

# *An Overview of China's Vocational Education Practices and Implementation Policies from 2018 to 2022*

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**Abstract:** China has given secondary vocational education more and more priority in recent years. In China's education community, topics such as student types and training methods are frequently discussed. The nation has released an increasing number of secondary vocational education policies in recent years. This study examines the secondary vocational education policies passed by The State Council of China from 2018 to 2022 in an effort to better understand the development orientation of China's secondary vocational education. 364 policies pertaining to secondary vocational education were acquired and coded by Nvivo screening. A questionnaire was created based on the coding results, and it was broken down into six dimensions: the professional teaching degree in the classroom, Internet use, "1+x" certificate penetration level, educational resources, the school's promotion of students' overall development, and the integration of industry and education. At the same time, special education, which involves the education of the disabled but is rarely included in the policy, is treated as a separate component. For the questionnaire survey, 153 secondary vocational students in total were chosen and dispersed around the nation. Spss and Amos tested the questionnaire. The test passed, and more analysis of the survey results was done. It is determined that while policy implementation is generally going well, there are still issues with student development overall, certificate penetration, and the integration of business and education. This study suggests remedies based on this, such as expanding practical operation training and enhancing school-business collaboration.

**Keywords:** vocational education policy, policy analysis, implementation of policy

## 1. Introduction

Vocational education is to train students' skills and knowledge to exercise their specific vocational abilities, so that they can meet the vocational requirements and become talents with both skills and knowledge. In recent years, China has continuously introduced new policies to increase the training of vocational education talents.

Understanding the promulgation of vocational education policies by The State Council of China from 2018 to 2022 and the implementation of such policies is helpful to continue to carry forward the parts of vocational education policies that are well implemented and analyze the reasons why some policies are not well implemented. This paper analyzes the reasons for the incomplete implementation of some educational policies from the perspectives of region, economy and teaching, which has certain pertinence and innovation.

## 2. Literature Review and Coding Process

This study compiles 364 policies concerning vocational and technical education that The State Council issued during the course from 2018 to 2022. These policies include 53 State Council papers, 173 departmental documents from The State Council, and 138 communiques. By importing Nvivo software to sort out the analysis, the most relevant words will appear as open code at the first level, at the same time, through the search for literature, the discovery of open code corresponding literature is also very broad.

The primary word “classroom professional teaching” appears 101 times in policy papers, according to Nvivo coding. From 2018 to 2022, there have been 616 journal articles and 207 university dissertations on pertinent topics, according to a search of the China Citation Database. Ye Jingqi emphasizes the significance of encouraging students to engage in competitions in the teaching of specialized courses and “promoting teaching through competition” because she sees competition as a key means of boosting the development of students’ vocational abilities [1]. Jin Tian proposes that secondary vocational instruction should focus on developing students’ practical and problem-solving skills, which is in line with the policy that emphasizes promoting the development of students’ professional abilities. Jin Tian believes that teaching should be problem-oriented [2]. In order to develop first-line professional skills talents with exceptional personal ability and strong professional quality, Bai Yu et al. separated the classroom into three sections: creative professional teaching, network platform teaching, and professional competition [3]. According to Li Zhou, vocational education emphasizes practical skills, hence more practical courses should be offered to encourage students to engage in professional practice [4].

In order to meet the current training requirements for practical talents, Li Chuntao incorporates the content of the project-based teaching method into classroom instruction and divides the classroom into various units, each of which has a different focus on practical content. She also places a high value on the professionalism of the classroom [5]. Du Xiuguo is of the opinion that integrated professional teaching should be used to help students advance from being just knowledgeable to becoming professionally competent [6]. In the research of students’ professional practise, there are 1461 pertinent journals and 255 academic dissertations; in the study of students’ skill competition, there are 846 pertinent periodicals and 117 academic dissertations. The Nvivo coding findings revealed that the terms associated with secondary vocational “skills competition” and “skills training” appeared most frequently, with 91 and 10 appearances, respectively. These two elements are therefore chosen as the study topic of the first level coding when paired with the literature analysis, and it is categorised as the second level coding.

When the policies for vocational education are sorted, it is discovered that the subject of Internet usage in vocational education has been brought up 31 times. The combination of secondary vocational training and the Internet has been the subject of 111 academic dissertations and 930 academic articles, according to a search of the literature. One of them, according to Wang Yajing, is the need for educators to focus on the growth and enhancement of vocational skills against the backdrop of the modern period, use Internet teaching in the classroom, and nurture high-level talents [7]. According to Liu Haixia, integrating into Internet innovation platforms is beneficial to enhancing students’ learning level since there are issues with vocational education, such as ineffective course quality control and poor compatibility between students’ demands and course material [8].

The acquisition of “1+x” certificates is one of the initiatives connected to vocational education that has been talked a lot during 2018 to 2022. According to Nvivo coding, this discourse occurs 73 times in the relevant State Council policies, showing that it is often discussed in State Council policies on vocational education. When the literature on “1+x” certificates from 2018 to 2022 is searched, it turns up 239 papers that are only about this certification, indicating that it has recently been

recognised as a research hot spot. According to Yu Yingxue, China's "1+x" policy is very helpful in developing e-commerce professionals because it can guarantee students' academic performance as well as that secondary vocational students receive the necessary skill certificates during the learning process, which will help them develop practical talents [9]. Sheng Yeqing proposed a method to integrate the professional course certificate, which is to cultivate teachers with both skills and culture, and to put students' academic and professional course scores on the same status in teaching, using the further implementation of the "1+x" certificate policy as the starting point [10]. The most popular study areas within the context of "1+x" research are agriculture (10 nodes) and pension (5 nodes), which may be observed via literature analysis to be in general agreement with the policy outcomes found by Nvivo analysis. Therefore, the first-level code is the penetration level of the "1+x" certificate in secondary vocational instruction, and the second-level codes are the particular "1+x" system (43 nodes), agriculture, and old-age care. The regulations also include reference to the certifications for art, transportation, and housekeeping, which are referred to as "other codes" and arranged as second-level codes. This is discovered throughout the coding process. There are 15 nodes altogether for these classes.

China has pushed for the implementation of comprehensive poverty alleviation, and the policy of secondary vocational education fully reflects this. From 2018 to 2022, the State Council has published pertinent papers with 119 contents on enhancing school teaching resources, and 138 articles have been discovered by conducting relevant literature searches. Zeng Haomiao discovered that China's vocational education is "east, west, and sparse" after examining the allocation of resources for this field. She came to the conclusion that it should be combined with the strategy of rural rehabilitation and that increased economic input and interregional cooperation should be used to further the development of vocational education in the west [11]. In order to accomplish more effective people training, Song Yafeng also thinks that economic investment in vocational and technical education has to be increased [12]. From the standpoint of optimising vocational education, Li Song thinks that China's vocational education should pay more attention to implicit resources, such as teachers' teaching level, teaching mode, and other teaching software, in addition to integrating explicit resources [13]. According to Nvivo coding results, "increase the investment in secondary vocational funding" has 88 nodes, "hardware facilities" have 7 nodes, and "software facilities" have 24 nodes. "Hardware facilities" and "software facilities" are selected as the second-level codes because "education resources" appear often, while "increase the funding input of secondary vocational schools" is taken as the first-level code.

China places a strong emphasis on the promotion of students' overall development and high-quality education. The Chinese literature database contains 169 academic dissertations and 126 journal articles over from 2018 to 2022, that discuss the overall development of Chinese secondary vocational students. Meanwhile, it has been discovered that the phrase "the all-round development of secondary vocational students" has been coded 85 times in the policies for secondary vocational students released by The State Council from 2018 to 2022. Starting with the mental health angle, Xu Xiaohui spoke on the significance of raising students' mental health levels and implementing customised instruction based on their real psychological circumstances as opposed to merely concentrating on their academic achievement [14]. After researching China's policies on secondary vocational students from the formation of New China from the standpoint of policy execution, Qiu Xiaojian came to the conclusion that policy financing is shifting from a societal standard to a student standard [15]. Yu Zhaokuan emphasised that there are still issues with Chinese policy execution as well as challenges with the strategy for quality improvement and excellence training. He proposed an educational goal that included treating students as the target of instruction, using complete quality as the material, encouraging holistic professional growth, and developing artisanal skills [16]. The promotion of students' overall development, the execution of national policies by schools, the credit

banking system, students' professional ethics, quality training, and other concerns are current hot themes, it can also be inferred from literature analysis. The application of school rules, students' professional ethics and quality, students' credit banking system, and other contents are regarded as the second-level code, with "the comprehensive development of the school for students" being taken as the first-level open code.

Vocational education in China has long been criticised for its inadequate practise and low skill level, which makes it unable to satisfy the need for trained people in modern society. Thus, 157 nodes relating to the integration of industry and education in the pertinent policies issued by The State Council of China were retrieved by Nvivo coding, which was the highest number of codes acquired in this qualitative research. There have been 523 articles on "integration of industry and education" from 2018 to 2022. Its research has three main objectives: to realise the integration of production and education, and to cultivate teachers with dual degrees; to carry out the integration of industry and education to ensure that secondary vocational students receive professional employment; to lay the groundwork for the comprehensive integration of industry and education; and to encourage school-enterprise collaboration. According to Zhou Xian, creating a group of educators with strong political qualities, high professional aptitudes, and strong practical aptitudes would assist advance the integration of business and education and support student employment [17].

School-enterprise collaboration, qualified teachers, professional matching employment, and other concerns under the integration of industry and education are often addressed in the policies, according to a classification of the policies issued by The State Council from 2018 to 2022 based on the literature. As a result, the integration of business and education is considered the first-level code, and the second-level code is assumed to be high frequency school-enterprise collaboration (67 nodes), qualified teachers (33 nodes), and professional matching employment (57 nodes).

A different section of the strategy is also concerned with special education in secondary vocational institutions. It is discovered via coding that there are 19 nodes, a tiny number that should be acknowledged as a component of the group that regularly arises in classrooms. There have been 41 publications on this issue published from 2018 to 2022, according to a search of relevant literature. Nie Wei is of the opinion that secondary vocational schools need to support the growth of vocational education for the handicapped as well as address the unique requirements of the disabled. She also thinks that secondary vocational school building should be governed [18]. According to CAI Quanfei, businesses and governments should work together to develop a sound system of vocational policy, create appropriate policy values, and achieve the modernization of secondary vocational education policies for people with disabilities and the effectiveness of cohesion [19]. Li Tao thinks that in light of the 14th Five-Year Plan, it is essential to perform a good job of placing the handicapped, boost teacher training, and raise the bar for disabled students' education [20]. Due to the fact that the policy adopted by China primarily relates to students with disabilities and that researchers have generalised these students to include all impaired persons, this section of the information is simply encoded at the level of special education without any additional categorization.

### 3. Coding Analysis

The coding findings can be arranged as follows when combined with the aforementioned literature and policy review:

Table 1: 2018-2022 State Council vocational education policy summary.

first coding	Additional coding	Amount of nodes	example
encourage the holistic development of students	application of school policy	52	Government will create and enhance national standards for vocational education, including those for instructors, programs, books, instruction, training, practice, and IT use.
			Build a team of high-quality professional vocational education cadres and choose and support the key figures in charge of the vocational schools.
	Bank for student loans	11	Starting in 2019, government will expedite the creation of a national “credit bank” for vocational education and consider setting up an individual learning account for it.
	Enhance political and ideological instruction in secondary technical schools	22	government should strongly promote the work ethic of role models in labor and craftsmanship through research and public relations.
With at least 36 hours of instruction, elective courses are offered and focus on current events, public policy, outstanding traditional Chinese culture.			
Professional level of teaching in class	skill training	91	In order to further the reform and innovation of vocational education, government will strengthen policy guidance, fully mobilize the enthusiasm of all sectors.
			Through vocational education and training evaluation organizations (hereinafter referred to as training evaluation organizations).
	skill competition	10	Government will enhance the contemporary transportation vocational education system with school-enterprise collaboration and integration of industry and education.
Internet plus	Internet + Vocational education	31	To adjust to the cross-disciplinary and cross-regional characteristics of online education, enhance coordination between regulatory departments and regions.

Table 1: (continued).

			accelerate the creation of an intelligent teaching environment, create course materials that can accommodate different learning styles, develop new service delivery models, and promote students' lifetime learning.
1+x certificate penetration	1+x certificate	43	Government will encourage the creation of a framework for credentials and look into connecting educational and occupational skill level certificates.
			Government will continue to change the way complex technical skill employees are trained, draw from best practices in vocational education.
	Old-age care	5	The "Action to Improve the Quality of Vocational Education Services for Lifelong Learning" has been carried out to select approximately 200 demonstration bases for continuing education.
	agriculture	10	Government will work hard to develop a fresh breed of professional farmers.
	Other courses	15	Vocational education sets up extended art courses that reflect the features of vocational education, organically merges art courses with professional courses, and improves practice.
educational resources	Increase expenditure	88	Government will optimize the structure of education expenditure and give emphasis to vocational education while guaranteeing sensible investment in education.
			To encourage the growth of vocational education, local governments should fully use the function of educational funds and other funds in line with rules.
	hardware facility	7	When drafting a land use plan, local relevant agencies prioritize vocational education and strongly support the building of vocational schools' infrastructure with the intention of achieving the land use aim.
	software facility	24	Government will increase the acceptance and caliber of standard Chinese in both written and spoken form.
Enhance the process for compiling, reviewing, choosing, using, updating, evaluating, and monitoring textbooks for vocational education.			

Table 1: (continued).

combining manufacturing and instruction	professional employment matching	57	Government will upgrade the structure of institutions, the availability of specializations, and the sort of vocational education offered.
			A quality evaluation system for special education has essentially been developed, the system of curricular materials has been further enhanced, education models have expanded in variety, and curriculum reform has been intensified.
	collaboration between businesses and schools	67	Government will aid private industry and enterprise in providing top-notch vocational training.
			There have been substantial improvements in the operating environment for vocational education.
	Skill teacher	33	to assess and confirm the public vocational schools' staffing in light of the requirements of vocational education.
			In order to enhance the national teacher qualification examination's vocational education teacher qualification examination system, professional teaching and practice requirements should be strengthened.
special education	/	19	The development of secondary vocational schools for the disabled shall be filled with school leaders who have high levels of ideological and political quality, excellent management skills, a passion for the welfare of the disabled.

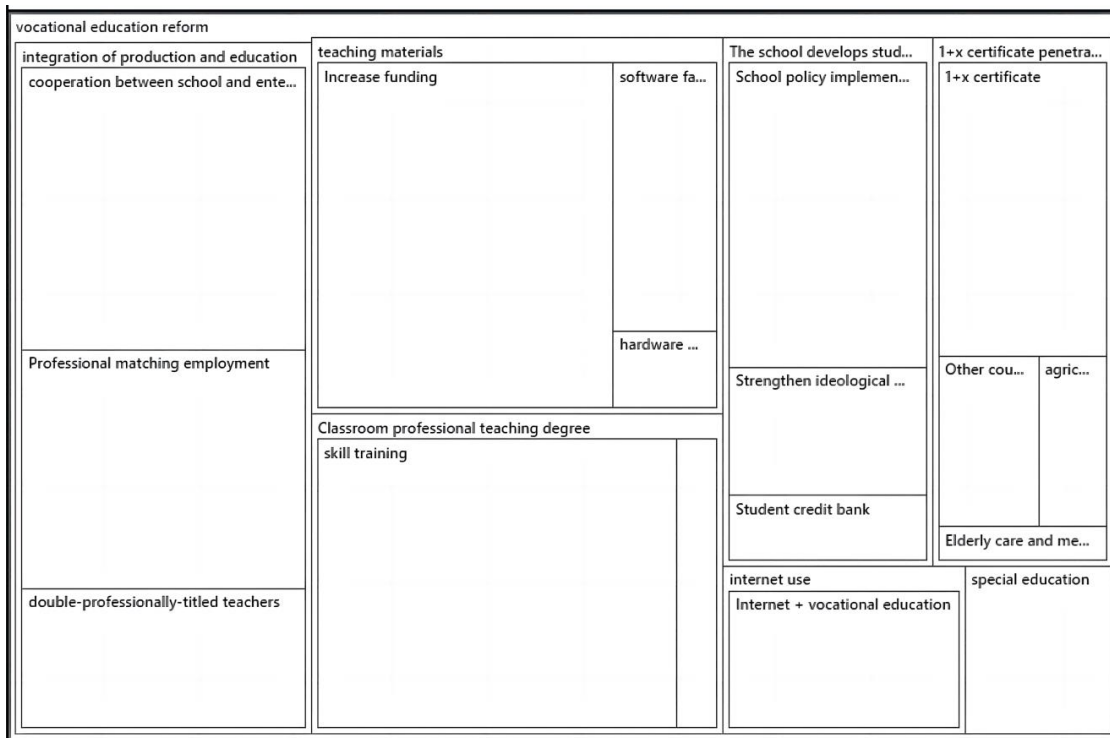


Figure 1: A compilation of secondary vocational policies published in from 2018 to 2022 by The State Council of China. (Image from Nvivo12).

#### 4. Design and Findings of the Survey

Questionnaire questions were created in accordance with dimension based on the Nvivo coding findings and the aforementioned literature study. There are 7 aspects involved, with the exception that the first 4 questions constitute the students’ foundational knowledge. Five questions are created for the first dimension, which is the professional teaching level in the classroom. Two questions are created for the second dimension, Internet Plus (Internet use in the classroom). Five questions are created, and the third dimension is 1+x certificate penetration. Three questions in the fourth dimension are intended to be teaching materials. Five questions were created for the fifth dimension, which is for the overall development of pupils, five questions were created for the sixth dimension, which is for the integration of teaching, and only one question was created for the seventh dimension, which is for the few special education programs stated in the policy:

Table 2: Design of questionnaire questions.

dimension	Questionnaire question
professional teaching level in a classroom	1. How frequently the institution offers professional practice courses
	2. How often you receive professional skills training
	3.how professional course instructors include practical information
	4. Your school frequently sponsors skill contests or encourages students to compete in regional and international competitions
	5. The effects of specialist courses’ textual learning instruction



Table 2: (continued).

Internet plus	<ol style="list-style-type: none"> <li>1. How much course materials and multimedia are used in the classroom</li> <li>2. How much role-playing or virtual simulation is employed in the classroom via the Internet.</li> </ol>
1+x certificate penetration	<ol style="list-style-type: none"> <li>1. The standards set by the institution for students' academic achievement in cultural courses</li> <li>2. Are you familiar with the 1+x certificate? If so, how significant do you consider it to be?</li> <li>3. Is the field of elder care your major? If so, how significant do you consider it to be?</li> <li>4. Did you major in or out of caring for the elderly? If yes, how much experience have you had in class?</li> <li>5. Do you study agriculture as your major? If so, how significant do you consider it to be?</li> </ol>
educational resources	<ol style="list-style-type: none"> <li>1. since you entered the school, the facilities of the school are often replaced, maintain normal function,</li> <li>2. you think your school teacher's teaching level is constantly improving / there is a higher level of teachers to introduce</li> <li>3. textbooks or teachers' content in the class, the class expands the content, you think you are close to the situation.</li> </ol>
The all-round development of students	<ol style="list-style-type: none"> <li>1. the frequency of teachers conducting professional ethics education to you in the class or the degree of transmission of the spirit of the craftsman</li> <li>2. the teacher conduct political education on you / promote excellent party spirit in the school</li> <li>3. the presence of the school in which you are a student / the phenomenon of simply teaching professional or cultural lessons</li> <li>4. the level of management of your school on student life, study and so on (the degree of influence on the ratings of the credit system)</li> </ol>
integration of production and education	<ol style="list-style-type: none"> <li>1. the frequency of teachers conducting professional ethics education to you in the class or the degree of transmission of the spirit of the craftsman</li> <li>2. the teacher conduct political education on you / promote excellent party spirit in the school</li> <li>3. the presence of the school in which you are a student / the phenomenon of simply teaching professional or cultural lessons</li> <li>4. the level of management of your school on student life, study and so on (the degree of influence on the ratings of the credit system)</li> </ol>
special education	<ol style="list-style-type: none"> <li>1. Whether there are disabled people in your school? If so, how much the school cares for them</li> </ol>

The questionnaire, which was given out in several parts of China and included 159 students, had a high degree of representativeness. 153 valid surveys in all were gathered.

As can be seen from the results of the questionnaire, the frequency of specialized courses in the first dimension is generally high, and the scores selected most are 6 points, with an average score of 5.1.

Teachers of specialized courses interspersed practical content in class to a high degree, and the scores selected most were 6 points, with an average score of 4.67.

In terms of the training degree of specialized courses in the school, 6 points were selected most often, with an average score of 4.89 points.

In terms of the degree to which the school organized students to participate in the provincial and national competitions, the most selected scores were 5 points, with an average score of 4.59.

In the question of written scores of specialized courses, the most selected score was 3 points, with an average score of 3.28.

In the second dimension, in the degree of multimedia teaching in class, 7 points were selected most, and the average score was 4.87.

In the question using virtual simulation or character simulation in class, the most selected score was 7, with an average score of 4.61.

In the third dimension, the score of students' academic performance requirements is 5 points, and the average score is 4.75 points.

In the survey of students' knowledge of the "1+x" certificate, the most selected score was 1, with an average score of 3.29; In the survey of the understanding degree of the popular major, the elderly care major, the most selected score was 6 points, and the average score was 4.89; In a survey on the training degree of students majoring in elderly care for the "x" certificate, the most selected score was 6 points, with an average score of 4.63. When agriculture majors were asked how well they knew their major's 1+x certificate, six points were chosen most, with an average score of 4.68.

Among the dimensions related to educational resources, 5 points were the most selected score in the survey on the novelty degree of educational facilities in schools, with an average score of 4.75.

In the study on whether the school constantly has new teaching content and teachers introduce it, the most selected score is 5 points, with an average score of 4.67.

The highest scores were 6 and 7, with an average score of 4.69, when studying whether what is taught in schools keeps up with social situations.

In the dimension of the study on the comprehensive development of schools, the most selected score is 5 points, with an average score of 4.46, in terms of the degree of moral education teachers give to students. In the aspect of instilling politics/party spirit in class, teachers were selected the most, 6 points, with an average score of 4.79; When students were asked whether their schools offer a separate curriculum, they received six points with an average score of 4.82.

In the survey on how well schools manage students' academic life (credit system), five and six points were chosen the most, with an average score of 4.74. In the sixth dimension of whether middle school students want to work as interns in enterprises, the most selected score is 6 points, and the average score is 4.75 points.

When studying the degree of promotion of students' professional development by enterprises cooperating with schools, the most selected score was 4 points, with an average score of 3.37 points.

When studying the degree to which students are engaged in related industries after graduation, the most selected score was 1 point, with an average score of 3.36. When it comes to the adaptation degree of the professional course content to the industry in the society, the score chosen most is 6 points, and the average score is 4.77.

When students were asked how closely their major matched their profession in society, seven points were chosen most, and their average score was 4.82.

In the last dimension, the average score was 4.75, with six points given to the question only on how well schools care for the disabled, which is related to special education mentioned in the policy document.

## 5. Reliability and Validity Test and Confirmatory Factor Analysis

### 5.1. Reliability and Validity Test

Reliability, validity, and other characteristics are among the quality detection indices of the scale or questionnaire. Reliability is the consistency of the scale's or questionnaire's measurement outcomes. The findings of its detection are more steady the more reliable the questionnaire or scale is, the more independent from the effects of time and place, etc. The term "validity" refers to the degree to which a scale or questionnaire can accurately assess whether it is capable of identifying the intended measurement objective. The validity and reliability of the entire questionnaire were examined in this study to ensure its validity.

Table 3: Reliability analysis of the questionnaire.

reliability statistics		
Cronbach's alpha	Cronbach's alpha based on normalized terms	number of terms
0.918	0.922	25

Table 4: Overall reliability analysis of the questionnaire.

Population reliability analysis		
Cronbach's alpha	sample size	number of terms
0.918	153	25

The overall reliability coefficient shows that the questionnaire's overall dependability is extremely good; the reliability coefficient following standardization is 0.922.

The degree to which the measured outcome represents the subject matter under investigation is referred to as validity. The validity will be higher the more in line the measured result is with the subject matter under investigation. Otherwise, the validity is reduced. KMO coefficient and Bartlett sphericity test significance must be examined as part of the validity test. The KMO coefficient has a value between 0 and 1, and the closer it is to 1, the higher the questionnaire's structural validity is. According to the result may also assume that the questionnaire has strong structural validity if the significance of the Bartlett sphericity test is less than 0.05.

Table 5: Questionnaire validity test.

KMO and Bartlett tests		
KMO sampling appropriateness measure		0.876
Bartlett's sphericity test	Approximate chi-square	2894.6
	degree of freedom	276
	significance	0

KMO and Bartlett tests were used to verify the validity. The coefficient of KMO test was 0.876, and the chi-square value of Bartlett test was 2984.6 (Sig.=0.000<0.01), indicating that the overall validity of the questionnaire was very good.

The whole questionnaire is divided according to dimensions. Since only one topic is involved in the dimension of special education, separate analysis is not made. The results of other analysis are as follows:

Table 6: Total variance interpretation.

element	Initial characteristic Percent variance			Extract the load squared and percentage variance			Rotational load squared and percent variance		
	total	accumulate		total	accumulate		total	accumulate	
			%			%			%
1	9.22	38.45	38.451	9.22	38.45	38.451	4.06	16.94	16.949
	8	1		8	1		8	9	
2	2.85	11.90	50.356	2.85	11.90	50.356	3.83	15.96	32.916
	7	5		7	5		2	8	
3	2.26	9.453	59.809	2.26	9.453	59.809	3.73	15.56	48.484
	9			9			6	8	
4	1.99	8.322	68.131	1.99	8.322	68.131	3.30	13.77	62.261
	7			7			6	6	
5	1.39	5.791	73.922	1.39	5.791	73.922	2.37	9.903	72.164
							7		
6	1.32	5.503	79.425	1.32	5.503	79.425	1.74	7.261	79.425
	1			1			3		
7	0.6	2.501	81.925						
8	0.49	2.047	83.973						
	1								
9	0.41	1.74	85.713						
	8								
10	0.40	1.669	87.382						
	1								
11	0.37	1.571	88.953						
	7								
12	0.36	1.504	90.457						
	1								
13	0.29	1.216	91.673						
	2								
14	0.28	1.17	92.843						
	1								
15	0.24	1.026	93.869						
	6								
16	0.23	0.96	94.829						
17	0.22	0.915	95.744						
18	0.21	0.884	96.629						
	2								

Table 6: (continued).

19	0.178	0.744	97.372
20	0.16	0.667	98.039
21	0.138	0.577	98.616
22	0.13	0.54	99.156
23	0.113	0.469	99.625
24	0.09	0.375	100

Extraction method: principal component analysis

Table 7: Component matrix after rotation.

	element					
	1	2	3	4	5	6
Q5			0.813			
Q6			0.843			
Q7			0.732			
Q8			0.734			
Q9			0.86			
Q10						0.858
Q11						0.9
Q12	0.81					
Q13	0.894					
Q14	0.79					
Q15	0.828					
Q16	0.892					
Q17					0.837	
Q18					0.848	
Q19					0.772	
Q20				0.798		
Q21				0.869		
Q22				0.852		
Q23				0.899		
Q24		0.801				
Q25		0.774				
Q26		0.831				
Q27		0.818				
Q28		0.881				

Extraction method: principal component analysis.

Rotation method: Caesar's normal maximum variance method.

a. Rotation has converged after 6 iterations.

Through the factor analysis in Table 6, it can be concluded that the cumulative variance contribution rate of the six dimensions reaches 79.425%, so the design of the first six dimensions is reasonable.

Table 7 measures the factor component matrix after rotation. Questions 5 to 28 are divided into 6 categories in terms of dimension, which is consistent with the preset dimension.

## 5.2. Confirmatory Factor Analysis

In the research, confirmatory factor analysis is often used to test the authenticity and applicability of questionnaires. In order to measure the validity of the dimensions designed in this paper and the relevance of the questions, amos software is used for analysis. Firstly, a measurement model of six dimensions of this study is designed, with the purpose of screening items. After measurement, each dimension is found to meet the measurement requirements, and then the measurement model is established and the standardized results are output. The dimension names are capitalized abbreviations of different dimensions in the questionnaire (CPTL=Classroom professional teaching level, IP=Internet plus, CP=1+x certificate penetration, ER=educational resources, STDEV=The all-round development of students, IOPAE=integration of production and education) The measurement model is shown in the figure below:

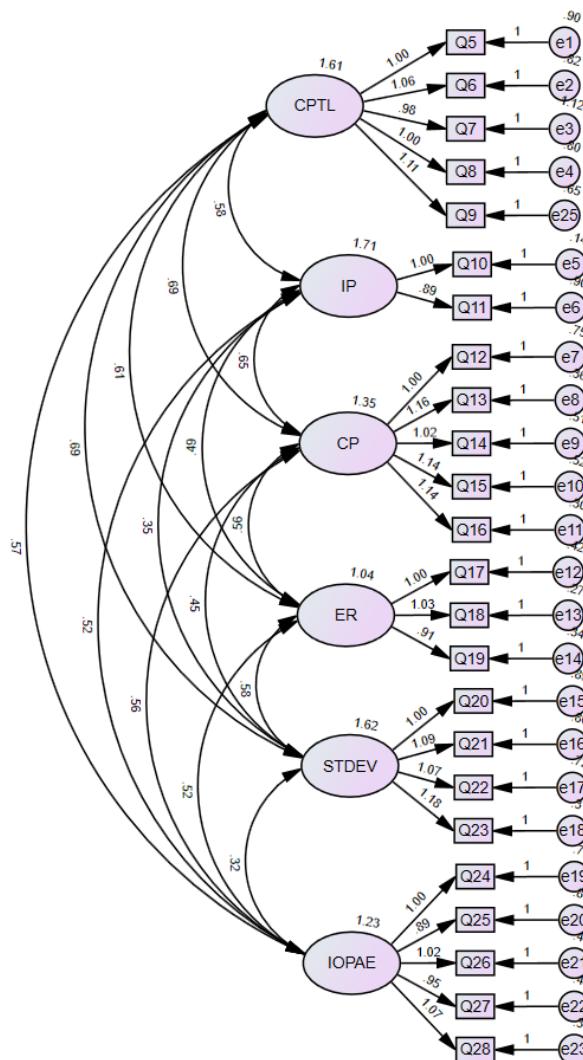


Figure 2: Questionnaire measurement model.

According to the questionnaire model, the model fitting index of the questionnaire is measured as follows:

Table 8: Questionnaire simulation fitting coefficient table.

$\chi^2/df$	GFI	CFI	NFI	TLI	RMSEA
1.496	0.844	0.958	0.885	0.951	0.057

Table 8 shows that  $\chi^2/df$  is between 0 and 2,  $GFI > 0.5$ ,  $CFI > 0.95$ ,  $NFI > 0.85$ ,  $TLI > 0.95$ , and RMSEA is between 0.05 and 0.08. It can be concluded from the results that the questionnaire has a reasonable degree of fit.

The validity test based on confirmatory factor analysis also needs to calculate average variance abstraction (AVE) and combination reliability (CR), which are calculated by using standardized estimate to calculate the standardized factor load in the model. The formula for calculating average variance sampling and combination reliability is as follows:

$$AVE = \frac{\sum \lambda^2}{\sum \lambda^2 + \sum (1 - \lambda^2)} = \sum \lambda^2 \quad (1)$$

$$CR = \frac{\sum \lambda^2}{\sum \lambda^2 + \sum (1 - \lambda^2)} \quad (2)$$

Table 9: Aggregation validity analysis of questionnaires.

			Normalized factor loading	SE	P	CR
Q5	<---	CPTL	0.801			
Q6	<---	CPTL	0.829	0.092	***	0.909
Q7	<---	CPTL	0.761	0.096	***	
Q8	<---	CPTL	0.816	0.089	***	
Q10	<---	IP	0.96			0.863
Q11	<---	IP	0.775	0.128	***	
Q12	<---	CP	0.802			0.943
Q13	<---	CP	0.914	0.085	***	
Q14	<---	CP	0.856	0.082	***	
Q15	<---	CP	0.879	0.088	***	
Q16	<---	CP	0.924	0.082	***	
Q17	<---	ER	0.846			0.898
Q18	<---	ER	0.897	0.076	***	
Q19	<---	ER	0.847	0.072	***	
Q20	<---	STDEV	0.803			0.916
Q21	<---	STDEV	0.831	0.092	***	
Q22	<---	STDEV	0.848	0.088	***	
Q23	<---	STDEV	0.937	0.086	***	
Q24	<---	IOPAE	0.787			
Q25	<---	IOPAE	0.739	0.091	***	0.914
Q26	<---	IOPAE	0.851	0.088	***	
Q27	<---	IOPAE	0.845	0.083	***	

Table 9: (continued).

Q28	<--	IOPAE	0.897	0.086	***
Q9	<---	CPTL	0.868	0.091	***

Table 10: Discriminative validity analysis of questionnaire.

variable	IOPAE	STDEV	ER	CP	IP	CPTL
IOPAE	0.826					
STDEV	0.321**	0.856				
ER	0.517**	0.582**	0.864			
CP	0.558**	0.451**	0.556**	0.876		
IP	0.518**	0.35**	0.49**	0.651**	0.872	
CPTL	0.568**	0.692**	0.612**	0.689**	0.578**	0.815
AVE	0.682	0.733	0.746	0.768	0.761	0.665

Note: \* means < 0.05, \*\* means < 0.01

Tables 9 and 10 show that this questionnaire's CR is higher than 0.7, AVE is greater than 0.5, and the first row of the differential validity analysis table is larger than the other data in this table, indicating that it is more effective at aggregating and differentiating data. This result may further analyze the questionnaire findings as the results of the reliability and validity test and confirmatory factor analysis show that this questionnaire has a high level of credibility, reliability, and applicability.

## 6. Analysis and Enlightenment of Questionnaire Survey Results

### 6.1. Analysis of Survey Results

According to the survey results of the first dimension question, students generally score highly on the teaching frequency of professional courses in the classroom, which indicates that after the promulgation of the policy, schools around the country begin to attach importance to the professional practical ability of secondary vocational students, and increase the proportion of practical content and practical cases in the classroom, and professional practical courses and practical operation courses increase. The purpose is to strengthen students' professional practice level and promote students' employment.

With the introduction of China's Internet Plus, more and more majors combine themselves with the Internet. In this questionnaire, students generally give higher scores in the dimension of the degree of Internet use in class. It can be seen that with the continuous development of China's education and the policy support for Internet Plus, the frequency of Internet use in class is increasing. Help modern teaching and multimedia teaching.

In the dimension of school certificate penetration, schools still pay high attention to students' academic performance, but it is moderated. But when it came to measuring the intensity of the school's requirements for students' major courses, most students chose "1". This means that many students still think that the school has less requirements on specialized courses. Although the practice teaching frequency of specialized courses has been increased, they still treat specialized courses as sub-courses. Therefore, the average score of this question item is only 3.28, less than half of the total score. Correspondingly, students know little about the concept of "1+x" certificate. The majority of students chose "1" because they believe the "1+x" certificate is not essential enough because many students don't know what it is. However, in a particular study of students in well-liked majors



including agriculture, elder care, and other related fields, all of the students said that they thought their major was more significant and that they wanted to earn the relevant skills certificate. Therefore, it can be said that schools promote the value of majors to students of various majors while instilling less skills needed by the general policy on vocational education. As a result, the majority of students are unaware of the “1+x” certificate policy and the precise knowledge requirements for graduation.

Hardware facilities and software facilities are the two categories used to categorize the dimensions of educational resources in this study. The majority choice for the hardware facilities category is “7” since all students concur with the availability of the school’s hardware and the regularity of equipment repair. With a high average score, “7” was selected by most students as their preferred instructional software option. Higher level professors often present the school, and lectures and textbook content are updated on a regular basis. This is connected to China’s quick development, rising educational investment, and the recent adoption of rural rejuvenation. In order to ensure that children in schools across the country have access to the same level of educational resources, China is dedicated to continually advancing educational equality.

From 2018 to 2022, secondary vocational schools’ educational policies have also placed a strong emphasis on students’ overall development, particularly the encouragement of their sense of craftsmanship. The majority of the questions with average scores more than 4.5 points deal with the development of students’ professional ethics, superb character, and sense of patriotism. In a test of how skillfully they used the national credit system (credit bank), they likewise received great marks. This is connected to China’s recent introduction of the strategy of promoting the spirit of the artisan and nurturing students’ good political spirit.

In the dimension of integration of industry and education, the scores of each item are not satisfactory. The degree of students wanting to practice in the corresponding major is high, but the degree of students thinking that the enterprises cooperating with the school do not promote students’ professional level is low, and the degree of employment of the students who have graduated from the major is also low. Because the practical content teachers intersperse with students in class is not real-time cases, many teachers are not double-qualified teachers, lack practical experience, can only use others’ cases to explain teaching, and the degree of professional promotion of enterprise students is low, so there is still a problem of inconsistency between the industry and major of secondary vocational students after graduation. It can be concluded that after the release of China’s secondary vocational education policy, schools in all regions are trying to promote the integration of industry and education, but the integration is still not thorough enough, and the employment rate of secondary vocational students in their major is low.

In the dimension of special education, students generally think that the degree of care for disabled students in schools is relatively high, which echoes the Chinese policy requiring secondary vocational schools to strengthen the degree of care for disabled students.

## 6.2. Implications of the Survey Results

Through the questionnaire survey, it can be seen that with the promulgation of the secondary vocational education policy, students believe that the professional teaching level of the school has been improved, the intensity of Internet use in class has been strengthened, educational resources keep up with social development and change with each passing day, and the school attaches more importance to the comprehensive development of students and pays more attention to disabled students. However, there are still some problems in the incomplete implementation of individual policies, such as the lack of certificate penetration, the lack of emphasis on professional courses, the lack of promotion of students’ majors by school-enterprise cooperation, and the low employment rate of the major. Therefore, in view of these problems, this paper combines the policy content and literature analysis, and comes up with the following improvement suggestions:

### **6.2.1. Deliver Education Policies to Students and Understand the “1+x” Certificate**

The Implementation Plan of National Vocational Education Reform (hereinafter referred to as the “20 Vocational Education Articles”), released by the State Council on January 24, 2019, announced that China’s vocational colleges would begin testing the “academic certificate + certain vocational skill level certificates” (hereinafter referred to as the “1+X certificate system”).

### **6.2.2. Further Implement Education Policies and Put an End to “Valuing Reason over Reality”**

Schools should also instill the right mindset in their students, carefully research the educational requirements of various professions, teach students in accordance with these requirements, and present the actual learning results requirements for students in accordance with the subject matter of various industries. Schools should not instruct students in the same cultural knowledge or neglect the development of professional skills.

### **6.2.3. School Enterprises Jointly Study Policies to Promote School Enterprise Cooperation**

Before students go to an enterprise internship, teachers should inform students about the concerns in the enterprise and tell students which aspects of study they should focus on, so that students have targeted internships. Schools and teachers by establishing contacts with enterprises and interns, enrich students’ learning content in enterprises, prepare students for full professional knowledge for employment, and improve student employment.

### **6.2.4. Training Dual-qualified Teachers to Improve the Professional Employment Rate**

Teachers in advanced enterprises study work before entering the job, work every 5-10 years to enter the corresponding enterprise study once, reserve sufficient study time, so that they fully understand the process of the industry, have sufficient work experience, can accumulate enough cases in the class to the student output, to eliminate “on paper talk soldiers”. Through their own personal learning, practice, the knowledge taught to students in the classroom is richer and more able to meet the requirements of the modern society for the professional staff, and improve the employment rate of this professional.

## **7. Conclusion**

The State Council’s plans on secondary vocational education have typically been carried out successfully from 2018 to 2022. The detailed implementation of these policies through Nvivo coding and additional questionnaire analysis, however, reveal that there are still a number of policy details that are not fully implemented, which is related to the variations in educational level in different regions and the level of policy implementation in different schools. But in general, there are still major shortcomings in the implementation of the “1 + x” certificate penetration, the school’s requirements for the comprehensive development of students, the degree of integration of teaching, etc., so this study proposes to strengthen the publicity of classroom policies, increase the practice of operational training, strengthen school and enterprise cooperation, and train dual skills teachers and other solutions, in order to promote national policy implementation in Secondary Professional Schools.

This paper has done a lot of work in the questionnaire survey phase, but there is still insufficiency in individual case studies due to the study pursuing a national mid-time general situation survey and the lack of questionnaires for individual regions or schools.

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