gaining skills training in teaching is not only a process of improving professional skills but also a process of producing products and creating value for the enterprise; this solves the contradiction of the shortage of training materials. It also trains students' excellent skills, so as to truly realize income-generating in education and education in income-generating.

Liu (2018) took "Project Hope"[1] as an example. According to the statistics, the project has raised more than 5.3 billion CNY in donations, built 15,444 Hope Elementary Schools, more than 14,000 Hope Libraries, and trained more than 52,000 rural elementary school teachers. More than 3 million poor students in rural areas have been subsidized. Therefore, Liu believed that social fund organizations represented by the "Project Hope" have played an important role in promoting poverty alleviation by supporting education in China.

At the same time, some scholars pointed out that social organizations still need to further improve their poverty-alleviation by supporting education model due to issues such as a single source of participation funds, lax fund management, and lack of professional managers (Li & Xie, 2019).

It can be seen from the above research that the main body of China's poverty-alleviation by supporting education is diversified, forming a framework that is led by the government and participated by multiple forces such as social organizations and individuals. Under this framework, all subjects work closely together, actively play the role of each subject, and promote the development of poverty-alleviation by supporting education from different levels.

Research on the Key Directions of the Poverty-Alleviation by Supporting Education in China

According to the relationship between the educational level of human capital and economic growth, vocational education is considered to be the most direct, quick, and effective way to help the poor. Therefore, in the direction of poverty-alleviation by supporting education, a Chinese-style poverty-alleviation by supporting education with vocational education as the focus has been formed.

Research on the Significance of the Poverty-Alleviation by Vocational Education

Starting from the relationship between human resources and economic development, Yao (2012) found that human capital at the high school level has the highest contribution to economic growth, and the permanent labor force in rural areas in China is also in urgent need of middle school education (China Statistics Press, 2019). Yao & Dou (2018) conducted a survey of 13,488 left-behind students in 197 rural middle schools in Henan Province and found that these students dropped out more due to individual characteristics. When their academic performance and self-confidence are low, students

with the low family financial background are more likely to choose to drop out. Because under the influence of the free environment formed under the "Migrant Working Economy", these students will consider the potential cost of completing their studies, and students with the low socioeconomic background will enter schools with low teaching quality and poor school atmosphere, all of these will further deepen their dropout mood. Therefore, in addition to the "Compulsory Education Project" implemented at the elementary level to ensure the basis of nine-year compulsory education (Wang et al., 2019), it is believed that vocational education in middle and high schools should become the focus of poverty-alleviation by supporting education.

From the perspective of the overall strategy of poverty-alleviation by supporting education, vocational education, as an important starting point for targeted poverty alleviation and intellectual improvement, is of great significance in the national strategy of targeted poverty alleviation and decisive battle against poverty.

Liao et al. (2020) believe that vocational education has become the mainstay of absorbing rural school-age youths to receive skills education. In addition, Tang et al. (2018) proposed that vocational education also plays an important role in the training of farmers' vocational skills. They believe that by catering to different poverty-stricken areas and different poor people, through vocational theory education, skilled personnel training, professional technical training, industrial paired assistance, etc., they will combine education and targeted poverty alleviation. Realize the improvement of the professional quality and ability of personnel in poor areas, promote their independent employment and entrepreneurship, and achieve economic development. Ultimately, it will achieve the goal of improving the professional quality of the poor, enhancing the professional abilities of disadvantaged groups, and driving and advancing the industrial development of underdeveloped regions in order to achieve the task of poverty alleviation.

Research on the Model of Poverty-Alleviation by Vocation Education

At present, the vocational education aid model in China includes tuition policy for students in extremely poor counties, national scholarship and inspirational scholarship policy, national scholarship policy, rain dew program (for registered middle-aged farmers, demobilized soldiers from poor households, Village cadres and wealthy backbones in key villages for poverty alleviation and development work, children from registered poor families participating in secondary vocational education and higher vocational education), Omni-Ocean Education Program (new students from registered poor families), and other related poverty-alleviation by vocational education Projects (Golden Autumn Aid Project, National Tobacco Educational Aid Project, Dream Aid Project), etc. Through various educational aid programs, to ensure that every impoverished student will not drop out of school due to poverty, and ensure the smooth progress of the poverty-alleviation by vocational education (Liu, 2016).

In addition, vocational education transforms the labor force in poor areas into human capital through the input of technical knowledge, practical materials, and other

elements for labor in poor areas, thereby realizing the growth of human capital in poor areas. Therefore, it is necessary to speed up the establishment of a system of secondary vocational schools with Chinese-style as technology centers, entrepreneurial centers, market information centers, and school farms. Focus on the implementation of professional training courses such as planting-breeding-processing-selling, and use localized human capital to build a team of relevant agricultural vocational and technical teachers (Hu, 2017).

Research on Educational Informationization and Targeted Poverty Alleviation

In the process of poverty-alleviation by supporting education, how to use information technology to solve the problem of talent training and lack of teachers has been concerned for a long time, and it is also one of the key areas of China's information-driven targeted poverty alleviation by supporting education.

Hu (2017) believed that the deep integration of the Internet and poverty-alleviation by supporting education is conducive to accurately identifying poor students and implementing accurate training for them, and based on the development of the future and the creation of new majors. Yu & Xie (2017) also believed that the application of the Internet can stimulate the internal motivation of targeted poverty alleviation in education, break through the constraints of space and time, realize real-time interaction between the subject and object of education, and create wealth for more scholars, excellent teachers, and wealth creators for different professional knowledge backgrounds. Leaders and volunteers participate in the process of poverty-alleviation by supporting education. This will help broaden the content dimension of targeted poverty alleviation through education. Therefore, in the process of targeted poverty alleviation by education in China, informatization has played an extremely important supporting role.

Use Information Technology to Implement Talent Training

1. *Realize classroom resource sharing between urban and rural areas and districts through distance education.*

Zeng (2016) believed that the inability to fully open the curriculum, the low professional level of teachers, and children's moral, academic, safety and psychological problems have always been the shackles of the development of teaching sites in poverty-stricken areas, and also the constraints of the balanced development of China's compulsory education.

In order to achieve the goal of fully opening the national curriculum, high-quality curriculum resources will be sent to weak schools. Wang (2018) proposed that the form of MOOC and micro-class breaks through the traditional classroom teaching model. They filmed the lecture resources of excellent teachers into videos and used online education platforms such as cloud education and distance education to build a high-quality teaching resource library around the real user relationship between teachers,

students, and parents. This meets the needs of students in poverty-stricken areas who need flexible learning time and frequency due to insufficient learning ability and limited learning time.

Lu et al. (2020) took the experience of poverty-alleviation by supporting education in Nanchang City as an example. The city launched the rural online synchronous classroom project and made full use of information technology to realize the remote two-way interaction of speaking and listening. This also solves the plight of teachers in poverty-stricken areas that "cannot be dispatched, retained, and taught poorly". The overall teaching quality in poverty-stricken areas has been improved, and the constraints on the balanced development of compulsory education have been supplemented.

2. *Effectively apply information technology to teaching management and scientific research.*

The use of online training platforms to improve teachers' professional quality is also another application in the talent training process of poverty alleviation education (Jia et al., 2020). For example, Chen (2020) stated that it is necessary to make full use of modern distance education resources to improve the quality of teachers, and form a continuous education system for teachers with the integration of "human net, earth net, and sky net". With "Teacher Training Platform" and "Teacher Workshop" as the main training bases, a teacher training model combining online and offline is implemented; at the same time, it can reduce training costs, reduce the contradiction between work and study, and ease the pressure of teacher training.

Improve the Efficiency of Poverty-Alleviation by Supporting Education with the Help of Information Technology

In the overall situation of national poverty alleviation and development, the digital processing of poor population information through registration and the formation of a national precision poverty alleviation big data system is an important foundation for achieving precision poverty alleviation (Zhang, 2015). Therefore, Jia & Zhang (2020) considered that in the process of poverty-alleviation by supporting education, various measures should be refined and managed through education information methods and information platforms such as "Internet +", artificial intelligence, cloud computing, and big data. It has realized the "precise" identification, decision-making, management, and evaluation of poverty alleviation, and the targeted allocation of all resources, so as to maximize the effectiveness of poverty-alleviation by supporting education.

Ren et al. (2017) took Shangrao City, Jiangxi Province as an example. Based on its own characteristics, the city developed a new poverty alleviation solution of "Internet + Education Targeted Poverty Alleviation". Using the county and school level database and management platform under construction within the city area, a detailed investigation was conducted on the flow of left-behind children who did not enter school among primary school graduates in various districts and counties of Shangrao City in 2016, not only accurately tracked the development status of each student, but

also analyzed the reasons in-depth for the various flows of poor students. This has pointed out the direction for formulating the targeted poverty-alleviation by supporting education projects, exerting the joint efforts of various departments in poverty alleviation, providing accurate data support for scientific decision-making, and making a good pavement and prioritized demonstration for further education and targeted poverty alleviation. Meanwhile, schools can use information processing methods to comprehensively analyze and match the characteristics of poverty information and poverty alleviation resources and use poverty alleviation platforms to accurately connect poor areas, poor individuals, and resource supply, which is to achieve accurate resource allocation.

It can be seen from the above research that we should deepen the integration of information in education, use information technology to implement talent training, and improve the efficiency of poverty alleviation. From this perspective, promote the progress of poverty alleviation, enhance the effect of poverty alleviation, and let poverty-alleviation by supporting education drive into the fast lane, becoming a powerful lever and inevitable choice for targeted poverty alleviation by education.

Research on the Achievements and Problems of Poverty-Alleviation by Supporting Education in China

In addition to the construction measures of poverty-alleviation by supporting education, its construction effectiveness has also become a concern. Research the implementation results of China's poverty-alleviation by supporting education through investigations, experiments, and other educational research methods. It is believed that the current poverty-alleviation by supporting education in China has achieved certain results from system construction to education infrastructure and resource construction, and talent training in poverty-stricken areas, but there are also certain shortcomings.

The Achievements of Poverty-Alleviation by Supporting Education

Ma (2020) believed that since the founding of the People's Republic of China, poverty-alleviation by supporting education has been a core element of China's overall poverty alleviation and development strategy. After decades of construction, the poverty-alleviation by supporting education in China has formed a policy system with unique Chinese characteristics based on the flexible configuration of policy tools. Under this system, China's poverty-alleviation by supporting education work has achieved certain results.

Greatly Improved the Teaching Environment and Facilities in Poor Areas

Since 2013, China has begun to comprehensively improve the basic conditions for running schools in poor areas of compulsory education across the country and has carried

out and implemented a series of major projects such as the renovation of rural middle schools, the construction of rural boarding schools, and the full coverage of digital education resources in teaching sites. Zhang (2019) pointed out in his research that as of April 2019, China had built, renovated and expanded 221 million square meters of school buildings nationwide, and purchased 99.9 billion CNY worth of facilities and equipment. To August 2019, the Internet access rate of primary and secondary schools in all regions of China has reached 97.9%, and there are 3.48 million ordinary classrooms equipped with multimedia teaching equipment. Approximately 93.6% of schools have multimedia classrooms, and 74.2% of them have achieved full coverage of multimedia teaching equipment. The conditions for running compulsory education schools in poverty-stricken areas across the country have been significantly improved (Science and Technology Department of the Ministry of Education of the People's Republic of China, 2019).

Taking local provinces as an example, the Education and Sports Bureau of Liangshan Yi Autonomous Prefecture in Sichuan Province conducted statistics on education from 2013 to 2018 and found that Liangshan Yi Autonomous Prefecture in Sichuan Province arranged a total of 60.462 billion CNY in national financial education funds, and a total of 8.63 billion CNY was invested in improving school conditions. They have successively implemented major projects such as "Comprehensive Improvement of Weakness", "Three-Year Action Plan for Preschool Education", "Poverty-alleviation by Supporting Education Improvement Project in Yi Districts of Daliangshan and Xiaoliangshan" and "Ten Year Action Plan"; prefecture-level financial investment of 2 billion CNY for implementation the projects of "One Village, One Kindergarten" and "One Town, One Kindergarten", and have built a total of 348 township kindergartens. The prefecture has completely eliminated Class D dilapidated buildings in elementary and middle schools, and the gap in school conditions between urban and rural areas and between schools has further narrowed (Education and Sports Bureau of Liangshan Yi Autonomous Prefecture, Sichuan Province, 2019).

Significantly Improved the Soft Power of Teaching in Poor Areas

Fu et al. (2019) conducted a field survey of more than 180 rural primary and secondary schools in 18 key counties (districts) for poverty alleviation and development in 6 central and western provinces. The professionalism of the team has improved, and the soft power of running schools in poor areas has gradually improved. In 2019, China's digital education public service platform was connected to 73 local platforms at all levels, and the number of online learning spaces for teachers and students increased to 79 million. Through the "One Teacher, One Excellent Class, One Class, One Excellent Teacher" activity, 1 million lessons were released, and 800 national high-quality online open courses were identified, and the ability to provide educational resources and services was continuously enhanced (Ministry of Education of the People's Republic of China, 2019). Through the "Full Coverage of Digital Education Resources in Rural Primary and Secondary Schools" project, a total of 1,212 hours of music and fine arts curricu-

lum resources have been developed, effectively solving the problem of over 4 million students in remote and impoverished areas due to lack of teachers (Ministry of Education of the People's Republic of China, 2019).

At the same time, in terms of the development of the teaching team, Yao & Cao (2020) found through research that 28 provinces attract 41,000 college graduates each year to carry out education in rural areas through tuition exemption, loans, and tuition compensation. This has significantly increased the number of rural teachers; at the same time, the "National Training Program" has trained a total of 41,000 rural teachers and campus leaders, effectively improving the quality of rural teachers.

Improve the Overall Quality of the Population in Poor Areas

Through the construction of a "full coverage" funding system for students from pre-school education to higher education with financial difficulties, the number of people in poverty-stricken areas who cannot go to school due to economic problems has been continuously reduced. According to statistics from the Ministry of Education, in 2019, a total of 105,907,900 students in pre-school education, compulsory education, secondary vocational schools, high schools, and colleges and universities were funded nationwide (Hu, 2020). As of the end of 2019, there were 282 million students in all levels of academic education across the country, an increase of 6,606,200 or 2.40% over the previous year; the gross enrollment rate of preschool education reached 83.4%, and the consolidation rate of nine-year compulsory education was 94.8%. The gross enrollment rate of high school is 89.5% (Ministry of Education of the People's Republic of China, 2020). In the higher education stage, as of 2019, a total of 370,000 rural and poor area students have obtained high-quality higher education resources through the targeted enrollment plan (Li & Wu, 2019).

Increased the Income of People in Poor Areas

Peng's (2019) empirical research based on data from all provinces in China showed that education investment has a stable and positive impact on farmers' income, and the effect of increasing income in poor areas is higher than in other areas. Take the "Three Districts and Three Prefectures"[2] as an example, between 2002 and 2016, for every 1% increase in education funding, rural per capita net income increased by 1.83%, while in higher-income areas during the same period, education funding increased by 1% with revenue only increased by 0.24%. From the perspective of the effectiveness of each region, Yang (2020) and others studied the balanced data of 13 prefecture-level cities in Jiangsu Province from 2000 to 2016 and found that Jiangsu Province's educational investment has achieved remarkable results in poverty alleviation. According to the household survey data of 350 poor households in Anyi County, Jiangxi Province, Yang et al. (2020) found that education level has a greater impact on poverty alleviation of rural poor households after analyzing the binary logistic regression model.

Insufficiency of Poverty-Alleviation by Supporting Education at This Stage

While achievements in the poverty-alleviation by supporting education work have been achieved, the existing problems have also begun to be exposed. Fu (2019) pointed out in his research that the precise identification mechanism of poverty-alleviation by supporting education at this stage is relatively lagging, insufficient attention is paid to the overall development of poor students and endogenous incentives, and the support measures for poor students are unified. Ma (2020) pointed out from a policy perspective that the current attention distribution of the poverty-alleviation by supporting education policy is obviously unbalanced, the target group identification has hidden dangers of centralized and static, the configuration of policy tools is low, coordination is weak, the connection is broken, and the structure of poverty alleviation methods is also unreasonable. Song (2019) found that poverty-alleviation by supporting education in deeply impoverished areas face three main dilemmas: (i) the mechanism of poverty-alleviation by supporting education is not sound, and the function of "blood-making" for society is weak; (ii) the allocation of educational resources is unbalanced, and the quality of education is not guaranteed; (iii) the endogenous energy is insufficient, and the concept of education for poverty alleviation is still weak.

Discussion and Conclusions

Poverty-alleviation by supporting education is considered to be the fundamental need to achieve education equity. It is not only to develop education and help the poor alleviate poverty but also to complete the deployment of justice and educational resources in poverty-stricken areas, the logical relationship between justice and justice, the need to ensure the fairness of education (Feng, 2019); it is also a practical need to accelerate economic construction and an inevitable need to promote social development (Mu, 2019). 2020 is the decisive year of the Chinese government's poverty alleviation. Poverty-alleviation by supporting education is an important starting point for poverty alleviation and an important position for China's poverty alleviation work. From the analysis of this article, it can be seen that at this stage poverty-alleviation by supporting education is not only the focus of the national strategy of China but also the focus of academic research. Many scholars have carried out research on the policies, measures, effects, and deficiencies of poverty-alleviation by supporting education, and have achieved certain results.

First, the number of articles published is considerable. In terms of the time distribution of research, the research on China's poverty-alleviation by supporting education has gradually increased in recent years and has become one of the hot research issues. It is foreseeable that with the in-depth advancement of China's targeted poverty alleviation work, the research literature on poverty alleviation by supporting education will continue to show an increasing trend in the next few years.

Second, the research perspective is diversified. The research on poverty-alleviation by supporting education is not only limited to education and social aspects, but considers it from the multidisciplinary perspective of economics, sociology, pedagogy, anthropology, and geography. This provides support for the realization of an ideal poverty alleviation framework that integrates the main body, content, and goals of poverty alleviation (Yuan & Zhang, 2018).

Third, research topics are rich. Judging from the existing research, the research on poverty-alleviation by supporting education covers pre-school education, basic education, higher education, vocational education, and special education. The research includes not only its related meanings, value, and other theoretical aspects but also its implementation, effects, and other practical aspects.

Of course, we have also noticed that there are still deficiencies in current research, and the discussion of these deficiencies is to provide directions for our future research.

First, the research direction places too much emphasis on vocational education and underestimates basic education research. Judging from the existing research results, compared with vocational education, there are less researches on poverty-alleviation by compulsory education, and the research form is scarce. However, as middle and high schools are an important period for human capital accumulation, many students still choose to drop out. Therefore, micro-level topics such as the reasons for students dropping out, and the current poverty alleviation effects still need to be further explored.

Second, the research method emphasizes qualitative research too much, despises empirical research, puts too much emphasis on description, and despises the practice. The current research is mainly based on qualitative research, and most of the researches are conducted in theoretical speculative or descriptive methods, and there is a lack of scientific empirical research. At the same time, there are fewer specific case studies. Therefore, future research needs to use a variety of research methods, focusing on the combination of qualitative research and empirical research; modern information technologies and methods such as big data, cloud computing, and artificial intelligence should be actively introduced to strengthen case studies.

Third, the research content emphasizes the form too much and underestimates the endogenous research. In the existing studies, researchers have focused more on the poor as objects, rather than as a unity of subject and object. Research has focused on the leadership and assistance of the government, social forces, and universities while ignoring the endogenous dynamics of the poor. Therefore, in the future, the research on the initiative and demand of the poor should be strengthened.

Fourth, from the perspective of research, there is a lack of systematic and in-depth international comparative research. Poverty-alleviation by education has always been the focus of international organizations and institutions to promote global anti-poverty, and many countries around the world have carried out useful explorations (Tang et al., 2019). A comparative study of the experiences of multiple countries from an international perspective is helpful to build or improve the educational standpoint and practice framework of targeted poverty alleviation based on the effective interna-

tional experience, and promote the effective development of poverty-alleviation by supporting education. Therefore, in the follow-up research, the research horizon should be broadened, based on international experience, and in-depth international comparative research in mutual learning and integration.

Education is always one of the most effective ways to eliminate poverty (Xu, 2016). In-depth reflection on the current poverty-alleviation by supporting education in China from the perspective of education attributes, correcting the phenomena that are not in line with education attributes, and improving the ability and endogenous motivation of the poor through education, so as to achieve poverty eradication and promote economic development. This is an important area discussed by Chinese scholars, especially educational scholars. Therefore, in follow-up research, more attention should be paid to the types of poverty-alleviation by supporting education, based on international experience, and comprehensively using multiple research methods to achieve multidisciplinary and multi-perspective exploratory research.

Notes

1. *The "Project Hope" is a public welfare undertaking initiated by the Communist Youth League Central Committee and the China Youth Development Foundation in 1989 for helping out-of-school children in impoverished areas. Its purpose is to build Hope Elementary Schools, subsidize out-of-school children in poor areas to return to school, and improve the conditions for running schools in rural areas.*

2. *"Three Districts and Three States" refers to extremely poor areas at the national level in China. They are the hardest "bones" for China to build a well-off society in an all-round way. The "three districts" refer to the Tibet Autonomous Region, the Tibetan areas of Qinghai, Sichuan, Gansu, and Yunnan, and the Hotan, Aksu, Kashgar, and Kizilsu Kirgiz Autonomous Prefectures in southern Xinjiang; the "three prefectures" refer to Sichuan Liangshan Prefecture, Nujiang Prefecture in Yunnan, Linxia Prefecture in Gansu".*

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Hope for Girls' Education in Poverty-Stricken Areas: The School-Running Experience and Process of Huaping Girls' High School in Yunnan, China

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Abstract: *As a measure to eradicate poverty, education has become the choice of more and more countries in the world. The development of girls' education is an important means to break the intergenerational transmission of poverty. In the practice of poverty alleviation through supporting education, the Chinese government strives to solve the problem of poverty by developing education for girls. In this process, the government, enterprises, institutions, and individuals have made tremendous efforts one after another. Teacher Guimei Zhang used her efforts to set up the first high school for girls in Huaping County of Lijiang, the poorest western part of Yunnan Province, China, providing valuable educational opportunities for school-age girls in poverty-stricken areas for free. The school challenges the current education system. Girls can enter the school based on their will without the entrance examination. All students have achieved impressive and outstanding outcomes. This article records in detail the school-running experience, process, and propositions of Huaping Girls' High School.*

G RANTING the basic right to receive education and promoting educational equity is a topic of global education. According to the statistics of the UNESCO Institute for Statistics, there are currently 263 million children and adolescents between the ages of 6 and 17 who are out of school in the world, and about 60% of young people aged 15 to 17 are out of school (UNESCO Institute for Statistics, 2016), there are approximately 617 million children and young people in the world who lack basic math and literacy skills (UNESCO Institute for Statistics, 2017). Among them, the imbalance in education caused by factors such as poverty, gender discrimination, and weak infrastructure has become the biggest obstacle for countries to solve education poverty. UNICEF released the report "Addressing the Learning Crisis: An Urgent Need to Better Finance Education for the Poorest Children". Among them, through a survey of the education situation in 23 low- and middle-income countries and 19 high-income countries, it was found that the public education resources of children from the world's 20% richest families were almost twice that of children from the 20% poorest families. In low-income countries, 37.6% of public educational resources go to students from the richest 20% of families, and children from the poorest 20% of families can only get 10.3% of educational resources (UNICEF, 2020). Therefore, eliminating educational poverty and reducing educational imbalances have become new trends in global education poverty alleviation.

Since the reform and opening up in 1978, China has made remarkable achievements in the economic field. On the other hand, the difference in the degree of economic development is projected on the education level, causing huge gaps between urban and rural areas, between regions, and between schools. Restricted by the level of economic development, after the nine-year compulsory education, education development in many areas has been unable to meet the needs of the people, and a large number of middle school graduates cannot get good educational opportunities.

When facing the education needs of the people, the government, enterprises, and individuals have made a lot of effort. The most touching one is that the Huaping County Girls High School in Lijiang City, Yunnan Province, which was established by teacher Guimei Zhang and with the support of the provincial, municipal, and county governments and social donations, has become the most typical educational development story. As the first all-free girls' high school in China, the school recruits girl students from impoverished mountainous areas who are unable to continue their studies

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teacher Guimei Zhang and with the support of the provincial, municipal, and county governments and social donations, has become the most typical educational development story. As the first all-free girls' high school in China, the school recruits girl students from impoverished mountainous areas who are unable to continue their studies after the nine-year compulsory education. Since its establishment in 2008, the school has helped more than 1,700 girls realize their dreams of entering university in the past ten years (Wang & He, 2020).

Huaping County Girls' High School in Lijiang City, Yunnan Province has attracted the attention of educators from all over the country with its tenacity in running a school and unique teaching ideas and has also been widely praised throughout China. This paper uses the way of educational narrative to study the school's school-running propositions and deeds, discussing its school-running characteristics and educational teaching propositions, to provide reference and enlightenment for education equality, education poverty alleviation and women's education in China.

Affection for the Poor Students and Help Them Out of Poverty with Love

From global experience, education is essential for poverty alleviation, economic growth, and sustainable development. In the policy document "Reducing Global Poverty through Universal Primary and Secondary Education" issued by UNESCO in 2017, it is pointed out that education is of great significance to alleviating poverty in various forms. And after studying the average impact of education on economic growth and poverty reduction in developing countries from 1965 to 2010, it is found that if all adults can receive two more years of education, nearly 60 million people in the world can be lifted out of poverty; Adults can complete secondary education, and 420 million people worldwide can escape poverty. In this way, the poverty population in sub-Saharan Africa and South Asia will be reduced by nearly 2/3 (UNESCO, 2017).

However, affected by economic development, most countries have regional imbalances in economic development, funding and social services, and huge differences between urban and rural areas. The resulting educational imbalance has become the biggest factor affecting educational development. The United Nations published a report entitled "World Social Report 2020: Inequality in a Rapidly Changing World" that 70% of the world's people live in countries where income inequality has increased since 1990. Concerning the distribution of educational resources, due to the uneven distribution of funds, children living in urban middle- and high-income families benefit more from government education expenditures than children from low-income families in rural areas, and the gap in the distribution of educational resources continues to widen (United Nations Department of Economic and Social Affairs, 2020). Several studies have shown that schools in rural areas and informal settlements in urban areas receive less funding, which is not conducive for children to receive early education, enter high-quality schools and have good teachers to teach, resulting in low literacy rates, poor

academic performance, and high dropout rate, and eventually fall into the vicious circle of poverty (Xu et al., 2020; Tian & Yao, 2020; Li et al., 2019).

Huaping County is located in a state-level poverty-stricken area on the border of southwest China. It is a typical mountainous county. The county has high mountains and steep slopes, inconvenient transportation, harsh climate, backward culture, and slow economic development (Tang, 1995). According to statistics, Huaping County administers 4 towns and 4 townships, 61 villages (communities), and a total population of 175,300. There are 3 provincial-level poor townships and 27 poor villages (10 deeply poor villages); in other poverty-stricken counties in Yunnan, there are more poverty-stricken people, broader poverty, and deeper poverty in this Huaping (Li, 2020).

Affected by regional economic development, education in Huaping County started late with a low starting point. The first middle school was founded in 1937. Until 1949, Huaping County had 26 kindergartens, elementary and middle schools, with fewer than 500 faculty members. Both human resources and material resources are severely lacking. Since the implementation of the nine-year compulsory education system in 1984, education in Huaping County has developed rapidly. As of 2004, there were 340 schools in Huaping County, with a primary school enrollment rate of 92% and a middle school enrollment rate of 86.8%. By 2009, Huaping County was basically out of blindness, with 27,341 students at all levels of school and 1,833 faculty members (Chen & Yang, 2013).

However, in high school education after compulsory education, because the farmers in the mountainous areas have a weak awareness of the importance of their children's education, students drop out very seriously. Faced with this situation, Guimei Zhang, who taught at Huaping Nationality Middle School and was also the head of Huaping County Children's Home at the time, had the idea of establishing an all-free girls' high school in Huaping. To raise funds to run a girls' high school, Guimei Zhang resolutely embarked on the road of running the school. She asked for help everywhere and went to other places to raise funds and solicit donations from society as soon as the winter and summer vacations arrived. However, the road to the establishment of the school was very difficult. After 5 years, only less than 20,000 CNY was raised. This is just a drop in the bucket for starting a school. It was not until 2007 that Guimei Zhang's dream of running a school was spread to thousands of households through television screens by an accidental opportunity, which attracted the attention of the whole society and the support of the Lijiang City and Huaping County governments.

After experiencing many difficulties, in August 2008, with the support of the provincial, municipal, and county governments and extensive donations from the society, the first all-free girls' high school in the country: Huaping County Girls' High School was established. In the same year, the school enrolled 96 poor rural female students from Huaping County, Yongsheng County, Ninglang County, and Xuanwei City.

The world is full of hardships, and it is even harder to initiate. At the beginning of the school's establishment, the school faced difficulties such as poor teaching facilities, difficult living conditions for teachers and students, and a lack of money for students' living expenses. On the one hand, Guimei Zhang led the teachers and students of

the school to run the school hard and diligently. On the other hand, the Huaping County Government has called on entrepreneurs, government officials, charitable people, and other social donations to prepare a set of luggage, a suitcase, and a school uniform for each freshman to help female high school students enjoy free high school education. At the same time, it also solved the student's living expenses.

Since the establishment of the Huaping County Girls' High School, it has received the attention of the Yunnan Province and Lijiang Municipal Government and has also received extensive attention from the whole society. They worked jointly to make suggestions and donate money for the development and operation of the school. According to the data, since 2008, governments at all levels in Yunnan Province have invested 91,321,100 CNY to the school to build infrastructures such as teaching buildings, dormitories, canteens, and sports fields. Only Huaping County has invested a total of 63,321,100 CNY, including 30.183 million CNY for faculty and staff salaries, 123.656 million CNY for student expenditures (excluding the exempted student accommodation fee of 5.867 million CNY, tuition and miscellaneous fees of 4,693,600 CNY, and the use of donation expenditures of 2.79 million CNY, and half of the exemption (Wang, 2020).

Today, the girls' high school has 9 classes with 470 students. Female high school students are exempt from tuition, clothing, beds, books, materials, water, and electricity, except for living expenses, for three years. This saves tens of thousands of CNY in fees for every impoverished girl family, and this has also attracted impoverished female students from various counties in Lijiang and even other prefectures to enroll in school.

Pay Attention to Girls' Education and Ensure Inclusive and Fair Quality Education

"Achieving gender equality and empowering all women and girls" and "Ensuring inclusive and fair quality education and promoting life-long learning opportunities for all" were adopted at the United Nations Sustainable Development Summit in 2015 to "Transforming Our World: The 2030 Agenda for Sustainable Development" and mentioned the above two goals. The report pointed out that providing high-quality education for girls will be an effective means to eradicate poverty, fight disease, and promote economic development (Tang, 2014; Sen, 2014).

Girls' education refers to the most basic school education for girls under the age of 18. Studies have shown that the effective control of population size and the improvement of population quality largely depend on the improvement of the education level of women who account for half of the population (Wang, 2003). According to a report entitled "Missed Opportunities: The High Cost of Not Educating Girls" released by the World Bank on the occasion of the United Nations Malala Day recently, there are approximately 132 million women between the ages of 6 and 17 who are not attending school in the world. Compared with women who have never attended school, women with 12 years of education are more likely to find a job and their income is twice as

high. Women with secondary education are better able to make decisions at home, including their health care. They are less likely to suffer from partner violence and their mental health levels are improved. Their children became healthier, their malnutrition situation improved, and they were more likely to go to school. Finally, providing girls with a better education can make them more likely to fully participate in society and become active members of the community (World Bank, 2018).

Girls' education is an international problem, and it is also a prominent problem faced by developing countries, especially in remote mountainous areas where the economy is lagging. This kind of education is not only a basic right that everyone should accept but also an indispensable foundation for girls in modern life.

Looking at China's female education, tremendous development has been achieved since the reform and opening up. Before 1949, the enrollment rate of school-age children was only 20%, and the enrollment rate of boys was much higher than that of girls. In 1952, the number of elementary schools nationwide was 527,000, and the number of elementary school girls reached 16.797 million, accounting for 32.9% of all students. As of 2017, the consolidation rate of nine-year compulsory education in China has reached 93.8%, and the net enrollment rate of girls in elementary school has reached 99.9%, which is the same as that of boys (Lin, 2019).

However, in some parts of China, due to the influence of traditional culture, economy, family, and other factors, the problem of girls' education has always existed, and it is even more serious in some poor areas. In 2017, China Children and Teenagers' Fund and China Philanthropy Research Institute of Beijing Normal University jointly released the "Research Report on the Development Needs of Poor Girls in China in the Future of Vocational Education". They surveyed 10 counties in the five provinces of Shanxi, Henan, Sichuan, Yunnan, and Xinjiang in the central and western regions. It is found that in poverty-stricken areas of China, poor girls have a strong desire to get rid of the existing living environment, eager to become teachers, white-collar workers, and work in cities, but for various reasons, they cannot obtain the right to education. Even for girls in school, only 43% of parents pay attention to their children's usual learning situation, and 11% of parents never cared for, which is far behind the parents' attention to boys (Wang, 2017).

Huaping County is located in the mountainous area on the border of southwest China. It has long been influenced by backwardness and patriarchal thinking. Therefore, girls' right to education has not been well realized, and it is common for girls to drop out of school and marry at a young age. Many girls in the area only receive nine years of compulsory education, which has created a vicious circle of "low-quality mothers and low-quality children".

Huaping Girls' High School founded by Guimei Zhang broke this status quo. In 1996, Guimei Zhang, who served as a teacher in Huaping County Central Middle School and Nationality Middle School, found that girls dropped out of school frequently, and the number was much higher than that of boys. As the dean of the Huaping County Children's Welfare Institute, she has seen the misfortunes of many poor rural families from the orphans in the children's home, the tragedy of forcing their daughters to marry

early in exchange for the betrothal by parents in poor mountainous areas, and also see man, and a lot of girls had to go to work to earn a living because of poverty or no money to go to high school when they graduated from middle school. In Guimei Zhang's view, the backwardness in poor mountainous areas is mainly due to backwardness in education, among which girls have a lower level of education, thus forming a vicious circle of "low-quality girls-low-quality mothers-low-quality next generation". To solve the poverty problem in mountainous areas, we must start by improving the quality of women. As a result, she hoped to start a free girls' high school. In Guimei Zhang's blueprint, these girls' high school should be a school full of love. Girls who go out of this school should have a healthy physique, good behavior, and strong will; girls should not repeat the path that their ancestors have walked for generations, and they will be better in the future. For this reason, she visited the families of girls who had dropped out at home after graduating from middle school due to poverty or trapped by the concept of "useless schooling" and "patriarchy" and persuaded their parents to allow them to continue to learn at Huaping Girls' High School for free.

The children in the mountains yearn for knowledge and desire to change their destiny. The establishment of Huaping Girls' High School has effectively solved the problem of poor girls in mountainous areas having difficulty attending high schools, blocked the intergenerational transmission of poverty, and provided girls in poor areas with a way to realize their dreams. In the past 12 years, Huaping Girls' High School has helped with about 1,800 poor girls to change their destiny and the destiny of more than 1,000 families through education.

Entrance without Examination Helps Poor Students Realize Their College Dreams

For a long time, in China, a certain trend has been formed in the education process. All levels and types of schools in China use student test scores as the only criterion for admission. Only by reaching a certain test score can you be eligible to enter a higher school. The emergence of this situation makes many gifted children lose the opportunity to go to school because of occasional poor performance in a major exam. This is a major problem that Chinese education has been unable to solve for many years.

Huaping Girls' High School founded by Guimei Zhang has made a breakthrough in this regard. Huaping Girls' High School does not set any score threshold for enrollment. Regardless of the students' academic level, they are welcome as long as they are willing to come. After entering the school, there is no distinction between high and low grades, and "individualized" education is not implemented according to the grades. Although the enrollment condition of no performance threshold allows some girls who do not have a good learning foundation to get further learning opportunities, under the unified selection criteria of China's college entrance examination, to let these students who come from different regions with different learning levels and understanding abilities meet the requirements for the college admissions, to realize a change in the

education of girls in the mountains, then more stringent education management and new ways of teaching are required.

Set Goals and Stimulate Potential

The connotation of poverty is not only the lack of economic income but more importantly, "the failure of basic capabilities to reach certain minimally acceptable levels" (Sen, 2016). Therefore, education for poverty alleviation requires not only empowerment but also determination. The core of poverty alleviation through education is to mobilize the impoverished population's motivation and vitality for poverty alleviation, improve the reading, writing, arithmetic and technical skills of the educated ones, enhance social adaptability, achieve stable employment, increase income, and eliminate poverty (Zhang & Xing, 2020). Mindfulness education is beneficial to children's development (Xie &Tu, 2019). Most students in deeply impoverished areas lack family guidance and education, and they need to stimulate their learning drive, self-discipline, and good study habits (Wang, 2020) to improve their learning ability. Therefore, education for poverty alleviation must focus on the improvement of the self-awareness and self-ability, so that the educated can be self-reliant (Wang et al. 2017).

Huaping Girls' High School pays special attention to the cultivation of students' learning motivation during the teaching process. Guimei Zhang often said to students, "You must learn well when you come, and you must take the attitude of entering key universities and prestigious colleges. If you only aim to enter a vocational school, then you don't need to come to this school." Under the encouragement, every girl from the mountain area realized that she is the only hope for the whole family, and she must go all out to study in school, and she must not disappoint her family's expectations.

Develop Good Study Habits

Learning habits are formed and developed through repeated practice in the learning process and become an automated learning method required by individuals. Good study habits are conducive to stimulating students' enthusiasm and initiative in learning; conducive to the formation of learning strategies and improving learning efficiency; conducive to cultivating the ability of independent learning; conducive to cultivating students' innovative spirit and creative ability and benefiting students for life (Zhang, 2014).

At Huaping Girls' High School, learning is a race against time. Get up at 5 a.m., rest after midnight, rush from the classroom to the canteen within 3 minutes, and finish the meal within 10 minutes. To save time for washing, the school stipulates that all female students should have a short haircut to ears, run for morning reading, run to eat, and run to sleep. In this school, every student makes the most of their time and pursues efficient learning.

Form a Good Feedback Mechanism

Hattie (1992) conducted a meta-analysis of all 134 factors that may affect academic achievement and concluded that feedback is the most influential factor in academic achievement. Winne and Butler (1994) believed that feedback is information. With this information, learners can determine, add, rewrite, adjust, or reorganize the information in their memory, whether the information is professional knowledge, metacognitive knowledge, self or self-mission beliefs are still cognitive techniques and strategies. The practice is one of the forms of feedback. Van Gog et al. (2005) believed that the level of related exercises aimed at improving academic performance determines the improvement of academic performance. Such exercises require students to expand their higher performance levels and focus more on long-term efforts. This is usually practiced at a fixed number of times over many days.

Because there is no grade requirement for entering the school, many students do not meet the high school entrance examination scores. Especially in the first year, there were still some students who have not received a middle school diploma after repeating three years. Because of the poor level of the students, in the beginning, the students of Huaping Girls' High School almost failed every exam. There were more voices of doubt. At that time, many people thought that these students who were already at a poor level would fail the college entrance examination.

Facing the doubts from the outside and the pressure of the college entrance examination, the students of Huaping Girls' High School had to do their best to do the questions. A lot of practice simulation can deepen the understanding of knowledge points and strengthen the interest in learning. To this end, the school spent 180,000 CNY to buy test papers in various high schools, and started the question sea tactics, allowing students to work hard in the third year after the first and second grades of high school. Some people say that this method of brushing up questions is unscientific, but in fact, the school had a period of "democracy". Principal Guimei Zhang learned from other key high schools and organized group discussions among students. She listened by the side and found that group discussions were not suitable for the students of the school when the learning level was originally low. It would also make the entire classroom unordered and would not affect at all, so it was immediately stopped. At Huaping Girls' High School, students know that learning opportunities are hard to come by and they work hard every day. To save electricity bills, they can also concentrate on studying under the lights in the corridor; consolidate their knowledge in practice, and make up for deficiencies.

Establish a Good Teacher-Student Relationship

The study showed that a good teacher-student relationship is an important factor in promoting students' learning (Yao et al., 2020). Dai & Lin (2019) explored the mechanism of learning burnout through standardized tests and questionnaire surveys of 36,248 students. The results showed that the teacher-student relationship and the key teaching support play an essential role in regulating learning burnout and performance. Therefore, establishing and optimizing a good teacher-student relationship, getting teaching sup-

port, and attaching importance to encouragement and guidance to students could stimulate students' enthusiasm for learning to a large extent, promote students' learning investment, and improve academic performance.

At Huaping Girls' High School, teachers headed by Guimei Zhang eat and live with their students, loving every student. Especially in the early days of the school's establishment, in the face of difficult teaching conditions and uneven student resources, the generally poor level of students, to give students more learning time, school hygiene was taken care of by teachers. At 6 a.m., all the teachers had to get up to clean the campus. The construction site was covered with dust everywhere, and it was muddy when it rained. The teachers had to carry water in the ditch to wash the cement board.

The teachers of Huaping Girls' High School not only guide students in their studies but also help them to the utmost in life. During the holidays, Guimei Zhang took bread and bottled water and took a bus to visit his home in the mountains. In the past 12 years, Guimei Zhang's home visit was 120,000 kilometers long, and it took 10 hours by car to reach the farthest. Every time he visits his home, Guimei Zhang tries his best to help solve the problem. She encouraged teachers to buy fruits that could not be sold together; when she saw a poor family, she left the coat she wore and the money she brought with her; there was a family with only two girls who were bullied and the land was invaded, Guimei Zhang helped them in a lawsuit.

At the same time, the teachers of Huaping Girls' High School also know that Dashan Girls' psychology needs more company. Every year when students step into the school gate, Guimei Zhang, as the principal, will give them a warm hug, and then say: "Dear, girls' high school welcomes you! From now on, this is your home, and I am your teacher. Let me take you to see the dormitory." When the students faced the psychological gap that they felt when they faced the gap with the outside, the school began to let the students dance ghost steps and wear yellow school uniform skirts. Let the students in the children's home eat hamburgers and pizzas, and change their living habits to "Western-style" so that the students can also keep pace with the times and prepare for society.

At Huaping Girls' High School, teachers are desperately teaching, students are studying hard, and students will use every minute and every second in school to the extreme. The school teachers also spend all their time in class, supervision, and companionship, so students have a strong motivation to learn, develop good study habits, and improve themselves in practice after practice. This has also become the unique teaching model of Huaping Girls' High School.

Excellent School Results

Poverty is one of the common problems that have always existed in human society, and from global experience, education is essential to poverty alleviation, economic growth, and sustainable development.

At present, there is still a lot of room for China's urbanization process, the multi-center pattern is still in the early stage, and China's potential to create demand is huge.

Through education to improve population quality and skills to promote social development, the effective cycle is longer, but once an effective demand group is formed, it will greatly promote economic development (Yue & Yin, 2020). Education is exactly the best way to change this dilemma.

As the advanced stage of basic education, high school education is the interface between basic education and higher education, and it plays a role in linking the whole education system. This stage is the most important period of knowledge accumulation, and it is also a key stage of a person's development. In China, at this stage, students will have two extremes, one is struggling to enter the university, and the other is to end their academic career. Compared with the latter, the former one is quite different in terms of employment opportunities, social understanding, and personal comprehensive quality (Zhu, 2017). Especially for a child without a good family and social background, education is the most effective way to change their destiny (Zhang & Hu, 2019).

Huaping Girls' High School founded by Guimei Zhang is now well-known locally and even across China. As the first all-free publicly-run girls' high school, especially as a girls' high school in the mountains, it has achieved impressive results: from 2011 to 2020, the overall rate of the college entrance examination for Huaping Girls' High School for 10 consecutive years was 100%. The first-class undergraduate compliance rate has risen from 4.26% in the first class to 44% in 2020. The undergraduate attainment rate was as high as 94% that year, ranking first in Lijiang City. "Zhejiang University, Xiamen University, Sichuan University, and Wuhan University...", in the 12 years since the school was founded, nearly 1,800 girls from the mountains have entered these universities. It is the Huaping Girls' High School that allowed them to step out of the muddy swamp of life and walk safely and smoothly to the wonderful world outside the mountain (Wu, 2020).

Yunli Zhou is the first batch of students enrolled. At the age of one, Zhou's mother passed away. She and her sister Yuncui Zhou were brought up by their father. Their father is disabled and he often leaves early and returns late. The family's income mainly depends on growing watermelons and mangoes, raising pigs, and weeding others. The family has a hard life. The only valuable thing in the old civil structure house was a color TV. From about seven or eight years old, the sisters began to do housework and later helped with farm work, selling vegetables at the farmers' market. Because the family did not have a son, and it was a single-parent family, their family was often bullied in the village. Their father hoped that they can get out of the mountains, and he will also offer them to study no matter what happened. In 2007, the sisters graduated from middle school at the same time. There is no money in the family, and their father was very sad to raise money everywhere. Zhou saw her father standing at the entrance of the pigpen, on the edge of the yard, and in the place where the donkey was raised, smoking one cigarette after another, without saying a word.

On the eve of the high school entrance examination, Yunli Zhou heard from the homeroom teacher of the middle school that a free girls' high school was being built next door and was managed by a teacher from Huaping Nationalily Middle School. There are no tuition fees, just some living expenses. At that time, the average high

school tuition fee was more than 1,000 CNY per semester, in addition to school miscellaneous and accommodation fees. Zhou ran to look excitedly after hearing this, and a brand new teaching building stood up in front of her.

Later, both sisters admitted to Huaping Girls' High School. In the summer of 2011, the first college entrance examination for Huaping Girls' High School. Yunli Zhou was admitted to Yunnan Normal University and her sister was admitted to Dehong Normal College. That summer, after learning that his two daughters were all admitted to college, their father, who had worked hard for half his life, finally opened his brows.

After graduating, the girls from the mountains walked out of the mountains to get to know the world outside the mountains and also experienced the gaps brought about by different growth environments. When faced with the gap and feel the psychological gap, students will be frustrated at first, but they are full of stamina, relying on the courage not to fear difficulties, not afraid of competition, and catch up. A 2011 graduate said that he was frustrated for a while. After going to college, she found that her classmates traveled abroad during the high school stage, and it was logical that she was admitted to the university, but her high school life was filled with boring study life, and she did her best to get rid of her status as a farmer. Feelings of injustice will come up at certain moments, but she also sees the value of striving because of this: she walked out of the mountains to stand with outstanding classmates through the college entrance examination, which in itself is worthy of joy.

Just as posted on the outer wall of the first teaching building of Huaping Girls' High School: strong (Gangqiang), kind (Cihui) and simple (Zhipu), this short school motto often encourages students, no matter how hard the process is, don't give up because of fear. Even if it fails, "the sky will not fall."

Conclusions

Huaping Girls' High School in Yunnan Province, as a model of education for poverty alleviation in China, has solved the problem of many school-age out-of-school girls in Huaping and many surrounding poverty-stricken districts and counties due to its free school admissions and no academic threshold. Through its unique teaching management model, it helped students get out of the closed villages and realized their dream of going to university. This is as Guimei Zhang himself said, education can change three generations. In the twelve years since the school was founded, more than 1,800 students have come out from here, behind more than 1,800 families, and it is the continuation of countless lives and hopes.

Poverty alleviation by supporting education is a systematic project. To effectively solve the problem of education poverty, the joint efforts of all levels of society are needed. Teacher Guimei Zhang's school-running process embodies a strong sense of education and is also a portrayal of the many participants on the road of poverty alleviation through education. It is the emergence of many characters like Guimei Zhang that make poverty alleviation by supporting education possible.

In global children's education, girls have become a neglected and disadvantaged group of students due to the influence of the regional education environment and bad traditional ideas. In the process of poverty alleviation through education, the development of education for girls and women so that women have the same opportunities as men to unleash their development potential has become the focus of the world's education poverty alleviation (Zhao, 2015). Since its inception, China's educational poverty alleviation work has been focusing on the development of education in remote areas, using girls' education as a breakthrough, to constantly fill up the shortcomings of education, optimize the structure of teachers, enrich the strength of teachers, and broaden the channels of education assistance. The education level of poor girls and the quality of education development in poverty-stricken areas have been significantly improved (Niu & Xu, 2018).

In particular, it is commendable that Huaping Girls' High School's educational proposition of "education but no classification" can obtain admission qualifications based on students' willingness to study. Not relying on student performance as a condition for admission is a challenge to China's current education system. The achievements of Huaping Girls' High School showed that as long as the educational concept is correct, the educational methods are appropriate and the teaching methods are reasonable, the school is likely to transform students' learning desires into learning outcomes and realize their educational dreams.

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Epidemic Prevention and Teaching Measures in Chinese Elementary and Middle Schools under the Background of COVID-19 Pandemic

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Abstract: The spread of the COVID-19 pandemic has caused a huge impact on education worldwide. Many countries have therefore suspended classes for pandemic prevention. As the situation of COVID-19 pandemic prevention and control in China has gradually improved, elementary and middle schools have started to resume classes. To guarantee the resumption of classes and pandemic prevention and control at the same time, and to ensure the safety and health of teachers and students, schools carefully planned various tasks after school resumption. The creative work carried out in various places and time ensured that the school resumed in a timely, orderly, and scientific manner. This paper took some elementary and middle schools in China as examples, and introduced in detail the preparatory work before the class resumption and the pandemic prevention and teaching measures under the pandemic after the class resumption.

THE outbreak of COVID-19 has produced a severe impact on global education. According to data released by UNESCO on July 15, 2020, currently, approximately 1.059 billion students worldwide are still affected by the pandemic. A total of 109 countries have implemented campus closure, and 60.5% of registered students worldwide are affected (UNESCO Institute for Statistics, 2020).

After undergoing strict prevention and control measures, some countries quickly curbed the spread of the pandemic and realized timely resumption of work with the help of pandemic's improvement (Wang, 2020). At present, China's pandemic prevention and control has shifted to a new stage of general situationalized anti-epidemic of "preventing external imports and blocking internal rebounds", and therefore all provinces have successively organized schools to resume classes (Liu, 2020).

As of July 14, 2020, the total number of students resuming classes in China reached 208 million that accounts for nearly 75% of the total student number (China News Network, 2020). Elementary and middle school education has obvious characteristics such as large coverage, a wide gathering of personnel, and strong interaction. How to resume classes on such a large scale in the context of pandemic prevention and control can not only ensure the safety and health of teachers and students but also promote the work of teaching and management scientifically and steadily. This is a critical issue that needs to be resolved in China's basic education system.

This paper took some elementary and middle schools in China as examples of resumption plans and measures to introduce in detail the school's preparations and responses to the resumption of classes in the context of COVID-19 pandemic, so as to provide a reference for schools to resume classes after the pandemic prevention and control is stabilized.

Preparatory Measures for School Pandemic Prevention and Control before Class Resumption

Factors such as large-scale personnel movement and gathering activities have brought new risks and challenges to campus prevention and control of the pandemic. To ensure the smooth development of epidemic prevention and teaching after the resumption of

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classes, schools must be fully prepared. The primary task in school preparation is to accurately grasp the prevention and control requirements, refine and quantify the resumption plan, strive to achieve the maximum restoration of the school, and implement prevention and control measures in strict accordance with the standards (Jiao & Wan, 2020). Schools are generally prepared for pandemic prevention and control from the following aspects:

Establish a Task Force Team of the Pandemic Prevention and Control

Establishing and improving the pandemic prevention and control work system under the responsibility of school leaders is conducive to promoting the fine management of campuses, decomposing responsibilities to various departments, clarifying job responsibilities, and helping the effective implementation of the school's pandemic prevention and control measures (Wang, 2019).

According to the needs of pandemic prevention and control, the first measure to deal with a pandemic is to establish an effective school pandemic prevention and control working group, so as to effectively implement pandemic prevention and control work (Dai & Lin, 2020). Taking Huangqiao Middle School in Taixing City, Jiangsu Province as an example, the school established a campus pandemic prevention and control task force team, which consists of a comprehensive group, a propaganda group, a security group, an emergency group, a supervision group, and a learning guidance group. Each group has a leader and team members. All members of the group are responsible for pandemic prevention and control and realize work and situation supervision.

The comprehensive group is responsible for assisting the leading group in the school's pandemic prevention and control work; analyzing and researching the school's prevention and control work, and proposing corresponding measures; assisting the leading group in drafting documents, reporting materials, running messages, implementing leadership instructions, and sorting out meeting records; Work and dynamic information, reporting and complaint mailbox work; docking with the city bureau pandemic prevention and control leading group; assisting the leading group to coordinate communication with other working groups, and jointly handle the pandemic prevention work.

- The propaganda group handles pandemic prevention and control work propaganda, public announcements, and public opinion monitoring.
- The security group manages the logistics support for prevention and control, and the procurement, storage and management of emergency supplies for prevention and control.
- The emergency group handles the emergency response to a sudden pandemic.
- The supervision group is responsible for the supervision of the implementation of relevant prevention and control measures.

● The learning guidance group manages an online learning guide for teachers and students.

Formulate the School's Work Plan and System for the Pandemic Prevention and Control

The establishment of the school system enables school management to be rule-based and appraised. This provides a reliable guarantee for the gradual realization of the scientific, standardized, and institutionalized school management (Liu, 2019).

To handle pandemic prevention and control before and after class resumption in a comprehensive and reasonable manner, each school has formulated a series of systems. Taking Zhenjiang Experimental School in Jiangsu Province as an example, the school has created a complete set of rules and regulations for school pandemic prevention and control to ensure orderly teaching:

● **Develop a reporting system for pandemic and public health emergencies.** To prevent the occurrence and spread of infectious diseases in a timely and effective manner, and to protect the health and safety of teachers and students, the school has established a pandemic report system in accordance with the requirements of the "Law of the People's Republic of China on the Prevention and Control of Infectious Diseases"[1] and made specific requirements for the school's pandemic report.

● **Develop a morning and afternoon inspection system for teachers, students, and other school employees.** To strengthen school disease prevention and control, improve teachers' and students' awareness of disease prevention, protect teachers and students' health, and prevent the occurrence of various infectious diseases, so as to achieve early detection, early reporting, early isolation, early diagnosis, and early treatment. In light of the actual situation, the school formulates a morning and afternoon inspection system to check and record the health of teachers, students, and employees.

● **Formulate a ventilation and disinfection system.** To further prevent the spread of various infectious diseases and guide the development of preventive health protection measures, according to the "Guidelines for Health Protection of the COVID-19 in Public Places"[2], the school has formulated a ventilation and disinfection system. Make specific requirements for the frequency and method of ventilation and disinfection in classrooms, offices, dormitories, canteens, libraries, laboratories, gymnasiums, and toilets. Thus avoiding infection caused by inadequate protective measures.

● **Formulate a school health education system.** To popularize the knowledge of infectious disease prevention and control, enhance the awareness of healthy living, and enable teachers and students to master the methods of prevention and control of infectious diseases, the school has made specific regulations on the health education of students and teachers and staff, requiring various forms

of health education for teachers and students. Thereby improving teachers' and students' awareness and ability to respond to infectious diseases.

Comprehensive Implementation of Campus Management and Comprehensive Sanitation Treatment

One of China's most effective measures to deal with the pandemic of the new crown is to strengthen the management and control of mobile personnel and appropriately reduce their flow (Global Times, 2020). At the same time, it is necessary to strengthen the comprehensive rectification of prevention, control, and sanitation, and handle the disinfection and protection of the environment to reduce the risk of infectious diseases spreading through the environment (China Patriotic Health Campaign Committee Office, 2020).

To ensure the normal resumption of classes, schools have adopted strict campus management and disinfection protection. Taking the Elementary School affiliated to Inner Mongolia Normal University as an example, the school has adopted strict protective measures from the following aspects (Affiliated School to Inner Mongolia Normal University, 2020):

- **Strict Campus Management and Control**

Strictly implement closed campus management. In principle, the school only keeps one access route. All personnel entering the campus will undergo temperature testing and information registration. It is strictly forbidden to enter the campus without wearing a mask and having abnormal body temperature. Non-working personnel and vehicles are not allowed to enter the campus.

- **Sufficient Material Reserves.**

According to the requirements of pandemic prevention and control materials in Jiangsu Province, a sufficient quantity and complete variety of pandemic prevention and control materials are reserved before the beginning of school. The material reserve manager is responsible for the unified storage and distribution of pandemic prevention and control materials, and the registration of in and out of the warehouse. The school's pandemic prevention and control work leadership team conduct inspections of protective materials one week before the start of school.

Material preparation includes thermometer, disinfectant, vomit bin, UV disinfection lamp, disposable medical mask, medical protective mask (N95 and above), personal protective clothing, disposable rubber gloves, goggles, protective mask, work shoes or rubber boots, waterproof boot covers, and other safety protection products.

- **Strengthen Environmental Remediation.**

According to the requirements of relevant documents, special cleaning and disinfection of classrooms, function rooms, libraries, toilets, washrooms, and other public places should be done well. Keep the campus environment clean and tidy, ventilate the room, and ensure fresh air. Further, strengthen the safety supervision of drinking water, arrange for special personnel to clean and disinfect the drinking fountains, so as to ensure the safe and smooth opening of schools.

Strengthen the Health Check of Teachers and Students

As COVID-19 is a contagious disease, timely detection, and effective isolation of suspected and confirmed patients so as to control the source of infection is the top priority for epidemic prevention (Tan, 2020). In order to ensure the normal resumption of classes in schools, all schools have taken effective measures to check the health of teachers and students, so that once a suspected case of COVID-19 appears, they can be effectively isolated as soon as possible to avoid new infections. Taking the Shanmen Town Central Elementary School in Siping City, Jilin Province as an example, the school has conducted serious and detailed investigations on the health of teachers and students entering the school (Zhang, 2020).

- **Carry Out Daily Health Information Sorting**

    1. Student health information investigation: Strictly implement the morning and afternoon inspection and pandemic reporting system. Room teacher counts the students' physical condition and travel arrangements and reports them to the health teacher for statistics and summary every day. Report the statistical results to the Municipal Education Bureau regularly every day.
    2. Faculty and staff health information investigation: Strictly implement the morning and afternoon inspection and pandemic reporting system, and require the grade leader to count the physical condition of teachers and travel arrangements every day, and report to the Comprehensive Coordination Center for statistics and summary. The statistical results are reported to the Municipal Education Bureau regularly every day.

- **Determine Whether to Return to School that Based on Health Conditions**

According to the current geographical situation and health status of teachers, students, and employees, the school divides teachers, students and employees into three categories: not returning to school temporarily, temporarily delaying returning to school, and returning to school normally. The school and faculty members determine whether to return to school according to their own circumstances.
    1. *Provisions not to return to school temporarily.* Those who have one of the following conditions will not return to school temporarily. The school will formu-

late practical training programs for students who will not return to school temporarily.

1.1 Teachers, students, and staff who are diagnosed with COVID-19 or suspected cases or asymptomatic infections will not return to school.

1.2 Teachers, students, and staff who are still in areas with severe pandemic need to stay where they are and will not return to school temporarily. The specific arrangements for returning to school are subject to pandemic announcements and prevention and control guidelines issued by the local government.

2. *Provisions to temporarily delayed returning to school.* If one of the following situations occurs, return to school will be temporarily delayed. For students who are temporarily delayed from returning to school, the school will promptly contact the students and their parents to maintain communication and keep in touch. After waiting for the conditions to be met, apply to the school first, and then return to school after review and approval.

2.1 Teachers, students, and staff who have had close contact with confirmed/suspected cases or asymptomatic infections within 14 days before returning to school will be temporarily delayed to return. A 14-day quarantine medical observation must be completed under the guidance of the local disease prevention and control agency, during which the body temperature is checked every day, and no unprotected contact with outsiders will occur. Those who have not developed fever or respiratory symptoms within 14 days and have a negative viral nucleic acid test must provide a certificate of dissolution of medical observation issued by the local quarantine and observation unit, and can return to school after approval by the school.

2.2 Teachers, students, and staff who stayed in or returned from severe pandemic areas 14 days before returning to school will be temporarily suspended from returning to school. Those who must complete 14 days of home (or intensive) isolation medical observation and have no fever or respiratory symptoms within 14 days can only return to school after approval by the school.

2.3 All teachers, students, and staff who develop fever or respiratory symptoms within 14 days before returning to school will be temporarily delayed to return to school. After going to the local hospital for treatment, excluding COVID-19 and recovering physically, they can return to school only after the approval of the school.

2.4 Those who have taken pandemic tracing vehicles (shifts) on the way back to school and currently have no fever or respiratory symptoms.

2.5 Have a fever or respiratory symptoms, including cough, sore throat, dyspnea, or diarrhea, especially body temperature $\geqslant$ 37.3 $^{\circ}$C (in addition to forehead temperature or ear temperature measurement, a medical thermometer is required for professional testing), diagnosis cannot be ruled out but no need hospitalized.

2.6 Other special circumstances require isolated medical observation.

3. Conditions for normal return to school. Except for the above two types of situations, personnel with other conditions can return to school normally.

Combine the self-checking with the preliminary screening work of the school pandemic prevention and control group. Teachers, students, and staff who meet the requirements for returning to school shall apply for the health QR code of the area where the school is located. Those who hold a green QR code shall submit the green code to the school, and the school will make a unified health card. After school starts, those who wear a health card, a mask, and the infrared body temperature sensor at the entrance of the school can enter the school.

The school implements dynamic management of the health of teachers and students. For teachers and students who suspend work and school due to uncomfortable symptoms such as fever, fatigue, dry cough, chest tightness, etc., a dedicated person will be arranged to contact them. In order to implement relevant prevention and control measures, do a good job of ideological guidance, care about their lives, wait for them to submit an application to the school after recovery, and return to school after the school reviews. For the sick students, organize teachers to conduct phone and online home visits, realize online homework interaction between teachers and students and provide online learning guidance and psychological counseling.

School Pandemic Prevention and Control and Teaching Measures after Class Resumption

In the context of the general situationalization of COVID-19 pandemic, health and education and teaching are the two priorities of the school after school starts. For this reason, the school has carried out corresponding measures for pandemic prevention and control and resumption of teaching. On the premise of ensuring the health and safety of teachers and students, the school realizes the connection between online teaching and classroom teaching, so as to achieve both epidemic prevention and normal teaching (Office of the Leading Group for Pandemic Work of the Ministry of Education of the People's Republic of China, 2020).

Pandemic Prevention and Control Measures after School Starts

Under the general situation of the COVID-19 pandemic, the spread of the pandemic in the country is basically blocked, but the risk of sporadic cases and local pandemic outbreaks still exists. At the same time, the "inward input" pandemic is not optimistic (Global Network, 2020). Therefore, doing a good job in pandemic prevention and control after school starts is the focus of all schools. Taking the Swan Lake Education Group of No.50 Middle School in Hefei, Anhui Province as an example, the school has adopted the following prevention and control measures (Hu, 2020):

- **Students will Enter the School in Batches after the Staggered Peak Period**

1. *The school formulates a plan to enter the school in batches during the staggered peak period.*

The school timely releases the schedule of entering the school in batches during the staggered peak period to students and parents through multiple channels. In order to ensure that all students and parents are aware of the relevant work arrangements and prevention and control requirements for the start of school, the school is divided into grades, batches, and staggered time to enter the school orderly, reducing the number and frequency of student gatherings.

2. *Undergo strict physical examination.*

Before and after students enter the school, the room teacher conducts morning and afternoon inspections in time. Before the first class in the morning and in the afternoon, each grade group leader is responsible for reporting the results of the morning and afternoon examinations to the school health room via WeChat.

- **Strengthen the Pandemic Monitoring of Teachers and Students**

1. *Student health monitoring*

Student pandemic monitoring follows the principle of each room teacher to achieve strict monitoring. Once an infectious disease pandemic or suspected pandemic is found, it must be reported to the emergency response team immediately, and the emergency response team can activate emergency plans when necessary to prevent the pandemic from spreading. And the school pandemic reporter quickly and accurately reported to the local CDC and education authority. Relevant responsible persons must establish student and staff health management files, pandemic report records.

2. *Teacher health monitoring*

The school strengthened the health monitoring of faculty and staff. Teachers should report to the school in a time when they have abnormal health conditions, take the initiative to seek medical treatment, and provide timely feedback on the results of medical treatment. Once COVID-19 or suspected B cases are found, they must be reported to the emergency response team immediately. The emergency response team can activate the emergency plan when necessary to prevent its spread, and the school pandemic reporter can quickly and accurately report to the CDC and the competent education department. Relevant responsible persons shall establish faculty and staff health management files and pandemic report records.

- **Strict Daily Management of the Campus**

1. *Strictly implement school epidemic prevention measures*

Focusing on the prevention and control of COVID-19, strictly implement the school's contagious disease prevention and control measures to achieve early detection, early isolation, early reporting, and early treatment to ensure the implementation of pandemic prevention and control measures.

2. *Carry out hygiene cleaning and regular disinfection of campuses and classes*

Classrooms and other indoor venues need to increase the daily ventilation check to maintain indoor air circulation. The class assigns a dedicated person to be responsible, and the grade group and the student growth center strengthen inspection and feedback and make records.

3. *Strictly control personnel entering and leaving the campus*

Ensure that the main duty leader is in place (the mobile phone is kept open), and the duty teacher and security (door guard) are in place. Establish a strict entry and exit registration system, and the concierge strictly controls the entry and exit of foreign personnel and vehicles. Persons who must enter the campus for business must wear masks, measure their body temperature, and register (for reference at any time) and report to the school gate for verification before entering the campus. If problems are found, they must be refused entry to the campus and the situation should be reported to the person in charge of the relevant department in time.

- **Strict Management of Cafeteria and Food**

The cafeteria is another public place where schools tend to gather. In order to do a good job of food safety in school cafeterias during pandemic prevention and control, the school strictly controls food safety and does a good job in cafeteria and food safety supervision (Yin, 2020).
   1. The cafeteria employees are required to work in a healthy manner, ensure the cleanliness of the operation room, and realize the daily cleaning and disinfection of tableware and restaurant water supply facilities.
   2. Regarding student meals, the school adopts separate meals, one table per person, to avoid crowdedness. In terms of food safety, mixing raw and cooked food is strictly prohibited. It is recommended to be light and palatable to ensure the nutritional match.

- **Strengthen the Management and Protection of Facilities and Personnel in Key Places**

1. *Office Management*

Every teacher's office computer must be dedicated and other people's computers and public computers are not allowed. Wash hands before and after passing paper documents.

2. *Management of classrooms and laboratories*
- Realize the on-duty and inspection work of the laboratory to ensure laboratory safety. The used experimental items, gloves, paper towels, masks, and other wastes are sorted and placed in special garbage bags for disposal according to regulations.
- It is necessary to maintain a certain social distance between teachers and students, or between students and students, and try to avoid close contact.
- Each student prepares a small convenient bag to carry with him. In case of vomiting in special circumstances, put the vomit in it and discard it in a special garbage bin. Then contact the room teacher, report to the school, and arrange a special person (logistics service center) for disinfection.
- Library management. During the period of COVID-19 prevention and control, paper books will be dealt with on the principle of returning only but not borrowing. Returned books and periodicals are disinfected by ultraviolet light and other methods before returning to the shelves.
- Stadium management. During the COVID-19 prevention and control period, all school indoor sports venues will be closed. Suspend the school's collective sports activities and competitions until pandemic prevention and control is lifted. The outdoor venue is normally open, but gatherings are not allowed. All classes carry out sports activities and keep a proper distance.

Teaching Measures after the Class Resumption

The quality of teaching is the foundation of the school's survival and development. During the pandemic, the diversity in study effects could become more obvious because of the different family status, study capability, etc. Dr. Slavin (2020) examined the United States federal and state educational responses to the spread of the COVID-19 pandemic, further calling for the implementation to address educational equality issues and improve access. While doing a good job in pandemic prevention and control, education and teaching must be carried out in a scientific and orderly manner. Therefore, the school will conduct a comprehensive analysis and judgment on all students, find out the problems and weakness in their studies, and formulate a targeted plan to realize the connection between online and offline learning. So as to ensure that the quality of student learning is steadily improved after classes are resumed (Liu, 2020).

- **Revise the Teaching Goals and Plans after School Starts**

Affected by pandemic, teaching is transferred from offline to online and from school to family. However, after leaving the class in school education, students' learning conditions cannot be guaranteed (Cheng, 2020). For this reason, the primary task of the

school after the resumption of classes is to realize the connection between the school's online teaching during the postponement of the semester and the original spring semester teaching plan, diagnose and evaluate the quality of students' online learning in the early stage, and appropriately adjust the goals and teaching plans.

The adjustment of the teaching schedule needs to consider the following four factors: one is the total amount of class hours of the course content of the subject, the second is the stage adjustment of the school curriculum plan; the third is the actual acceptance and effect of students' learning, avoiding one-sided catching up with the teaching progress. Students are left behind in learning, which intensifies the emergence of student polarization; the fourth is the overall planning and reasonable compression of part of the course content (Ding, 2020).

Taking Zhenjiang Experimental School in Jiangsu Province as an example, the teacher development center of the school held a meeting of class preparation team leaders and teaching research team leaders according to the special circumstances of the delayed start of school, unified the adjustment of the teaching plan of each subject, and made use of the staggered class and time in the evening and weekends to make up for it Insufficient teaching time. Organize video collective lesson preparation before school starts, and urge teachers to prepare a week's lesson in advance. It also counts the grades, classes, or students who have not started online teaching and implements "zero-start teaching" for them.

- **Adjust Class Arrangements**

Restricted by the conditions for running a school, many grassroots schools have large courses in some non-main subjects, that is, two or more parallel classes are taught together, which are classes in the same grade, the same subject, or the same major were gathered together to teach (Sun, 2019). Due to the large number of students in co-classes, it brings new challenges to pandemic prevention and control. Therefore, reducing the number of classes has become an inevitable choice after the resumption of classes in Chinese schools (Liu Yu, 2020).

Take Zhengzhou No. 9 Middle School as an example. According to the actual situation of the 12th grade, the Curriculum Development Office of the school split 4 administrative classes of 246 students into 8 teaching classes, and 8 administrative classes of science 456 students into 16 teaching classes. The maximum class size of each teaching class is guaranteed not to exceed 32 students. And coordinate the allocation of classroom positions for each teaching class, make temporary class cards for each teaching class, and coordinate the keys of each class. The Academic Affairs Office arranges the course teaching and organizes the compilation of the course schedule. In order to ensure the orderly and efficient classroom teaching, the director of the Office of Academic Affairs is responsible for sending it to each teacher one week in advance (Shi & Yin, 2020).

Some schools also use the Internet to conduct online teaching of non-main subjects. Take the Elementary School affiliated to Nanjing Normal University as an exam-

ple. The school readjusted class affairs in accordance with the requirements of pandemic prevention and control, and re-arranged classes that take large classes (such as music, art, computer, and other technical subjects) to avoid large classes and adopt them as much as possible. The online teaching method allows students to learn some non-main subjects. For example, in music classes, teachers are organized to use the campus audio-visual system to uniformly attend large classes, arrange the teacher's class schedule, and supervise the implementation.

For teachers who are unable to attend school due to isolation, coordinate their class affairs in advance. Make statistics of the workload of substitute teachers and accumulate data for the final performance evaluation.

- **Choose Appropriate Teaching Methods**

Studies have pointed out that building a good teacher-student relationship, forming a stable teacher-student exchange, and enabling teachers to truly assume the role of instructor and companion is the key to effective teaching (Yao et al, 2020). Therefore, attaching importance to teaching and choosing appropriate teaching methods are important measures after the school starts and resumes classes.

The outbreak of the COVID-19 pandemic has changed the way students learn and the way teachers teach. Due to the inability to carry out classroom teaching, teachers are more guiding students to use online teaching platforms and abundant online teaching resources for autonomous learning (Xie & Yang, 2020). Internet-based autonomous learning has become an important learning method for students (Zhou & Li, 2020). The changes in students' learning methods during the pandemic period have deeply affected the school's teaching methods and teaching methods after classes resume. Traditional lecture-based teaching is facing challenges. Online and offline hybrid learning will become a new form of learning (Tan, 2020).

Take the Ninety Six Middle School in Zhengzhou as an example. After class is resumed, the teachers of the school will classify and integrate the content taught during the pandemic period. In class, they will lead students to review their knowledge in the form of unit summaries and use small topic explanations to train and improve, strengthen, and consolidate what you have learned. At the same time, using the hybrid teaching model, continue to use the established network teaching platform and rich network teaching resources to upload online courseware, protocol, micro-course, and other teaching resources to the school's network platform. Pay attention to the guidance of teachers to allow students to solidify the learning habit of autonomous learning and cultivate their independent learning ability. It is convenient for students to make up for the content that they did not understand in class after class, and give full play to the auxiliary role of online teaching in offline classroom teaching.

- **Strengthen School Health Education**

In order to popularize the knowledge of infectious disease prevention and control and improve students' self-prevention ability, the school uses a variety of ways and methods

to carry out health education in depth. Taking Dongsha Middle School in Daishan County, Zhejiang Province as an example, the school makes full use of publicity boards, blackboard newspapers, campus networks, WeChat official accounts, and other platforms, combined with health education classes, theme class meetings, and other forms to widely publicize COVID-19 prevention to teachers, students and parents. This enables every teacher and student to master protective skills and develop good hygiene habits. Organize the learning of COVID-19 prevention and control knowledge based on grades and classes, collect prevention and control materials, and distribute them to every student, forming a strong learning atmosphere among students (Daishan County Education Bureau, 2020).

- **Reduce Large-Scale Active Gatherings**

In order to effectively guarantee the life safety and physical health of teachers and students, the school strictly implements the "Notice on Suspending the Resumption of Large-scale Sports Activities and Aggregate Activities during the COVID-19 Pandemic Period"[3] to reduce large-scale activity gatherings of teachers and students. Taking the Ninety Six Middle School in Zhengzhou as an example, the school has implemented the following measures:

1. During the pandemic prevention and control period, strictly control the school personnel to participate in lectures, visits, and learning activities in other cities (districts), and all participants in key pandemic areas will be suspended.

2. Schools try to avoid holding all-teacher meetings, and it is recommended to adopt the form of online meetings. If you have to hold a meeting for special needs, you must wear masks and wash your hands and disinfect before entering the meeting room. The meeting personnel is separated by more than 1 meter. Air conditioning is not allowed. Strictly control the number of participants and meeting time. Keep the room ventilated during the meeting, and disinfect the venue, tables, and chairs after the meeting.

- **Scientifically Arrange Physical Exercise**

Scientifically and reasonably arranging teachers and students to participate in physical exercise is a prerequisite to ensure their good physical condition. Therefore, strengthening physical exercise is another key task of teaching after school resumes. But most schools in China have more students. Therefore, during the pandemic period, the school needs to adopt scientific sports arrangements. While avoiding the phenomenon of large-scale crowds, it is necessary to ensure the daily outdoor activities of students. Take Qujiang No. 1 Elementary School in Xi'an, Shaanxi Province as an example. This school will implement the 1-hour "Sunshine Sports" exercise every day. To carry out sports and health teaching activities and physical exercises for students in batches, time periods, and venues, the school organize teachers and students to contact Healthy Qigong • Ba Duan Jin[4] between large classes and physical education classes, make full use of small spaces and large movements, and cultivate the body while inheriting tradi-

tional Chinese culture, so that both learning and physical exercise can be harvested (Ma, 2020).

Deepen Home-School Cooperation

Home-school cooperation is an inevitable move to realize the collaborative education of families, schools, and society, promote the healthy growth of students, and improve the overall quality of education. Especially in the general situationalization of COVID-19 pandemic prevention and control, good home-school cooperation will not only help build good education ecology, but also help build a learning society and maintain social harmony and stability (Xia, 2020). Dr. Peter (2020) offered a description of the learning-from-home event, highlighting changes that were required of teachers, students and parents, and initiating the importance of pertinence in the connection between family and school. Therefore, facing the pandemic, schools and families must deepen their cooperation. According to the needs of parents, the growing needs of students and the current teaching tasks of the school, we can carry out reasonable and in-depth home-school cooperation activities, realize students' health and epidemic prevention and education activities, and form a new situation of home-school cooperation under the general situation of pandemic prevention and control (Dai, 2020).

Strengthen the Guiding Role of Parents

1. Strengthen health education and guidance. The education and guidance of parents play an important role in the health protection of students. Therefore, the school conducts infectious disease prevention and control publicity and education through various forms such as Weibo, WeChat official account, parent groups, student groups, and class meetings. In addition, schools have invited experts to carry out online family education lectures on home-school cooperation to fight the epidemic and online parental Q&A activities. So as to popularize the advanced concept of home-school cooperation and family education knowledge and methods, and answer questions for parents. Help parents to understand prevention and control knowledge, improve awareness of prevention, guide students to protect themselves scientifically, maintain adequate sleep, actively participate in physical exercise, arrange reasonable meals, enhance physical fitness and immunity, and develop good hygiene habits and healthy lifestyles (Tian & Lv, 2020).

2. Strengthen the guidance of good study habits. After a long "winter vacation", many students' learning status has changed. When learning returns from online to offline, many students show bad learning phenomena such as decreased concentration, slower thinking ability, and poorer learning habits. The improvement of learning status needs to be done by parents and teachers together, and the two should maintain close communication and pay attention to teachers' feedback to their children. After the resumption of classes at Nanping Experimental Elementary School in Chongqing City, it pushed out "Tips for Resum-

ing Classes" to every student's parents, reminding parents to make several preparations. Students must have a regular schedule, establish a concept of time; adjust the diet structure, balance the daily nutritional intake; help children calm down, review their vacation life, and make plans for the new semester. Through the adjustment of the children's psychological and physical work and rest time, continuous attention to the children's learning attitude and habits can be realized, so that the children's poor learning can be effectively improved. But at the same time, we must pay attention to the method and don't act too hastily, otherwise, things will be reversed (Kuang & Li, 2020).

Pay Attention to Daily Family Health Information Reporting

Information technology plays a significant supporting role in teaching during the pandemic (Tilahun, 2020; Marta, 2020). Daily health reports are the basic means for schools to track student health. The No. 8 Middle School in Hefei City, Anhui Province requires parents to cooperate with the school before and after the beginning of school to do a good job of the student's "health status report" as required. Need to check the body temperature every day and record truthfully. If the body temperature is higher than 37.3 degrees Celsius, the parents of the students should promptly inform the class teacher and seek medical treatment, so that "one report per day" and "one file per person" should not be concealed or falsely reported.

The environment that students are exposed to after semester is more complicated than that of studying at home. Therefore, it is necessary for parents to pay more attention to the daily family temperature testing, realize family health information reporting, closely cooperate with schools, and keep the first pass of student health and safety (Hefei No. 8 Middle School Principal's Office, 2020).

Use Online Channels to Provide Timely Feedback on Student Learning

For students who are temporarily unable to return to school due to pandemic prevention and control requirements or due to illness after the normal resumption of classes, the school arranges teachers to carry out teaching activities through online teaching methods, and provide students with online Q&A and learning guidance. Under this learning method, parents need to promptly report the students' learning situation to the teacher through WeChat, QQ, or the school teaching management platform (Cai & Wang, 2020). At the same time, teachers should give feedback to parents in time after correcting students' homework. Parents and teachers can understand their children's home learning status and effects in a timely manner based on mutual feedback, and help parents and teachers communicate education strategies together to achieve home-school education (Guo & Li, 2020).

Strengthen the Personal Protection of Students on the Way back and forth after School Starts

After classes are resumed, the way students go to and from school is a key concern for parents. Schools across China have made requirements for personal protection of students on the way to and from school. Yulan School in Zhangzhou City, Fujian Province requires students to avoid taking public transportation and try to be picked up by parents with green codes throughout the journey so that they can be prepared to pick up their children to and from school. During the transfer, students and parents must wear disposable medical masks or surgical masks or KN95/N95 masks. After returning home, parents and students try not to go through the door as much as possible, and reduce to crowded public places, especially places with poor air mobility, such as shopping malls, stations, restaurants, etc. (Yulan School, Zhangzhou City, Fujian Province, 2020).

Concluding Remarks

After the COVID-19 outbreak, the Chinese government took the lead in launching a major initiative of "School is Out, but Class is On" on a global scale. Through the world's largest online education activities, the education of hundreds of millions of students has been uninterrupted (Zhou et al, 2020). Research has shown that the large-scale "School is Out, but Class is On" activities carried out by the Chinese government are in the elementary, middle and high schools all have gotten great achievements (Cai et al., 2020; Dai & Xia, 2020; Xie, 2020).

With the successful resumption of elementary and middle schools everywhere, education departments and schools at all levels attach great importance to it. Taking health and safety as the prerequisite, the school has formulated a complete resumption and school opening plan based on the actual situation and has implemented various emergency prevention and control measures at all levels to achieve the orderly opening of schools at all levels.

From the perspective of epidemic prevention measures, the school has formulated a campus epidemic prevention work system based on actual school conditions. Before the beginning of school, prepare for the preparation of epidemic prevention materials and comprehensive management of the campus environment. After school starts, the focus will be on hygiene monitoring, disinfection, health education, and personnel protection. So as to ensure the effective implementation of various epidemic prevention measures (Fei, 2020).

In addition to anti-pandemic measures, schools have explored effective links between online and classroom teaching. Based on a comprehensive analysis of the actual situation of students' online learning, scientifically adjust teaching arrangements, pay attention to the physical and mental health of teachers and students, and coordinate the connection between online and offline teaching arrangements (Sun & Xu, 2020).

We have also seen that there are still some problems in the actual implementation of these epidemic prevention and teaching measures. For example, in the school's

epidemic prevention work, health examinations and pandemic reports occupy the main content of the school's work, which has increased the school's prevention and control pressure to a certain extent. Therefore, some grassroots educators believe that in the pandemic prevention and control system of the entire society, schools are actually in a peripheral position. Parents of students are inevitably active in society every day, excessively increasing the prevention and control pressure of schools, not the most important thing. Sometimes it may have the opposite effect. Therefore, it is recommended to integrate and compress inspections, make better use of information technology, and share information to effectively reduce the burden on schools (Xu et al, 2020).

At the same time, we are soberly aware that the teaching effect of schools under the background of pandemic general sensationalization has yet to be tested. So far, there has not been any research report on the study effect of students under the background of general situationalization of COVID-19. Therefore, it is not possible to accurately report the student's learning effectiveness after the class resumption.

In addition, some students and teachers are extremely anxious psychologically. In the current teaching work, the mental health counseling of teachers and students has not been the main direction. Facing the psychological problems of students to a certain extent, schools should organize targeted psychological intervention activities for students. The school will continue to organize and coordinate relevant professionals to jointly assist the resuming students' learning psychological support and the reconstruction of learning order, so as to help students resume their normal learning status as soon as possible (Zhang et al., 2020).

Notes

1. *Standing Committee of the National People's Congress. (2004) Law of the People's Republic of China on the Prevention and Control of Infectious Diseases.*
2. *The State Council's Joint Prevention and Control Mechanism for COVID-19 Pandemic. (2020) Guidelines for Health Protection of COVID-19 in Public Places [Standing Committee of the National People's Congress. (2004) Law of the People's Republic of China on the Prevention and Control of Infectious Diseases.*
3. *The Office of the Leading Group of the Ministry of Education for Response to COVID-19 Pandemic. (2020) Notice on the suspension of large-scale sports activities and gathering activities during the COVID-19 Pandemic period, 04-13-2020.*
4. *Healthy Qigong•Ba Duan Jin is one of the traditional health care methods with very significant effects on fitness and disease prevention. It is organized and edited by the Health Qigong Management Center of the State Sports General Administration of China. Regular practice can help to cure diseases, strengthen the body, and prolong life.*

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Research Capabilities among Selected Graduate School Students in Philippines

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Abstract*: With the increasing demand for quality research to cope up with the industry trends, understanding the need among researchers should primarily be established to further improve capacity and practices over the production of theoretical knowledge. Essential to support is the notion of exploring issues then stimulate the concern. This study established the concern on research capabilities among Graduate School student-respondents at President Ramon Magsaysay State University conducted during the First Semester School Year 2018-2019. The study made used of descriptive research design with survey questionnaire as the main research instrument. The data was processed using descriptive and inferential statistical tools. The study concludes that respondents perceived their capabilities in writing research proposal and publishable research paper both as "Moderately Capable". The respondents perceived the availability of facilities, time, training, funding, other resources and support from agency in doing research as "Moderately Available". The analysis of variance test revealed that there is significant difference on the research capabilities of respondents in writing research proposal when grouped according to position and highest educational attainment; significant in writing publishable research paper when grouped according to sex, position and research seminars/trainings attended; significant in the availability of facilities, time, training, funding, other resources and support from agency in doing research when grouped according to sex, position and research seminars/trainings attended.*

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Introduction

UNIVERSITIES in the developing world have retained strong teaching functions and weak research functions (Sanyal et al., 2019). The Philippines is not an exemption to this. As observed by Bernardo (2003) in his study on the typology of Higher Education Institutions (HEIs) in the Philippines, "only 15 out of 223 HEIs in the sample met the requirements for the graduate-capable HEI category, and only two HEIs met the criteria for doctoral/research university categories." This shows that majority of the HEIs are teaching institutions.

In light of this reality, the Philippine Commission on Higher Education (CHED) has been zealously pushing for a stronger research orientation among the HEIs. This is in response to the increasing demand for quality research to cope up with the industry trends, understanding research needs should be established to further improve capacity and practices over the production of theoretical knowledge. Its National Higher Education Research Agenda (NHERA), formulated in 1996, articulates goals of higher education research as well as the mechanics and concrete steps for achieving these goals. CHED has likewise established 12 Zonal Research Centers (ZRC) in the country to further promote and encourage research in 1,605 public and private HEIs.

A study on the status of research in these institutions showed a low turnout (13,859 research reports submitted to the ZRCs from 1996-2001). Among these studies, those conducted by individuals 72% far exceeded collaborative and institutional research. Meanwhile, about 69% of these individual studies were done by graduate students (master's and doctoral) as part of their degree requirements (Vicencio, Bualat, et al., as cited in Salazar-Clemeña, 2006). Considering that CHED (2000) reported having funded only 16 research projects with a total approved budget of about P 9 million, it can be inferred that much of the research conducted were not dependent on the miniscule funding offered by CHED.

Notwithstanding the CHED initiatives, therefore, the recent state of higher education research in the Philippines leaves much to be desired in terms of quantity, quality, thrusts, and contribution to national development (Salazar-Clemeña, 2006).

It must be noted, however, that Philippine HEIs manifest varied research capabilities, a diversity that can be explained by differences in university type, faculty profile, as well university locale. This diversity notwithstanding, the ability to respond to the call to develop research-oriented institutions of higher learning is also dependent on the HEIs' human capital. HEIs should stress "research or perish" since if one is strong in research, then it follows that he/she is strong in instruction and teaching because his/her teachings are updated and with relevance as reflected on his/her research studies. Thus, a major test of relevance of higher learning institutions is the effectiveness of its programs in consonance with the function of research.

The minimal involvement of faculty or teachers in research activities can be attributed to the lack of firm training from graduate studies that would make them consistent producers of research and in response to increase demand to become an active

contributor of knowledge for the future of industry. This may be due to the fact that many HEIs in the country are formerly secondary schools that have been upgraded to tertiary level, thus largely focusing on sustaining the teaching function. Among the 34% of the faculty who are graduate degree holders (CHED, 1997), few have done research beyond their master's theses or doctoral dissertations. This implies that the graduate degree papers 'were one-shot short-term projects that did not build on earlier findings or lead to further investigations' (Salazar-Clemeña, 2006). This study will try to validate the problems of poor involvement in research among Graduate School students who are employed as professionals mostly teachers by looking at their capability while they are in the Graduate School.

Cognizant to this, the Graduate School is a research-based department among universities and colleges, and thus considered as its major tasks is to prepare and equip its students to become expert researchers. The implication of this study is for the Graduate School of President Ramon Magsaysay State University to consider and address the findings, to meet its objective in developing and enhancing the capabilities of its students to become competitive and expert researchers. Result would serve as basis for Graduate School students in threshing out possible solutions to problems they encounter in conducting a research. Furthermore, this study will help the office of Graduate School understand the needs and demands of students in making a quality research. This serves as an eye opener particularly in preparing students in conducting quality researches. This will also help them identify the skills and competencies need to be addressed and obtain inputs to design research innovation policies and programs solely intend whether to sustain or improve research capabilities of Graduate School students.

Objectives

This study aimed to determine the research capabilities of Graduate School student-respondents of President Ramon Magsaysay State University (PRMSU) during the first Semester, School Year 2018-2019. Specifically, it sought to determine the profile of the student-respondents in terms of age, sex, civil status, position, highest educational attainment, and research seminars/trainings attended; determine the level of research capabilities of Graduate School students in terms of writing a research proposal and writing a publishable research paper; determine the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by student-respondents; test significant difference in the level of research capabilities in writing research proposal among Graduate School students when grouped according to profile; test significant difference in the level of research capabilities in writing publishable research paper among Graduate School students when grouped according to profile; and test significant difference in the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by Graduate School students when grouped according to profile.

Methodology

The researcher made used of the descriptive method of research. Descriptive research is used since the research capabilities of graduate school students in PRMSU Iba and Castillejos Zambales, Philippines is to be studied, in order to describe the characteristics of a population or phenomenon being studied. Said method is paramount because the nature of the research is documentary analysis, where facts, figures and data were already existing information (Shields & Rangarajan, 2013).

Statistical sample was the 288 Graduate School students of President Ramon Magsaysay State University Graduate School during the 1st Semester SY 2018-2019 in the five programs which include the Master of Science in Agriculture (MSA), Master in Public Administration (MPA), Master in Business Administration (MBA), Master in Education (MAEd.), Doctor of Education (Ed.D.), and Master of Science in Computer Science (MSCS). The sample respondents were taken based from 1,029 total population of Graduate School students enrolled during the semester. Out of the total population, 288 sample respondents will be taken to take part in the study as computed using the Slovin's formula. To give equal chance among sexes of respondents to be part of the study, 144 and 144 respondents were males and females, respectively. The survey questionnaire highlighting key points in writing proposal and publishable paper was the main instrument used in gathering the needed data.

Data was entered to SPSS version 13 software after being gathered and all statistical analyses were performed. Hence, to interpret the data effectively, the researcher employed statistical treatment which includes the frequency, percentage, rank, mean and Analysis of Variance (ANOVA).

Results and Discussion

The frequency and percentage distribution on the respondents profile of age, sex, highest educational attainment, and position and research seminars/trainings attended is shown in **Table 1**.

Out of 288 graduate school student-respondents, there were 136 or equivalent to 47.22% are from age group of 21-30 ; 96 or 33.33% are from age group of 31-40; 46 or 15.97% are from age group of 41-50; 10 or 3.48% are from age group 51-60 and only 2 or 0.70% are from 61 years old and above. The computed mean age of graduate school student-respondents was 33.37 years old suggesting that students in the Graduate School are in their early adulthood. On sex profile, there were 144 or equivalent to 50.00% are males and 144 or equivalent to 50.00% are females. This means that there is an equal distribution of sample size for both sexes as gender equality is concerned. As for the result on highest educational attainment, an overwhelming majority of 231 or 80.21% are graduates of Bachelor degrees with Master units; and 57 or 19.79% are graduates of Master with Doctoral units. This clearly suggests that student-respondents need to continue to pursue advanced education and manifests an evidence that teachers

Table 1. Frequency and Percentage Distribution on Respondents Profile Variables.

Profile Variables		Frequency	Percentage
Age (Mean=33.1 yr)	21-30	136	47.22
	31-40	96	33.33
	41-50	46	15.97
	51-60	10	3.48
	> 61	0	0
Sex	Male	144	50.00
	Female	144	50.00
Highest Educational Attainment	Bachelor + Master Units	231	80.21
	Master + Doctoral Units	57	19.79
Position	Rank and File	235	81.60
	Supervisory	39	13.54
	Managerial	14	4.86
Research Seminars/ Trainings Attended	School-based	71	24.65
	District	53	18.40
	Division	64	22.22
	Regional	51	17.71
	National	47	16.32
	International	2	0.70
	Total	**288**	**100.00**

comply with the Department of Education's (DepEd) and Commission on Higher Education (CHED) call for continuous education by enrolling in graduate programs. As for the result on position, there were 235 or 81.60% belong to Rank and File position; 39 or 13.54% are Supervisory; and 14 or 4.86 are Managerial. On research seminars / trainings attended, there were 71 or 24.65% with school-based research seminars/trainings attended; 53 or 18.40% with district research seminars/trainings attended; 64 or 22.22% with division research seminars/trainings attended; 51 or 17.71% with regional research seminars/trainings attended; 47 or 16.32% with national research seminars/trainings attended; and 2 or 0.70% with international research seminars/trainings attended. The result clearly signifies that there is a need for professionals to elevate trainings into national and international levels.

Table 2 presents the level of research capabilities in writing research proposal as perceived by the Graduate School student-respondents.

The research capabilities in writing research proposal of Graduate School student-respondents in writing significance of the study and writing the hypothesis has the

Table 2. Level of Research Capabilities in Writing Research Proposal as Perceived by the Graduate School Student-Respondents.

#	Aspect	Mean	Interpretation Capability	Rank
1	Conceptualizing a problem.	2.36	Less	15
2	Writing rationale/introduction.	3.45	Moderate	3
3	Writing the significance of the study.	3.48	Moderate	1
4	Writing the statement of the problem.	3.33	Moderate	10
5	Writing the scope and limitation.	3.37	Moderate	9
6	Writing the review of related literature and studies.	3.44	Moderate	4
7	Writing the theoretical and conceptual framework.	3.11	Moderate	13
8	Writing the definition of terms.	3.39	Moderate	6
9	Writing the hypothesis.	3.46	Moderate	2
10	Writing the research methodology.	3.41	Moderate	5
11	Identifying appropriate research design.	3.23	Moderate	12
12	Determining sample size using the appropriate sampling technique.	3.29	Moderate	11
13	Writing the bibliography.	3.37	Moderate	8
14	Applying the APA format.	2.78	Moderate	14
15	Writing instruments/questionnaire.	3.38	Moderate	7
	Overall Weighted Mean	**3.25**	**Moderate**	

highest mean rating of 3.48 and 3.46, respectively both with descriptive interpretation of "Moderately Capable". On the other hand, conceptualizing a problem with a mean rating of 2.36 and applying the APA format with a mean rating of 2.78 interpreted as "Less Capable" and "Moderately Capable", respectively were the lowest mean. The computed over-all weighted mean on the level of research capabilities in writing research proposal as perceived by the Graduate School student-respondents was 3.25 interpreted as "Moderately Capable". The data indicates that the Graduate School students are moderately capable of writing research proposal. However, they are less capable of conceptualizing a problem and applying the APA format. The results of the interviews with the students revealed that they are hard up in conceptualizing research problems with different variables that jibe with the study title likewise applying the American Psychological Associations (APA) format in general manuscript and bibliographical citations.

This entails that the student-respondents should be provided with trainings applying APA format in writing research proposal. Likewise, trainings on how to concept-

Table 3. Level of Research Capabilities in Writing a Publishable Research Paper as Perceived by the Graduate School Student-Respondents.

#	Aspect	Mean	Interpretation Capability	Rank
1	Writing the abstract	3.48	Moderate	2
2	Writing the keywords	4.32	Capable	1
3	Writing rationale/introduction	2.94	Moderate	7
4	Writing the statement of the problem and objectives	2.87	Moderate	8
5	Writing the research methodology	3.44	Moderate	4
6	Writing results and discussion	2.21	Less	10
7	Writing the conclusion	3.45	Moderate	3
8	Writing the recommendation	3.39	Moderate	5
9	Writing the bibliography	3.12	Moderate	6
10	Applying the APA format	2.67	Moderate	9
	Overall Weighted Mean	**3.19**	**Moderate**	

tualize problems based from variables in the study should also be taken in consideration. Burns (2010) accounted that professionals who are students in the Graduate School commonly identified several areas on which they need further awareness and training which includes identifying an initial idea and systematically defining and implementing the APA format designed for the initial idea. Thus, Burns (2010) hold that most students may be acquainted with the methods of research but still need further support and clarification in APA format and other areas. Clarification may include standard used in APA format in general.

The level of research capabilities in writing a publishable research paper as perceived by the Graduate School student-respondents is presented in **Table 3**.

The research capabilities in writing a publishable research paper in terms of writing the keywords and writing the abstract gained the highest mean rating of with 4.32 and 3.45 interpreted as "Capable" and "Moderately Capable", respectively. While, writing results and discussion has the lowest mean rating of 2.21 interpreted as "Less Capable" and applying the APA format with a mean of 2.67 interpreted as "Moderately Capable". The computed over-all weighted mean on the level of research capabilities in writing a publishable research paper as perceived by the Graduate School student-respondents was 3.19 interpreted as "Moderately Capable".

The result emphasizes the need for students to learn interpreting statistical data as results and discussion is concerned. Furthermore, the result affirms that students encountered difficulty of applying the APA format both in writing proposal and converting researches to publishable paper. The result of interviews with the students revealed

Table 4. Availability of Facilities, Time, Training, Funding, Other Resources and Support from Agency in Doing Research as Perceived by Graduate School student-Respondents.

#	Aspects	Mean	Interpretation Capability	Rank
1	Computer units for research purposes	2.57	Moderate	11
2	Journals, books and other materials	3.46	Moderate	5
3	Installed e-journals/Online Platforms/Publications	2.88	Moderate	8
4	Research seminars/LAC/trainings	3.44	Moderate	6
5	Internet access	2.59	Moderate	10
6	Laboratories for experimental research	2.84	Moderate	9
7	Statistician services	3.58	Available	4
8	Editor/grammarian services	3.41	Moderate	7
9	Consultation services to Research Committee/Staff	3.74	Available	3
10	Mentoring/Coaching	4.13	Available	2
11	Institutional research journals and publication	4.46	Available	1
12	Budget for research publication	2.47	Less	13
13	Budget for writing a research	2.62	Moderate	12
14	Budget for research and fora	2.04	Less	15
15	Available time in conducting research	2.26	Less	14
	Overall Weighted Mean	**3.09**	**Moderate**	

that the varying requirements and prescribed format of different journals for publication create confusion in line with the concept of APA format in general.

Meanwhile, it seems critical that students in the Graduate School believe in the power of research to crash the practice of their profession. Pursuing this path, however, needs a concrete and absolute development of research skills and capabilities. These identified perceived needs, challenges, and conceptions on research and its lasting brunt descend towards professional growth, advancement and improvement of their effectiveness in the profession in general. Subsequently, in analogy to the study of Luciano (2014) and Grouws, Tarr, Chavez, Sears, Soria and Taylan (2013) though teachers focused on methodology and practices in research as implied and practiced in their profession, there are however those areas needing further enhancement and room for improvement, they also want to further step up manifested in their interest in solving and interpreting number results of their studies and concerns related to publication, which might be on a national level who adage the same drive on credibility of different journals for to be used for publications.

Table 4 shows the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by Graduate School student-respondents.

Institutional research journals and publication and mentoring/coaching has the highest mean rating of 4.46 and 4.13, respectively both interpreted as "Available". Meanwhile, budget for research and for a and availability of time in conducting research gained the lowest mean with 2.04 and 2.26, respectively both interpreted as "Less Available". The computed over-all weighted mean on the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by Graduate School student-respondents was 3.09 interpreted as "Moderately Available".

Since Graduate School students are all professionals time-bounded by work during weekdays and their studies during weekends, the finding implies that the student professionals also need government attention for budgetary and time allocation support deemed needed for the completion of research studies. These further confirm the literature studies of Atay (2006); Taskeen et al. (2014), and Vec & Rupar (2015) who affirm that modifications in workloads and financial support to teachers who continued their advanced studies which usually happen after graduating in their baccalaureate degrees should be reiterated in order to achieve quality education through quality research.

The Analysis of Variance on research capabilities of Graduate School students in writing research proposal when grouped according to profile is shown in **Table 5**.

As manifested in Table 5, the probability value on research capabilities of Graduate School students in writing research proposal when grouped according to position and highest educational attainment are < 0.05 alpha level of significance, therefore the null hypotheses are rejected. On the other hand, the probability values on research capabilities of Graduate School students in writing research proposal when grouped according to age, sex and research seminar/trainings attended are $>$ the 0.05 level of significance which denotes failure to reject the null hypotheses.

The findings indicate that the research capabilities of Graduate School students in writing research proposal are affected by their position and highest educational attainment and not with their age, sex and research seminar/trainings attended.

The student-teachers believe in improving their research skills through higher degree education; likewise, as they seek higher position in the workplace, their professional competence, ability, fitness, and skills in instructional practice should be boosted (Darling-Hammond, 2012; Hanushek, 2011).

Table 6 presents the analysis of variance on research capabilities of Graduate School students in writing publishable research paper when grouped according to profile.

In relation to analysis of variance on research capabilities of Graduate School students in writing publishable research paper, table 6 revealed significant differences in terms of sex, position and research seminars/trainings attended as indicated of the lower probability values compared to the 0.05 level for significance. On the other hand, there is no sufficient evidence to show that there is a significant difference on the re-

Table 5. Analysis of Variance on Research Capabilities of Graduate School Students in Writing Research Proposal When Grouped According to Profile.

Sources of Variations	F	Sig.	Decision
Age	1.619	0.210	Accept H0
Sex	2.460	0.134	Accept H0
Highest Educational Attainment	0.087	0.044	Reject H0
Position	2.813	0.025	Reject H0
Research Seminars/Trainings Attended	1.096	0.384	Accept H0

Table 6. Analysis of Variance on Research Capabilities of Graduate School Students in Writing Publishable Research Paper When Grouped According to Profile.

Sources of Variations	F	Sig.	Decision
Age	0.55	0.720	Accept H0
Sex	9.592	0.012	Reject H0
Highest Educational Attainment	1.064	0.365	Accept H0
Position	2.223	0.013	Reject H0
Research Seminars/Trainings Attended	3.581	0.004	Reject H0

Table 7. Analysis of Variance in the Availability of Facilities, Time, Training, Funding, Other Resources and Support from Agency in Doing Research as Perceived by Graduate School Student-Respondents When Grouped According to Profile.

Sources of Variations	F	Sig.	Decision
Age	0.492	0.750	Accept H0
Sex	5.651	0.020	Reject H0
Highest Educational Attainment	2.389	0.096	Accept H0
Position	1.318	0.028	Reject H0
Research Seminars/Trainings Attended	3.840	0.003	Reject H0

search capabilities of Graduate School students in writing publishable research paper when grouped according to age and highest educational attainment.

This further illustrate that the research capabilities of Graduate school students are affected by sex, position and research seminars/trainings attended and not curtained by age and highest educational attainment. This can be accounted that exposure to seminars/trainings can bring closer for connections and ideas when it comes to publishing research studies.

This finding supports previous study of Pine (2009) which concluded that research improves professionals' reflective practices in their profession. Personal qualities are also developed because they become more enthusiastic of other contributions in the field and even becoming more open to constructive criticisms during defense and publication. As a matter of fact, some of the participants in her study stated that research can refines one's character since it makes one aware of the areas he/she needs to perk up. Furthermore, exposure brings them more to people as a skill they need in publication. Researchers corroborate that research promotes openness to new ideas (Johnson & Button, 2000) and to learning new things, improves their level of confidence, and boosts their self-esteem (Furlong & Sainsbury, 2005). This finding also advocates that although doing research may be externally driven, professionals may find the experience as also intrinsically rewarding with regards to their position in their respective job.

The analysis of variance in the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by Graduate School student-respondents when grouped according to profile is exemplified in **Table 7**.

The probability values on the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by Graduate School student-respondents when grouped according to sex, position and research seminars/trainings attended are low compared to 0.05 alpha level of significance, thus the null hypotheses are rejected. On the other hand, the probability values in terms of age and highest educational attainment are higher compared to the 0.05 alpha for significance, therefore null hypotheses are accepted.

The findings divulged that the availability of facilities, time, training, funding, other resources and support from agency in doing research among Graduate School students are affected by sex, position and research seminars/trainings attended and not by age and highest educational attainment.

Although some literature (Ary, Yacobs, Sorensen, 2010; Dornyei, 2007) reported the importance of research in one's professional practice regardless of sex, McDonough (2006) found that some do not consider research as one of their primary responsibilities owing to availability of resources and funding which greatly varies by position and longevity of service in their workplace.

Conclusion and Recommendations

The Graduate School student-respondents typically are in their early adulthood, taking up Master's degree, and serving as Rank and File employees and attended school-based research seminars/trainings. The Graduate School student-respondents perceived their capabilities in writing research proposal as "Moderately Capable". The Graduate School student-respondents perceived their research capabilities in writing a publishable research paper as "Moderately Capable". The Graduate School student-respondents perceived the availability of facilities, time, training, funding, other resources and support from agency in doing research as "Moderately Available". There was no significant difference on the research capabilities of Graduate School students in writing research proposal when grouped according to age, sex and research seminar/trainings attended and there was a significant difference on the research capabilities of Graduate School students in writing research proposal when grouped according to highest educational attainment and position. There was no significant difference on research capabilities of Graduate School students in writing publishable research paper when grouped according to age and highest educational attainment and there was a significant difference on research capabilities of Graduate School students in writing publishable research paper when grouped according to sex, position and research seminars/trainings attended. There was no significant difference on the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by Graduate School student-respondents when grouped according to age and highest educational attainment and there was a significant difference on the availability of facilities, time, training, funding, other resources and support from agency in doing research as perceived by Graduate School student-respondents when grouped according to sex, position and research seminars/trainings attended.

Anchored in study findings, this study recommend that the Graduate School should strengthen research capabilities in writing research proposal among students through conducting seminars on conceptualizing problem, applying APA format and writing theoretical and conceptual framework. Strengthen research capabilities of students in writing publishable research paper through exposing them in writing results and discussion, applying the APA format and writing the statement of the problem and objectives. Strengthen government agency funding to support research scholarship grant among graduate school students and budgetary allocations for research fora and publication should be made available on-time, allocate enough hours and sufficient time to conduct researches as part of schedule within the curriculum that will cultivate positive research climate among students. Since the research capabilities of Graduate School students in writing research proposal is affected by highest educational attainment and position, students are encouraged to become resourceful, innovative and apply time management in writing regardless of their educational attainment and position at work, inculcate shared vision on conducting research regardless of their position at work. Finishing graduate degree preferably with thesis for with non-thesis degree option and not just units earn is strongly encouraged to hone writing publishable research and elevate them to promotion, attendance to research seminars/trainings is recommended to bring closer for connections and knowledge on publication. To revisit policies and pro-

tocols for possible modification on issues related to availability on access of facilities, time, training, funding, other resources and support from agency in doing research equally among sexes and positions and give chances through providing equal opportunity for those with inadequate research seminars/trainings. It is suggested therefore to conduct a follow-up study of wider scope so as to confirm and corroborate the findings obtained in the present study. Variables which may be included in future research may focus on effective strategy to address the increasing demand for quality research to cope up with the industry trends compatible in understanding research capability needs to further improve capacity and practices over the production of theoretical knowledge.

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Study on the Target Guidance in the Integration of Teaching Protocol

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Abstract: Integration of teaching protocol is an original creation of China's basic education. This model emphasizes the balance between the student as the subject and the teacher as the dominant. "Target-Guided Teaching" refers to the use of target guidance strategy to improve teaching, enabling students to effectively use information tools and resources to improve their learning and adapt to social development. This paper studies the target guidance model based on the integration of teaching protocol. After analyzing the early studies, we defined the concepts related to the target guidance model based on the teaching protocol, and elaborated on the strategies for determining learning and using goals for the reference of front-line education workers.

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Introduction

A S a part of educational activities, classroom teaching is extremely purposeful. The Japanese educator Masao (1996) believed that "The fundamental condition for the formation of all educational phenomena and processes is the goal". In the teaching process, the teaching objective is the main line of classroom teaching. It plays an important role in guiding the direction and process of classroom teaching and is also the basis for classroom evaluation. The effect of classroom teaching can be tested by the degree of achievement of teaching objectives (Lin, 2015). With the advancement of the new curriculum reform, the efficiency of classroom teaching is the most concerned topic for educators, scholars and frontline teachers working in teaching positions (Deng, 2013). The reform of the new curriculum standard changed the teaching objective to the learning objective, and proposed three-dimensional learning goals of knowledge, skills, and emotional attitudes. Learning objectives are the basis of the teaching process, and whether they can be achieved is related to the success or failure of the entire classroom teaching (Lin, 2015).

Teaching protocol is considered to be a useful material to promote students' autonomous learning (Zhou & Li, 2020). The classroom teaching model based on the teaching protocol is a new model derived from the carrier of the teaching protocol, and it has always received extensive attention from education researchers. On the basis of the concept of "learning is fundamentally the student's own business, teaching activities should stimulate students' drive to learn and make learning really happen to the students themselves", Li (2019) believed that the classroom teaching model based on the teaching protocol is a goal-oriented, problem-centered, self-preparation as the prerequisite, the combination of self-inquiry and intensive instruction as the foundation, and in-class training as the guarantee.

This article focuses on target guidance research based on teaching protocol. Based on the analysis of the existing target guidance research, clarify the related concepts of classroom guidance, teaching goals and target guidance based on the teaching protocol, and then determine the method of learning objectives and the strategies of how to use learning objectives for classroom guidance.

Research Status

Current Status of Foreign Research

There are few studies on target-guided teaching abroad, and most of them focused on the study of teaching objectives. Tyler RW, an American educator, elaborated on the

definition of goals, and believed that "various changes in behavior are the teaching goals" (Pi. 2008).

Japanese scholar Atsushi Mita proposed a Japanese-style teaching target classification theory. In the fields of cognition, emotion and motor skills, from the perspective of goal realization, the school teaching goals are divided into three types, i.e. basic, improvement and experience goals (Chen, 2002). American educator Bloom BS believed that the goal is the expected result. It embodies the researcher's shift of research objectives from classification research to teaching application. His research showed that the realization of teaching goals should be based on classroom practice activities (Zheng, 1990).

Among the above studies, Bloom's goal theory of education classification has the most extensive influence. Bloom's classification theory of educational goals was first proposed in 1956 (Lorin & Laren, 1994). This theory has been adopted by education fields all over the world and has been translated into 22 languages. However, in the process of being applied, the shortcomings of this theory have gradually emerged. The most significant shortcoming is that it assumes that the cognitive process is one-dimensional, it is only a sort of behavior from simple to complex, and in the hierarchical structure, the categories of different levels do not overlap, which is not reasonable in actual teaching (Shukran & Nor, 2017). After five years of research, Anderson et al. revised it in 2001 (Aly, 2006). Bloom's goal classification theory divides all the goals that should be achieved in education into three fields: the cognitive field composed of the mastery and understanding of knowledge and the goals of intellectual development; and the cognitive field composed of interests, attitudes, values, and correct judgment, and adaptation. The affection field composed of the goal development; the motor skills field composed of various skills and motor skills. The goals in the cognitive domain include knowledge, comprehension, application, analysis, synthesis, and evaluation from low level to high level. In the domain of affection, the degree of internalization of value includes five levels: receiving, responding, valuing, organization, and characterization. In the field of motor skills, it includes perception, orientation, guided response, mechanical action, complex external response, adaptation, etc. (Gu, 2003).

In sum, although there are few studies on target-guided teaching abroad, the above-mentioned studies all reflected the importance of learning objectives in teaching practice. Among them, Bloom's target classification theory also provides a theoretical basis for the target-guided teaching model based on the teaching protocol.

Current Status of Research in China

In China, the research on target guidance has a history of decades, and they were mainly reflected in the research on teaching goals and learning goals.

Research on Teaching Goals

Research on the Function of Teaching Goals

Li & Li (1991) believed that the function of teaching goals mainly has directing, motivating and standardizing functions.

- The directing effect refers to the guiding effect of the teaching goal on the learner's attention;
- Motivating effect refers to the teaching goal can stimulate and maintain learners' interest and motivation in learning;
- The standardizing effect means that teaching goals can be used as standards for testing and evaluating the teaching effects.

Li (2009; 2012) proposed that the basic functions of teaching goals mainly include guiding, evaluating, motivating and feedback function.

- The guiding function refers to the guiding role of teaching goals in the design and implementation of teaching activities, the selection of teaching methods and the performance of student behavior;
- The evaluation function means that the teaching goals have a corresponding evaluation effect on the teaching process and results;
- The motivation function means that the teaching goals have an stimulating effect on students' learning;
- The feedback function refers to the teaching goals can help teachers to evaluate and correct the teaching process.

Yan (2000) proposed that teaching objectives have four functions: orientation, reinforcement, adaptation, and evaluation.

Research on Classification of Teaching Goals

The research on the classification of teaching objects in China began in the 1980s. The landmark event was the introduction of Bloom's object classification theory to China and had a wide range of influence. The most profound impact on the current research on China's teaching goals is the new curriculum reform introduced by the Ministry of Education in 2001. This reform standardized the expression of teaching goals. On the one hand, it designed the overall goal of the curriculum; on the other hand, in order to implement the overall goal in the compilation of teaching materials, the positioning of classroom teaching goals, teaching organization, teacher training and curriculum resource allocation, the overall goal of the curriculum was divided into three dimensions: "knowledge and skills", "process and method", and "emotional attitude and values" (Cao, 2014).

Research on Learning Goals

Value Research of Target Guidance

In 1997, the general research group proposed the "three standards, two guidance, and double five rings" model, which targeted on cognition, moral education, and academic ability. The application in the middle school showed that this model can promote the

improvement of students' moral character and academic performance (General Research Group, 1997).

In 2011, Jiang (2011) established the classroom teaching model of "Target guidance, activity construction, and meeting standards in the classroom" of the middle school history. By comparing the learning effects of the experimental and the control classes, it is found that the experimental class is significantly better than the control one in terms of learning confidence, interest, ability and habits. It is believed that this model implemented the curriculum goals, improved classroom efficiency and students' autonomous learning ability, reduced the learning burden, cultivated interest, and promoted all-round development.

In 2014, Lu (2014) proposed that students who experienced the teaching and training of target guidance were significantly better than the control class in terms of learning interest, habits, ability, experimental operation skills, and subject learning quality.

Use Target Guidance to Cultivate Student Autonomous Research

In 2009, Huang (2009) pointed out that the "Target guidance" teaching model was proposed to provide information, means, time and space guarantee for students to achieve their learning goals. Promote students to develop good study habits, innovation and inquiry ability, and enhance students' learning ability. The guiding ideology of this model is "teach to learn, learn to cooperate, and actively develop".

In 2010, Wang & Wang (2010) put forward the "Target guidance" teaching model based on "Target guidance-knowledge construction-application improvement", which stimulates students' curiosity, encourages students to learn independently, and also enables students to practice And the comprehensive development of innovative thinking.

In 2010, Zhu (2010) put forward "Target guidance" which requires teachers to use teaching goals as clues in the teaching process, conceal the teaching content in each goal, and guide students to ask questions independently.

In 2013, Song (2013) proposed the three-stage nine-ring teaching method. The three-stage nine-ring teaching method is divided into three stages: presentation, implementation, and detection. By entrusting classroom rights to students, students will be more motivated to learn, and they will be more confident to actively participate in learning.

In summary, we can find that China has a long history of research on the use of Target guidance in classroom teaching based on teaching protocol. At the same time, the above research also proves that Target guidance has a positive effect on improving students' learning interest, habits and abilities.

Shortcomings of Existing Research

From existing studies, it is found that there are relatively more studies on "target guidance" in China, and many methods for constructing "target guidance" in classrooms

have been proposed, but most of them focused on the implementation details and operating methods. Therefore, it has not been formed into a system (Lin, 2015). This paper takes the determination and use strategies of learning goals as the entry points, and studies the teaching protocol-based target-guided teaching model, hoping to provide reference for education practitioners, so that they can more accurately understand target guidance, so as to achieve effective application of the target guidance model that based on the teaching protocol.

Definition of Related Concepts

The Definition of Classroom Guidance Based on Teaching Protocol

There are many statements about the classroom, and Wang Jian's statement is the most comprehensive (Han, 2009). He believes that the meaning of the classroom includes three levels, and a progressive relationship. The first one is to understand the classroom as a classroom, which refers to the main place where school teaching activities occur; traditional teaching theory uses it as a teaching environment to study. The second is to understand the classroom as the classroom teaching activity of the school. The third is to understand the classroom as a synthesis of curriculum and teaching activities, including classroom implementation, curriculum resource development, teaching activities, teacher-student relationship, teaching environment and other educational elements and their relationships (Wang, 2003).

"Guiding learning" is derived from "teaching". To a certain extent, "guidance" focuses on demonstration, enlightenment, training, and guidance. It requires teachers to learn one step first, learn more, and promote students' thinking through their own thinking. Teachers can become organizers, maker and collaborator and guide the teacher-student activities. Teachers respect the individual differences and initiative of students, put students from the position of "plasticized" to the position of "self-molding", and continuously derives the internal drive of students, and "learning" lies in observation, imitation and application and creation (Han, 2009).

Therefore, we define classroom guidance based on the teaching protocol as: the teacher uses the teaching protocol as the carrier, and the students are formed under the three aspects of teacher guidance including prior-class introduction, in-class guidance, and after-class help. To form a teaching method that takes students as the main body, goal-oriented, problem-centered, combines cooperative inquiry and teacher teaching, and uses teaching evaluation as a means to promote the overall development of students.

The difference from other teaching methods is that this teaching model is carried out in strict accordance with the procedures stipulated by the teaching protocol, students learn according to the teaching protocol, and teachers teach according to the teaching protocol. Teaching by the protocol is the foundation of this teaching method (Xia. 2017).

Definition of Teaching Goals

Teaching goals play an essential role in the teaching process. "Teaching goal is the starting point and destination of teaching activities. In the teaching process, it restricts the design of teaching strategy and evaluation, and plays the role of outline guide and list" (Wang & Zhong, 2010).

In 1934, Taylor of Ohio State University put forward the concept of "teaching goals" for the first time, but did not elaborate on it (Zhao, 2014). After the 1960s, with the development of program teaching, teaching goals have also received extensive attention. Many foreign researchers have successively defined teaching goals from different perspectives (Liu, 2013).

The American scholar Clark's point of view is: teaching goals are things that cannot be achieved at present, they are things that are striving for, progress forward, and will be produced (Clark, 1985).

Mager (2007) suggested that the teaching goal should have three components: a description of the behavior required by the learner; a statement of the important conditions to demonstrate the behavior; and a standard for evaluating whether the goal is achieved.

Wang (2004) believed that teaching goals are the stipulations or assumptions of the standards and tasks of the expected results of teaching activities. The effect of teaching activities is mainly reflected in the changes in the physical and mental development of students, and the teaching goal is to prepare the expected changes in students through certain teaching activities.

In the "Contemporary Pedagogy" edited by Yuan Zhenguo, it is mentioned that the goal of teaching is the requirements or the result of changes that educators hope to meet when educators complete a certain stage of work in the process of education and teaching (Yuan, 2004).

Zhong (2008) believes that teaching goals are the learning results and standards expected to be achieved by teachers and students in the teaching process.

Xie Limin suggested that the teaching goals can be understood from the following aspects in "The Design, Application and Guidance of Teaching": First, the teaching goal is essentially the learning goal, which must be achieved by the learner; Second, the teaching goal is mainly by the teacher And the learners; Third, the teaching goal is an important central link in the transition from educational ideals, training goals, and curriculum goals to realistic educational practice and results; Fourth, the teaching goals should be based on educational ideals and training, and meanwhile there are often changes such as curriculum objectives, such as reification, supplementation, expansion, and enrichment (Xie, 2007).

Through the interpretation of the above definitions, we believe that the teaching goal is: after in-depth interpretation of textbooks and related documents, teachers hope that students should achieve or the desired goals in a certain learning stage (such as a lesson or a unit) during which the knowledge, skills, and emotional to be mastered.

Definition of Target Guidance

Different from the teaching goal, the learning goal is to describe the results and requirements of course learning from the perspective of students. It is to show the content of the course from the perspective of the students and help students understand the course objectives. Although they are all goals, there is a big difference between learning goals and teaching goals in terms of the design intent, function, and educational values of the goals (Yu & Guo, 2019).

On this basis, target guidance based on teaching protocol is derived, and Chinese scholars define it in various ways. Jiang (2011) believes that target guidance is to implement classroom teaching goals as the basic guidance of classroom teaching activities, to construct activities as the basic form of teacher-student interaction, and to meet the standards in the classroom as the basic means to test the teaching effect, and to optimize the structure of classroom teaching as a whole. Adhere to the teaching principles of scientific goals, learning autonomy, and compliance with standards, and focus on cultivating students' autonomous learning ability to achieve the individual development and harmonious development of students' lives.

Wang (2016) believes that target guidance refers to the teaching model of introducing students into the learning field through previewing; integrating students into the classroom through cooperative inquiry and group activities; and mastering the learning situation of students through tests.

Lin (2015) pointed out that the "target-guided teaching model" is based on teaching protocol as the medium, teacher regulation as the means, method guidance as the focus, three-dimensional teaching goal as the basic orientation, activity construction as the basic form, and the in-class test as the standard for measuring the teaching effect. The basic method of teaching effect is to optimize the structure of classroom teaching as a whole, and adopt teaching strategies that are targeted, autonomous and open.

Based on the above, we consider that target guidance is the teacher, who fully considers the student's learning situation before class, conducts in-depth research on the teaching content and sets goals; in class, the teacher guides the students to cooperate and explore independently to achieve the goals; after class, consolidate exercises and tests to check the completion degree of the teaching goal.

Strategies for Determining Learning Goals

Basis for Determining Learning Goals

Theoretical Basis

The theoretical basis for determining learning goals mainly includes mastery learning theory and constructivist theory, which will be explained separately from the two aspects below.

Mastery Learning Theory

The so-called "mastery learning" is to provide students with individualized help and extra learning time based on group teaching, supplemented by frequent and timely feedback under the guidance of the learning philosophy of "most students can master", so that most students can master the content stipulated by the teaching objectives (Zhuang, 2017).

Bloom pointed out in the mastery of learning theory that as long as the various learning conditions required for learning are available, almost all students can master the course content that they should master. The strength of learning ability determines the length of time they need to learn the same knowledge, i.e., the learners with strong learning ability can master the learning content in a short time, while those with poor learning ability need more time (Feng, 2007).

Under the mastery of learning theory, teachers must first clarify what students need to master, that is, when fully understanding the students, put forward a clear learning goal, and then focus on the set learning goals for teaching and testing. This theory provides a solid theoretical basis for the generation of target guidance.

Constructivist Theory

The cognitive psychologist Piaget, the proponent of the constructivism theory, believes that children construct knowledge step by step in the interaction with the external world, thereby enabling themselves to develop. He insisted that children's cognitive development is developed under the interaction of individual internal factors and external factors (Zhang, 2003). From the perspective of constructivism, the world exists objectively, but the understanding of the world is determined by the individual subjectively; learning is not simply a process by which teachers transfer knowledge to students, but a process by which students construct knowledge; students should not become passive receivers of information, but on the contrary, it should be a process of meaningful learning that is actively constructed under certain external conditions and with the help of others using necessary learning materials (Lin, 2015).

The process of knowledge construction stems from cognitive conflict (Lu, 2007). The "Target-guided teaching model" is based on the theoretical basis of constructivism, following its principles, advocating cooperation and communication, through the joint research, sharing, inspiring and accelerating the students to construct knowledge (Robert & EIena, 2002).

Realistic Basis

The realistic basis for determining learning goals is mainly based on national policies and children's own development, and is divided into the following two points:

The Requirements of the New Curriculum Standards

Curriculum standards are the main basis for furthering the teaching reform. It requires teachers to reasonably grasp the teaching capacity and difficulty requirements, adjust teaching concepts and behaviors, stimulate students' initiative and enthusiasm in learn-

ing, control the burden of homework, and continuously improve the quality and level of teaching; it is necessary to determine scientific evaluation standards based on curriculum standards and achieve the goal of emphasizing knowledge and skills, processes and methods, emotions and values (Ministry of Education of the People's Republic of China, 2011).

The Requirements of Children's Physical and Mental Development

The law of children's psychological development refers to the characteristics of children's psychological activities and the laws of psychological development during the growth stage of children. It is embodied in the following aspects (Luo, 2016).

- The sequence of psychological development. The development of individual psychology is sequential and develops in a certain direction. Psychological development follows the development sequence from low level to high level, from simple to complex, and from concrete to abstract. This process is irreversible, that is, it cannot develop in the opposite direction, and its overall trend is upward.
- The stages and continuity of psychological development. The development of individual psychology is staged and continuous. Only by solving the development crisis of each stage, the individual can develop smoothly to the next stage; otherwise the individual will encounter difficulties in adapting, which will affect the development of all subsequent stages. Therefore, education should be based on the stage characteristics of children's psychological development, and take a reasonable way to complete the tasks of each stage, so that it can enter the next stage smoothly.
- Differences in psychological development. The overall trend of children's psychological development is consistent. However, because individuals are subject to the combined effects of objective and subjective factors such as genetics and environment, each child has its own characteristics in terms of development speed, level of development, and development advantages, and there are differences in development between individuals.

  Therefore, in education, we must fully consider the sequence, stage, continuity, and difference of children's cognitive development, and implement education in accordance with the characteristics of different students at a certain stage of development step by step.

Determine the Requirements for Learning Goals

1. The dominant body of learning goals is students.

The subjectivity of student learning is the overall inherent characteristics of independence, consciousness, initiative, creativity, and development that students have as the subject of learning activities. It is the internal basis and fundamental symbol for the establishment of the student body. Only when the student's dominant position is estab-

lished, can we find the correct position in classroom teaching, and cultivate high-quality talents with the spirit of the subject and comprehensive development for the society (Ma, 1999);

Target guidance based on teaching protocol should clarify the orientation of teachers and students in the classroom. The task of the teacher is to guide students purposefully according to the teaching goals, and the task of the students is to understand and master knowledge under the guidance of the teacher (Xia, 2020). The established learning goals can be achieved only through the "guidance" of teachers and the "learning" of students; strictly speaking, students have actually completed their own learning in the process of being "guided" by teachers (Zhao, 2016).

2. The learning goals should be operable, measurable, and evaluable, and their expression should be expressed using accurate verbs that students can achieve (Li, 2019).

The student is the master of learning, and the main body of the description of the learning goal is also the student; the focus is on describing the result of the student's learning, specifying the result of the student's learning behavior, and the learning goal is the generalization of the student's learning behavior to meet the requirements. In teaching, not only students are required to realize, but also teachers are required to realize. If the teaching goals are not specific, then the measurability of the teaching goals will be lost. At the same time, it is necessary to learn to use explicit verbs to describe the learning goals. If the words "understand, comprehend, experience" and other words are used to describe the teaching goals, the quantity is not clear and specific, and the results are not easy to measure, which will reduce the measurability of the learning goals. On the contrary, when describing the teaching goal, using specific explicit verbs such as "mastery, recognize, talk", the results described are very measurable. In this way, it is easy for teachers to measure, and it is clear at a glance whether students meet the standard (Pan, 2020).

The learning goals should be hierarchical. The so-called goal stratification means that teachers use the teaching syllabus as the basis, according to the structure of the teaching materials and the actual learning possibilities of students at all levels to reasonably formulate teaching goals suitable for students at all levels. Hierarchical goals play a role in positioning, guiding and stimulating the learning of students at all levels in teaching activities, and set a stage for students' progress. Establishing the "layered goal" is the basis for changing the "one size fits all" and implementing the "target-layering-guidance" to teach students in accordance with their aptitude. The stratification goal should pay attention to the suitability and challenge of students at all levels. The formulation of hierarchical goals can only be "challenging" for students at all levels by paying attention to the "recent development zone" of students, and can effectively promote them to "jump to get the fruit", so as to help students at all levels to lay the foundation for transforming learning into realistic goals (Gu, 2003).

3. The number of learning objectives is controllable, not too many.

The learning content of each chapter has its key points and difficulties. In the teaching process, teachers should accurately grasp this key point and put forward learning goals in a targeted manner. Therefore, the number of learning goals should not be too many, but they must be targeted, so as to improve the effectiveness of learning (Ben, 2019).

Examples of Setting Learning Objectives

Based on the four requirements for the above learning goal setting, the following is an example of the learning goal setting in the Welcome to the unit section of Unit1-Dream Homes in the second volume of the seventh grade "Phoenix Digital Guide (English)" published by Yilin Publishing House. The core of this lesson is to describe the ideal residence and different living environments. The teaching focuses on the living environment, capital names, and landmark buildings of different countries.

Based on this, teachers can set the learning goals of the "Welcome to the unit" section as follows on the basis of fully studying the requirements of the textbook and syllabus, grasping the important and difficult points of the teaching content, and understanding the students' cognitive level:

- Master vocabulary: dream, palace, capital, town, country, next to, etc.;
- Identify the landmark buildings or landscapes of different countries, and master the English expressions of different countries and their capitals;
- Understand the representative things of some developed countries, and be able to talk about their ideal residence and different living environments.

The setting of learning goals in this lesson, on the premise that students' learning goals are specifically arranged, also reflects the measurability, hierarchy and quantity controllability of learning goals.

Strategies for Using Learning Goals

Guide in Class, Students Achieve Learning Goals

After the learning goals are set, the teacher will assign pre-study requirements and distribute the teaching protocol to the students before class, so that the students can use the self-study time to complete. Teaching protocol plays a crucial role in guiding students to learn independently. Teaching materials are the source, and teaching protocol is the guide. According to the problems specifically designed by the teaching protocol, students will independently think, analyze, and implement item by item in reading the textbook, as well as basic exercises for testing. In the preparatory process, students should be encouraged to ask questions, and students should be able to discover, propose and solve them (Lu, 2014). In the target guidance based on the teaching protocol, after the teacher sets the target, the next step is to guide the students and provide timely help to the students, so that the students can form their own knowledge system, that is, knowledge construction through continuous thinking and exploration.

Constructivist theory emphasizes student-centered, through determining students' learning needs, setting their own goals, monitoring their own progress and obtaining learning outcomes (Neo et al., 2007). Wallace (1992) proposed that humans are not passive recipients of information. Learners can acquire knowledge, connect it with previously absorbed knowledge, and make it their own knowledge by constructing their own interpretation.

Knowledge construction is the center of the entire classroom. The role of teachers in this process is not to impart knowledge, but to guide learning (Wang, 2002). Give the initiative of the classroom to students, and guide students to explore independently, discuss in groups, and focus on exchanges and displays. Teachers patrol the classroom, provide guidance on learning methods in time, adjust teaching strategies, and provide guidance to students with learning difficulties. Teachers should present new knowledge in a hierarchical manner, stimulate thinking, improve students' autonomous learning in the classroom, improve their self-learning ability, and promote all-round development (Lin, 2015).

For example, in the teaching practice of "The Structure of Atom" in the second volume of the ninth grade of "Digital Guidance Draft (Chemistry)" of the People's Education Edition, teachers set learning goals and arranged preparatory exercises before class to give students a preliminary understanding of the learning content . Let students know that the learning content includes physical changes, chemical changes, and molecular and atomic changes. On this basis, teachers can set the following questions for classroom target guidance,

    i.   When a substance made of molecules undergoes physical and chemical changes, how do molecules and atoms change?

    ii.   Explain from the point of view of molecules and atoms:

- Water becomes steam when heated;
- Water is decomposed into hydrogen and oxygen by electricity;
- Mercury oxide decomposes into mercury and oxygen when heated.

    iii.   How to distinguish molecules from atoms?

Let students discuss and summarize in groups, and finally conclude their own answers. In this process, on the one hand, the teacher has completed the role transition from teaching to guiding; on the other hand, students have achieved their learning goals while completing their own knowledge structure.

With the continuous reform of education, the cultivation of students' core literacy has become a mainstream trend. This also requires teachers to change the traditional teaching methods, return the classroom to students, and cultivate students' independent learning ability, independent thinking awareness and teamwork awareness by setting up various classroom activities (cooperative or independent inquiry, etc.). Therefore, it is particularly important for teachers to guide students to establish their own knowledge system and improve it in teaching.

Application Enhancement, Students Consolidate Their Learning Goals

The achievement of learning goals requires timely feedback through means to adjust and consolidate. Educational evaluation is the actual degree and situation of testing whether the activity has achieved the expected educational purpose (Bai, 2014), and it is also an important part of curriculum and teaching practice. It has an important role in diagnosing, positioning, monitoring, and guiding for teaching practice (Yu & Wu, 2015). Therefore, timely detection in the classroom is a key part of classroom target guidance. Determine the testing method and test question type according to the students' learning situation and the key and difficult points of teaching. The questions can be mandatory and optional questions, and the amount of questions is moderate, and students must complete them independently as required. In the process of testing, students actively discover problems and provide timely feedback. Teachers should give timely praise to students who excel in the test to fully stimulate students' enthusiasm (Lu, 2014). The test results can be communicated and exchanged in groups, which can not only test the teaching effect of teachers, but also adjust the teaching tasks and teaching goals of the class (Zhu, 1999).

For example, in the teaching of the second volume of "10.4 Fraction Multiplication and Division (2)" of Jiangsu Education Edition "Phoenix Digital Guide (Mathematics)", the teacher will determine the goal before class and achieve the goal in class. The following methods can be adopted to further consolidate the achievement of students' learning goals.

i. Questions and answers. Through the form of question and answer to detect students' awareness of learning goals. The multiplication and division of fractions mainly involves concepts such as the order of operations, so teachers can set the following questions:

- What is the order of the mixed operations of addition, subtraction, multiplication, and division of fractions?
- What do you think should be paid attention to when performing fractional mixed operations?

ii. Practice. Test students' mastery of the content by letting students complete exercises. The form of practice questions can be calculations, or simplified calculations, and even allow students to choose their favorite values and plug them into fractions for calculations to check their actual mastery and application ability.

iii. Communication. Let students sort out their knowledge through free conversation. Topics can be learned from this lesson? Whether the knowledge learned in this lesson is in the same phase as the previous knowledge is developed, allowing students to construct their own knowledge system in the process of conversation and achieve the integration of new and old knowledge.

Therefore, students can learn about their own deficiencies through testing, and teachers can also provide targeted guidance to students based on their feedback from testing, which not only verifies the completion of learning objectives, but also helps students consolidate their knowledge.

Teachers Discuss and Understand Students' Accomplishment of Learning Goals

The after-class discussion is a process by which the case research team examines the pros and cons of classroom teaching from different angles based on observations, and then reveals the possible directions for improvement in teaching. The level of after-class discussion directly affects the quality of subsequent teaching improvement. The content of the after-class discussion should focus on the facts that students learn in the classroom, and avoid focusing on the success and failure of the class or the teaching style of the teacher. Only by taking "student's learning" as the main theme of the discussion, and by analyzing and researching students' learning to improve classroom teaching and form teaching practice, can we create a "learning-centered" classroom and make every student's difference be paid attention to. Only in this way can the improvement of teachers' learning and behavior be realized through students' learning (An & Yan, 2010). In the continuous discussion, teachers can more clearly understand whether the students' learning goals are achieved, and for the unachieved learning goals, teachers can also analyze the reasons and put forward solutions.

Conclusions

Integration of teaching protocol, as the localized teaching model of basic education in China, emphasizes the balance between student autonomy and teacher guidance. The goal is the basic orientation of teaching activities. Through the formulation and implementation of learning goals and teaching goals, the basic form of teacher-student interaction is constructed. The basic method is to use in-class training to test the accomplishment of learning goals, optimize the structure of classroom teaching as a whole, cultivate students' independent learning ability, and achieve the personality and harmonious development of students' lives.

This research is based on the target guidance in classroom teaching of teaching protocol. In the teaching process, reasonable teaching goals can guide students to learn independently and improve the overall level of student participation in the classroom. Sufficient preparation is a prerequisite for the effective realization of target guidance classes. Of course, teachers also need to detect the completion of learning objectives through timely teaching evaluation and feedback, so that students can follow up in time.

Therefore, the target guidance in the integration of teaching protocol is not a fixed model, but should be flexibly changed according to the teaching content. For example, the content of the new class and the review class are different, and the target guidance process will definitely be different.

At the same time, whether the target guidance model based on teaching protocol can be effective is closely related to teachers. From the formulation, consolidation, and completion of the target, teachers need to give full play to their leading role, and to reasonably guide students to develop self-directed learning around the target with full consideration of students' learning conditions. In addition, teachers constantly update their own professional knowledge reserves and update educational and teaching concepts, so that the target guidance model can play a better role.

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