INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN PROGRESSIVE EDUCATION & DEVELOPMENT

OPEN ACCESS JOURNAL

Vol 13, Issue 4, (2024) E-ISSN: 2226-6348

Effectiveness of Primary and Secondary Music Teachers' Pre-Service Educational Programmes: Early-Career Music Teachers' Perspectives

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To Link this Article: http://dx.doi.org/10.6007/IJARPED/v13-i4/23962 DOI:10.6007/IJARPED/v13-i4/23962

Published Online: 26 December 2024

Abstract

The current study seeks to examine early-career music educators' viewpoints on the efficacious of pre-service educational programmes. A quantitative methodology, namely questionnaires, was employed among 398 respondents at primary and secondary schools in Guizhou, China. This study also appraised other factors contributing to the perspectives on the requirements for pre-service knowledge and skill preparations. The results demonstrated that the pre-service music teacher education programme was deemed effective, although further improvements were necessitated for music performance knowledge and skills, especially choral rehearsals and piano improvisation accompaniments. Furthermore, the theoretical knowledge and skills in the music programme were considered less efficacious and required reconstruction. Summarily, an empirical foundation was developed for future revisions of the pre-service music educational programme and the effective resolution of existing issues to sufficiently train graduates for classroom instructions.

Keywords: Early-Career Primary and Secondary Music Educator, Pre-Service Music Teacher Programme, Effectiveness, Music Teacher Education

Introduction

The rapid socioeconomic advancement with higher educational popularisation and industrialisation since the late 20th century has facilitated comprehensive individual development in China (Liu & Zhao, 2018). Accordingly, higher education has transitioned from emphasising elite education to education for all individuals, with the monocultural approach shifting to a diversified method (Liu, 2019; Xu, 2019; Zhao, 2019). Music education in China has also been observed with rapid popularisation and has become one of the most popular majors at higher educational institutions (Dai, 2014; Pu, 2018; Xu, 2014). Nonetheless, numerous shortcomings have been identified in contemporary quality assurance processes, which has led to lower quality and graduate employment rates (Dai, 2014). The inadequate preparation of pre-service music educators, especially in knowledge and skills without

consistency with the requirements at primary and secondary schools, has resulted in employment difficulties owing to low teaching competency (Fan, 2019; Zhou & Cao, 2022).

The primary objective of music education, which serves as a key component of aesthetic learning, is to develop qualified educators with specialised talents for both primary and secondary students (Ballantyne & Packer, 2004; Wu, 2020; Xu, 2017; Zhao, 2009). Aesthetic education aims to positively influence the sentiment, experience, and enjoyment of aesthetically attractive objects by counterbalancing the currently rationalised world (Denac, 2014). Aesthetic education also seeks to foster students' comprehensive development through intelligence, morality, physique, and beauty. Hence, music education is significant and crucial to students' comprehensive development, with pre-service music educators playing a critical role in ensuring musical quality (Li, 2011). The term 'programme' in the present study is defined as music educators' pre-service training before providing classroom instructions at both primary and secondary educational institutions. An effective programme can positively impact the process of nurturing comprehensive qualities and students' acquiring knowledge and skills. Nevertheless, pre-service music educators were inadequately prepared owing to ineffective programmers at higher educational institutions, with personal competencies not fulfilling primary and secondary school standards (Wang, 2019). Resultantly, employment difficulties and low teaching competencies (Yu, 2024; Yong, 2021) lead to the stagnation of primary and secondary students' aesthetic capabilities. Evaluating pre-service music teacher educational programme effectiveness while aligning with the requirements for respective knowledge and skills at both primary and secondary schools is vital to designing an efficacious programme (Ballantyne, 2005).

Research Problem

Pre-service music educators' insufficient knowledge and skills in China owing to the inconsistency with primary and secondary school requirements is the current research problem, although multiple reformations and studies have been conducted to resolve the issue. The current issue is situated within the broader context of music education reformation in China, in which significant efforts have been performed to modernise and improve music education in recent years to ensure students' holistic development. As such, adequate alignment between pre-service education and professional requirements is pivotal to developing a robust foundation to nurture the future generation of music educators. Moreover, limited quantitative research to improve the efficacies of pre-service programmes aligned with the actual requirements has been observed. Existing studies primarily rely on qualitative techniques, such as literature analysis and personal experiences, without data-driven insights or statistical evidence to support hypotheses and postulations, which reduces the ability to perform informed decisions and implement targeted interventions in music teacher education. Therefore, this quantitative study seeks to appraise the specific misalignment areas between pre-service music educator preparation at higher educational institutions and primary and secondary school requirements in China to contribute empirical recommendations for music educational quality improvements.

Research Objectives

The primary study objective is to determine pre-service music educator programme efficacy by examining early-career music educators' perspectives and primary and secondary school requirements:

RO1: To identify pre-service preparation requirements for early-career primary and secondary music educators in China.
RO2: To evaluate the performance of graduates from selected universities in Guizhou and determine the effectiveness of pre-service music educator preparation programmes.

Research Questions
The following research questions were fulfilled:
RQ1: What are the pre-service preparation requirements for primary and secondary music educators?
RQ2: What is the efficacy level of the pre-service music educator preparation programme for graduates at Guizhou higher educational institutions?

Methodology
A quantitative methodology was employed as "its range of use is very wide; it includes the study of the status quo as well as retrospective studies, comparisons of essences, and related causes and effects", which suggests that the methodology is swift, simple, and direct to be utilised for data collection from a large sample to produce generalisable results (Chua, 2020; Wiersma & Jurs, 2009). Particularly, a questionnaire survey was employed for data collection.

Questionnaire Design
Educator literacy or an educator's professionalism level is defined as the integration of codes of conduct, morality, and moral qualities, which constitute relative stability in the educational journey by demonstrating high work competencies (professional ethos, knowledge, and skills) and effective educational practices (Liu, 2010; Yu & Lian, 2007). Wu (2016) also propounded that educator literacy comprises performance, emotional, and expressive achievements apart from cultural and historical competencies. Therefore, music educators should exhibit the qualities of music competencies, professional pursuit, and interdisciplinary abilities, on top of professional capabilities which involve effective classroom instruction (Yang, 2022). In addition, Wang (2016) posited that music educator literacy should encompass sufficient music skills, educational expertise, music teaching theoretical and practical knowledge, music subject knowledge, professional belief, and overall quality. Jiao (2017) also delineated that primary and secondary music educators should be adequately equipped with educational knowledge and skills, musical instrumental (except the piano) skills, singing skills, piano improvisation accompaniment skills, theoretical and practical music knowledge, educational and scientific research abilities, and the capability to guide extracurricular activities.

The present study developed a conceptual framework specific to pre-service music educator preparation by categorising the knowledge and skills required at primary and secondary schools into four educational components, namely educational theory knowledge and skills (ETKS), educational practice knowledge and skills (EPKS), music performance knowledge and skills (MPKS), and music theory knowledge and skills (MTKS):

1) The ETKS encompass pedagogical approaches, psychology, educational policies and regulations, educational appraisal, and curriculum.
2) The MPKS contains musical instrumental (except the piano) abilities, piano improvisation accompaniment, vocal singing, aural skills, and choral rehearsal.
3) The MTKS comprises folk music, music aesthetics, music history, musical theories, musical work analysis, and music creation.

4) The EPKS involves verbal expression, reflective teaching, modern educational technological application, classroom instruction, activity organisation, student management, and literal expression.

The current questionnaire was adapted from Zhang and Luo (2022) and Ballantyne (2005) while considering the actual situation in China. The questionnaire consists of three sections. The first section is a cover letter introducing the research objectives and the second section contains 11 demographic details, including the gender, graduation year, teaching grade, years of teaching, and teaching location. The third section contains 48 items separated into two parts, which are the importance of knowledge and skills *(Based on your teaching experience, how important is it that the following areas of knowledge and skills are covered in pre-service music teacher education programmes?)* and the performance *(Based on your teaching experience, please rate the performance of your knowledge and skills in covering these areas.).* The items were measured on a five-point Likert scale ranging from 1 as "very unimportant" or "very poor" to 5 as "very important" or "very good".

Pilot Study

A pilot study was conducted among carefully selected graduates between 2017 and 2021 from Guizhou Education University (GZEU), Xingyi Normal University for Nationalities (XNUN), Guizhou Normal University (GZNU), and Liupanshui Normal University (LNU) to improve the questionnaire and ensure the accuracy of the collected responses. Concurrently, 30 music teachers were randomly selected from primary and secondary schools through both WeChat and Sojump platforms. All data were collected by January 2023, with the overall reliability and validity of the questionnaire deemed satisfactory.

Ethics

All research objectives were explained to the respondents and informed consent was obtained before participation. Respondents' anonymity was also ensured by utilising pseudonyms when reporting findings. Thus, the report contains no personal identity identifiers. The ethical committee also approved the current study by issuing an ethical approval letter dated 18th April 2022.

Samples

The questionnaires were distributed through WeChat and SoJump due to the limitations posed by the coronavirus disease (COVID-19) outbreak. A total of 407 early-career music teachers who graduated from four universities in Guizhou and received pre-service music education from 2017 to 2021 were recruited via simple random sampling in February 2023. All 407 questionnaires with complete responses were collected, which represented a 100% response rate. Nevertheless, nine questionnaires were discovered to be invalid and excluded, which provided a final 398 valid questionnaires for subsequent analyses (a 97.79% effectiveness rate). Table 1 summarises respondents' demographic details, wherein 73.37% (N = 292) of the respondents were females and the remaining 26.63% (N = 106) were males. A total of 45.23% (N = 180) of respondents graduated from GZEU, followed by 27.39% (N = 109) from GZNU, 17.59% (N = 70) from XNUN, and 9.8% (N = 39) from LNU. A relatively uniform distribution of teaching experience was discovered, with 28.14% (N = 112) possessing one year of teaching experience, followed by 24.12% (N = 96) possessing five years, 20.60% (N = 82) three years, 18.59% (N = 74) possessing two years, and 8.54% (N = 34) possessing

four years. The largest age cohort was between 26 and 30 years old at 48.49% (N = 193), followed by between 21 and 25 years old at 42.46% (N = 169) and 9.05% (N = 36) at 35 years old and above. A majority of the respondents (63.32%; N = 252) served as primary music educators, whereas 36.68% (N = 146) at secondary educational institutions. A total of 50% of the respondents (N = 199) served as music educators at urban schools while the other half (N = 199) of the counterparts at rural schools. A total of 83.32% of the respondents (N = 332) taught at public educational institutions while 16.58% (N = 66) at private schools. More than half of the music educators (58.54%; N = 233) also taught Chinese and Mathematics compared to 41.46% (N = 165) who taught music. A total of 55.53% (N = 221) specialised in vocal music, followed by 19.60% (N = 78) in playing instrumental music (excluding piano), 13.32% (N = 53) in music theory, and 11.56% (N = 46) in piano.

Table 1
Respondents' Demographic Profiles

Demography	Segment	Number	%
Gender	Male	106	26.63
	Female	292	73.37
Age	21 to 25 years old	169	42.46
	26 to 35 years old	193	48.49
	35 years old and above	36	9.05
Graduation Year	2017	103	25.88
	2018	48	12.06
	2019	76	19.1
	2020	67	16.83
	2021	104	26.13
Years of Teaching	One year	112	28.14
	Two years	74	18.59
	Three years	82	20.60
	Four years	34	8.54
	Five years	96	24.12
Location	Urban	199	50
	Rural	199	50
Grade	Primary	252	63.32
	Secondary	146	36.68
Enrolled University	GZNU	109	27.39

	GZEU	180	45.23
	XNUN	70	17.59
	LNU	39	9.8
The Only Classroom Music Teacher?	Other classroom music teachers serve at the school	233	58.54
	The only classroom music teacher at the school	165	41.46
Current Employment Situation	Permanent or full-time	241	60.55
	Contract	108	27.14
	Casual	49	12.31
Current School Type	Public	332	83.32
	Private	66	16.58
Study Field	Vocal music	221	55.53
	Instrument	78	19.60
	Theory	53	13.32
	Piano	46	11.56

Data Analysis

The collected data were analysed via the Statistical Product and Service Solutions (SPSS) version 20.7.29 software to compute different measures, including means, standard deviations, frequency counts, percentages, and ranges. Importance-performance analysis (IPA) was also conducted on the ratings regarding the importance of musical knowledge and skills and the performance of music educational programmes in cultivating the required knowledge and skills. Martilla and James (1977) developed the IPA to evaluate the importance and performance of various attributes in marketing programmes, which was subsequently perceived as "an easy, flexible, and action-oriented method that can be adapted for higher education curriculum assessment" (Nale, Rauch, Wathen & Barr, 2000). Contemporarily, IPA is extensively applied in various disciplines, such as tourism, education, and management (Xiao & Zhang, 2022). The IPA mean scores were plotted on the four quadrants of an action grid. The first quadrant is the highly crucial but low-performing category, the second is the low-importance and performance category, the third is the highly essential and performing area, and the fourth is the low-importance but highly performing area. The IPA theory postulates that the highest attention level should be provided to items in the first quadrant. The current researchers also considered the second quadrant as a significant area due to the high importance, although items in the quadrant have generally been deemed as less prioritised by previous academicians. The third quadrant comprised items that were efficaciously addressed, with specific continuing efforts determined. The fourth quadrant suggested lower efforts to respective items owing to the lower importance degree (Martilla & James, 1977; Pei, Huang, Liu & Jiang, 2023; Yu, 2020).

Reliability

The consistency, stability, and validity of the measurements were determined by appraising the reliability level. Table 2 depicts that Cronbach's alpha value is .963, which surpasses the threshold value of .9 and posits high overall reliability. The four educational components also attained Cronbach's alpha values exceeding .8 according to the standardised terms, which confirmed adequate reliability and feasibility for further analyses.

Table 2
The Reliability Results of the Four Educational Components

Component	Cronbach's Alpha	Sample Size	Number of Items
Overall Reliability	.963	398	24
ETKS	.921	398	6
MPKS	.896	398	5
MTKS	.950	398	6
EPKS	.945	398	7

Validity

Exploration Factor Analysis (EFA)

The EFA was performed to simplify the observed variables. Table 3 demonstrates that the KMO sampling adequacy measure value is .955 and the chi-square value of Bartlett's test of sphericity is 8973.44. Most components achieved a significance value of 0 below .05, which fulfilled the significance requirement and propounded robust structural validity. Meanwhile, the significant item loadings under each factor distinguished the competency requirements across the four educational components.

Table 3
The KMO Measure of Sampling Adequacy and Bartlett's Test of Sphericity

KMO Measure of Sampling Adequacy		.955
Bartlett's Sphericity Test	**Approximate Chi-Square**	8973.438
	Degree of Freedom	276
	Significance	0

Table 4
Rotated Factor Matrix of Items in Importance

Item	Factor				Variance of Common Factor
	1	2	3	4	
Aural Abilities	0.553	0.220	0.307	0.492	0.690
Musical Theories	0.826	0.108	0.195	0.243	0.791
Musical Work Analysis	0.852	0.180	0.212	0.185	0.838
Music Creation	0.790	0.231	0.220	0.244	0.785
Folk Music Knowledge	0.801	0.224	0.216	0.236	0.794
Music History	0.769	0.324	0.257	0.166	0.789
Music Aesthetics	0.799	0.328	0.265	0.142	0.836
Classroom Teaching Skills	0.182	0.713	0.295	0.307	0.723
Verbal Communication	0.193	0.796	0.190	0.159	0.733
Teaching Reflective	0.240	0.755	0.387	0.143	0.798
Classroom Management	0.165	0.816	0.249	0.168	0.784
Music Activity Organisation	0.289	0.704	0.348	0.235	0.756
Literal Expression	0.201	0.81	0.285	0.212	0.822
Modern Educational Technological	0.320	0.731	0.200	0.218	0.725
Educational Policies and Regulations	0.208	0.220	0.746	0.194	0.685
Musical Pedagogical Approaches	0.169	0.275	0.792	0.157	0.756
Musical Educational Measurement and Appraisal	0.255	0.223	0.759	0.179	0.723
Pedagogy	0.220	0.293	0.793	0.187	0.798
Psychology	0.298	0.305	0.669	0.115	0.642
Musical (Art) Curriculum Standard in Any Teaching Section	0.22	0.308	0.736	0.211	0.73
Vocal Singing Skills	0.275	0.224	0.479	0.610	0.727
Piano Improvisation Accompaniment	0.243	0.284	0.237	0.787	0.815
Musical Instrumental (Except Piano)	0.402	0.24	0.159	0.664	0.685
Choral Rehearsal Capabilities	0.296	0.374	0.220	0.744	0.829

Confirmatory Factor Analysis (CFA)

A structural equation model (SEM) was developed through the AMOS 22.0 software, and CFA was performed on the 24 effective indicators. Higher Cronbach's alpha and composite reliability values postulated higher internal consistency, with 0.7 as the acceptable threshold. Table 5 depicts that Cronbach's alpha and composite reliability values of each construct exceed 0.7, which postulates that each measurement model demonstrates satisfactory reliability. In addition, the average variance extracted (AVE) value of each construct exceeded 0.5, which propounded that the measurement model attained robust convergent validity.

Table 6 portrays that the AVE square root of each construct exceeds the correlation with other constructs, which suggests acceptable discriminant validity.

Table 5
Convergence Validity

Factor	Item	Unstd.	Std.	*t*	*p*	Std.	CR	AV
ETKS	A1	1.000	-	-	-	.785	.923	.667
	A2	.935	.051	18.393	.000	.831		
	A3	1.117	.062	17.997	.000	.817		
	A4	1.078	.055	19.738	.000	.877		
	A5	.929	.056	16.471	.000	.762		
	A6	.942	.052	18.146	.000	.822		
MPKS	B1	1.000	-	-	-	.789	.902	.650
	B2	1.115	.061	18.406	.000	.834		
	B5	1.136	.068	16.740	.000	.774		
	B3	1.218	.074	16.355	.000	.760		
	B4	1.058	.055	19.401	.000	.868		
MTKS	C1	1.000	-	-	-	.834	.950	.761
	C2	1.008	.044	23.060	.000	.890		
	C3	.935	.043	21.542	.000	.855		
	C4	.920	.041	22.529	.000	.878		
	C5	.923	.041	22.552	.000	.878		
	C6	.996	.043	23.402	.000	.897		
EPKS	D1	1.000	-	-	-	.818	.946	.713
	D2	.995	.053	18.841	.000	.801		
	D6	1.077	.049	22.079	.000	.888		
	D7	1.058	.054	19.606	.000	.823		
	D3	1.080	.051	21.306	.000	.869		
	D4	1.072	.052	20.654	.000	.851		
	D5	1.079	.052	20.873	.000	.857		

Table 6
Regional Validity via Pearson Correlations with AVE Square Root Values

	ETKS	MPKS	MTKS	EPKS
ETKS	**0.817**			
MPKS	0.662	**0.806**		
MTKS	0.594	0.719	**0.872**	
EPKS	0.680	0.675	0.597	**0.844**

Note: The diagonally bolded number is the AVE square root value.

The overall presented data demonstrated robust convergence validity for all study constructs, wherein the CR, factor loadings, and AVE values collectively postulated the high efficacy of the items in assessing the intended constructs. A more exhaustive analysis, including assessing discriminant validity, was also performed to further ensure the validity and overall fit of the measurement model. Furthermore, both EFA and CFA yielded satisfactory results across all indicators. Summarily, the questionnaire exhibited high reliability and validity, which served as a robust instrument in investigating early-career music educators' knowledge and skills through perceived importance and actual performance at both primary and secondary schools. The 24 measurement items comprised skills and knowledge that music educational experts considered essential for pre-service music educators to acquire.Results

Table 6
The Mean Values on Importance and Performance

Category	Item Number	Item	Importance			Performance		
			Category Mean	Mean	SD	Category Mean	Mean	SD
ETKS	A1	Educational Policies and	4.43	4.37	0.77	3.69	3.64	0.77
	A2	Musical Pedagogical Approaches		4.55	0.68		3.72	0.72
	A3	Musical Educational Measurement		4.36	0.83		3.68	0.72
	A4	Pedagogy		4.44	0.74		3.72	0.73
	A5	Psychology		4.37	0.74		3.62	0.76
	A6	Musical Curriculum Standards		4.50	0.69		3.74	0.73
MPKS	B1	Vocal Singing Capacities	4.37	4.41	0.71	3.49	3.67	0.75
	B2	Piano Improvisation		4.46	0.75		3.30	0.89
	B3	Musical Instrumental (Except		4.18	0.89		3.33	0.91
	B4	Choral Rehearsal Capabilities		4.47	0.68		3.48	0.82
	B5	Aural Abilities		4.31	0.82		3.69	0.79
MTKS	C1	Musical Theories	4.10	4.03	0.98	3.47	3.49	0.83
	C2	Analysis of Musical Works		4.11	0.93		3.51	0.79
	C3	Music Creation		4.09	0.90		3.41	0.83
	C4	Folk Music Knowledge		4.13	0.86		3.44	0.80
	C5	Music History		4.17	0.86		3.51	0.78
	C6	Music Aesthetics		4.1	0.91		3.44	0.78
EPKS	D1	Classroom Teaching Skills	4.50	4.56	0.63	3.74	3.80	0.73
	D2	Verbal Communication		4.52	0.64		3.89	0.72
	D3	Reflective Teaching		4.49	0.64		3.70	0.70
	D4	Student Management		4.5	0.65		3.73	0.69
	D5	Music Activity Organisation		4.49	0.65		3.69	0.71
	D6	Literal Expression		4.51	0.63		3.73	0.73
	D7	Modern Educational Technological		4.42	0.66		3.63	0.76

Table 6 illustrates that the four educational components, namely ETKS, MPKS, MTKS, and EPKS, attain respective scores of 4.43, 4.37, 4.10, and 4.50 in the importance evaluation, with an overall mean score of 4.33. The four educational components achieved respective scores of 3.69, 3.49, 3.47, and 3.74 in the performance evaluation, with an overall mean score of 3.61. The overall mean score of the importance evaluation significantly exceeded that of the performance evaluation, which propounded a gap between respondents' self-assessed performance and perceived importance despite the significance of the required knowledge

and skills. Moreover, all 24 items achieved scores ranging from 4.03 to 4.56, which surpassed the threshold value of 4 with an overall mean score of 4.33. The findings highlighted the importance of required knowledge and skills to early-career music educators at both primary and secondary educational institutions. Specifically, EPKS and ETKS exhibited relatively high average scores in both importance and performance evaluations, which indicated respondents' high emphasis on and proficiency in educational theory and practical knowledge and skills. The data dispersion also demonstrated that standard deviations (SD) primarily ranged from 0.63 to 0.98, with a uniform distribution in performance across the four components despite individual variations.

The results revealed disparities between cognitive importance and practical performance. While early-career music educators consistently perceived required knowledge and skills as crucial competencies, the actual performance frequently did not fulfil the expectations. The discrepancy was apparent in both the overall scores and individual sub-item comparisons, which underscored the continuous improvement challenges and opportunities for pre-service music educator training programmes. Hence, reinforcing practical teaching components is imperative to enhance programme effectiveness while fostering the translation of theoretical knowledge into practical skills. Recognising individual differences and personalised coaching and training should also be implemented to ensure each music educator is equipped with a sufficient level of knowledge and skills for teaching practices. Resultantly, pre-service music educational programmes can efficaciously develop primary and secondary music educators adequately equipped with robust theoretical foundations and practical competencies, which will ensure sustainable music educational development in China.

Importance-Performance Analysis (IPA)

A comprehensive quantitative component is necessary to examine early-career primary and secondary music educators' perspectives on pre-service educational programme efficacies to discover future improvement areas. The results from sub-sections reinforced and delineated the results from the questionnaire while concurrently serving as a robust fundamental for the music educational programme. Figure 1 portrays the four educational components in the four quadrants respectively.

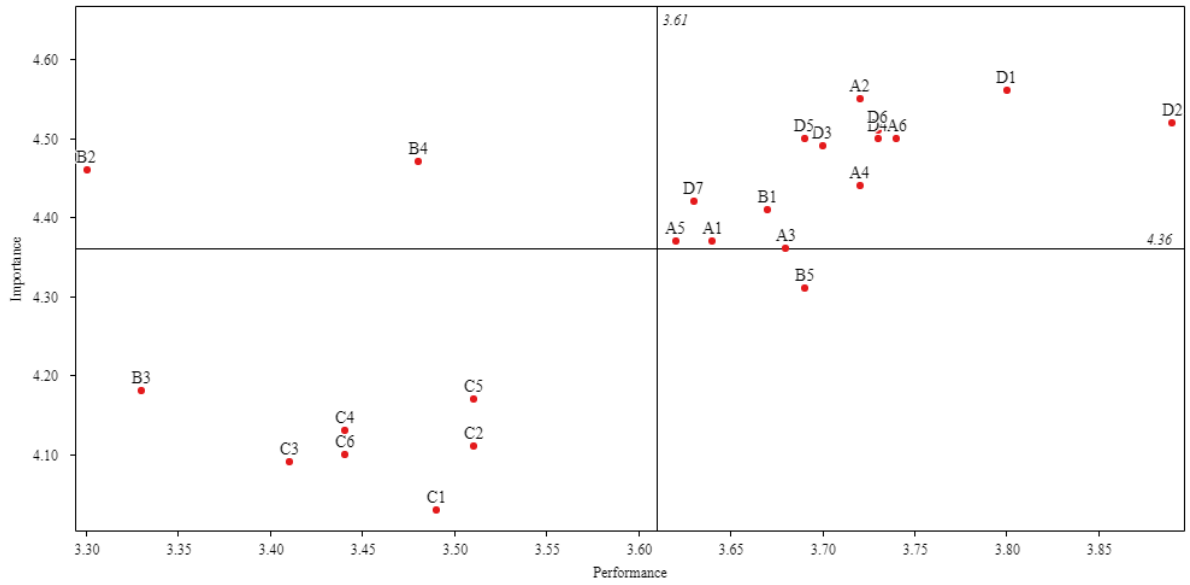

Figure 1. The IPA of Music Educational Programmes

Analysing the Four Educational Components in IPA

Figure 1 illustrates the 24 pivotal knowledge and skill areas perpendicularly plotted based on the importance and preference levels (see Table 4.3). The vertical axis signifies the importance level and the horizontal axis denotes the performance extent. The respective medians (4.36 and 3.61) of both importance and performance function as the coordinate origin and separate the graph into four quadrants. The current study also developed item codes, wherein 'A' symbolises ETKS items (see Table 6). Furthermore, 14 of the 24 items were categorised into the highly crucial high-performing category (the third quadrant), in which the items demonstrate a linear positive relationship and suggest that pre-service music educational programmes are generally effective.

Quadrant 1: A High Priority for Attention

Piano improvisation accompaniment (B2) and choral rehearsal abilities (B4) from the MPKS component achieved significantly high importance ratings at 4.46 and 4.47 respectively, although the actual performance scores were only 3.30 and 3.48 respectively (see Table 6). The results postulated that the existing pre-service music education programmes did not adequately address the two areas despite both items being perceived as the most crucial aspects, which required special attention in the pre-service music educational programme.

Quadrant 2: A Lower Attention Level but with Significant Emphasis

The MTKS component was the most significant in the second quadrant, which contains all MTKS items and musical instrumental (except the piano) skills (B3) of the MPKS component. Most early-career music educators considered the items essential or highly essential despite the majority perceiving being inadequately prepared. The results propounded that the music educational programme in Guizhou, China insufficiently addressed MTKS, which required future studies to determine the most effective approaches to ensuring the identified areas would be adequately addressed in the existing programmes.

Quadrant 3: Maintaining Efforts

The third quadrant contains effectively covered areas in the current programmes, wherein both ETKS and EPKS related to general pedagogical approaches are both sufficiently addressed and perceived as highly pivotal to early-career music educators. Moreover, vocal singing capabilities (B1) of the MPKS component were considered more significant and sufficiently covered than other areas from the same component.

Quadrant 4: Potential Areas for Reduction

The fourth quadrant comprises areas deemed with lower importance (lower emphasis than the third quadrant) while being adequately addressed in the existing programmes. Only the aural skills (B5) from the MPKS component were categorised in this quadrant, which would generally be addressed in a music or arts degree. The importance and performance scores were 4.31 and 3.69, respectively (see Table 6).

Discussion

The present study underscored the importance of the four educational components namely ETKS, EPKS, MTKS, and MPKS, for early-career music educators at both primary and secondary schools, with respective importance scores of 4.43, 4.50, 4.10, and 4.37 exceeding the threshold value of 4.00. Particularly, ETKS and EPKS components achieved higher scores, which postulated the significance of educational theory and practice over musical theory and practice (MTKS and MPKS). Miao, Zhang and Wang (2012) also emphasised the four components as fundamental for primary and secondary music educators. The IPA results also demonstrated that 14 out of the 24 examined items were classified under the third quadrant (high importance, high performance), which posited the high efficacies of pre-service music educational programmes provided by the four participating universities. Zhang and Luo (2022) also discovered that respondents were highly satisfied with enrolled music teacher education programmes. Nonetheless, a discrepancy existed between the overall mean score of importance (4.24) and that of performance (3.61), which propounded the requirement for further improvement. Kugelman (2021), also observed a similar perception of music teacher education programmes over teaching performance.

All ETKS items were categorised into the third quadrant, which suggested a robust foundation among pre-service music educators in China. Conversely, Ding and Quan (2013) revealed limited proficiency in education theory among in-service music educators, which could be owing to the sample in the current study consisting of recent graduates with extensive teaching experience. All EPKS items were also classified into the third quadrant, which corroborated the high efficacy of EPKS items in pre-service music educational programmes. Contrarily, Tong and Yin (2018) investigated the improvement areas in EPKS quality and emphasised the need for continuous improvement. Different sample compositions might contribute to the contradictory findings. In addition, both choral rehearsal abilities and piano improvisation accompaniment were categorised into the first quadrant, which posited the two items as highly essential despite unsatisfactory performance among early-career music educators. The findings were consistent with Conway's (2022) emphasis on practical experience and diversified curriculum, Ren and Jin's (2019) observation of professional ability deficiencies, Li's (2020) postulation on inadequate choral rehearsal training, and Peng's (2021) claim on integration challenges.

Conclusion

An adequate satisfaction level for pre-service music educator preparation programmes before serving at both primary and secondary educational institutions in Guizhou was observed due to effectively equipping graduates with the required knowledge and skills and adequately cultivating ETKS and EPKS. Nevertheless, the MTKS component requires further calibrations and improvements, as a certain misalignment degree with the requirements was discerned. The MPKS component, especially piano improvisation accompaniment (B2) and choral rehearsal skills (B4), also necessitated reinforcement as the two items are integral areas frequently lacking among early-career educators. Therefore, addressing the gaps in required knowledge and skills will assist in resolving the current research problem. While aural skills in MPKS were rated low in importance yet high in performance, the fundamental nature suggested the maintenance of the skills. Additionally, pre-service music teacher educational programmes should emphasise developing specific MPKS areas and practical skills while sustaining ETKS and EPKS coverage. The MTKS component also requires more attention and improvement. Future researchers can expand the current scope to different regions in China to investigate other pedagogical and learning methods and the association between different knowledge areas and skills. Longitudinal and comparative analyses can also be considered by future scholars to include diverse perspectives in revealing emerging trends, which may serve as a solid foundation for continuous improvements to pre-service music educational programmes and enhancements to the quality of music education at both primary and secondary educational institutions.

This research offers a solid empirical foundation for shaping and refining pre-service music teacher education programs, based on the unique requirements and experiences of early-career music teachers in primary and secondary schools. By addressing these specific needs, the programs are well-positioned to effectively prepare teachers for their roles in primary and secondary education, thereby aligning seamlessly with the evolving requirements of early-career music educators. Furthermore, this study makes a notable contribution by advocating for the integration of courses and the provision of ongoing support beyond graduation as key strategies to enhance the effectiveness of teacher education programs. These insights are not only pertinent to the training of future music teachers but also have broader implications for teacher education programs in general, particularly those geared towards preparing specialists for the primary and secondary school levels. The integrative approach proposed here offers a promising avenue for program designers to forge ahead in crafting impactful and purposeful teacher education initiatives.

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