Analysis on the Influencing Factors of Informatization Leadership of Rural Primary and Secondary School Principals in Hebei Province, China

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Abstract: *Influence is the core ability of principals, especially in rural primary and secondary schools, establishing the leadership influence of principals plays an important role in strengthening the capacity building of principals. With the widening of the urban - rural education gap, the phenomenon of low informatization literacy and insufficient leadership of principals of rural primary and secondary schools has become more and more obvious. Therefore, in a modern society where education informatization is becoming more and more popular, it is of great practical significance to study and analyze the informatization leadership of rural primary and secondary school principals. Based on the theory of transformational leadership and transformational learning, this paper adopts survey methods such as questionnaires and field visits, and goes deep into rural primary and secondary schools in Hebei Province, China, to carry out research on information - based leadership for principals. The results of the study found that the principals of primary and secondary schools in Hebei Province have a certain foundation in information communication and construction, and also have a certain degree of information literacy, but there are obvious differences in information management ability, information planning ability, and information evaluation ability. Deficient, and basically do not have information technology innovation capabilities. However, judging from the principal's personal background, personality traits, leadership style and school background, which are the four major influencing factors, the principal's age and education have no significant impact on his informatization leadership; the personality traits of responsibility, extroversion and openness, has a positive effect on the principal's leadership; the transformational leadership style can promote the school's informatization leadership; the effective management of campus informatization will also promote the principal's informatization leadership. By analyzing the factors that affect primary and secondary school principals' informatization leadership, and then put forward effective improvement suggestions, and provide reference for improving the informatization leadership of rural primary and secondary school principals in Hebei Province.*

Keywords: Rural primary and secondary school principals, Headmaster informatization leadership, Hebei Province

1. Research Background

With the development of China's education informatization and the in - depth integration of computer technology in the education field, the informatization ability training of primary and secondary school principals has become a top priority. As early as 2014, the Ministry of Education of China has made requirements on the principal's informatization leadership responsibilities and formulated corresponding evaluation standards. The Ministry of Education has clearly pointed out that the center of gravity of education has changed through the action plan for the popularization of education informatization. The core key is the transformation of education and information technology to produce a new education and teaching model. In 2019, the government further emphasized that building intelligent campuses and digital shared resources is the goal of school informatization construction in the new era, and it is the responsibility of every principal. It can be seen that the research on how to effectively enhance the principal's informatization leadership to promote the development of educational informatization conforms to the requirements of the times and the trend of social development.

Existing survey results also show that at this stage, the informatization construction of most rural primary and middle schools in China is obviously lagging behind and weak, and further improvement is urgently needed. The allocation of educational resources is uneven, the types of applications are simplified, the development of the ability to use educational information technology is lagging behind, there is a shortage of full - time personnel or teachers, and the leadership of principals is insufficient in information technology, etc. These are the main problems in the development of informatization in rural schools. The principal is the core of leadership in the informatization construction of rural primary and secondary schools. If he has a good informatization literacy, he can better lead the informatization construction of rural schools. As Zoya Charter, an educational technology expert at Intel Corporation, said, if the principal designs an informatization development plan for the school, which meets the actual situation and requirements of local education development, as well as the needs of teachers and students, then it will be able to Perfect implementation. It can be seen that the principal's good informatization leadership can promote the smooth development of rural school informatization construction. Therefore, this paper takes the principals of rural primary and secondary schools in Hebei Province as the research object, and through in - depth investigation and research, explores the path of cultivating and improving the leadership of principals' informatization leadership, so as to

promote the development of informatization in rural primary and secondary education in Hebei Province, and realize the rural primary and secondary education in Hebei Province. Quality improvement.

This study takes the principals of rural primary and middle schools in Hebei Province as the object of empirical research, and provides empirical reference for the enrichment and development of rural education informatization theory. This study takes rural primary and secondary school principals in Hebei Province as the object of empirical research, which provides empirical reference for the enrichment and development of rural education informatization theory, and is conducive to expanding the existing research field of education informatization; It is conducive to enrich the current research on educational leadership theory.

As the leader of rural education, the principals of rural primary and secondary schools focus on the analysis of factors affecting the informatization leadership of rural primary and secondary school principals in Hebei Province. Provide a theoretical basis for the education management department to formulate relevant support policies.

Theory points out the direction for practice, and it is difficult for any practice to achieve the established goal without the guidance of appropriate theory. Therefore, the effective improvement of informatization leadership of rural primary and secondary school principals cannot be separated from the support of correct theories. Under the background of the new era, the principals' leadership characteristics, leadership style, response attitude to information - based reform and other aspects are closely related to the effectiveness of educational informatization. Therefore, it is necessary to have appropriate theoretical guidance for the principals' information - based leadership research will bring twice the result with half the effort. This paper will take the transformational leadership theory and transformational learning theory as the guiding theory.

Combining Maslow's need hierarchy theory, Burns studied the behavior and needs of transformational managers, as well as the needs and motivations to develop employees' potential, in order to realize their deeper needs, and finally in an environment of mutual motivation and improvement Achieve leadership goals. In 1985, Bass formally put forward the theory of transformational leadership on the basis of previous research results. Bass pointed out that transformational leaders can positively influence followers in terms of self - actualization needs. With the care and encouragement of managers, employees can make commitments that go beyond personal interests, or take behaviors that are beneficial to the team. Since then, transformational leadership theory has gradually become an important theoretical perspective in leadership research.

According to the current leadership situation in China, Li Chaoping, Shi Kan, etc. summarized China's transformational leadership structure and formulated a questionnaire for my country's transformational leadership.

Later, other scholars such as Tian Jing and Meng Hui proposed a nine - dimensional research model and a four - factor model respectively.

Therefore, for school principals, they should become transformational leaders in the development and construction of educational informatization. Through the influence of personal charm and charisma, as well as personalized care and vision incentives for employees, employees can be aware of higher - level needs and personal pursuit, stimulate their potential, and finally achieve transcendental results. In the process of educational informatization, make their goals consistent with the development goals of school informatization, and improve their work enthusiasm and investment, so as to promote the realization of the vision and goals of the school.

2. Problem Statement

This study aims to investigate the current situation of informatization leadership of rural primary and secondary school principals in Hebei Province, and carry out descriptive analysis at all levels, and then analyze the differences of various influencing factors and put forward improvement countermeasures.

Specifically, researchers mainly conduct research around the following issues:
1) What is the current situation of primary and secondary school principals in information leadership?
2) What are the factors that affect the formation of informatization leadership of primary and secondary school principals?

3. Proposed Innovation, Intervention, and Strategy

The principal's informatization leadership explored in this research includes two aspects. It includes not only the knowledge and ability of informatization required by ordinary modern citizens, but also the ability required by the principal as the leader of the school and senior managers to lead the school to carry out the construction of school informatization. Therefore, the author believes that the school's informatization leadership mainly refers to the comprehensive informatization awareness, comprehensive informatization knowledge, comprehensive informatization skills, and comprehensive informatization ethics and morals that the school has during construction under the leadership of the principal. . Informatization leadership is the foundation and starting point for the principal to effectively lead all faculty and staff to carry out the construction of the school's informatization campus environment, informatization teaching and research, student management, and administrative management.

4. Research Methods

4.1 Sources of Data

Hebei Province has 179 rural complete primary schools (excluding 173 sub teaching points), 63 rural junior middle schools and 1 rural senior high school. Rural schools account for 87% of the number of primary and secondary schools in the city. The subjects of this study are principals and full - time Vice Principals of public middle schools and primary schools in rural areas (i. e. rural and township) of Hebei Province.

In order to make the research rigorous and scientific, this study uses the interview method as a supplement to further collect hidden problems that cannot be covered by the questionnaire, and explore deeper information as evidence of the questionnaire data. This study selects the following three types of interviewees for in - depth interviews:
1) Head of Education Informatization Office of Hebei Teacher Development Center
2) There are six principals in total, including one principal of Hebei rural model school, three principals of ordinary schools and two principals of weak schools
3) Six teacher representatives from rural primary and secondary schools in Hebei Province

4.2 Data Gathering Methods

The research was completed by the respondents in the form of questionnaire stars. The author interviewed the person in charge of the Education Information Office of Hebei teacher development center and clarified the purpose of the research. After receiving recognition and help, the questionnaire was distributed through the headmaster work exchange group. Rural primary and secondary school principals and some full - time Vice Principals actively participated in the questionnaire survey, and finally 258 questionnaires were collected, with an effective rate of 97%, It basically covers rural public primary and secondary schools in Hebei Province.

4.3 Data Analysis Plan

This study selected rural primary and secondary school principals and full - time Vice Principals in Hebei Province of Guangdong Province as the subjects of investigation. This study was supported and helped by the education information room of Hebei teacher development center. Through the form of questionnaire stars, online questionnaires were distributed in the principal work exchange group for data collection. The distribution and recovery of questionnaires are shown in table 2 - 3. After deducting all invalid questionnaires, SPSS20.0 is used for the statistical analysis of the results of all valid questionnaires.

Questionnaire distribution and recovery

Questionnaire category	Number of questionnaires issued	Number of questionnaires collected		Number of valid questionnaires	
		Number of Copies	Efficiency	Number of copies	Efficiency
Principal questionnaire	258	258	97%	258	97%

The reliability of this study was analyzed by SPSS20.0. The degree of homogeneity of the designed scale was tested by Cronbach's alpha coefficient.

Generally, the coefficient of Cronbach's alpha greater than 0.6 is acceptable. The results analyzed in table 2 - 4 show that the scale as a whole and its components have good unity. Except that the Cronbach's alpha coefficient of "informatization vision construction and innovation ability" is 0.827, others have reached more than 0.89; The reliability of the overall scale also exceeded 0.986. In this way, it shows that there is a good reliability in this questionnaire. As shown in the following table: reliability test values of various dimensions of informatization leadership of primary and secondary school principals.

Reliability test value of informatization leadership of rural primary and secondary school principals in Hebei Province			
Variable	Subject	Quantity	Cronbach's Alpha Coefficient
Information literacy	A1 - A10	10	0.910
Information communication ability	B1 - B7	7	0.894
Information management ability	C1 - C10	10	0.964
Informatization planning ability	D1 - D10	9	0.946
Informatization construction capacity	E1 - E9	9	0.950
Informatization evaluation ability	F1 - F6 G1 - G8	14	0.976
Informatization vision planning and innovation ability	H1 - H6	6	0.827
Total		65	0.988

5. Discussion of Results and Reflection

5.1 Results

5.1.1 Analysis of Gender Differences in Informatization Leadership
In order to test whether the gender differences of principals have a significant impact on all levels of their information -

based leadership, this research uses SPSS20.0 technology to carry out an independent sample t - test on the questionnaire data results to specifically analyze whether there are significant differences in different variables at each level. If the T value in the analysis of variance is significant (p<0.05), then the difference between the two groups is significant. The inspection results are shown in the figure below.

Analysis on the difference between the Gender of principals and their informatization leadership					
Level	Gender	Mean	Std. Deviation	T - value	Significance
Personal information literacy	Male	3.9633	0.48786	- 0.274	0.784
	Female	3.9952	0.73789		
Information communication ability	Male	3.9096	0.52744	- 2.436	0.016
	Female	4.2041	0.57066		
Information management ability	Male	3.8758	0.58753	- 1.822	0.07
	Female	4.1217	0.65349		
Informatization planning ability	Male	3.7987	0.61171	0.904	0.367
	Female	3.9286	0.82531		
Informatization construction capacity	Male	3.8894	0.58621	- 1.740	0.083
	Female	4.1217	0.58994		
Informatization evaluation ability	Male	3.8092	0.60015	- 1.157	0.248
	Female	3.9694	0.69163		
Informatization vision construction ability	Male	3.8453	0.66204	- 2.051	0.041
	Female	4.1508	0.55504		
Informatization leadership	Male	3.8658	0.52483	- 1.525	0.129
	Female	4.0513	0.63705		

By comparing the principals of different genders, there are significant differences in information communication ability, information vision construction and innovation ability (p<0.05), while there are no significant differences in personal information literacy, information planning ability, information construction strength, information management ability, information evaluation ability, etc. This also shows that the gender of primary and secondary school principals in rural China has a significant impact on the informatization leadership of principals from an individual level, but it will not have a decisive impact on the whole.

5.1.2 The influence of headmaster's age on informatization leadership
In order to test whether there is a significant impact of different age levels on all levels of principals' informatization leadership, this study compares the age of principals with all levels by one - way analysis of variance (ANOVA). If the F value in the analysis of variance is significant (p<0.05), then it is clear that the difference between the averages of several groups reaches a significant level, and then the LSD method is compared afterwards, Find out which group of average differences have reached a significant level. The inspection results obtained are shown in the figure below

Analysis on the difference of Headmasters' Age on their informatization leadership					
Level	Age	Mean	Std. Deviation	F - value	Significance
Personal information literacy	31 - 40	3.0000		2.189	0.09
	41 - 50	4.0972	0.54221		
	51 - 60	3.9632	0.52926		
Information communication ability	31 - 40	3.9259	0.4536	1.371	0.252
	41 - 50	3.9659	0.51089		
	51 - 60	3.0000			
Information management ability	31 - 40	4.0040	0.50823	1.683	0.171
	41 - 50	3.9443	0.54132		
	51 - 60	3.8975	0.53525		
Informatization planning ability	31 - 40	3.9336	0.53602	0.178	0.542
	41 - 50	3.0000			
	51 - 60	3.9861	0.55762		
Informatization construction capacity	31 - 40	3.7985	0.67769	0.59	0.622
	41 - 50	3.7612	0.57094		
	51 - 60	3.8093	0.63079		

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Informatization evaluation ability	31 - 40	3.5556		0.504	0.68
	41 - 50	4.0000	0.64132		
	51 - 60	3.9232	0.55407		
Informatization vision construction ability	31 - 40	3.8497	0.62212	0.711	0.546
	41 - 50	3.9083	0.58881		
	51 - 60	3.8889			
Informatization leadership	31 - 40	4.0000	0.65868	1.046	0.373
	41 - 50	3.9011	0.59239		
	51 - 60	3.8431	0.57717		

Since there is only one sample size from 20 to 30 years old in this questionnaire sample, it is not considered. The comparative analysis is mainly carried out for the three groups of 31 to 40 years old, 41 to 50 years old and 51 to 60 years old. From the analysis of the average level of information - based leadership, with the increase of age, the level of information - based leadership also decreased slightly, but there is no significant difference, which also shows that the age of primary and secondary school principals is not much related to the level of information - based leadership of principals. However, the impact of age is different at various levels. For example, the impact of age on information literacy is more significant than other levels. This shows that the change of information is changing with each passing day. To adapt to the pace of the information age, keep pace with the times, and keep up with the pace of educational informatization and modernization, the principal must maintain the attitude of lifelong learning.

5.1.3 The influence of principals' leadership style on informatization leadership

At present, the research on leadership style is relatively mature. Burns first proposed two types of leadership behaviors: transactional and transformational. Bass (Bass, 1985) perfected and developed, established the transformational leadership assessment tool "Multifactor Leadership Questionaire". The evaluation tools were further improved by Bass and Avelio. This questionnaire is widely used in the field of leadership theory research. This study selects transformational and transactional leadership styles for difference analysis. By comparison, the results are shown in Table below.

Analysis on the Differences of Principal's Leadership Style in Their Informatization Leadership					
Level	Leadership style	N	Mean	T - value	Significance
Personal information literacy	Transformational	160	4.1281	7.119	0.00
	Transaction type	98	3.701	7.68	
Information communication ability	Transformational	160	4.0804	5.99	0.00
	Transaction type	98	3.6939	6.449	
Information management ability	Transformational	160	3.9663	5.377	0.00
	Transaction type	98	3.5531	5.722	
Informatization planning ability	Transformational	160	4.0611	5.638	0.00
	Transaction type	98	3.6587	5.952	
Informatization construction capacity	Transformational	160	4.0417	5.284	0.00
	Transaction type	98	3.6576	5.666	
Informatization evaluation ability	Transformational	160	3.9674	5.134	0.00
	Transaction type	98	3.5853	5.483	
Informatization vision construction ability	Transformational	160	4.0208	4.903	0.00
	Transaction type	98	3.6241	5.185	
Informatization leadership	Transformational	160	4.0323	6.211	0.00
	Transaction type	98	3.6336	6.743	

Through analysis and comparison, it can be seen that transformational and transactional leadership styles have a significant impact on the level of principals' informatization leadership, and from the average level, the impact of transformational leadership style on Principals' informatization leadership is more obvious. This shows that in order to strengthen and improve the informatization leadership level of principals, we can start with cultivating and changing the leadership style of principals, especially the transformational leadership style can positively promote the informatization leadership of principals. In leading all teachers, students and staff to carry out school information construction, the president strengthened his leadership level by strengthening his own charm influence, moral conduct, vision, attraction and motivation, care for employees and so on.

5.2 Reflection

The analysis of the survey results of this study shows that the headmaster's leadership style has a positive impact on the headmaster's informatization leadership. The headmaster should reasonably choose the working methods of guidance according to the level and stage of each school, further enhance the prestige of school leaders, comprehensively explore educational resources, and promote the

improvement of headmaster's informatization leadership.

5.3 Conclusion

In the early stage of school informatization construction, we should use the way of transformational leadership. The president needs to instill in the teaching staff and encourage teachers to actively carry out information - based teaching applications, and use the president's personality charm to change the mentality, beliefs and values of the teaching staff facing the difficulties of educational informatization through inspiration, influence and care, so that they can work hard to realize the vision of school informatization development. This kind of leadership method can make the teaching staff form a stronger sense of belonging to meet their multi - level work needs, so as to achieve higher benefits. Compared with the traditional transactional leadership theory, it can maximize the promotion of the teaching staff from "I want to do" to "I want to do".

Transformational leadership encourages faculty members to encourage their own development in order to achieve common goals, which is actually the inheritance, development and Transcendence of transactional leadership spirit. Therefore, in the process of leading school education informatization, we should not only establish the concept of education informatization and mobilize the enthusiasm of teaching staff to meet the higher - level needs of the spiritual level of teaching staff, but also infiltrate some transactional leadership thinking in the implementation work to ensure that the basic needs of teaching staff are met and phased goals are achieved. When the recent goals can always be successfully achieved, We will also improve our appeal to our long - term goals.

6. Recommendation

The improvement of informatization leadership of rural primary and secondary school principals and the construction and development of school informatization cannot be separated from the guidance of the government, education administrative departments and the support of forces from all walks of life. They are the strong backing for principals to give full play to informatization leadership. Therefore, the construction of a professional and normalized informatization leadership improvement and development system for rural primary and secondary school principals by government leaders can effectively standardize and improve the informatization leadership behavior and attitude of rural primary and secondary school principals.

6.1 Increase financial investment in the informatization construction of rural primary and secondary schools.

In order to effectively improve the headmaster's informatization leadership, we need to establish a perfect financial investment mechanism to escort. First, improve the scientific decision - making mechanism of financial investment in educational informatization. According to the actual situation of all kinds of schools at all levels, the competent education department formulates the corresponding information construction investment plan and investment intensity to ensure that the investment is accurate and effective, and help the school information construction achieve results. Second, implement multi - agent investment channels for educational informatization. Through government leadership, it is conducive to strengthening the confidence and enthusiasm of social investors, and using social capital to provide a strong driving force for the development of educational informatization. Third, strengthen post investment supervision. The government should urge and guide school principals at all levels and all types to use the funds for educational informatization construction on the cutting edge. Do not blindly build and waste resources. The strict implementation of the above three measures will really help rural primary and secondary schools improve the informatization leadership of principals and smoothly promote the informatization construction of rural primary and secondary education.

6.2 Building a development community for rural primary and secondary school principals in the region

The construction of the development team of rural primary and secondary school principals in this region is conducive to the introduction of excellent information - based education resources according to the actual situation of this region, and promotes the co construction, sharing and sharing of excellent resources and platforms between schools and principals.

6.3 Establish the training mechanism of informatization leadership of rural primary and secondary school principals

In view of the development direction of educational informatization and professional teaching proposed in the new era, the most powerful measure to improve the informatization leadership of primary and secondary school principals in rural areas is to strengthen the professional training of teachers' informatization skills. How to improve the informatization leadership of principals is a major proposition related to the informatization development trend of primary and secondary schools in rural China. Local government departments need to take the lead in organizing school teachers to carry out corresponding informatization leadership training, so as to broaden the teachers' informatization vision of schools.

7.   Plans for Dissemination and Utilization

7.1 Hold a seminar to discuss and recommend typical informatization leadership as representatives to speak at the seminar, so as to promote and promote the improvement of informatization leadership of principals.

7.2 In the form of papers, continue to explore the factors that affect the informatization leadership of principals and encourage innovation.

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