

Evaluation Model Construction of Employability Evaluation for College Teacher Trainees Based on AHP

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Abstract

The concept of high-quality employment requires teacher trainees to achieve full employment and career development, and more importantly, to realize their self-worth and gain all-round development. Employability of teacher trainees is a bridge connecting the cultivation of talents in colleges and universities with the needs of the society, and it is also the key to the successful employment and career development of teacher trainees. In retrospect, the existing research on employability focuses on connotation analysis and strategy cultivation, but pays little attention to the teacher trainee group, and the framework of the employability of the college student group will lead to the dislocation of teacher trainee's characteristics. Paying attention to and improving the employability of teacher trainees at the pre-service training stage can improve their adaptability to the primary and secondary school teaching profession after graduation, thus helping to reduce the turnover rate of primary and secondary school teachers. Drawing on existing relevant studies, this study compiled its own "Employability Assessment Scale for College Teacher Students" through the Delphi method, and after item analysis, exploratory factor analysis, and reliability test, established an employability model for teacher students that contains five dimensions: professional competence, general competence, competing competence, vocational qualities, and personality traits, and promoted the cultivation of employability to be embedded in the curriculum system of teacher education.

Keywords

Teacher trainees, employability, evaluation models.

1. Introduction

The scale of higher education in China has been expanding, and the world's largest higher education system has been built. In the context of the popularization of higher education, the gross enrollment rate of higher education in China has jumped from 30% in 2012[1] to 60.2% in 2023[2], and the scale of college graduates in the class of 2025 is expected to reach 12.22 million. In this development situation, the employment of teacher training students is facing a threefold structural contradiction: First, the "double high phenomenon" is prominent, although the teacher training students have a middle to upper level of professional identity or willingness to teach, but the identity of the professional identity and development prospects of the low degree of recognition, this "recognition but not recognized This complex psychology of "recognizing but not acknowledging" seems to highlight the "double high phenomenon" of the current employment rate and turnover rate in the field of education; secondly, the labor market

presents the paradox of "difficult to find employment" and "labor shortage" coexisting with the "labor shortage". Secondly, the labor market presents the paradox of "difficult employment" and "labor shortage" coexisting, and the intelligent transformation has created an upgraded demand for complex teachers, while the traditional training mode is difficult to respond in time; thirdly, the reform of the teacher certification system breaks down the barriers to the employment of teacher trainees, and the "double-decrease" policy further reduces the space for employment, and the influx of comprehensive university graduates intensifies the competition. Programmatic documents such as China Education Modernization 2035 have elevated the construction of the teaching force to the level of national strategy, and the implementation of programs such as the "Special Post Program" has provided institutional safeguards for the employment of teacher educators [3]. However, there are significant defects in the current evaluation system of employability: the evaluation dimension is single, focusing excessively on the assessment of professional knowledge and neglecting key qualities such as "teacher ethics"; the indicators are static and solidified, failing to incorporate emerging competencies such as intelligent educational literacy in a timely manner; and at the methodological level, the subjective evaluation accounts for a high proportion and lacks the support of quantitative tools. This evaluation bias has directly led to a mismatch between training and demand, with about 43% of employers reflecting that newly recruited teachers have an acceptable theoretical level but insufficient practical ability.

The construction of a scientific evaluation model of employability has a threefold urgency: first, to crack the structural employment contradictions, we need to establish a closed-loop system of "market demand-competency training-evaluation feedback", and guide the reform of the training mode by dynamically adjusting the evaluation indexes [4]; second, the professional development of the teaching profession requires that the evaluation system cover the whole element of "professional competence + professionalism + development potential". Secondly, the professional development of the teaching profession requires the evaluation system to cover the whole element of "professional competence + professional quality + development potential", and it is especially necessary to strengthen the assessment of hidden traits such as educational sentiment and mental toughness [5]; Thirdly, the digital transformation of education urgently needs to introduce big data technology to realize the paradigm shift from empirical judgment to evidence-based evaluation [6]. Empirical studies have shown that teacher training colleges adopting quantitative evaluation models increase the employment fitness of their graduates by 27% and career stability by 35% compared with traditional institutions. The multidimensional dynamic evaluation model to be constructed in this study will establish a system architecture containing 5 first-level indicators and 24 second-level indicators through the Delphi method, use the AHP method to determine the differentiation weights, and establish a reverse correction mechanism based on employment quality. The model innovatively incorporates the three dimensions of policy requirements, market changes and individual development into a unified framework, which provides a theoretical basis and practical path for cracking the employment dilemma of teacher training students.

2. Concept of Employability of Teacher Trainees

2.1. Employability

Employability, also known as employment force (Employability), this concept was firstly put forward by Beveridge in the United Kingdom from the exploration of the causes of the unemployment problem existing in the British society at that time,[7] and its role is used to determine whether the laborer has the ability to work or not. From the 1950s to the present, the research idea of foreign scholars' employability has experienced the development of the path from the work attitude to the work ability to the work traits, and the focus of the research

is also correspondingly shifted from how to make the workers to obtain and keep the employment opportunities to how to maintain the employability of the individual in order to adapt to the ever-changing work and social environments. [8][9] Domestic research on employability mainly began in 2000, with the research object focusing on college students, and the research content focusing on connotation analysis, strategy cultivation, etc. Scholars generally believe that the concept of employability should be expanded from purely work-related skills to a series of job-related resources and traits, and that students' employability should be improved through the strategies of setting up employment courses, establishing the concept of employment, creating an employment environment, and enhancing comprehensive abilities. comprehensive abilities and other strategies to enhance students' employability. [10][11]

2.2. Employability of teacher trainees

The employability of teacher trainees "originates from the field of practice, has the common characteristics of the group, and at the same time reflects the specific interests, and lies between concrete practice and abstract system", which is always distinctly practice-oriented and shows the adaptability and development potential of teacher trainees to the occupational positions. As a special group in the higher education system, teacher trainees should maintain consistency with students of ordinary colleges and universities in terms of general literacy and job-seeking skills, while in the field of specialized knowledge and professional skills, they need to highlight their unique "teacher traits" and strictly follow the national professional competence standards for teacher trainees. For teacher trainees, employability includes the ability to secure an ideal position that suits their level of qualifications for the first time, as well as the ability to maintain a job, remain competent in the position, and re-select a job in the face of changes in the professional environment. Five documents issued by the General Office of the Ministry of Education, including the Standards of Teacher Professional Competence for Teacher Trainees Specializing in Secondary Education (for Trial Implementation), propose that teacher trainees' professional competence includes ten requirements, such as the ability to practise teacher ethics and the ability to engage in teaching practice. What teacher trainees' employment ability shows is what duties and tasks they can fulfill in their future work, and the extent to which they can fulfill these duties and accomplish these tasks. The most important selection criterion for employers in recruiting and selecting people is to see whether the ability of the applicant meets the requirements of the post and whether he or she can perform the duties of the post well. Therefore, the employability of teacher trainees is the foundation for teacher trainees to realize the transformation of "social person", prove themselves and realize their own self-worth in their careers.

3. Theoretical Models

Regarding the measurement dimensions of college students' employability structure, academics have not yet formed a unified definition standard. Existing research results mainly present three typical theoretical paradigms: first, the USEM theoretical framework emphasizing professionalism; second, the Career EDGE conceptual model focusing on career development; and third, the psycho-social analysis model focusing on individual traits. Although each of these theoretical systems has its own characteristics, all of them have obvious local adaptability problems when applied to the assessment of the employability of teacher trainees in China. Based on this, this study intends to construct a theoretical analysis framework in line with the reality of Chinese education through systematic integration and innovative improvement.

The USEM theoretical framework, co-founded by British scholars Knight and Yorke, systematically explains the employability assessment system, which is composed of elements

such as subject knowledge, practical skills, professional confidence and reflective regulation ability. This theoretical framework focuses on the individual's mastery and regulation of professional knowledge and skills, and lacks the consideration of professional qualities that are actually demanded by the labor market. The unique curriculum and training specifications of the teacher training group determine the fundamental position of professional theoretical literacy in the composition of employability. Based on this, this study establishes "professional competence" as the primary dimension, specifically covering professional knowledge and literacy, professional skills, and teaching ability. Under the specific employment standards of the education industry, professional competence is not only the basic prerequisite for job seekers to be qualified for their positions, but also an important observation index of the evaluation system of employment competence in this study.

The Career EDGE theoretical framework jointly constructed by Pool and Sewel systematically delineates the four key elements of career development education, practical experience accumulation, professional knowledge reserve and general ability cultivation. Compared with the USEM theoretical system, this analytical model is more practice-oriented, especially emphasizing the cultivation of core competencies required in the professional context. In view of the special requirements of the teacher education group, this study establishes the second dimension of the employability structure - general competence - based on the two key elements of the theory, namely, career development education and accumulation of practical experience. This dimension specifically refers to the comprehensive competence quality beyond the specialized knowledge of disciplines, which is manifested in the following ways: problem solving ability, teamwork ability, interpersonal ability, learning adaptability and so on. As a visible indicator affecting career acquisition and development, generic plays an irreplaceable role in the professional growth of preschool education practitioners.

The psycho-social theoretical framework constructed by Fugate and his research team deconstructs employability into three core elements: career cognitive orientation, individual adaptive mechanisms, and social resource accumulation. Unlike theories such as USEM and Career EDGE that emphasize professional skills, this analytical paradigm highlights the influence of individual psychological traits on career development. Ushinski, a famous educationalist, once pointed out that "the essence of educational practice lies in the personality of the educator". This viewpoint has been fully confirmed in the training of education professionals, and the training of teacher training students pays special attention to the character building and professional emotional cultivation of future educators, which is highly consistent with the idea of "humanistic development" advocated by psycho-social theory. Drawing on the personal adaptability dimension of the psycho-social model, we propose the third dimension in the employability structure of teacher trainees - personality traits - as an implicit factor in the employability structure, covering responsibility, affinity, empathy, mental toughness and so on. These personality traits are inevitably targeted and specific, thus it is appropriate to examine them as the personality dimension of employability.

Based on China's unique cultural background, labor market characteristics and social development needs, and with reference to the relevant provisions of the Teacher Professional Competency Standards for Teacher Trainees in Secondary Education (for Trial Implementation), it can be observed that the importance of teacher moral cultivation as a core quality of practitioners is increasingly highlighted. Inspired by the conceptualization of professional identity in psycho-social theory, this study establishes professionalism as the fourth key dimension of the employability system. This implicit trait is reflected in practitioners' passionate commitment to education and the pursuit of continuous professional development, which plays a deep driving role in the process of career choice and development. Practice is a direct way to test the theoretical knowledge of teacher trainees, including the ability to apply policies, integrate and utilize resources, self-promotion, development planning

and social capital. Through these sessions, students are able to apply what they have learned in a real educational environment and improve their ability to deal with practical problems. Internships and practicum activities not only enhance students' teaching skills, but also develop their ability to apply for jobs competitively and enhance their competitiveness in employment.

4. AHP Scale Development

Based on the aforementioned theoretical constructs and disciplinary characteristics, several basic principles of scale development were established. First, the target group. This scale is intended for the group of teacher educators, so neither the group of non-teacher educators nor the group of non-college students is the target of this scale. Second, the content of the scale. The scale questions were developed based on the dimensions constructed by the theoretical model and the indicators established by the in-depth interviews. In particular, it should be pointed out that the measurement of college students' employability does not point to their specific work ability, but is a combination of knowledge, skills, and personality traits acquired through study and practice during their school years, so as to adapt to the needs of future employment positions and occupational environments. Therefore, the descriptions of employability in the questions all refer to the students' "pre-employment" rather than "post-employment" situations. Third, item presentation. The self-report scale was used to assess the level of employability of the teacher education group, which was concise, without hints or ambiguities, and the meanings of the items were independent of each other.

The prediction scale was prepared according to the above principles, and a total of 24 experts from universities and primary and secondary schools were asked to reach a consensus after two rounds of Delphi questionnaires to expert opinions. The expert review mainly included the following: first, assessing the explanatory power of the test questions on the research topic; second, embellishing the content and text of the test questions. After the experts' revision, 48 official pretest questions were finally formed. The scale was distributed through questionnaire star and super star study pass. The research significance and answering rules were explained to the administrators in the preface part, and the invalid scales with too short answering time or all the options being the same were deleted. After data recovery, item analysis, exploratory factor analysis and internal and external reliability tests were conducted on the pretest scales using SPSS 26.0 software.

5. Findings and Analysis

5.1. Project analysis

The recovered data of the Employability Assessment of College Teacher Trainees were analyzed by using the critical ratio method and the homogeneity test for item analysis. In the homogeneity test part, the items were tested by finding the correlation between the items and the total score of the scale, the factor loadings of the items on the common factors of the scale, and the reliability test. The summary of item analysis is shown in Table 1. Based on the results of the item analysis analysis, it can be superficially indicated that all the question items (Q5 to Q52) showed good performance on several statistical indicators and were suitable for further research or application, so no question items were recommended for deletion or modification.

Table 1. Summary of project analysis

Project analysis analysis results							
subject	Decision value	Question items are related to the total score	Correction line total correlation	homogeneity test Deleted alpha coefficients of line	comm onality	factor load	note
Q5	6.071	0.435**	0.583	0.841	0.485	0.649	reservations
Q6	8.091	0.449**	0.682	0.829	0.643	0.757	reservations
Q7	6.077	0.410**	0.558	0.844	0.469	0.635	reservations
Q8	5.394	0.350**	0.546	0.846	0.490	0.657	reservations
Q9	7.966	0.459**	0.622	0.837	0.549	0.687	reservations
Q50	13.352	0.573**	0.711	0.877	0.669	0.736	reservations
Q51	12.491	0.545**	0.670	0.884	0.601	0.712	reservations
Q52	12.144	0.540**	0.738	0.873	0.690	0.784	reservations
(an official) standard	≥3.500	≥ 0.3 and ≤ 0.7	≥0.400	≥0.800	≥0.300	≥0.450	-

5.2. Validity analysis

In this study, a validated factor analysis (CFA) was conducted on the assessment questionnaire based on the recovered assessment data, and the great likelihood method was applied to implement the estimation of the relevant parameters of the model. Structural validation was conducted for each of the five dimensions of professional competence, general competence, and competitiveness. The results are shown in Table 2, the χ^2/df of each dimension is between 1 and 3, the fitness index (GFI) and the comparative fit index (TLI) are all greater than 0.9, and the root mean square of standardized residuals (SRMR) and the root mean square of approximation error (RMSEA) are all less than 0.08. All the indexes are up to the standard, which indicates that the dimensions of the questionnaire of the teacher training students' employment competence are well-structured and well-fitted, and they can reflect the relationship between each dimension and the actual data better. reflect the relationship between the dimensions and the actual data, providing a solid foundation for subsequent research and application.

Table 2. Indicators of model fit for each dimension

dimension (math.)	χ^2	df	χ^2/df	RMSEA	CFI	TLI	SRMR
professional capacity	32.056	20	1.603	0.001	0.986	0.999	0.022
universal capacity	305.778	119	2.57	0.072	0.919	0.907	0.045
Competency	36.559	27	1.354	0.034	0.991	0.988	0.028
professionalism	20.361	20	1.018	0.008	0.999	0.999	0.025
personality trait	9.992	9	1.11	0.019	0.999	0.998	0.017

5.3. Reliability analysis

Based on the recovered assessment data, Cronbach's coefficient (Cronbach's α) was used to validate the overall reliability of the assessment questionnaire and the internal consistency of the implied variables.

As shown in Table 3, for the " α -coefficient of deleted items", the reliability coefficients do not increase significantly after any item is deleted, indicating that the above eight assessment items can be retained. Regarding the "CITC value", the CITC values of the analyzed items are all greater than 0.4, which indicates that there is a good correlation between the analyzed items, and also indicates that the reliability level is good. The total reliability coefficient of the assessment questionnaire in this study is 0.931, and the internal consistency coefficients of all dimensions reach more than 0.8, which indicates that the reliability of the assessment questionnaire is acceptable and can reflect the real level of the teacher trainees' employability.

Table 3. Results of the reliability analysis of the assessment questionnaire

dimension (math.)	item count (of a consignment etc)	sample size	Cronbach's alpha coefficient
professional capacity	8	388	0.856
universal capacity	17		0.926
Competency	9		0.882
professionalism	8		0.841
personality trait	6		0.895
umbrella	48		0.931

The results of the above reliability measurements show that the index system for evaluating the employment ability of teacher trainees in colleges and universities has passed the test, and the indexes meet the standards and have the value of further application and analysis. Figure 1 shows the formal model constructed in this study, which includes five dimensions: professional ability, general ability, competitiveness, professionalism and personality traits.

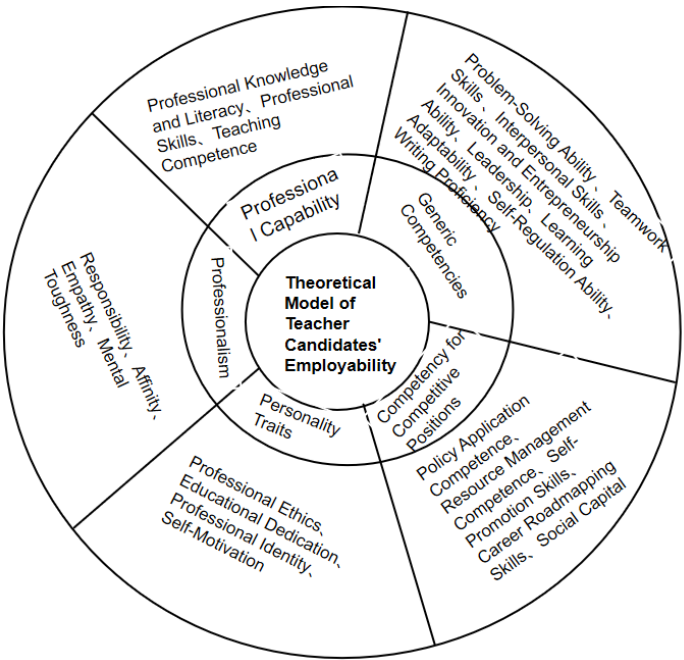


Figure 1. Employability Model for Higher Education Teacher Trainees

6. Conclusion

Through a multi-dimensional, dynamic and quantifiable evaluation system, this model provides theoretical tools and practical paths for cracking the employment dilemma of teacher trainees, which is of strategic significance for promoting the high-quality development of the teaching force.

Acknowledgements

Project Fund: Funded by: Yunnan Normal University Graduate Student Research and Innovation Fund 2024 ‘Construction of Evaluation Indicator System for Teacher Training Students’ Employability and Application Research’ (No. YJSJJ23-B117)

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