

A Four-Factors Competency Model for Music Teachers: Building and Analysis

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Abstract

This study applied the methods including literature review, key behavioral events interview, questionnaire surveys and statistics analysis to construct the competency model of musical teachers. Through questionnaires, key elements of musical teachers' competency were extracted. Through exploratory and confirmatory factor analysis, the competency model of musical teachers was constructed and verified. The study shows that the model consists of four dimensions, including professional skills, teaching abilities, management abilities and personal traits.

Keywords: Competency, Music Teachers

1. Introduction

The word competency, which originated from the Latin word *Competere* that originally means being suitable and appropriate, firstly appeared in the research on the Management Competencies Movement by Frederick Winslow Taylor, Father of Scientific Management, and was first applied in the early 1950s. In 1973, Professor McClelland of Harvard University formally introduced the concept of competency in an article *Testing for competency Rather Than for Intelligence* published in the *American Psychologist*. According to the existing literature, the assessment of music teachers is still based on evaluations by schools, which are simple, optional or unprofessional administrative evaluations. Therefore, building a set of assessment tools and an evaluation index system which can accurately identify the competency of music teachers can provide scientific reference for the human resource management of music teachers.

Basis on a comprehensive review of the existing literature, the study draws on the theory of human resource competency in the management, identifies factors of music teachers' competency, constructs a competency model, and tests the structural validity and reliability of the model through key behavioral event interviews.

2. Literature Review

2.1 The Concept and Connotation of Competency

The word competency, which originated from the Latin word *Competere* which originally means being suitable and appropriate, firstly appeared in the research on the Management Competencies Movement by Frederick Winslow Taylor, Father of Scientific Management, and was first applied in the early 1950s, when the U.S. State Department found that, most of the diplomats selected solely based on intelligence factors only seemed excellent, but their performance in practice was not satisfactory. In response, Professor McClelland of Harvard University was asked to help the State Department devise a personnel selection method that would effectively predict performance. McClelland added brand-new ideas and methods to the selection process, and in 1973 formally introduced the concept of competency in the *Testing for competency Rather Than for Intelligence* published in the *American Psychologist*. He believed that, competency is composed of measurable individual features which can distinguish good from average performance in certain positions, including motivation, traits, knowledge, skills and so on. Subsequently, many scholars began studies in similar areas and developed their own concepts. At present, the concept introduced by Spencer et al. in 1994 was widely accepted, in which competency can be measured in a valid way, and through measuring competency features, such as motivation, knowledge, professional skills, self-concept, attitudes and values, high and average performers can be distinguished. According to Shi Kan and Wang Jicheng (2002), competency is a set of potential and persistent key individual features related with cognition, attitude and emotion, which can distinguish excellent performers from the ordinary ones, while Zhao Shuming and Yang Huifang (2007) argued that competency refers to individual qualities or features that can help achieve higher work performance and fulfill task requirements, which can be reflected as or develop into individual abilities or features to perform the work.

According to previous studies, three features of competency could be concluded: firstly, competency is a set of individual features in jobs, including relevant knowledge, professional skills, personal characteristics, which are measurable; secondly, competency is closely related to an individual's work performance, and can distinguish the excellent performers from the ordinary ones; thirdly, competency reflects both the external and potential qualities of an individual at the same time.

2.2 Competency Model

There are mainly two classical models of competency, the Iceberg Model and the Onion Model as shown in Figure 1 and 2.

The Iceberg Model was introduced by McClelland (1973), in which competency is presented as an iceberg floating on water, which is divided into the surface part and the hidden part based on different manifestations of individual features, including 6 levels: knowledge - the factual and experiential information that an individual possess in a particular domain; skill - the ability to use knowledge in a structured way to accomplish a specific task, or to master the knowledge of a specific domain and techniques required; social role - individual behavior and style based on attitudes and values; self-concept - the individual's attitudes, values and self-impressions; traits - persistent response of personality and physical characteristics to the environment and various information; motivation - natural and persistent thoughts and preferences that drive, direct and determine an individual's external actions in a particular domain. Those above the water are external personal traits which are easier to measure, and could be changed and improved through training, while those under the water are internal traits which are difficult to measure and change, but play a key role in the individual's behavioral performance.

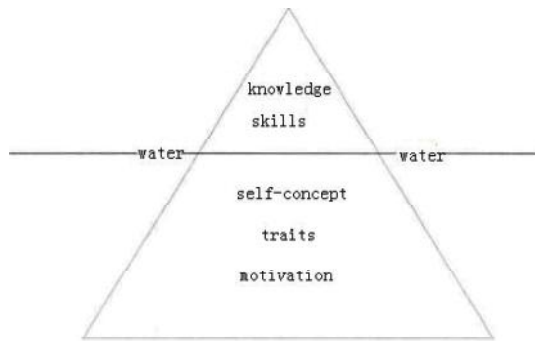


Figure 1 Iceberg Model

The Onion Model introduced by Boyatzis (1982) showed the core elements of individual quality. Competency is presented in a hierarchical structure from inside to outside, in which motivation is the deepest core element, while other elements, including personality, self-image, social role, attitude, knowledge, skill, expand outward in sequence. In this model, the hierarchical relationship between potential and external elements is highlighted: knowledge and skills are the most superficial elements, which are easier to cultivate and evaluate, while motivation and traits are the innermost and core elements, which are the deepest individual features and most difficult to change and develop.

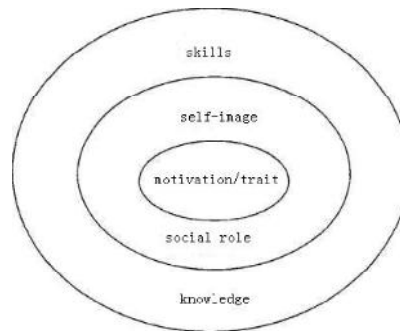


Figure 2 Onion Model

Along with the development of competency theory and the continuous maturity of model construction methods, the competency models have been widely used in human resource management, especially in job analysis, recruitment, appraisal and personnel motivation, and provided new research perspectives for human resource management activities. By constructing a job competency model and evaluating the individual competency level, the gap between individual competency levels can be determined, while by taking the competency model as a standard to develop key elements required in the job, individual job competency could be improved. This study has drawn on previous researches on the theory and practice of competency models, and from a practical and operational point of view, we can focus on the Iceberg Model to study the competency model of music teachers from aspects including knowledge, skills, self-concept, trait and motivation.

2.3 Competency Models for Music Teachers

Kriumane, L. and Marnauza, M. (2013) believed that the emotional competency analysis is a component of music teachers' professionalization. Through theoretical literature analysis, observation of the teaching process, theoretical derivation and structures of emotional competency, including music knowledge and skills, emotional intelligence, the abilities to experience emotions and to direct teaching process towards emotional experience, have been investigated and defined. The study by Kovalev, D.A. and Khussainova, G.A. (2016) showed that motives of self-development and self-education are important factors to train future music teachers. The effectiveness of future music teachers' professional development depends on their professional competency, and professional skills could be improved through continuous musical and pedagogical education. The experiments provided several major indicators for the development of future music teachers' competency: the acquisition of professional knowledge (quality and solidity), the demand for continuous improvement of knowledge, the completeness and reliability of acquired professional skills, creative elements in professional activities, professional motivation and self-regulation of individual behaviors.

Zhou Jun (2015), targeting music teachers, pupils, and relevant administrative leaders of primary schools, investigated, analyzed and constructed a competency model of primary school music teachers, through literature review, key behavioral events interview, questionnaire surveys and statistics analysis. The study showed that, the seven factors, including professional skills, teaching ability, affective features, innovative consciousness, sense of responsibility, management ability and individual behavioral accomplishment, could better indicate the competency of primary music teachers and play as an evaluating basis. Wang Yingjin (2019), proposed the professional comprehensive abilities which music teachers of primary and secondary school should have: professional skills, including singing, piano, dancing, conducting and choreographing, and teaching abilities, including innovation, language expression, organization and management, information technology and scientific research.

According to previous studies, both domestic and foreign scholars have seldom studied the competency of music teachers, and mostly of the few ones started from their personal abilities and career development, while the construction of competency models are still in the infancy with few solid evidences. This provides a promising room for this study.

3. Research Method

3.1 Key Behavioral Events Interview

Key behavioral event interviews were conducted with 22 teachers working in the music teaching, and the interview results were collated to determine the competency features demonstrated by the teachers and to obtain initial indicators of competency.

3.2 Questionnaire Surveys

110 copies of the *Initial Questionnaire of Music Teacher Competency Survey* were distributed, 94 of which were returned, with a return rate of 85.5%, including 90 valid copies, with an effective rate of 95.7%. 400 copies of the *Music Teacher Competency Survey* were distributed, and 337 of them were returned, with a return rate of 84.3%, 316 of which were valid, with an effective rate of 93.8%.

3.3 Statistics Analysis

SPSS25.0 and AMOS21.0 were used to collect and count the questionnaires, and the data were processed through exploratory factor analysis, confirmatory factor analysis, and reliability analysis.

4. Research Results

4.1 Extraction of Music Teachers' Competency Features

In this study, key behavioral events have been acquired by interviewing 22 music teachers, and 44 competency features related with their professional characteristics extracted. The most frequently occurring competency feature in the content analysis of the key behavioral events interview was taken as 100%, and the percentage of other competency characteristics compared with it was 27%. The percentages greater than 27% were taken as the key competency features. Accordingly, the 44 competency features were counted, and 32 of them with percentages greater than 27% have been taken as key competency features based on which the preliminary theoretical competency model of music teachers will be constructed.

4.2 Preparation of Questionnaires

Based on the above-mentioned key competency features of music teachers, the *Music Teacher competency Questionnaire* which contained 32 competency items was developed. The Likert-5 scale was applied in the questionnaire as follows: 5 means the stated competency feature is extremely important for becoming a music teacher, while 1 is extremely unimportant. 400 questionnaires were distributed in Jiangsu, Zhejiang and Shanghai, 337 of which were returned.

4.3 Exploratory Factor Analysis

Statistical analysis of the valid questionnaires collected was performed using SPSS25.0. Firstly, correlation analysis was performed on the 32 questions of the questionnaire, and according to the t-test result formulation, items 4, 6, 7, 9, 13, and 24 did not reach a significance of 0.05 between the high and low groups, indicating that these variables were not well identified and therefore removed. KMO sampling appropriateness test and Bartlett's spherical test were then performed on the data of the other 26 questions of the questionnaire. See Table 1.

Table 1 KMO and Bartlett's Sphericity Test

KMO sampling appropriateness results		.944
Bartlett's sphericity test	Approximate chi-square distribution (X^2)	6100.803
	Free degree (df)	325
	Significance (sig.)	.000

A common KMO measurement standard was introduced by Kaiser (1974): above 0.9 for very suitable; 0.8 for suitable; 0.7 for fair; 0.6 for not very suitable and below 0.5 for very unsuitable. The analysis resulted in a KMO value of 0.944 for the sample and a Bartlett's spherical test cube Vluе of 6100.803, $p < 0.001$, indicating a good relationship between the items for factor analysis.

Based on the results of principal component analysis, factors with eigenvalues greater than and equal to 1 were extracted, resulting in four dimensions that together could explain 70.62% of the total variation, while the results of the exploratory factor analysis indicated that the structure was a more desirable factor structure. The four dimensions were: professional skills (containing five items), teaching ability (containing seven items), management skills (containing six items), and personal traits (containing eight items) (see Table 2 and Table 3).

Table 2 Total Variance Explanatory Table

Content	Initial eigenvalue			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	Variance Percentage	Cumulative %	Total	Variance Percentage	Cumulative %	Total	Variance Percentage	Cumulative %
1	10.057	38.679	38.679	10.057	38.679	38.679	5.595	21.521	21.521
2	4.432	17.047	55.726	4.432	17.047	55.726	5.086	19.560	41.081
3	2.798	10.762	66.488	2.798	10.762	66.488	4.679	17.998	59.079
4	1.074	4.132	70.620	1.074	4.132	70.620	3.001	11.541	70.620

Table 3 Competency Model of Music Teachers

Dimension	Competency features
Professional Skills	Rich stage experience
	Ability to collect information
	Knowledge to select talents
	Knowledge sharing
	Professional knowledge
Teaching Abilities	Creative thinking
	Teaching techniques
	Instructional design skills
	Critical thinking
	Demonstrative teaching
	Good language skills
	Humorous in class
Management Abilities	Communication
	Incentive
	Good organizational skills
	Supportive
	Teamwork
	Self-management
Personal Features	Motivation of achievement
	Personality
	Acceptance of differences

	Good values
	Emotional control
	Sense of responsibility
	Self-confidence
	Respect for students

4.4 Reliability Analysis

Through the data obtained from SPSS25.0, it can be concluded that the reliability of each dimension in this study is between 0.907 and 0.934, indicating that the research scale has a high degree of reliability, good stability and consistency. See Table 4.

Table 4 Reliability Analysis

	Cronbach Alpha	Items
Professional skills	0.907	5
Teaching abilities	0.915	7
Management abilities	0.927	6
Personal features	0.934	8

4.5 Confirmatory Factor Analysis

From Table 5, it can be found that, among all the factor models, the ratio of the four-factor model's card-square test value and free degrees is 1.480, while less than 3 is generally considered that the overall goodness of fit is excellent; meanwhile, all the values of GFI, IFI, TLI, CFI are above 0.9; in addition, the point estimate of the root mean square error (RMSEA) is 0.0393, and less than 0.08 indicates an ideal compatibility, implying that the four-factor model is the most appropriate.

Table 5 Confirmatory Factor Analysis

Parameters	CMIN	DF	CMIN/DF	GFI	IFI	TLI	CFI	RMSEA
2-factor model	2153.864	298	7.228	0.496	0.690	0.661	0.689	0.141
3-factor model	1570.394	296	5.305	0.589	0.787	0.765	0.786	0.117
4-factor model	433.623	293	1.480	0.905	0.977	0.974	0.976	0.039

5. Conclusion

The music teachers' competency model is composed of 26 features in four dimensions, including professional skills, teaching abilities, management abilities and personal traits. Features of the professional skills dimension are rich stage experience, ability to collect information, knowledge to select talents, knowledge sharing and professional knowledge. Features of the teaching abilities dimension are creative thinking, teaching techniques, instructional design skills, critical thinking, demonstrative teaching, good language skills, and humorous in class; features of the management abilities dimension are communication, incentive, good organizational skills, supportive, teamwork, and self-management. Features of the personal traits dimension are motivation of achievement, personality, acceptance of differences, good values, emotional control, sense of responsibility, self-confidence, respect for students.

Through exploratory factor analysis and confirmatory factor analysis, it is concluded that the model is an ideal structure of thinking angles, which can describe the music teacher competency in a good way. The reliability analysis shows that the questionnaire based on the music teacher competency model has good stability and consistency, which can provide relevant measurement tools for evaluating music teachers' competency.

The competency-based management of music teachers is a brand-new idea, and its research is still in a preliminary stage of exploration. The competency-based management should include both the rational use and effective development of competency resources. In different organizational contexts, the competency features that music teachers should have are still a subject of further research. The competency model built in this study can help improve the level of individual music teacher's competency and provide scientific methods and tools for the selection, evaluation and management of music teachers.

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