

Research and Effectiveness Analysis of The Evaluation System for University Teachers in The New Era Based on The 'MOLP' Competency Perspective

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Abstract

Starting from the perspective of management, this study analyzes and summarizes the current research status of competence at home and abroad through literature review. Based on the competence evaluation model of higher education teachers, combined with the development requirements and characteristics of the new era university teacher team, the MOLP competence model for higher education teachers is proposed, and a new era university teacher evaluation system is constructed on the basis of this competence model. The evaluation system for university teachers constructed in this study can provide guidance and suggestions for talent recruitment in domestic universities in the new era, key training areas for young university teachers, performance evaluation indicators for university teachers, and personal development plans for teachers. This study is based on the characteristics of teacher development at S University, and constructs a teacher evaluation system that is suitable for the university. The performance scores of the university's teachers in the past three years were analyzed to verify the leading and promoting role of the evaluation system in enhancing the competence of university teachers and the development of school construction.

Keywords

Competency model, higher education teachers, model construction, evaluation system for university teachers.

1. Research Status and Literature Review

1.1. Research Status of Competence

Since Harvard psychologist McClelland (1973) creatively proposed the relationship between competence and job performance, and pointed out that 'intelligence and an individual's ability to perform the job are related, but do not play a decisive role', 'competence can truly distinguish the conditions and behavioral characteristics of individual performance, and competence models should replace intelligence tests and occupational ability tests'. Once the concept of competence was proposed, it was widely recognized in the academic community, and many scholars further improved the connotation of the competence model. Spencer (1983) proposed a competency model from five aspects: professional technicians, managers, salespeople, community workers, and entrepreneurs. Cristina (2004) introduced the pyramid model in her study of global leadership competency models, symbolizing the six developmental stages of leaders. Her research on global leadership competency models has predictability.

In recent years, competency research has gradually become a hot topic in China, widely applied in fields such as human resource management, education, psychology, etc. Domestic scholars mainly draw on foreign research results to define competence, and provide localized interpretations based on China's national conditions. Wang Zhongming (2001) believes that

competence refers to the objectively measurable individual characteristics possessed by high performers in specific job positions, organizational environments, and cultural atmospheres, as well as the predictable behavioral characteristics that lead to performance. Shi Kan (2002) emphasizes the situational and dynamic nature of competence, believing that competence is 'the individual potential characteristics that can distinguish outstanding performers from average performers in specific contexts, including knowledge, skills, abilities, traits, motivation, etc.

The competency model is applied to human resource management processes such as talent recruitment, selection, training, and performance evaluation to enhance job matching and organizational effectiveness; Design training courses based on competency models to improve the pertinence and effectiveness of training, and promote talent development; Provide reference for personal career planning and development, and help individuals enhance their career competitiveness.

1.2. The Current Research Status of Teacher Competence

The international research on teacher competence can be traced back to the 1970s. The American Association of High School Principals has proposed a competency model for high school principals, which is used to construct a principal selection model and study their career development direction. In the early 1990s, the UK National Centre for Education Assessment developed a unique competency model for education management personnel, which focused on indicators such as skills, behavior, professional qualifications, personal qualities, and traits. Since the 21st century, Hay Mcber has proposed competency evaluation criteria for high-performance teachers to the US Department of Education.

The research on competence in our country started around 2000. Shi Kan et al. (2002) studied the competency characteristics of management personnel in China's communication industry through behavioral event interviews, with a total of 10 items; Later, a total of 11 competency characteristics of senior management personnel in Chinese family businesses were studied. Zhu Guofeng et al. (2004) constructed a competency index system and its weights for seafarers using psychological scales and expert consultation methods, and proposed a comprehensive evaluation model for seafarers. The above research mainly focuses on enterprises. Compared to others, there is a lack of research on competency models for university teachers. Niu Duan et al. (2012) summarized three dimensions of teacher competence using the 0 * NET job analysis method; Huang Yan et al. (2013) used Analytic Hierarchy Process, Interview Method, Questionnaire Survey Method, and Delphi Method to obtain a competency model for university teachers with 5 dimensions and 19 indicators.

1.3. Current research deficiencies in teacher competence

The current research on teacher evaluation at home and abroad has formed some valuable conclusions, but there are also the following problems in the existing research: 1) In terms of research subjects, most studies focus more on the evaluation methods and systems of primary and secondary school teachers, especially lacking systematic thinking on the 'competence of different types of university teachers under the background of education evaluation reform in the new era' (He Qizong, 2014; Zhao Zhongjie, 2021); 2) From a research perspective, the existing evaluation systems for university teachers mostly focus on the characteristics of teacher personality charm and knowledge reserves, while there is relatively little research on the multi-dimensional evaluation of teacher ethics, professional skills, and research abilities, especially the lack of a multi structure competency evaluation model based on different levels and categories of teachers (Niu Duan 2012); 3) In terms of research methods, most studies explore the concepts and trends of teacher evaluation reform from a macro perspective, lacking scientific construction and empirical analysis of teacher competency models (Zhao Zhongjie, 2021).

2. Research Background and Significance

2.1. Research background of the evaluation system for university teachers

In recent years, China's higher education sector has continuously promoted the reform of the teacher evaluation system. The policy background is centered on the 'Overall Plan for Deepening the Reform of Education Evaluation in the New Era' (hereinafter referred to as the 'Overall Plan'), combined with multiple supporting policies, gradually building a scientific and diversified evaluation mechanism. In October 2020, the Central Committee of the Communist Party of China and the State Council issued the 'Overall Plan', which clearly proposed to eliminate the stubborn problem of 'only papers, only hats, only professional titles, only academic qualifications, and only awards'. The current policy direction focuses on building a comprehensive evaluation system that takes into account teaching, research, and social services, and emphasizes the connection between evaluation results and teacher career development. It also emphasizes that each university needs to optimize evaluation indicators based on its own characteristics.

2.2. The significance of this study

As a pioneer and source of innovation in national university reform, Shanghai has taken the lead in exploring new ideas, methods, and mechanisms for evaluating university teachers in the new era. It is a timely research topic for Shanghai to effectively unleash the existing advantages of higher education and accelerate the development of higher education innovation. The purpose of studying the competency model of university teachers is mainly to improve the management mode of university teachers, promote the professionalization of teacher development, and meet the requirements of education reform in the new era. This project aims to incorporate the reform requirements of education evaluation in the new era into the competency model of university teachers, and take S University as a typical case, aiming to innovate and improve the existing evaluation system for university teachers, and provide research references that combine the spirit of education reform in the new era with practical significance for the innovation and reform of the evaluation system for university teachers.

3. Research Design and Process

3.1. Research objective

The reform of educational evaluation involves multiple factors and different subjects, and is the 'key battle' and 'toughest battle' of comprehensive educational reform. Under the strategic layout of deepening the reform of education evaluation in the new era by the country, this project aims to integrate and analyze the norms and trends of teacher competence in domestic and foreign universities. Based on this, it intends to use machine learning algorithms and other methods from the perspective of multi structure competence to form a heat-map of teacher competence evaluation at home and abroad. The competence model will be combined with big data analysis to form a norm system of teacher competence in domestic and foreign universities, aiming to provide analytical tools and theoretical support for universities to carry out teacher evaluation work.

3.2. Construction of MOLP Teacher Competency Model Evaluation Index System

Based on the theories, laws, and current situation of teacher competence summarized in the previous sections, this section attempts to establish a complete hierarchical structure model for evaluating the competence of university teachers. This study considers M (Multiple Evaluation), O (Outstanding Achievements), L (Leadership on Teaching&Research), and P (Process Evaluation) as the four factors that determine the competence of university teachers.

These four factors are located at the benchmark level in the hierarchical structure model. The four factors of the benchmark layer are influenced by several specific indicators, and the specific construction of the competence evaluation model for university teachers is as follows:

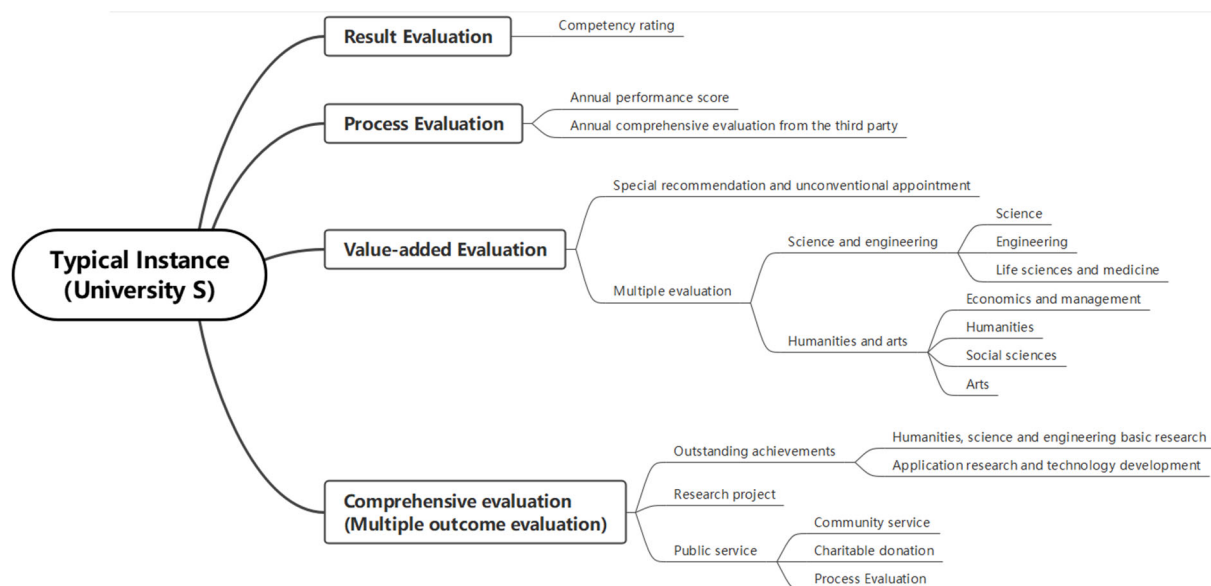


Figure 1. A hierarchical structure model for evaluating the competence of university teachers based on the MOLP teacher competence model

3.3. Analysis of the Effectiveness of Teacher Evaluation System - Based on the Performance of S College Technical Personnel

The model established in this study will use the performance scoring results of S college technical personnel as the main object to test the MOLP teacher competence model.

As one of the pilot units for the reform of science and technology talent evaluation in Shanghai, S University actively responds to the national policy of 'breaking the five only' and aims to break the traditional single evaluation mode based on papers, professional titles, education, awards, and hats, establish an evaluation system guided by innovative value, ability, and contribution, stimulate teacher vitality, and improve the quality of talent cultivation. By reforming the teacher evaluation system, the goal is for S University to build a more scientific and reasonable evaluation system, break the traditional evaluation model of 'only papers, only professional titles, only academic qualifications', and promote the comprehensive development of teachers in teaching, research, social services and other dimensions. Build a more scientific, fair, and diverse evaluation system to promote the comprehensive development of S University teachers in teaching, research, social services, and other fields, while improving the quality of education and research innovation capabilities, ultimately achieving the talent development goal of 'everyone can become talented and fully display their talents'. The specific inspection methods and steps are as follows:

1. Data selection and dimension framework design: Based on the performance scoring results of the entire school from 2021 to 2024 according to S University's statistics, select data that can reflect the competency evaluation selected in the previous section. According to the time dimension, performance data is divided into pre-reform (2021, 2022), early reform period (2023), and deepening reform period (2024); According to the dimension of professional titles, performance data is divided into junior, associate senior, and senior levels; According to the age dimension, performance data is divided into those under 30 years old, 30-50 years old, and over 50 years old.

2. Data cleaning and pre processing: Data quality inspection, removal of invalid data, removal of teachers who have resigned within four years, and removal of data missing items due to maternity leave, sick leave, etc; Handle outliers and eliminate situations where individual teachers' performance scores suddenly increase or decrease in a certain year, such as job transfers, suspensions, etc; Hierarchical labeling of data, 2021-2022= pre-reform, 2023=early reform, 2024=deepening reform. After processing, 2196 sets of valid data will be retained.

3. Overall trend analysis shows that the average annual performance has steadily improved, with a slight increase in growth rate; The standard deviation of the three stages shows that the data in the deepening stage of reform is relatively unstable; The excellent rate (the proportion of people exceeding the performance requirement by 1.5 times) has significantly increased. Combined with standard deviation analysis, the possibility of the 'Matthew effect' can be considered, and further analysis and exploration are needed. The data visualization processing is as follows:

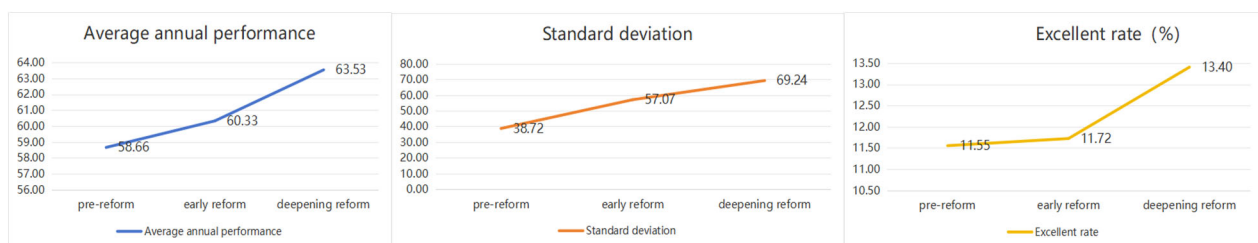


Figure 2. Overall Trend Analysis

4. Group difference analysis was conducted by grouping performance data according to series, selecting representative personnel and dividing them into four series: teaching and research, experimental technology, engineering technology, and book publishing. ANOVA analysis of variance showed that there was no significant difference between the experimental technology and book publishing series ($p=0.13>0.05$), but there was a significant difference between the teaching and research and engineering technology series and other series ($p<0.05$). Based on basic data, it can be found that teachers in the teaching and research series, as a group with initial advantages, have the possibility of obtaining more resources or opportunities more easily, thereby further expanding their advantages. Although teaching and research oriented teachers are the mainstay of the university teaching team and the main force in educating and nurturing talents, in order to achieve a balanced and fair development of various series as much as possible, in the process of further deepening reforms in the future, it is necessary to further consider the issue of the 'Matthew effect' between different series.

5. Reform policy verification, comparing the performance of the teaching and research oriented teacher group under the new and old teacher evaluation systems in 2021-2022 (before the reform) and 2024 (during the deepening stage of the reform). Propose null hypothesis (H_0): There is no significant difference in the average performance scores of the teaching and research teacher group under the new and old teacher evaluation systems ($\mu_1=\mu_2$). After verification, the two sets of data follow a normal distribution. The significance level $\alpha=0.05$ and the degree of freedom $df=n-1$ are chosen as ∞ , and the table shows $t_{0.025,\infty} = 1.96$, due to the test result of $t = 1.97 > 1.96$, rejecting the null hypothesis, it can be inferred that there is a significant difference in the performance of the teaching and research teacher group before and after the reform of the teacher evaluation system.

4. Epilogue

This article analyzes the norms of teacher competence development and teacher evaluation systems at home and abroad, and proposes an evaluation index system for university teachers based on the MOLP competence model, combined with the current development status of domestic universities and the background of education reform. Taking S University as an example, the performance scoring results of S University's professional and technical personnel are analyzed. Based on the time of introduction of the MOLP model, the differences in performance results before and after the model is established are compared. The reform has enhanced the vitality of teachers, stimulated their teaching and research enthusiasm, and produced a group of teaching masters and excellent teams; Improved the quality of talent cultivation, teachers pay more attention to teaching research and student development, and the quality of talent cultivation steadily improves; S University has expanded its social influence, and its reform experience has won the Excellent Case Award of the city where it is located. It is at the forefront of teacher education evaluation reform, providing useful reference for other domestic universities, further enhancing its social influence, and setting an example for the reform of university evaluation system.

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