The Attributes of Teacher Leadership in Chinese Public Colleges and Universities during Crisis Situation in Jilin Province

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Abstracts

The objectives of this research were: (1)To determine the attributes of teacher leadership in Chinese Public colleges and universities during Crisis situation in Jilin Province, (2)To explore the influencing factors of teacher leadership in Chinese Public colleges and universities during Crisis situation in Jilin Province ; and (3)To Develop effective managerial guideline to improve the teacher leadership in Chinese Public colleges and universities to cope with the arrival of the era of change.

The research was a mixed methodology research. The instruments used for data collection were collation and analysis of relevant literature, content analysis of semi-structured interviews with key informants, questionnaire survey, and focus group discussion.Data analysis and statistics are mainly carried out through statistical analysis software SPSS.The confirmatory factor analysis of the model is carried out by using AMOS software.

The research findings revealed that:(1)Constructing the dimensional framework of teacher leadership in Jilin Province from: the role of teacher leadership and the four dimensions of teacher leadership: Administrative leadership, Professional leadership, Interpersonal leadership, Self-leadership and the important attributes of teacher leadership;(2)Studying from four components:The practice of teacher leadership in public colleges and universities in Jilin;The necessary conditions for promoting the development of teacher leadership;The factors hindering the development of teacher leadership and the challenges they face;and the factors(political, economic and social factors) that affect the development of teacher leadership.The 24 key influencing factors of four components are founded;and (3)The 30 key guidelines to improve the teacher leadership in Chinese Public colleges and universities.

Keywords: Teacher Leadership, Chinese Public Colleges and Universities, Crisis Situation,Jilin Province

Introduction

The outbreak of COVID-19 began at the end of 2019, and with its continuous deterioration, the World Health Organization declared the outbreak of COVID-19 a global pandemic on March 11, 2020, affecting nearly 1.6 billion students in more than 190 countries on all continents. The Crisis has seriously weakened the global market economy, changed social behavior, changed the way people run businesses and managed organizations, and many enterprises have been forced to close down.Meri Madashashi(2020-08-18), a consultant member of the UNESCO International Centre for creativity and Sustainable Development ,pointed out that "the COVID-19 epidemic has closed half of the world's population", which is the worst impact on the global economy in peacetime in nearly a century.

However, this crisis has also exposed the fragility of the curriculum and management practice system of colleges and universities in China, including the low level of digitization and long-standing structural weaknesses. Although the measures of "suspension of classes without suspension of classes" and implementation of teaching methods similar to those of international scientific and technological developed countries have dealt with the problems of immediate teaching in terms of form and procedure, however, due to the limited knowledge reserves of information technology production and development departments and teachers, insufficient supply of information technology means and curriculum and teaching resources, online teaching may be a "supplement" and "embellishment" for offline learning (Shen Zhonghua, Wu Daguang,2020 : 25-3659).

The epidemic situation of COVID-19 has had a profound negative impact on China's higher education system, and higher education organizations themselves should respond actively rather than passively. The shortage of resources and the emergence of uncertainty in the future are not only the major challenges facing the development of China's higher education organizations, but also the best opportunity to re-establish their position in the international higher education pattern.In this sense, the COVID-19 epidemic brought not only a crisis, but also some unexpected effect.This study expounds the current situation of Chinese Public colleges and universities in Jilin Province during the COVID-19 epidemic and its strategies to maintain feasible and sustainable development during major crises such as the impact of the COVID-19 epidemic, and puts forward the idea that teachers are also agents of change during the COVID-19 pandemic.

Research objectives

1. To determine the attributes of teacher leadership in Chinese public colleges and universities during crisis situation in Jilin Province,

2. To explore the influencing factors of teacher leadership in Chinese public colleges and universities during crisis situation in Jilin Province ; and

3. To develop effective managerial guideline to improve the teacher leadership in Chinese public colleges and universities to cope with the arrival of the era of change.

Research Methodology

In order to answer the questions and objectives of the above study, the researchers will divide the research methods into three phases:

Phase 1:**By using the method of qualitative research,constructing the framework of the concept of teacher leadership and to determine the attributes of teacher leadership in Chinese Public colleges and universities in Jilin Province.**

The key informants

To select 10 key informants for preliminary interviews. They come from different public universities in Jilin Province.Key informants were selected by purposive sampling technique .

Research Instruments

The instrument for collecting data consists of two parts. First of all, the literature search is carried out in Chinese CNKI, PROQUEST database and Google Academic resource database, the main research content and framework are determined, the data record table is used for classification and recording. Second, in the interview stage, the researchers adopted the semi-structured interview method.

Phase 2:By using the method of quantitative research, exploring the influencing factors of teacher leadership in Chinese Public colleges and universities in Jilin Province.

Population and sample

The choice of population comes from a total of 2381 teachers, teacher leaders and school administrators from 11 public colleges and universities in Jilin Province. The researcher used the tables of Krejcie and Morgan to determine the sample size of 333 teachers and administrators, and obtained by stratified random sampling technique.

Research Instruments

Instrument was developed from Phase 1 as a questionnaire.The questionnaire tool takes teacher leaders, teachers and administrators as samples, and mainly consists of two parts.

Part I: General Information (6 Items), which mainly understands the Gender, Age, Position,Teaching age and Professional title of the sample, as well as the Category of the universities, and

Part II:Variables(48 Items) , on the basis of drawing lessons from the research literature at home and abroad, this study mainly focuses on the four components of teacher leadership, which are: A The practice of teacher leadership in public colleges and universities in Jilin.B The necessary conditions for promoting the development of teacher leadership. C The factors hindering the development of teacher leadership and the challenges they face. D The factors that affect the development of teacher leadership.

The quality of questionnaires was assessed by content validity and reliability. For the content validity, it was checked by five experts and analyzed by Item-Objective Congruence (IOC). The item value was ≥ 0.60. The total of 48 items were obtained.Each factor is measured on a 5-point liker's scale. For the reliability, it was analyzed by Cronbach alpha at .80. The questionnaires were sent by online, mail, and researcher. The data of demographic variables were analyzed by descriptive statistics; frequency, and percentage. The variables of the influencing factors of teacher leadership were analyzed by descriptive statistics; mean, Standard Deviation (S.D.).And the confirmatory factor analysis of the model is carried out by using AMOS 23.0 software.

Phase 3: By using the method of qualitative research,developing effective managerial guideline to improve teacher leadership in Chinese Public colleges and universities to cope with the arrival of the era of change.

The key informants

The key informants selected in this part are the Executive Dean, Academic Dean, Vice Dean and Assistant Dean of Northeast normal University, as well as professional department heads and academic leaders,a total of 9 people.

Research Instruments

The researcher conducted focus group discussions and in-depth communication with 9 participants. According to the previous literature and the analysis of the results of the questionnaire, and had in-depth exchanges with the dean, scientific research dean, executive dean, assistant dean, Department heads and Academic leaders of the college.

Research Conceptual Framework

The Research framework is shown in the figure below. The mixed method research design is based on a convergent design of two methodologies as below.
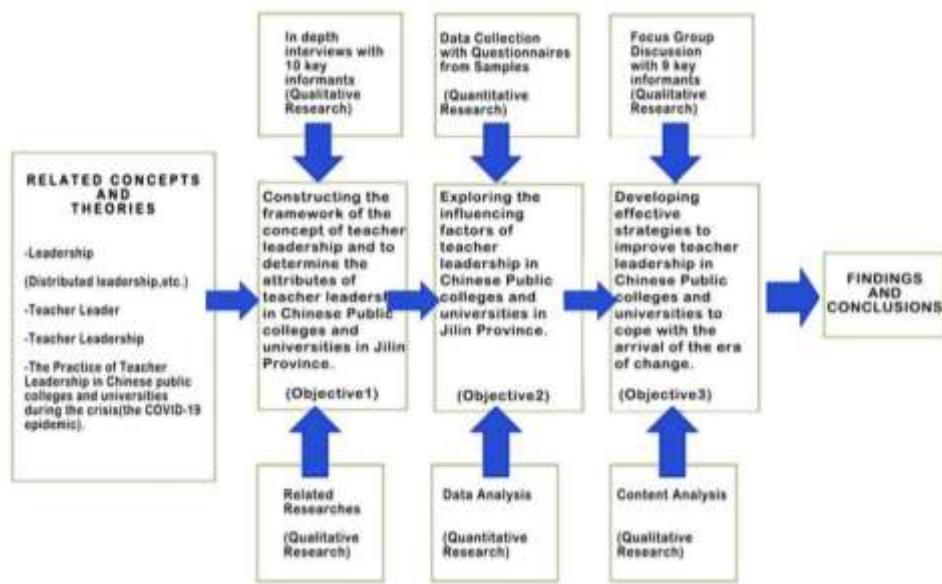

Figure 1: The Research ConceptualFramework

Research Results

Major findings of Research Objective1:

In Phase 1: Combined with literature review and semi-structured interviews with 10 key informants, the researcher constructs the dimensional framework of teacher leadership in Jilin Province from: the role of teacher leadership and the four dimensions of teacher leadership: administrative leadership, professional leadership, interpersonal leadership, self-leadership and the important attributes of teacher leadership.

Major findings of Research Objective 2:

In Phase 2: To explore the influencing factors of teacher leadership in Chinese Public colleges and universities during Crisis situation in Jilin Province.Result of Data Analysis on Questionnaire: Variable analysis of the influencing factors of teacher leadership of Chinese Public colleges and universities in Jilin Province.

The researcher analyzed the arithmetic mean ($\bar{x}$) , Standard Deviation (S.D.) and Coefficient of variation(CV) by comparing the derived arithmetic mean to the criteria based on Best's concepts,it also shows Cronbach's α and KMO.The mean of each item is 3 points above the theoretical median, indicating that the measured dimension level is above medium; the coefficient of variation is below 0.36, indicating that the sample data is at medium variation level.The reliability validity test of the scale by SPSS showed that the Cronbach's α system values of the four dimensions were 0.950,0.924,0.94,0.960 and 0.945, which were greater than 0.9, indicating the high reliability quality of the scale, the KMO of 0.973,0.955,0.976 and 0.968, and the sig of 0.000, indicating that the questionnaire reliability met the study criteria.Then, the researcher merged the options with the same factor load, and deleted the options with low values,

and the collated data were no more than 7 observable variables per dimension. After sorting and combining the remaining key variables, the researcher re-coded them in the Table 1:

Table 1 Remaining Key Variables of influencing factors (KIF)

Key Variables			$\bar{X}$	S.D.	CV	Sk	Ku	Meaning
KIF-A	A1	Teacher leaders participate in teaching and formulate teaching plans and related policies.	3.61	1.145	0.317	-0.582	-0.413	High
	A2	Teacher leaders are involved in the formulation of school management and evaluation policies.	3.64	1.142	0.314	-0.645	-0.252	High
	A3	Teacher leaders are the discipline leaders in their professional fields.	3.68	1.117	0.304	-0.573	-0.378	High
	A4	Teacher leaders have the energy and time to do scientific research projects.	3.64	1.068	0.293	-0.472	-0.493	High
	A5	Teacher leaders can give opinions on the use and distribution of school funds.	3.67	1.117	0.304	-0.646	-0.252	High
	A6	Teacher leaders will actively interact with social groups.	3.70	1.152	0.311	-0.649	-0.356	High
KIF-B	B1	Have a positive and cooperative school culture and share school planning and vision with teachers.	3.76	1.125	0.299	-0.735	-0.217	High
	B2	Encourage teachers to develop teacher leadership, so that teacher leaders have appropriate decision-making power.	3.88	1.017	0.262	-0.882	0.53	High
	B3	Have a strong desire to become a teacher leader, work hard to improve their own ability.	3.79	1.072	0.283	-0.613	-0.367	High
	B4	Get the recognition and trust of the school leaders.	3.79	1.086	0.287	-0.688	-0.194	High
	B5	Provide training for new teachers, including environmental and relatively systematic mentoring courses.	3.81	1.089	0.286	-0.682	-0.308	High
	B6	Provide a more humane and relatively relaxed working environment.	3.68	1.175	0.319	-0.687	-0.313	High

		Key Variables	$\bar{X}$	S.D.	CV	Sk	Ku	Meaning
KIF-C	C1	The working status of school departments is isolated, lack of sharing and cooperation, and seldom discuss the goals, rules and regulations of school development.	3.47	1.071	0.309	-0.243	-0.492	Medium
	C2	Competition leads to a lack of consistent work goals and little cooperation, limiting solutions to problems to personal experience.	3.59	1.157	0.322	-0.499	-0.455	High
	C3	The "studio system" of some disciplines forms a culture of non-interference among teachers, which limits the sharing of expertise and experience among teachers.	3.49	1.140	0.327	-0.372	-0.51	Medium
	C4	Due to the heavy burden of family, work and scientific research, teachers are unwilling to provide help in school affairs except classroom teaching.	3.55	1.093	0.308	-0.294	-0.481	High
	C5	Conservative thinking, not keen to explore new management and teaching practices, accustomed to routine management and teaching activities.	3.56	1.073	0.301	-0.441	-0.27	High
	C6	Social and cultural factors set up obstacles to the leading role of teachers in the school. (such as prejudice against teachers' positions in society, etc.).	3.59	1.142	0.318	-0.452	-0.515	High
KIF-D	D1	Gender is very important for teacher leadership role in the school.	3.62	1.213	0.335	-0.6	-0.585	High
	D2	The leading role of male teachers in schools takes precedence over that of female teachers.	3.69	1.173	0.318	-0.684	-0.368	High
	D3	In the selection of teacher leaders, priority will be given to the financial situation of individual teachers.	3.67	1.194	0.325	-0.66	-0.468	High
	D4	The selection of teacher leaders will give priority to testing the influence of teachers within the scope of the discipline.	3.65	1.145	0.314	-0.522	-0.573	High

Key Variables			$\bar{\text{X}}$	S.D.	CV	Sk	Ku	Meaning
	D5	In the selection of teacher leaders, priority will be given to teachers' professional knowledge.	3.66	1.171	0.320	-0.554	-0.585	High
	D6	Most teacher leaders are recommended by high-level school leaders.	3.64	1.139	0.313	-0.51	-0.6	High

As shown in the table, the absolute value of skewness of each item is less than 10 and the absolute value of kurtosis is less than 3. Moreover, combined with the normality test histogram of each item, we can think that the data of each item conforms to the normal distribution.Component KIF-A was described by 6 key variables,the $\bar{\text{x}}$(Average) was between 3.61-3.70;Component KIF-B was described by 6 key variables,the $\bar{\text{x}}$(Average) was between 3.68-3.88;Component KIF-C was described by 6 key variables,the $\bar{\text{x}}$(Average) was between 3.47-3.59;Component KIF-D was described by 6 key variables,the $\bar{\text{x}}$(Average) was between 3.62-3.69.And the Meaning of 24 Key Variables is almost high.

In order to further test the reliability and validity of the scale, AMOS was used for confirmatory factor analysis (CFA). In terms of combination reliability, the combination reliability of each variable (CR) was more than 0.8. it showed that the combination reliability of the scale was ideal. At the same time, the relationship between the open root value of the average extracted variance (AVE) of each variable and the Pearson correlation of this variable and all other variables is in line with the judgment standard. The corresponding AVE values of each factor are greater than 0.5. and the factor load coefficient values are all more than 0.7. it shows that there is a good corresponding relationship between the factors and the measurement items, and the discriminant validity is good.

The confirmatory factor analysis of the model is carried out by using AMOS 23.0 software. The specific results are as shown in Figure 2：
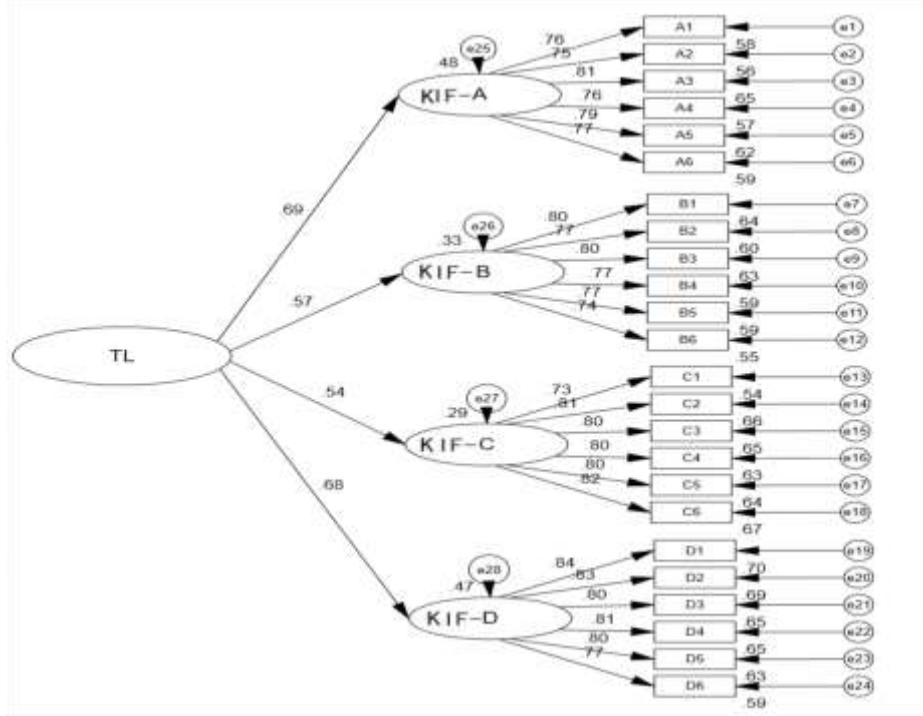
Figure 2：CFA model of the influencing factors of teacher leadership

Table 2 Fitting index of confirmatory factor analysis model

GFI	Numerical value	Excellent fitting index	Effective fitting index	Standard or not
Chi-square	263.147			
df	248			
χ2/df	1.061	≤3	≤5	Fit
P-value	0.243	>0.05		Fit
GFI	0.939	≥0.9	≥0.8	Fit
AGFI	0.926	≥0.9	≥0.8	Fit
CFI	0.997	≥0.9	≥0.8	Fit
NFI	0.948	≥0.9	≥0.8	Fit
RMSEA	0.014	≤0.05	≤0.08	Fit
SRMR	0.0345	≤0.05	≤0.08	Fit

In Table 2,the relationship between variables is analyzed by structural equation model.The results are as follows: Chi-square=263.147, df=248,Chi-square degree of freedom ratio ($\chi 2/df$=1.061), goodness of fit index (GFI=0.939), root mean square of approximate error (RMSEA=0.014), comparative fitting index (CFI = 0.997), goodness of fit index (GFI=0.939), adjusted goodness of fit index (AGFI=0.926), standard fitting index (NFI=0.948) are all in accordance with the reference standard of fitting index. And the significant value of the model fitting is 0.243, Standardized root mean square Residual (SRMR=0.0345),which indicates that the fitting degree of the model is good.

According to the above analysis, the 24 key variables of four components are listed by factor load coefficient from high to low as follows:

Component KIF-A:A3,A5,A6,A4,A1,A2.
Component KIF-B:B1,B3,B2,B4,B5,B6.
Component KIF-C:C6,C2,C3,C4,C5,C1.
Component KIF-D:D1,D2,D4,D3,D5,D6.

Major findings of Research Objective 3:
In Phase 3 : It is concluded that the effective managerial guidelines to improve the teacher leadership in Chinese Public colleges and universities.A total of 30 key guidelines(KG) were discussed.Details were as follows:

Key guidelines of Component KIF-A: Management guidelines on the practice of teacher leadership in Jilin public colleges and universities: KG-1: Building a motivated and committed team. KG-2:Foster a climate oftrust and respect. KG-3: Routinely monitor the situation and always stay well- informed. KG-4:Deciding and prioritizing objectives. KG-5:Planning for intended outcomes. KG-6:Students must come first. KG-7:The development of professional skills and personal ability should not be ignored. KG-8:Communicating effectively. KG-9:Listen intentionally and ask for input. KG-10:Knowledge, training, and experience in online or mixed distance learning.

Key guidelines of Component KIF-B: Management guidelines on how to promote the development of teacher leadership:KG-11:Promote teachers' participation in management and assign a series of mobile roles to organization members according to individual abilities and the characteristics of tasks in specific situations. KG-12:From the material level to build a cooperative campus culture, to create a relaxed and comfortable, easy to communicate work and learning environment. KG-13:From the spiritual level, we should construct a cooperative campus culture and form a learning community for teachers in academic, scientific research and management. KG-14: Formulate relevant incentive systems to encourage exchanges and cooperation among teachers of various disciplines. KG-15:Improve teachers' interpersonal leadership skills, including college teachers' perception and communication skills in interpersonal communication. KG-16:Establishing and perfecting the training Mechanism of College Teacher leadership.KG-17:Professional authority is one of the important sources of university teacher leadership. The purpose of improving teachers' professional knowledge and skills is to improve teachers' professional authority.

Key guidelines of Component KIF-C: Management guidelines on how to deal with the challenges they are facing:KG-18:An expert group is established annually to review strategic plans and set priorities for target implementation. KG-19:Taking teacher leadership theory as a required course for teacher entry, the content of teacher leadership should form a complete and systematic training and application system.KG-20:Through the adjustment of organizational structure and the change of management mode to improve the enthusiasm and initiative of teachers.KG-21:To develop an education management system with regional and university characteristics.KG-22:Strengthen the exchanges and cooperation between teachers and teachers, teachers and students, strengthen the exchanges and cooperation between colleges and universities, and strengthen the exchanges and cooperation between domestic and foreign colleges and universities.KG-23:Expand and leverage resources to identify the sustainable development of its universities by developing modern educational technologies, emphasizing the multiple possibilities offered by digital and Internet development; technology-enhanced learning systems and tools; multiple curriculum models (such as face-to-face classroom, face-to-face classroom,

remote, online and hybrid education models), and providing more professional degrees and professional certification programs. KG-24:Retains and allocates resources.

Key guidelines of Component KIF-D: Management guidelines on how to correctly deal with political, economic and social factors:KG-25:Colleges and departments realize the autonomy and substantial operation of the college under the condition that they have a certain ability of autonomy.KG-26:Formulate financial systems related to major crises and set up special funds to ensure the operation of the organization.KG-27:Reflect on the problem of resource supply exposed by COVID-19 's epidemic situation, strengthen the accumulation of necessary resources, improve the ability of R & D and improvement of technical resources, the management and response ability of management departments, teachers' online and offline dual teaching ability and interpersonal communication ability and so on.KG-28:Improve the practice teaching system, strengthen the construction of practice bases inside and outside the school, and link scientific research, teaching and social services.KG-29:Jump out of the fixed mode of thinking and creatively look for unconventional solutions.KG-30:Learn to reflect.

Discussion

Discussion about Research Objective 1

Teacher leadership promoting school improvement is mainly manifested in four areas: management, curriculum and teaching, interpersonal relationship, self-development and promoting the development of others(Corresponding to the four dimensions of teacher leadership: administrative leadership, professional leadership, interpersonal leadership and self-leadership).The three issues that we have to address are:

First of all, who are the main body of teacher leadership in Chinese Public colleges and universities?

Teacher leadership is essentially a way to describe collective activities, including teachers' professional innovation, professional learning, sharing decision-making power, mutual cooperation, and active participation in school work improvement. Promote school reform and development, etc. Among them, there are no teachers appointed by formal leadership positions, and they have an impact on principals, colleagues, students and parents in cooperation with other teams and their own teaching work, thus reflecting their own leadership.Teacher leadership is no longer limited to personality traits, skills, talents, but also extends to social interaction and cooperation. Teacher leaders enable leaders outside the school leadership to participate in the school reform. Teachers are not only leaders in classroom teaching, leaders in schools, but also teaching advisers to local education departments.

The researcher believe that from the perspective of distributed leadership theory, teacher leadership of colleges and universities is a kind of school leadership that coexists with the leadership of traditional formal leaders such as presidents. In a specific task situation, in order to achieve the goal of the organization or team, through their own management ability, professional authority, effective communication ability and improving learning ability, a comprehensive influence on other members of the team.This research finding was in accordance with the theories or research of Katzenmeryer.M & Moller.G (2001 : 137), Crowther. F, Hann.L & McMaster.J (2001), Kaagen, Ferguson & Hann. L (2002), Harris & Muijis (2003 : 136). Its meaning includes the following points:

First, the main body of university teacher leadership is all teachers in university organizations.

Second, university teacher leadership is a kind of school leadership that coexists with the leadership of traditional presidents and other formal leaders, both of which constitute the distributed leadership of the school.

Third, the leadership of university teachers is a kind of comprehensive influence. It is mainly composed of four dimensions: administrative leadership, professional leadership, interpersonal leadership and self-leadership.

Fourth, in the specific situation of distributed leadership, whether in the role of leader or follower, university teacher leadership can play an influential role in team activities and promote the realization of task team goals.

Second, what are the attributes of teacher leadership?

Successful teacher leaders have a wide range of characteristics, including experience, personality, personal and moral behavior, relational behavior, content, and curriculum knowledge (Killion & Harrison ,2006). Of course, for every teacher leader, these qualities, or attributes, are varied in different times and social backgrounds.Although domestic and foreign scholars have different expectations of teacher leaders, the main characteristics of teacher leaders are similar. Professional knowledge is the basis for obtaining its leadership position, and appropriate conduct and values are the key conditions for becoming a teacher leader.This research finding was in accordance with the theories or research of Chen Dan (2018, 52), Lai Xianghui and Zhao Jianmei (2018, 29-33).

Third, what are the areas in which teacher leadership plays a role?

Distributed leadership theory not only emphasizes teacher leadership in a specific situation, but also emphasizes that with the dynamic change of task situation, the role of teacher leadership should also be changed dynamically, and the role is dynamic and diverse (Jiang Yuanyuan, 2013: 87-91). The task situation faced by teachers is not immutable. Every university teacher needs to constantly adjust his or her role in different task situations such as teaching and management, and his leadership ability is also different. Therefore, college teachers need to adjust their leadership in the context of this task while changing their leadership roles.

Based on the perspective of distributed leadership theory, the teacher leadership model of colleges and universities can be constructed from the two dimensions of static structure and dynamic distribution. The static structure is shown as follows: in a specific task context, the leadership role played by university teachers is fixed, and its corresponding leadership is also determined. Among them, in the task context of administrative management and decision-making, teacher leadership is mainly administrative leadership; in the task context of teaching and professional development, teacher leadership is mainly professional leadership; in the task context of communication and cooperation, teacher leadership is mainly interpersonal leadership; in the task context of behavior and values, it is mainly self-leadership. The dynamic distribution shows that colleges and universities teachers change randomly under the task context of administrative management, teaching, cooperation and values, and teacher leadership changes accordingly. As a result, the teacher leadership model is constructed from the perspective of distributed leadership theory, as shown in figure 3.
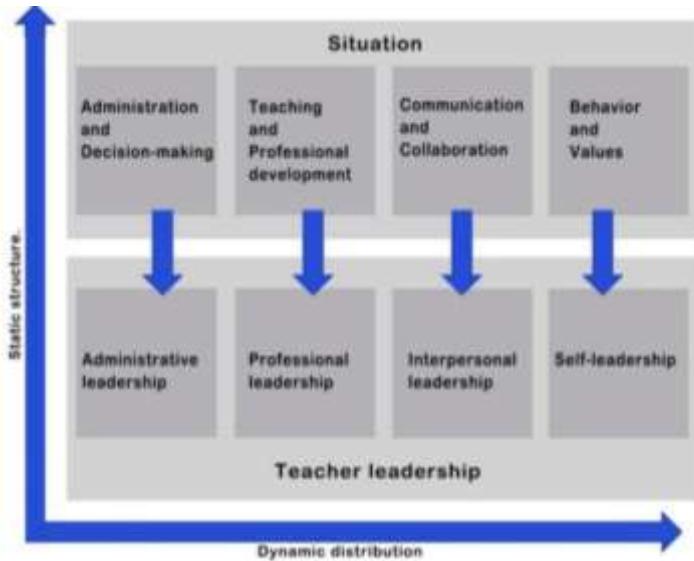
Figure 3: Teacher leadership model from the perspective of distributed leadership

Nevertheless, the findings of this study are different from previous studies to some extent. School leaders have gradually changed from managers to team builders, emphasizing the improvement of overall ability and participation in systematic thinking to solve challenges. In this case, leadership attributes such as the ability to communicate and promote collaboration are considered more valuable. Although it is generally accepted in this field that all informal teacher leaders have influence outside the classroom, there are few studies that clearly examine the attributes of these people. Therefore, it is worth noting that the most important attribute of informal teacher leadership is the type of quality that has a positive impact on colleagues.

The above research content constructs the dimensional framework of teacher leadership in Jilin Province from three aspects: the role of teacher leadership, the key attributes of teacher leadership and the areas of teacher leadership, and solved the Research Objective 1.

Discussion about Research Objective 2

The researcher determined the influencing factors of teacher leadership from four aspects:

The results of Component KIF-A show that school principals assign leadership responsibilities to teacher leaders, and this allocation method to promote school teacher leadership is based on the theoretical framework of the research, that is, distributed leadership theory. School leaders also promote teacher leadership by assigning new roles and different responsibilities to teachers, involving them in different activities and functions of the school, and by convening teachers to hold meetings and discussions.This research finding was in accordance with the theories or research of Wasley (1991), Harris (2003 : 437-437*448), Grant (2006). Teacher leadership is part of school leadership, and its practical areas include administrative leadership (participation in decision-making, formulation of school and college policies and development goals, and school affairs management, including teaching, scientific research, use of funds, etc.); Professional leadership (discipline leaders in related fields, curriculum reform and teaching); Interpersonal leadership (participatory leadership, collaboration and sharing, mediation and communication). Self-leadership (ability to improve their abilities and aspirations, professional development, and promote the professional development of teachers).

The results of Component KIF-B show the conditions necessary to promote the development of teacher leadership skills."Have a positive and cooperative school culture and share school planning and vision with teachers" and "Have a strong desire to become a teacher leader, work hard to improve their own ability." is very important.Also includes: school encouragement and development of teachers' leadership, promotion of teachers' participation in management, personal will, support and trust between schools and colleagues, provision of training, relaxed working environment and rewards, will have a positive impact on the development of teacher leadership.

The results of Component KIF-C shows that the factors hindering the development of teacher leadership and the challenges they face."Social and cultural factors set up obstacles to the leading role of teachers in the school. (such as prejudice against teachers' positions in society, etc.). ",and "Competition leads to a lack of consistent work goals and little cooperation, limiting solutions to problems to personal experience." are two more important obstacles.There is no autonomy for ordinary teachers; lack of sharing and cooperation among departments; empirical conservatism and lack of innovation; no interdisciplinary interaction between disciplines; lack of training; inadequate school infrastructure (laboratories, classrooms, bathrooms, school buildings, hospitals, libraries, etc.), lack of utilities (water, electricity, Internet, winter heating), etc.The above factors hinder the development of teacher leadership.In addition, during the COVID-19 pandemic, the lack of cooperation has been proved to be a key factor affecting teachers' leadership development. While more research is certainly needed to confirm this hypothesis, given the results of this and previous studies, this crisis may lead to an increase in distributed leadership practices (Harris,2020 ; Harris and Jones, 2020 : 243-247).

Component KIF-D shows that the factors that affect the development of teacher leadership.Teachers and schools are part of the social system, and social factors influence school, faculty, and teacher leadership. Gender factors also affect teacher leadership, and female teachers may face more problems in their work.This research finding was in accordance with the theories or research of Peng Yun (2017, 27-29), Steeves et al. (2017, 563-580),Somnath Sinha and Deborah L. The economic situation of the school directly affects the teaching facilities and teaching environment, teachers' scientific research, training, salary and reward payment and other issues, so economic factors have a significant impact on teacher leadership.There is political intervention in school affairs such as teacher recruitment, transfer, daily work and so on. Usually, teachers are political posts, and teachers with good political background have access to opportunities and benefits.Relevant research shows that there is a significant positive correlation between teacher leadership and promotion, challenges, social and cultural, economic and political factors. There is also a significant positive correlation among social, cultural, economic, political and other factors.This research finding was in accordance with the theories or research of Lisa et al. (2012),Baer & Duin, (2020, 54),Kuswardhani, R. M. (2020).

Through the confirmatory factor analysis of the hypothetical model, the model factors of the key influencing factors are found, and the structural equation model is constructed. Through the model analysis, this study obtains good model results on the basis of data. On the one hand, due to the effectiveness of the research tool design based on theoretical analysis, the results of the good model are obtained. On the other hand, it also truly reflects the key factors affecting the leadership development of public university teachers in Jilin Province.

Discussion about Research Objective 3

In this research stage, with the help of 9 experts from Northeast normal University, in the process of discussing and giving guidelines to the model, they said that the model has high credibility and good evaluation effect no matter from the point of view of professional field or from the sample size of data. This result was consistent with the survey results and interview results of the model. Therefore, the model was effective and feasible. According to the results of Section 2 of the study, experts put forward management guidelines to improve the teacher leadership in Public colleges and universities in Jilin, a total of 30 key guidelines.

The results of this study and previous studies show that the COVID-19 pandemic has changed the teacher leadership practice of Chinese public colleges and universities in Jilin Province to a certain extent. What these changes mean for the future of educational organizations is unclear; however, the importance of understanding these changes cannot be underestimated. In this ever-changing era, the long-term impact of crises like COVID-19 on all levels inside and outside the education system is unknown, so more research is needed.

Recommendations

Recommendation for Policies Formulation

In order to better promote the teacher leadership development of Chinese public colleges and universities in Jilin Province, it is suggested to follow the following principles when formulating policies:

1.From the perspective of distributed leadership theory, we can consider redefining the concept and structure of teacher leadership in order to better improve the management system. Therefore, the formulation of policies should be based on the characteristics of teacher leadership roles in different task situations, assign a series of mobile roles to organization members.

2.Create a positive cooperative campus culture and share the goal vision with teachers.Campus culture plays a guiding role in the cultivation of teacher leadership and is the main driving force for the realization of teacher leadership. Integrate the active and cooperative campus culture into the policy formulation, and build it together from both material and spiritual aspects, so as to form a community of academic, scientific research and management.

3.According to the characteristics of colleges and universities in Jilin Province, the training mechanism of university teacher leadership should be established. At the same time, the formulation of school policies should consider whether it can promote the improvement of teacher leadership.

4.It is necessary to embed the relevant systems to deal with major crisis events under the current policy and institutional framework, so that various systems such as budget and management cover both normal development and abnormal operation, shorten the reaction time when the crisis occurs, and improve the efficiency of system implementation. Amend the budget and final accounts system to allow the withdrawal and retention of special funds to deal with the crisis, reduce the pressure of the government in abnormal operation, at the same time expand the independent space of colleges and universities, and enhance their ability to deal with the crisis independently.

Recommendation for Practical Application

In the context of COVID-19, this study determines the attributes, influencing factors and how to improve the teacher leadership in Jilin public colleges and universities. Based on these findings, the researcher put forward some ideas for the practice of teacher leadership in public colleges and universities in Jilin Province:

1.Colleges and universities should strengthen the improvement and reserve of resources.In the process of future development, colleges and universities should reflect on the supply of resources exposed by COVID-19 's epidemic situation and strengthen the necessary accumulation of resources.

2.The talent incentive policy should be further improved and implemented, the enthusiasm of teachers should be aroused through the incentive mechanism, and self-management and self-motivation should be strengthened.

3.To construct a framework of knowledge production supported by interdisciplinary and interdisciplinary. In the face of a major human crisis, a single knowledge production and reserve leads to a lack of ability to deal with the crisis. Only by breaking the discipline barriers and broadening the knowledge dimension, can we effectively avoid or deal with the crisis.

4.Improve the practice teaching system, strengthen the construction of practice bases inside and outside the school, establish the relationship among scientific research, teaching and social services, and promote the transformation of education. Therefore, it is suggested to increase practical teaching links, let teachers go out of the classroom and go deep into the society, encourage teachers to cooperate with various social platforms, understand the real needs of the society, and make graduates smoothly integrate with the society and better serve the society. this is the ultimate goal of education.

Recommendation for Further Research

The COVID-19 pandemic has caused long-term and persistent interference to the traditional school environment. The current research results show that the findings of this study are of certain practical significance and timely, and it will be conducive to some related studies in the post-coronavirus era.

1.Repeat and delve into this study. With the continuous variation of the new crown virus strain, we all know that the epidemic is not over, and the challenges that this crisis brings to educational organizations around the world are constantly changing and unknown, therefore, it is hoped that more researchers and participants will carry out mixed methods of research on this similar crisis-a combination of quantitative research and qualitative research.

2.A study on the teacher leadership in different types of schools in different regions. The population and samples of this study are from administrators, teacher leaders and ordinary teachers of public universities in Jilin Province, China. Although the northeast region has a unique regional and cultural education network, there is enough space to consider similar research in the context of different regions in the future. By conducting similar studies in different regions, we can analyze whether the results of this study are applicable to a wider range of schools and provide educational organizations with some valuable information that will help promote the development of teacher leadership.

3.Considering the discovery of the key attributes of university teacher leadership, another suggestion for future research is to focus on the selection and evaluation criteria of teacher leaders, which also has a certain practical significance for the management and development of educational organizations in the future.

Teachers' role and influence in school leadership are very important. School administrators often turn to teacher leaders to lead teaching and school reform. The depth of this change depends on administrative support, peer acceptance and teachers' own skill development and other factors. The study of teacher leadership can not only lead to the success of educational organizations, but also train teachers and staff who are committed to achieving organizational goals, and create a working environment that attracts, retains and motivates teachers and staff teams. and effectively

promote students' achievement and success. In the period of crisis, teacher leaders should to promote the reform process of educational organizations and become agents of change through personal and professional growth.The COVID-19 pandemic poses challenges for our educational organizations, but it should be seen as an opportunity and as a catalyst for changing a relatively stable education system since the beginning of the 20th century. If the crisis can be viewed and handled correctly in this way, the possibilities for the future are numerous and infinite. The emergence of deficiency and uncertainty is not only a major challenge to the development of China's higher education, but also the best opportunity to re-establish its position in the international higher education pattern. In this sense, COVID-19 's epidemic brings not only a crisis, but also some unexpected effect. In the process of future development, it is very important whether China's higher education can grasp this key node to carry out deep-seated reform and development.

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