Discussion on How to Improve the Teaching Efficacy of Chinese University Teachers from the Perspective of Information Leadership

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Abstract: With the widespread use of the Internet, the era of resource sharing has come. As one of the important goals of the United Nations in promoting Education for Sustainable Development （ESD）, ICTs (Information and Communication Technologies) has gradually infiltrated into schools, and the informationization of education has become increasingly prominent. According to the current trend of educational development, the key to educational reform and development lies in information-based teaching, which supports the reform of teachers' sustainable teaching methods. Through the explanation of information-based teaching leadership, and taking College of Food Engineering, Jilin Engineering Normal University as the research object, this study puts forward the strategies to improve university teachers' teaching efficacy from the perspective of teachers' information-based teaching leadership. The purpose of this study is to provide reference for related research.

*Keywords:*Chinese university teachers，Education for Sustainable Development，information leadership，teaching efficacy

Introduction. After the 19th CPC National Congress, the informationization of education in China has entered the 2.0 era. *The Action Plan of Educational Informatization 2.0* pointed out that educational informatization is the basic connotation and remarkable feature of educational modernization and an endogenous variable that promotes the deep reform of education and supports and leads the modernization and sustainable development of education. As the trainer of students' information literacy and ability, teachers play an important role in the process of educational informatization. The improvement of teachers' information ability has also become an important part of the professional development of education. However, there are some problems worth paying attention to. In the context of information-based teaching, it is not

enough to rely on teachers' teaching literacy, but also requires teachers' strong self-confidence that they can effectively complete the teaching work, that is, teachers' sense of efficacy. As one of the important goals of the United Nations in promoting Education for Sustainable Development (ESD), ICTs (Information and Communication Technologies) has gradually infiltrated schools. Only when teachers think that the use of information technology can enhance and expand classroom practice and supplement and improve classroom practice, can they actively adapt to and dare to try the change of teaching mode, so as to obtain better teaching results. As an important promoter and executor of education and teaching, teachers' sense of self-efficacy will affect whether they can calmly face the changes and challenges of sustainable education and teaching.

In recent years, with the rise of "Internet +", MOOC, Micro-Course Online Video, Flipped Classrooms, TEAM Model, Mixed Learning, Mobile Learning and so on are gradually changing the traditional teaching mode and teaching process, which has a great impact on the school teaching environment and teaching methods, and teachers' teaching efficiency has also been endowed with the characteristics of information. In view of this, on the basis of considering the information environment and based on the perspective of information leadership, this study is expected to analyze the ways to improve the sense of teaching efficacy from the perspective of teachers' information leadership from the perspective of multi-dimensional structure. Finally, it provides solutions for the related problems in the implementation of information-based teaching in the future.

LITERATURE REVIEW
THE CONNOTATION OF TEACHING EFFICACY

Teaching efficacy is a relatively mature concept in educational psychology, which comes from A Bandura[1], an American scholar, which refers to an individual's expectation of whether he or she has the ability to accomplish a certain behavior in a particular situation, or the ability belief of the behavior required to accomplish a certain result. Scholars at home and abroad have given different connotations and denotations to the sense of teaching efficacy. Armor[2] believed that teaching efficacy is a belief in the extent to which teachers can influence students to complete tasks. Ashton[3] believed that teachers believe that they influence students' performance; that is, teachers' confidence in whether they can complete teaching tasks, or whether teachers believe that they have the ability to influence students' future achievements. According to Woolfolk[4], teaching efficacy includes teachers' belief in the power of school education, responsibility for students' learning success or failure, learning function, general educational philosophy, and their own belief in the degree of influence on students. Chinese scholars draw lessons from the views of foreign scholars in the definition of teachers' efficacy. Zhang Yongsheng[5] believes that teaching efficacy refers to the extent to which teachers can subjectively judge and evaluate their own teaching achievement behavior, and then play a role in the cultivation of students. Xin Tao[3]

and other scholars directly cited Gibson and Ashton's definition of teaching efficacy, which is defined as teachers' subjective judgment of their own ability to influence students' learning behavior and achievement; that is, the belief that they have the skills to teach students well. Luo Shengquan[6] and others believed that teaching effectiveness refers to teachers' subjective judgment and awareness of whether they have the ability to complete a certain behavior in a particular situation, as well as the objective representation of effective teaching ability. Thus it can be seen that teaching effectiveness is a kind of belief, subjective judgment and intuitive perception, which is the consensus reached by many scholars.

MEASUREMENT OF TEACHING EFFICACY

Self-efficacy is a subjective concept, which cannot be directly observed and known, so it is generally evaluated in the form of self-report scale. The measurement of teaching efficacy can be studied from a single-dimensional, two-dimensional or multi-dimensional point of view, and some researchers analyze it as a single dimension. For example, teachers can influence the degree of students' performance or teachers' expectations of their own abilities, and some researchers divide teaching efficacy into two or more dimensions to analyze. For example, whether it can affect students' learning performance, the effectiveness of effective teaching, their own teaching expectations and so on. Berman, the representative of single-dimensional measurement, made a general description of teaching efficacy from an overall point of view, mainly a belief in judging teachers' teaching ability; that is, two-dimensional measurement representative Gibson and Dembo[7] divided the sense of teaching efficacy into two parts: general teaching efficacy and personal teaching efficacy. However, this scale is more limited to teaching and lacks attention to the social environment of teachers' teaching. Bandura[8], the representative of multi-dimensional measurement, tried to expand the scale to seven dimensions: "self-efficacy affecting decision-making", "self-efficacy affecting school resources", "teaching efficacy", "discipline efficacy", "parental participation efficacy", "community participation efficacy" and "creating a positive school atmosphere". In 2001, Tschannen-Moran and Hoy[9] considered the reliability and validity of the scale. After three rounds of independent research, they defined the dimensions as "teaching strategy", "classroom management" and "making students participate". At the same time, they paid more attention to students' thinking development, teaching creativity, teaching flexibility and so on. At present, the scale has been adopted by (TALIS), an international teacher teaching survey project of the Organization for Economic Cooperation and Development (OECD), and is quite representative in the international community.

THE RESEARCH ON THE INFLUENCING FACTORS OF TEACHING EFFICACY

Based on the existing research, the factors that affect teachers' teaching efficacy are generally divided into external factors and internal factors. The external factors mainly refer to the factors at the organizational level of the school, including the region, the cultural background of the

school, the interpersonal relationship between teachers, the relationship between teachers and students, and so on. The internal factors mainly include teachers' teaching age, educational background, professional title and some psychological factors of teachers. Woolfolk[4] et al. found that classroom interpersonal relationship, school management and students' learning motivation have an important impact on teachers' self-efficacy. Xin Tao[10] and others explored the relationship between teachers' self-efficacy and school factors. It is found that six factors such as the integrity of school system, the development conditions provided by work, school support system, school atmosphere, teacher-student relationship and teacher-student relationship have independent and significant influence on teachers' self-efficacy. Chen Chunjin[11] investigated teachers' sense of teaching efficacy in 36 countries and regions participating in the TALIS project, and analyzed the factors affecting teachers' sense of teaching efficacy by using Sharp value decomposition. The results showed that teachers' job satisfaction has the greatest influence on teachers' teaching efficacy in various countries.

THE PROPOSAL OF THE STRUCTURE OF TEACHERS' INFORMATIZATION LEADERSHIP

With regard to the concept of teachers' information technology leadership, although its extension has been expanding in recent years, there is a lack of in-depth exploration in connotation. Based on this consideration, this study uses the "key success factors analysis" to deeply explore the concept of teachers' information technology leadership through the identification of key factors and the determination of priorities. Through the relevant literature focus, extraction, merger, deletion, reconstruction and other links, it is finally determined that the main key factors of teachers' information technology leadership are teaching leadership, professional guidance, management and implementation, communication and cooperation. Therefore, this study regards Teaching Leadership in Information Technology（ITTL）、Professional Leadership in Information Technology（ITPL）、Management and Maintenance in Information Technology (ITMM)、 Communication and Collaboration in Information Technology (ITCC) as the four core elements of teachers' information technology leadership. Teachers' information technology leadership is defined as "teachers, on the basis of constantly improving their information technology literacy, integrate information thinking and skills into teaching and curriculum, and play a leading role through key activities such as management, implementation, communication, collaboration, and so on" in order to exert influence on students, colleagues and other related personnel. Through the above analysis of the conceptual elements, this study took Teaching Leadership in Information Technology（ITTL）、Professional Leadership in Information Technology（ITPL）、 Management and Maintenance in Information Technology (ITMM)、 Communication and Collaboration in Information Technology (ITCC) as the four aspects of teachers' information technology leadership.

THE INFLUENCE OF THE LEADING POWER OF INFORMATIZATION SPECIALTY ON COLLEGE TEACHERS' SENSE OF TEACHING EFFICACY

The United Nations released *the Global Broadband Progress Report* on September 14, 2019, which showed that 48% of the world's population now has access to the international Internet, 76% of people live in places with access to 3G, and 43% of them have access to 4G. With the continuous development of China's network technology and the continuous improvement of Internet coverage, 5G network is about to be realized, and the construction of the two platforms "three links" and "three links" is constantly advancing, which provides a high-quality technical environment for teachers to carry out online teaching. Teaching no longer depends only on face-to-face classroom teaching, but also with the help of teaching platform, network video, WeChat voice and other ways of teaching, with a variety of teaching forms, such as MOOC, Micro-Course Online Video, Flipped Classrooms and so on. With the arrival of the information age, the trend of rapid development of science and technology urges people to share resources. Teachers can cross the limitations of time and space, learn from each other's excellent scientific research achievements and promote teaching. However, the reality is that the application of information technology in the field of education is limited, or it is difficult to go deep, and the expected results cannot be achieved, and the teaching reform is beset with difficulties. The reasons for the low leading power of teachers' information technology are major as follows: First, for reasons such as "shyness", "embarrassment", "not wanting to be in the limelight", "shooting at the head", "headmaster does not support" and so on; those teachers with strong information technology ability are unwilling to come forward to guide and lead other teachers of the same trade. Second, "when young teachers who understand technology come forward to help peer teachers guide information-based teaching, they are always resisted or even disdained by peer teachers and are unwilling to accept guidance and influence." On the one hand, it is unwilling to lead others; on the other hand, others do not want to be led, and the root cause is that the school has not yet formed an organizational atmosphere of mutual support and learning, in the face of the new thing of information-based teaching. There is a sense of discomfort between the leader and the led. Therefore, to improve the "deficiency" of teachers' information professional leadership, it is inseparable from creating a harmonious atmosphere of actively exploring information technology teaching and learning and supporting each other. In addition, teachers' information technology ability and awareness of technological progress are not only the cornerstone of teachers' information technology leadership, but also an important part of teachers' information professional leadership.

THE INFLUENCE OF THE EXECUTIVE POWER OF INFORMATION MANAGEMENT ON TEACHING EFFICIENCY

The effective promotion of school education informatization needs information management. As the main force in the development of the school, teachers should perform the responsibilities

undertaken by the senior leaders of the school, so it is more effective for teachers to undertake some administrative leadership functions to promote teaching. To a certain extent, the level of teachers' information management is the key factor to ensure the effective promotion of school informatization. The improvement of teachers' information technology literacy and information communication and cooperation ability can directly promote the implementation of teachers' information management, and the improvement of teachers' information management execution can directly promote the improvement of teaching efficiency.

CONCLUSION: THE STRATEGY OF IMPROVING TEACHING EFFICACY BASED ON INFORMATION LEADERSHIP.

ESTABLISH A WEB-BASED LEARNING COMMUNITY AND A TECHNICAL SUPPORT SERVICE GUARANTEE SYSTEM

Through the success and failure cases shared by others, we can provide alternative experience for teachers, enable teachers to avoid making the same mistakes, enhance teachers' confidence in information-based teaching, and help to enhance teachers' subjective judgment and evaluation of teaching activities. The advantage of the web-based learning community lies in that it cannot only share resources, but also learn from each other's experience, reduce teachers' mistakes in the process of education and teaching and lead teaching goals. The establishment of the web-based learning community must be guaranteed by the technical support service of the school. Without the technical support mechanism of follow-up maintenance, it will be difficult for the school to maintain the long-term mechanism of information-based teaching. However, in the current education and teaching, the implementation and management performance of teachers' information-based teaching leadership is not outstanding, teachers cannot well integrate information technology into classroom teaching. Its application ability of information technology is relatively weak, which is one of the reasons why the productivity of information technology education is low and it is difficult to train innovative talents. Therefore, the author suggests that schools should create a sustainable environment for the development of teaching efficiency, provide a platform for teachers to learn modern information technology, support and encourage teachers to implement information-based teaching leadership, and really give full play to the role of information technology. Only in this way can we promote the sustainable development of the school and improve teachers' professional accomplishment and teaching efficacy.

ESTABLISHING INCENTIVE MECHANISM AND PERFECTING TEACHER ASSESSMENT SYSTEM

As suggested by Marks, H. &Printy, S.[12], only when teachers share information leadership can they really attach importance to information leadership and actively participate in practice, so as to promote their own information leadership. Therefore, it is necessary for schools to incorporate information leadership into teachers' assessment. In the school, a complete and reasonable

management system and rules must be established and strictly implemented. Among them, the long-term incentive mechanism can ensure the continuous motivation of teachers and improve their teaching effect. In addition, when improving the teacher assessment system, schools should refine the evaluation dimension of information leadership, affirm teachers' efforts, enhance teachers' self-confidence in teaching and promote their professional development.

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