

## Article

# Unpacking the Policies, Historical Stages, and Themes of the Education Equality for Educational Sustainable Development: Evidence from China

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**Abstract:** The educational equality policies vary in terms of different spatial, cultural, economic, and social dynamics. Despite a great deal of discussion on how to implement equality policies into the Chinese education system, very little research has explored how the Chinese education equality policy responds to social inequalities. To address it, applying Rawls' theory of justice, this study investigates the macro-level landscape of education equality in China through Dynamic Topic Models to examine their evolution of (unobserved) social equalities imbedded in different political documents over time. The findings present the key policies, the key historical period, the core themes of China's equality education development, and its responses to social inequalities. In addition, the discussion and conclusion have been offered in the last section.

**Keywords:** Chinese education equality policy; social inequalities; China's education system; education policy development



**Citation:** Li, J.; Xue, E. Unpacking the Policies, Historical Stages, and Themes of the Education Equality for Educational Sustainable Development: Evidence from China. *Sustainability* **2022**, *14*, 10522. <https://doi.org/10.3390/su141710522>

Academic Editor: Laura Daniuseviciute-Brazaite

Received: 11 July 2022

Accepted: 17 August 2022

Published: 24 August 2022

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## 1. Introduction

This paper explores the education equality development aims for promoting educational sustainability locally and globally. The Sustainable Development Goal on Education (SDG4) aims to ensure equitable and quality education and promote lifelong learning for all. SDG4 includes 7 specific targets, 11 global indicators, and 32 thematic indicators, covering education at all levels and types, and promoting the lifelong development of all people [1]. The development of fair and quality education is the core goal of Chinese education reform, but also the core of the sustainable development of Chinese education. Promoting the sustainable development of education to achieve “high quality and fairness” has a long way to go. A good education ecology is an education system involving sustainable development, and sustainable development is thus at the core goal of the construction of education ecology. It is of great theoretical significance to construct the education ecology of sustainable development in China, which can provide value guidance for the realization of the sustainable development of education [2]. The goal and influences of the educational equality policy on social development and human progress have been historically changed through time. According to the previous studies [3], Examining the Chinese education equality policy and its response to social inequalities mainly involves four aspects.

### 1.1. The Educational Status Quo of Urban and Rural Areas

Closing the gaps between urban and rural education is beneficial for promoting social equality development in contemporary China. Promoting the integration of urban–rural education serves as one of China's national strategies to balance the urban and rural economic and social development, striving for the prosperity of the whole society. The integration of urban and rural education is to balance urban and rural educational resources, and to break the urban and rural dual economic and social structure to shape a dynamic, balanced, and interactive educational system. In a word, China's educational status quo in rural and urban

areas is identified as the contradiction between the people's growing demand for higher quality education and the unbalanced and insufficient educational development.

### *1.2. The Educational Status Quo of Regional Development*

The biggest challenges for the modernization of education lies in the central and western regional education development in China. Due to natural, historical, economic, social, and other reasons, China's eastern and western education gap is relatively large, and the higher education in the central and western regions is also sluggish or even lagging. Many outstanding talents from colleges and universities in the central and western regions flock to the eastern areas, which results in the shortage of talents in the central and western regions [4]. Specifically, by 2018, the educational outlays in the eastern, central, and western regions of China were CNY 178.214 billion, CNY 87.374 billion, and CNY 69.315 billion, respectively, accounting for 53.21%, 26.09%, and 20.70% of the national educational outlays, respectively. The educational outlays in the eastern regions were 2.04 and 2.57 times of those in the central and western regions [5,6]. (The ministry of education. In 2018, the national compulsory education balanced development the supervision evaluation report [EB/OL]. [28 July 2018] [http://www.moe.gov.cn/fbh/live/2019/50415/sfcl/201903/t20190326\\_375275.html](http://www.moe.gov.cn/fbh/live/2019/50415/sfcl/201903/t20190326_375275.html) (accessed on 26 March 2019)).

### *1.3. The Educational Status Quo of Interscholastic Difference*

The quality of teachers is the fundamental, implicit factor among China's various schools, which affects the overall development of educational equality. There is a phenomenon of "accelerated aging" of new teachers due to the existing "negative" teacher culture and the relatively inaccessible geographical environment [7]. The original development motivation of new teachers has been gradually eroded, and they are satisfied to complete the prescribed teaching tasks step by step, to some extent, and lose the initiative to find and solve problems and the ability to provide innovate teaching methods based on their empirical teaching practice [8]. The unbalanced status quo of inter-school education is mainly reflected in the aspects of school infrastructure construction, school-running characteristics, and school-running norms. For example, for the school infrastructure construction, some schools have outdated buildings and teaching equipment, such as a stadium, library, and canteen. In some boarding schools, the living facilities and accommodation conditions need to be improved.

### *1.4. The Educational Status Quo of Interethnic Difference*

The development of interethnic education is rooted in China's educational progress. There are some pressing problems in the development of interethnic education in current China: the dropout rate of ethnic minority students is relatively high, and their enrollment opportunities need to be improved. Teachers in the ethnic and minority areas are underpaid, thus accounting for low income and few opportunities for promotion and training. Moreover, the funds in ethnic minority areas are insufficient without financial self-sufficiency. The prominent manifestation of the social contradiction in ethnic areas is the unbalanced and inadequate development of ethnic areas. There are extensive studies on education equality in China, which have shown that implementing education equality policies plays a pivotal role in addressing social inequalities at various levels. Compared with previous studies on micro-level perspectives on Chinese education equality, this study applies an innovative approach to explore the macro-level landscape of Chinese education equality policy development trends and characteristics. Thus, this study aims to uncover Chinese education equality policy and its response to social inequalities. This study intends to "open the black box" of Chinese education equality policy with quantitative analyses.

1. What were the key policies of the educational equality policy in China?
2. When was the pivotal historical period of the educational equality policy in China?
3. What were the core themes of the educational equality policy in China?

## 2. Theoretical Framework: Rawls' Theory of Justice

For traditional education in China, in general, the fairness of education shows the characteristics of basic theoretical research followed by practice research, which now attaches equal importance to both excluding practice research. From the perspective of discipline, the characteristics of complex multi-disciplinary and multi-perspective interventional education equity research are more and more obvious, and the research fields and perspectives are constantly deepened and integrated. Further research needs to consider the compatibility between multi-disciplinary theory and rural education issues. Along with the above, Rawls' theory of justice offers an in-depth understanding of educational equality as follows:

Rawls' discussion of social equality is a theoretical foundation for understanding educational equity. The content of the social contract proposed by Rawls requires people to accept specific moral principles and expounds the concept of justice in the form of a contract as the choice of rational people, and also emphasizes the principle that all parties involved can accept the distribution of interests [8]. He believes that fairness is the most basic and important principle in the concept of justice. In general, he believes that education should be fair and just in the distribution of educational resources, and that individual development and education rights should not be infringed. He believed that priority should be given to the first principle of justice, and that equitable opportunity in the second principle took precedence over the principle of difference. He proposed the theoretical construction of maintaining social justice by narrowing the gap between the rich and poor [9]. The first principle, equal treatment for all, is compatible with the principle of universal access to education. The second principle, the different treatment of different people, is matched with the compensatory principle of education. The existing education policies for rural areas pay full attention to the needs of disadvantaged rural areas and the rural population. Policies and resources are tilted toward rural groups to enhance their access to education, protect their rights and interests, and gradually enhance their interests. By favoring the "least beneficiary" group and providing educational subsidies and other social assistance systems to the children of rural families, this group can be guaranteed equal rights to educational development. Through the guarantee of education opportunities and support in the form of fair allocation of education resources in rural areas and the general population, this helps to provide fair education opportunities, improve their ability, help rural families gain development ability, prevent the rural education poverty generation from "inheriting" and "copying" this vicious cycle, hence fundamentally breaking the foundation of "weak" [10]. From the perspective of the active and inclusive policy, students in rural areas should be given the full opportunity and ability to compete fairly and ensure that they enjoy fair education. Educational equality is the goal of education and an important embodiment of social equity and justice. In the process of practical education, a considerable number of rural students who are trapped by their families and regional disadvantages get a fair chance to enter school due to the benefits of the policy. Assistance to rural families is an important guarantee to protect the most disadvantaged people's right to education. The guarantee of fair enrollment is the premise and core of realizing fair education. The central government has increased its investment in rural educational resources, and has actively encouraged the construction of teaching staff, personnel training, and software and hardware development to support rural education. We will strengthen supervision over schools in accordance with the law, ensure fair distribution of educational resources, pay attention to poverty alleviation in rural areas, and provide precise education input and education subsidies to the poor in poor areas [11].

### 3. Methods

#### 3.1. Analysis Tools of China's Education Equality Policy

This study applies quantitative analysis methods to examine China's education equality policy to effectively excavate the potential information and knowledge in the text, recognize the text features from multiple dimensions, and provide objective data support for policy text analysis. It uses Dynamic Topic Models (DTM) to mine the relevant texts for educational equality policies, analyze its thematic characteristics and evolution trend, carry out corresponding discussions, and put forward corresponding suggestions. Compared with the NLTK and JIEB model, one of the most classic topic models is LDA (Latent Dirichlet Allocation). Most other topic models make full use of LDA's design idea, so the following is a brief description of the process of generating a document collection. The advantage of Dynamic Topic Models (DTM) is to apply a state-space model on the natural parameter space of the underlying topic polynomials, as well as the logically and normally distributed natural parameters for modeling document-specific topic proportions. DTMs provide qualitative results that show how dynamic topic models can explore large document collections in new ways, as well as quantitative results that show higher predictive accuracy compared to static topic models [12].

#### 3.2. Analysis Structure of Chinese Education Equality Policy

This study is divided into four parts, including the literature research, the policy information acquisition, the data processing, and the subject word classification. Firstly, we investigate the publications related to the educational equality policies, select both the representative and wide-ranging websites, and investigate the background of the relevant policies in different periods for providing a basis for the division of stages. Secondly, we apply the selenium automation technology of Python language to collect the relevant policy information of websites, and the data cleaning is carried out through filtering procedures and manual inspection to remove irrelevant data. Additionally, the DTM identifies the topics at each stage of data through analyzing the topic evolution. Finally, the results are discussed to make relevant suggestions. The dynamic topic model (DTM) is offered based on the LDA topic model. Firstly, the policy text data are discretely sliced according to a certain time series. It is assumed that the topic distribution and topic content on the time slice evolves over time. To examine the focus of the educational equality policy, the Python design program is used to merge all texts and count word frequency. The calculation process of word frequency weight is based on the TF-IDF algorithm, which combines the text content of context with the constantly updating stop vocabulary, to filter irrelevant and meaningless keywords. Then, the important weight of keywords in the whole text can be calculated. Compared with the general word frequency statistics, the TF-IDF algorithm is accurately used to analyze the importance of keywords with real significance: the larger the word frequency weight, the higher the importance of the word in the document. Educational equality policy texts are diverse. To deeply analyze the policy theme structure, the DTM is used to simplify the classification of data and further explore the connotation of the policy. To avoid the interference of subjective factors on the number of classifications, the perplexity index is used to determine the optimal number of classifications. Perplexity is the reciprocal of the geometric mean of all token likelihood values on the test data set and the Perplexity index. The smaller the puzzlement degree is, the better the result. Using DTM analysis, we can get the top ten keywords of each topic. Based on the analysis of the theme of the whole text, we try to investigate the temporal trends and characteristics of policy text topic strength by using the DTM [13].

#### 3.3. Data Sources, Data Extraction and Data Analysis

Historical political documents were selected in this study as data resources. The political texts from the National People's Congress Standing Committee, General Office of the State Council, and various ministries and commissions are commonly regarded as primary sources for historical studies. However, the availability and accessibility of confidential

documents is very limited. The policy text analysis studies, documenting the findings of education equality remains, are commonly event-specific and based on the detailed explanations, thus covering the full duration of China's equality education policy development from 1949 to 2019. Furthermore, referring to historical political documents, integrating the knowledge from these first-hand studies, and organizing them in a systematic way, was the method chosen for this study.

All the three levels, including National People's Congress Standing Committee, General Office of the State Council, and various ministries and commissions were selected (See Table 1). The three levels cover the fullest extent of China's equality education policies in contemporary China from different perspectives. The political documents of National People's Congress Standing Committee contain the national legislative act of equality education; the political text from General Office of the State Council focused on various types of strategies and outlines; the political documents of various ministries and commission regulations and principles took a step further to analyze the regulations and principles, which is considered the main resource of educational policies in this study. There are other comprehensive historical documents, but these documents have mostly used one or more of the three selected political documents as sources of references (for example, The Compulsory Education Law); therefore, the main contents of these documents relevant to this study are covered by the selected three historical documents [14]. Using all three political documents together not only ensures a comprehensive coverage of equality education policies and its societal contexts, but it also provides cross-validation of equality documented under different perspectives. In addition, these political documents were compiled by the long-term efforts of large, nationwide teams composed of highly recognized educators, sociologists, and politicians in China and were published by Chinese People Publishing Houses. These political documents are often referenced by the Chinese Education Yearbooks, and by academic researchers. Content analysis was undertaken to extract relevant information from the selected political documents. Content analysis has been widely used to systematically analyze unstructured texts for discovery (See Table 1).

**Table 1.** Data resources of political documents of China's equality education policy.

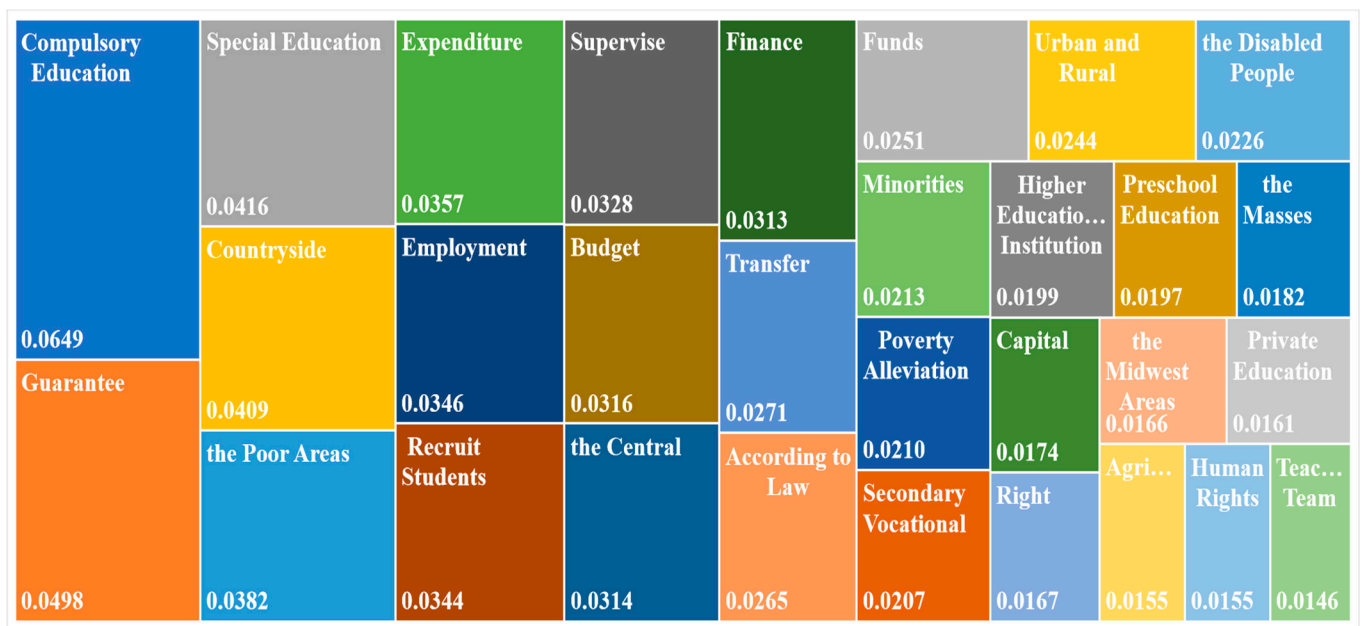
Data Sources	Focuses
National People's Congress Standing Committee	Focused on the national legislative act of equality education
General Office of the State Council	Focused on various types of strategies and outlines.
Various ministries and Commissions	Focused on the regulations and principles
Other historical comprehensive documents	Focused on the relevant information from the selected political documents

## 4. Results

### 4.1. The Overall Description of China's Education Equality Policy: The High Frequency Words Analysis

#### 4.1.1. The Process of High Frequency Word Analysis

The methods of the high frequency words include dynamic word distribution, LDA theme model, DTM, and emergent words to analyze the text of domestic education equality policies. The TF-IDF (Term Frequency-Inverse Document Frequency) algorithm is applied to filter and analyze the raw data. TF-IDF is a weighting technique, which has the advantage of filtering out words common in the text but without practical meaning (See Figure 1).



**Figure 1.** The top 60 high-frequency words.

#### 4.1.2. The Key Role of Compulsory Education

The word frequency weight of “Compulsory Education” is the highest, indicating that compulsory education occupies a very important position in the relevant policy documents regarding education equality. In fact, China’s compulsory education plays an inevitable role in formatting and implementing the education equality policies. The Chinese central government attaches great importance to the integration of urban and rural compulsory education. The Report of the 19th National Congress pointed out that, the priority should be given to compulsory education: “we need to promote the integration of urban and rural compulsory education and attach great importance to rural compulsory education.” It focuses on developing fair and quality education to promote the integrated development of compulsory education in urban and rural areas. In 2016, Several Opinions of the State Council on Coordinating and Promoting the Integrated Reform and Development of Urban and Rural Compulsory Education was released to deepen comprehensive reform and promote the education administration through improving the quality of education, and by coordinating the integrated reform and development of urban and rural compulsory education [15,16]. In 2017, the State Council issued a notice on the 13th Five-Year Plan for the Development of National Education, which pointed out that the reform and development of integrated compulsory education in urban and rural areas should be promoted in a coordinated way, to realize the full coverage of basic public education services for permanent residents [17].

#### 4.1.3. The Important Role of Financial Support

In the Top 20 frequency words, words related to “Finance” appeared frequently, such as “expenditure”, “hundred million yuan”, “budget”, “expenditure” and “payment”, which indicated that maintaining education equality requires considerable financial support and financial input. Specifically, in the mid-1980s, China established the compulsory education system of “grade-level school running and management”. In 2003, the Decision on Further Strengthening Rural Education was released to establish the financial system of compulsory education for rural students from poor families. Since 2004, the Chinese central government is responsible for providing free textbooks and the local governments are responsible for exempt miscellaneous expenses and allowances to the cost of living. Since 2005, according to the Circular on Deepening the Reform of the Mechanism for Guaranteeing Funding for Rural Compulsory Education, the central and provincial governments have become

the main body of rural compulsory education investment, implementing the “provincial pooling of funds, with the county as the main management”. The Compulsory Education Law of 2006, based on the principle of “giving priority to counties”, established a new financial investment system of sharing responsibilities between the central government and local governments at all levels, and emphasized the responsibility of governments to develop compulsory education [18]. In 2009, the central government introduced the benchmark quota (the difference between the basic standard for public funds per student set by all provinces (districts and municipalities) and the benchmark quota shall be 50% for the current year) of public funds for primary and secondary schools in rural compulsory education. At the end of 2015, the Notification of the State Council to Further Improve the Urban and Rural Compulsory Education Funds Safeguard Mechanism put forward a unified urban and rural compulsory education funds safeguard mechanism, which cancels the rural and urban public funds quota standards and increases public funds for compulsory education run by the local schools. In 2016, the Guiding Opinions of the State Council on Promoting the Reform of the Division of Fiscal Authority and Expenditure Responsibility between the Central and Local Governments guided the pilot reform of the division of fiscal authority between central and local governments [19]. In 2017, the Measures for the Management of Awards and Subsidies for the Mechanism for Ensuring Basic Financial Resources for County-level Governments under the Central Government adopted awards and subsidies to ensure basic financial resources for county-level governments. In 2018, the Notice of the General Office of the State Council on the Assurance of the Reform Plan on the Division of Central and Local Financial Powers and Expenditure Responsibilities in the basic public services further clarifies the financial reform path. For local pilot projects, the central government approves incentive subsidy funds based on local financial input, organization and management, implementation effect, and other factors of the previous year. Since 2000, the Chinese compulsory education financial system has been gradually constructed to help bridge the gap between rural and urban areas [20,21].

#### *4.2. The Temporal Development of China's Education Equality Policy: The Dynamic Lexical Distribution Analysis*

##### The Process of Dynamic Lexical Distribution Analysis

Dynamic lexical distribution is used to represent the distribution of specific words in the data. The number of words accumulated from the beginning of the text, and the occurrence times of specific words are also accumulated. The distribution of the position of specific words in the total number of words is represented by a discrete graph [22]. A line represents the distribution state of a word in the whole text. Because the policy text has carried on the arrangement in time order, the distribution of the word not only represents the high frequency of the word towards the direction of the increase in the number of distributions according to the text word, but it also represents the high frequency words in the positive direction on the dynamic distribution of time arrangement, so you can show the evolution trend of the selection of vocabulary over time. There were more than 600,000 policy text words selected in total and we selected the starting point to be the year of 1949 time node, the finish point was selected as the year of 2018 since it has no related policy text published in 2000, and 2018 is the last year we collect the data of the policy text. The unit of time, roughly five years as a unit, is selected due to the period of 2010–2015, in which the final analysis results were more accurate to observe, and we take the 2012 stage as a midpoint. Policy texts from 2001 to 2005 were also relatively short. After 2005, the length of relevant policies on education equality has increased significantly, especially during the five-year period of 2010 to 2015, which witnessed an explosive growth [23]. During this period, the length of relevant policies on China's education equality has accounted for almost half of all the texts in the past seven decades since the founding of the People's Republic of China. Among them, the more rural interactions with other nodes, including rural problems to be solved, and objects, such as rural and engineering, compulsory education, employment, association of teachers and students, etc., between

the rural and the relationship between the nodes is very close, the base of China's rural population is larger, these problems are one of major reform and improve the main direction. The guaranteed node is more about institutional, educational, social, and developmental connections, and its core is to guarantee the improvement of the influence and support of the multilateral environment in the implementation of educational equality. With special teaching, compulsory education node superposition is more, showing that compulsory education and special education belong to the same branch of education, and is designed to provide children with the quality of teaching, the difference is compulsory education is a sound body, mainly for students without defect, and to guarantee the right of everyone to receive education, can enter the special education study (See Figure 1).

#### 4.3. The Periodical Development of China's Education Equality Policy

We found that after 2005, the length of relevant policies on education equality has increased significantly, especially in the five-year period of 2010 to 2015), which witnessed an explosive growth. In fact, during the period of 2010 and 2015, the Chinese central government released lots of comprehensive education equality policy documents in response to these social inequalities. At the end of 2013, the Ministry of Education, the National Development and Reform Commission, and the Ministry of Finance issued the Opinions on Comprehensively Improving the Basic Conditions of Poor Schools, which provides compulsory education in poor areas to comprehensively improve the basic conditions of poorly performing schools, deepen the standardization of compulsory education schools, and raise the level of development of compulsory education. In 2014, the General Office of the Ministry of Education, the General Office of the National Development and Reform Commission, and the General Office of the Ministry of Finance issued the Circular on the Bottom-line Requirements for Comprehensively Improving the Basic Conditions of Poor schools Providing Compulsory Education in Poor Areas [24,25].

#### 4.4. The Themes Development of China's Education Equality Policy: The Theme Distribution Analysis

##### 4.4.1. The Theme Development of China's Education Equality Policy

Theme 1 reflects the protection mechanism, such as protection, human rights, compulsory education, rights, and other key words to protect the rights of vulnerable groups to different degrees; theme 2 reflects vulnerable groups, such as rural areas, poor areas, poverty alleviation, funds, and other key words, mainly targeting people or areas in need of help; theme 3 reflects the fiscal revenue, such as CNY 100 million, central government, expenditure, budget, transfer, and other key words. The implementation of educational equality inevitably needs fiscal input. Furthermore, theme 3 reflects multi-level education, such as colleges and universities, technical schools, normal schools, etc., aiming to balance the education equality of different levels and objects. Theme 5 reflects regional policies, such as rural areas, urban and rural areas, employment, service industry, and central and western regions [26].

##### 4.4.2. The Top Theme of Guaranteed Mechanism

Based on the results of the theme distribution, the top theme is the "guarantee mechanism". The guaranteed mechanism of the Chinese education equality policy includes some projects, such as the Teacher Quality Improvement Project, Special Workplace Plan, Master Program of Teachers, Public-Funded Education for Normal University Students, and the Rural Teacher Support Program. Specifically, the Teacher Quality Improvement Project has been developed by local governments to reach the national urban and rural grading standards. To further improve the quality of rural teachers, the state has formulated and implemented a variety of targeted policies. In 2006, the Ministry of Education, Ministry of Finance, and Ministry of Human Resources jointly issued the Implementation Plan of Rural Compulsory Education Teacher through recruiting college graduates to mid-west counties in rural schools, guiding and encouraging college graduates to work in the rural



education. It aims to solve problems such as the insufficient and unreasonable structure of rural teachers and improve the overall quality of the contingent of rural teachers, hence promoting the balanced development of compulsory education. In 2012, the State Council issued the Opinions on Strengthening the Construction of Teachers, which pointed out that implementing and improving the Special Workplace Plan for teachers in rural compulsory education should focus on supplementing the new mechanism for rural compulsory education teachers. It has improved the educational background, discipline, and age structure of rural teachers and has greatly alleviated the shortage of rural teachers [27]. It has improved the level of teachers in rural areas, improved the basic education situation in rural areas, especially in poor areas, and narrowed the educational gap between urban and rural areas. By the end of 2018, the Special Workplace Plan for rural teachers had been launched, with 280,000 rural teachers in more than 30,000 rural schools (village primary schools and teaching centers) in more than 1000 counties across 22 provinces (districts) in mid-west China.

The implementation of the Master Program of Teacher is an important measure to strengthen the cultivation of rural teachers. In 2004, the Ministry of Education launched the Master Program of Teachers to attract outstanding college graduates to teach in rural schools in poor areas through recommending them to study for master's degrees without examination. The program focused on the selection of several outstanding university undergraduates to be admitted to the Master Program of Teachers without examination, and signed a contract with the provincial, county, and other local government education administrative departments to formally hire teachers within the organization, county, town, or the following secondary schools to teach. There are roughly three stages, respectively. Firstly, the pilot stage (2004–2005), which was mainly for the implementation of the national poverty alleviation work, focused primarily on county-level high school; second, the promotion stage (2006–2009), in which the service point is the rural schools in “key counties of national poverty alleviation and development work” and “key counties of provincial poverty alleviation and development work”; and third, the improvement stage (from 2010 to now), in which the service point is all of the rural schools at the county, town, and below, and it is implemented in combination with the “rural compulsory education school teachers' special post plan”. Every year, the master's program trains about 1000 high-quality primary and secondary school teachers for rural schools, which alleviates the shortage of rural teachers to varying degrees and improves the overall quality of rural teachers. In 2007, the Measures for the Implementation of Free Education for Normal University Students Under the Direct Administration of the Ministry of Education (trial) was issued to carry out Public-Funded Education for Normal University Students (In 2018, the General Office of the State Council forwarded the Measures for the Implementation of Public-Funded Education for Normal University Students in Normal Universities directly under the Ministry of Education, which calls for the demonstration and leading role of normal universities affiliated with the Ministry of Education to cultivate a group of qualified rural teachers, which also marks the upgrade of “Free education” to “Public-funded education” for normal university students in China) in normal universities affiliated with the Ministry of Education. Driven by this policy, most provincial governments and educational administrative departments try to implement the public-funded policy for normal students in provincial normal universities, to solve the problems of training and supplementing teachers in this province. From 2007 to 2016, six minister-affiliated normal universities have enrolled 94,000 students nationwide, and 62,000 have graduated and joined the teaching team. Each year, 28 provinces train 41,000 public-funded teachers to teach directly in rural areas. Under the guidance of the government-funded education policy for normal university students of the ministry of normal university, 28 provinces have implemented the government-funded education for local, normal university students. Every year, more than 41,000 college graduates teach in rural areas, especially primary and secondary schools in poor areas [28].

In 2015, the State Council issued the Rural Teacher Support Plan (2015–2020), which focused on improving rural teachers' ideological and political quality and teacher's ethics, developing rural teachers supply pathway, improving the rural life treatment, unifying

urban and rural teachers establishment standard carries (position), promoting urban outstanding teachers to rural schools, improving the rural teachers' ability quality, and building a rural teacher honor system, such as strengthening the construction of rural teachers. Subsequently, this plan puts the construction of rural teachers in a strategic position of priority development, focuses on the most critical areas and urgent tasks of the construction of rural teachers, and strives to build high-quality, dedicated, and deep-rooted rural teachers.

#### 4.4.3. The Hot Topics of Financial Support

Based on the comparison of theme popularity, we found that the financial support is highly regarded as the hot topic in educational equality policy documents. In fact, the financial support serves as an "implicit catalyst" to promote policies regarding multi-level education and vulnerable groups. For example, to ensure the smooth implementation of the nutritional improvement plan, in 2017, the General Office of the Ministry of Education and the General Office of the Ministry of Finance issued the Notice on the Further Management of the Nutrition Improvement Plan for Rural Compulsory Education Students. At the end of 2018, the Ministry of Education proposed that the Rural Compulsory Education Nutrition Improvement Plan, which has covered all state-level counties, benefits rural students, with their nutritional health improving significantly. Meanwhile, living allowances are to be given to rural students with financial difficulties in compulsory education at the standard of CNY 1000 per year for primary school students and CNY 1250 for junior-middle school students. Since the implementation of the plan five years ago, the Central Government has allocated a total of CNY 160 billion, and local pilot areas of CNY 23 billion in subsidies for nutrition and diet. Thus, the funding support is to promote the policies regarding multi-level education and vulnerable groups. The result regarding the thematic evolution analysis indicated that the guaranteed mechanism of educational equality has been affected by various institutions and departments for a long time. The institutional guaranteed mechanism mainly involves solving problems, such as the shortage of teachers in the central and western regions. Encouraging teachers to teach in the central and western regions and carrying out on-the-job training for rural teachers plays a fundamental role in supporting rural teacher development in the central and western regions. For example, on 20 March 2013, Measures for the Administration of the Central and Western Rural Primary and Middle School Teacher Training Program and Kindergarten Teacher Training Program under the National Training Plan were released by General Office of Ministry of Education and General Office of Ministry of Finance. It focuses on improving teachers' teaching ability and quality, guiding the local standard of teacher training management to provide the compulsory education with balanced development and to popularize preschool education with teachers [29].

#### 4.4.4. Comparison of Theme Popularity of China's Education Equality Policy

Our results show the growing concern for the theme of the current analysis. Among these, the X-axis represents the five themes, the Y-axis represents the theme intensity, the degree of attention, a vertical bar end that reveals the theme of the lowest strength, the top of the vertical lines reveals the highest strength, vertical bar that represents the heat of the maximum and minimum interval, and the small triangle of each subject in education concern degree of average distribution. It can be observed that the financial input, multi-level education, and vulnerable groups are highly concerned, which indicates that these three categories are the core points of educational equality policy. Although the theme of the guaranteed mechanism is also an important part of construction, its intensity is not significant enough.

#### 4.4.5. Thematic Evolution of China's Education Equality Policy

The results show that the horizontal coordinate represents the year, and the vertical coordinate represents the theme intensity, which mainly involves five themes, including security mechanism, vulnerable groups, financial input, regional policy, and multi-level

education. Among them, the security mechanism rises slowly, which indicates that the guarantee of educational equality has been affected by various institutions and departments for a long time. The longitudinal attention of the theme of vulnerable groups is always the highest at the early stage, indicating that the object in need of help has always become the focus, whereas after 2001, the object in need of help is gradually fixed and the space for rise is gradually reduced, making the theme decline. Fiscal revenue remained relatively stable in the early and middle stages, and the attention of economic input significantly increased around 2005. The economic input has been a persistent hot spot. However, the theme of regional policy is quite stable and does not fluctuate greatly, which indicates that although the emphasis of regional policy often appears in the text of education equality, the theme strength is still not obvious enough. Multi-level education is also relatively stable. Different from regional policies, in terms of vertical attention, relevant departments seem to pay more attention to different levels of education.

4.4.6. The Theme Similarity Calculation Analysis of China’s Education Equality Policy

The theme similar calculation takes the following steps: the sentence vector is obtained by the word segmentation of two sentences; the sum vector arrays separately to further calculate the inner product of the two arrays; the product of the norm of the two arrays is obtained for the product between the modules. We smooth the results according to the similarity between the results in step 4 and step 5. The results are obtained through the above formula calculation, as shown in the figure below. Theme 5 (Regional Policy) and theme 1 (Guarantee Mechanism) have a high degree of similarity, followed by theme 3 (Financial Investment) and theme 1 (Guarantee Mechanism), and then theme 5 (Regional Policy) and theme 2 (The Disadvantage Groups). Through similarity calculation, it can be known that the theme of regional policy and the theme of the disadvantaged group have the same general direction in related content (See Figure 2).

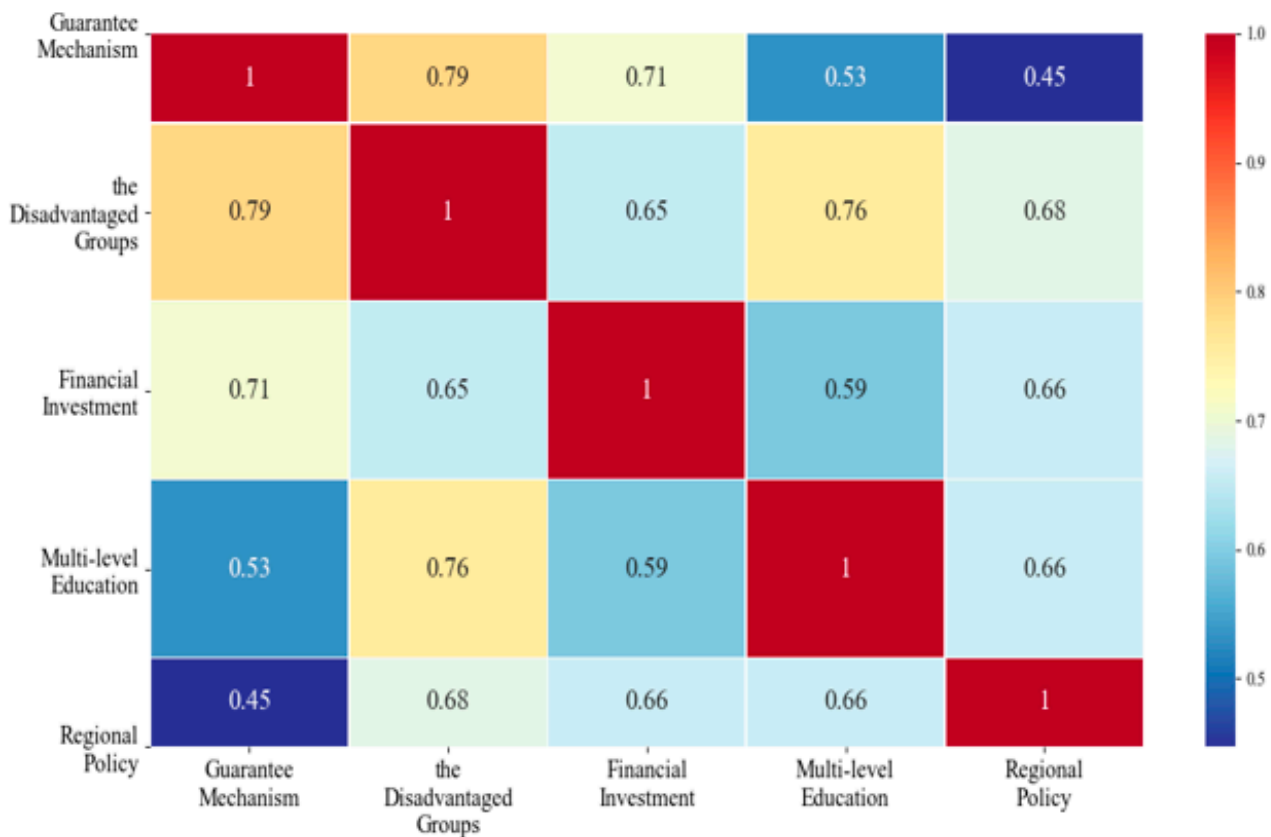


Figure 2. The theme similarity calculation.

The longitudinal attention of the theme of vulnerable groups is always the highest at the early stage, indicating that the object in need of help has always become the focus, whereas after 2001, the object in need of help is gradually fixed and the space for rise is gradually reduced, making the theme decline. This result indicates that since 2001, the Chinese government proposed the sustainable education policies to support the vulnerable and disadvantaged groups. For example, the General Office of the State Council issued a *Notice to the General Office of the State Council on the Issuance of Rural Teacher Support Plan (2015–2020)* to support the replenishment of rural teachers in poverty-stricken areas, such as the poverty islands in the central and western regions, and to raise wage subsidies for teachers in special posts. Through relevant policies, the rural teachers as the vulnerable groups are gradually supported [30].

The theme similarity calculation suggested that theme 5 (Regional Policy) and theme 1 (Guarantee Mechanism) have a high degree of similarity. In fact, the educational regional policy and guarantee mechanism are closely related to the response to social inequalities in China. The key to China's social equalities lies in closing the gap between the central and western regional education development. Due to the natural, historical, economic, and social differences, China's east and west education gap is relatively large, and the education in central and western regions is sluggish or even lagging. Since 2000, to mitigate the gap, the Chinese central government has carried out a series of regional policies, including the Key Construction of Higher Education in the Western Region (on 16 February 2004, Ministry of Education, Commission for Development and Reform, and The Ministry of Finance, and the State Council released the Development Office for the Western Region (2004–2007), with the main objectives being: "by 2007, the western region as a whole will have achieved the goal for covering more than 85 percent of the population, with a gross enrollment rate of over 90 percent in junior-middle schools, eliminating 6 million illiterates, and reducing the illiteracy rate among young and middle-aged people to less than 5 percent"), the Program of Counterpart Support for Education in the Western Region (On 29 July 2010, The Outline of the National Program for Medium and Long-term Education Reform and Development (2010–2020) was implemented to revitalize higher education in the central and western regions and strengthen the development of advantageous disciplines and teachers in local colleges and universities in the central and western regions. It focuses on supporting poor areas in the central and western regions in making full use of surplus primary and secondary school buildings and social resources to rebuild, expand, or build new kindergartens in towns and villages), the Program of Jointly Building Higher Education by Provinces and Ministries (On 7 September 2012, Opinions of the State Council on Deepening the Balanced Development of Compulsory Education was released by the central government to increase investment in compulsory education in the central and western regions. It continues to implement the plan to renovate poorly built schools providing compulsory education in rural areas and the project to renovate secondary school buildings in rural areas in the central and western regions and work hard to build energy-efficient campuses), and the Program of Revitalizing Education in the Central and Western Regions (On 22 May 2013, The Ministry of Education, National Development and Reform Commission, and The Ministry of Finance released the Midwest Higher Education Revitalization Plan (2012–2020) by 2020, the Midwest higher education structured more reasonable, more remarkable characteristics, such as school quality significantly increased, and they built a number of distinctive, high-levels institutions for higher learning, to improve the overall level of China's higher education development, the construction of higher education power lay a solid foundation) to optimize the guaranteed mechanism in mid-west areas.

## 5. Discussion and Conclusions

Along with the findings above, we found that the word frequency weight of "Compulsory Education" is the highest, indicating that compulsory education occupies a very important position in the relevant policy documents of education equality. In the Top 20 frequency words, the words related to "Finance" appeared frequently, such as "expenditure",

“hundred million yuan”, “budget”, “expenditure”, and “payment”, which indicated that maintaining education equality requires considerable financial support and financial input. For the key theme distribution, we found that theme 1 reflects the protection mechanism, such as protection, human rights, compulsory education, rights, and other key words to protect the rights of vulnerable groups to different degrees. Theme 2 reflects vulnerable groups, such as rural areas, poor areas, poverty alleviation, funds, and other key words, mainly targeting people or areas in need of help. Theme 3 reflects the fiscal revenue, such as CNY 100 million, central government, expenditure, budget, transfer, and other key words. This article aims to uncover China’s education equality policy. It established a hierarchical structure that contained various political subsystems. The historical political documents were used as data sources, from which unstructured political information was extracted using content analysis of Dynamic Topic Models (DTM). Along with the previous literature on the educational equality development in China and the theoretical framework of Rawls’ theory of justice, the discussion and implications are summarized below:

### *5.1. The Key Policies of China’s Education Equality Policy and Its Responses to Social Inequalities*

Many studies that explore promoting Chinese equality education are fundamentally imbedded in shaping compulsory education, especially in the central and western regions, ethnic minority areas, and poor rural areas [31]. As early as 1945, before the Universal Declaration of Human Rights, the Constitution of UNESCO made it clear that it is the mission of the Organization and the responsibility of the signatory States to guarantee “full and equal access to education for all”. The Convention against Discrimination in Education adopted in 1960 also established two basic principles concerning the right to education: “to enjoy equal educational opportunities and to oppose discrimination in education” [32]. Everyone, whether child or adult, has the right to education. We must fulfil their statutory obligations to provide quality education to all citizens. China’s compulsory education plays a pivotal role in influencing the development of education equality policies [32]. In addition, increasing financial investment into China’s compulsory education in disadvantaged areas also contributes to mitigating the social inequalities. Investment in rural and poor education should pay more attention to precision and differentiation, making differentiated precise investment according to the development degree and demand of different regions. Indeed, the funding support also plays a significant role in Chinese equality education policies. The financial system of rural compulsory education with county-led overall planning at the provincial level has clearly defined the responsibility of funding guarantee at the central level, but the responsibility of funding guarantee at the provincial level and below are still not clear, and local governments at the grass-roots level are often in a dilemma.

### *5.2. The Key Historical Period of China’s Education Equality Policy and Its Responses to Social Inequalities*

During the period of 2010 and 2015, the Chinese central government released a series of comprehensive education equality political documents in response to social inequalities. Teachers can play a decisive role in the quality of urban and rural education. Unified staffing management is conducive to the elimination of discrimination, the equality between urban and rural areas, and the mobility and employment of urban and rural teachers [33]. Teacher mobility means that any teacher can move between urban and rural schools to achieve barrier-free mobility between urban and rural schools. To solve the problems of teacher flow, it needs related institutional guarantee, a guarantee for the outstanding city teachers moving to the countryside, rural-to-urban school training for teachers, which will help avoid rural loss of outstanding teachers and prevent widening gap between urban and rural areas.

### *5.3. The Core Themes of China’s Education Equality Policy and Its Responses to Social Inequalities*

As the core theme, the guaranteed mechanism of Chinese education equality policy focuses on formulating the incentive mechanism for teachers in order to establish and

improve a series of teacher honor evaluation and recognition systems. Establishing and improving the withdrawal mechanism of teachers is to formulate evaluation standards for teachers and carry out regular evaluations of the teachers. Clarifying government responsibilities can promote the integration of urban and rural education [34]. At the same time, we should actively transform government functions, highlighting the government's public management, social governance, and social service functions. In addition, the ability of "county-oriented" to coordinate resources is not enough, which leads to the unbalanced phenomenon of "rich counties running rich education, poor counties running poor education" [35]. Therefore, the integration of urban and rural areas needs a broader vision, and the integration of urban and rural education with a lower focus needs to be put into a broader space and be promoted by a higher-level government. The reform will focus on strengthening the functions of provincial and municipal governments for the overall planning and development of urban and rural education [36]. Thus, the establishment and development of an urban–rural integrated education system should be based on the principle of "fairness and efficiency" to promote the development of urban and rural individuals and achieve the overall goal of better economic and social development of urban and rural areas.

There are still some limitations in this study: on the one hand, a more reliable database might be added to explore the macro-level landscape of the education equality in China; on the other hand, more comparative perspectives could be offered to make more illustrations on what the similarities and differences between China's education equality development and foreign education reform context are. For future research, both the interview and questionnaire might be included to address different stakeholders' perspectives on the macro-level landscape of education equality in China.

**Author Contributions:** Conceptualization, J.L. and E.X.; Formal analysis, J.L. and E.X.; Funding acquisition, E.X.; Investigation, J.L.; Methodology, J.L.; Project administration, J.L. and E.X. All authors have read and agreed to the published version of the manuscript.

**Funding:** Funded by the International Joint Research Project of Faculty of Education, Beijing Normal University.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Note applicable.

**Data Availability Statement:** Note applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

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