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RESEARCH ARTICLE

The Development of the "Integrated" 5E3 Teaching Model for Music in Vocational Early Childhood Care Programs

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ABSTRACT

With the introduction of the 1+X "Academic Certificate + Several Vocational Skill Level Certificates" system, vocational colleges, particularly those offering Early Childhood Care programs, face both challenges and opportunities in curriculum integration and interdisciplinary teaching. This article explores the integration of music education within Early Childhood Care programs, aiming to enhance students' overall qualities through a scientifically-based teaching model to meet societal demands for versatile early childhood care professionals. The article first analyzes current issues in Early Childhood Care program teaching models and their alignment with societal needs, emphasizing the importance of music education in fostering students' aesthetic sense, creativity, and interdisciplinary thinking. Based on theories such as Gardner's Multiple Intelligences, the 5E Instructional Model, and Fogarty's Curriculum Integration Theory, a music-integrated teaching model framework is proposed to improve students' problem-solving abilities through cross-disciplinary learning. Regarding research methods, this study employs questionnaire surveys and interviews to gather data on the demands and challenges of integrating music within Early Childhood Care programs. Additionally, expert focus groups are used to further validate the effectiveness and feasibility of music integration in Early Childhood Care curricula. Furthermore, a scale assessment is conducted to evaluate the effectiveness of the proposed teaching model and the enhancement of students' overall competencies. Finally, the article outlines a comprehensive guide for implementing a music-integrated teaching model in Early Childhood Care programs, covering its theoretical foundation, objectives, teaching strategies, and assessment methods. The study concludes that the integration of music education can enrich Early Childhood Care curricula, enhance students' professional competitiveness, and provide new ideas and methods for future curriculum reforms and talent development.

1. INTRODUCTION

The Ministry of Education, along with other agencies, introduced the "1+X" certification system in vocational colleges, outlined in the "Pilot Program for the Implementation of the 'Academic Certificate + Several Vocational Skill Level Certificates' System" (Document No. [2019] 6). This program encourages vocational students to gain multiple skills by earning various qualification certificates, improving their comprehensive vocational abilities. For Early Childhood Care students, obtaining the Early Childhood Care Worker certificate and other vocational certificates helps enhance their skills and adaptability to employer needs(Wang, 2024)。

The Ministry of Education's "Guidelines for Kindergarten Care and Education Quality Evaluation" (Document No. [2022] 1) highlight the importance of fostering children's development across various domains. These standards guide kindergarten caregivers to meet early childhood education

quality benchmarks. As educational concepts evolve, integrated teaching models have become crucial for improving early childhood education quality.

The "1+X" certification system brings new demands for textbooks, teachers, and teaching methods, aligning with certification exam standards. Effective curriculum integration, emphasized in the Ministry's "Opinions on Curriculum Reform" (Document No. [2014] 4), helps students connect disciplines and apply knowledge in practice. This approach supports Early Childhood Care programs in developing well-rounded graduates who meet industry needs and achieve professional growth (Bai, 2022).

However, challenges remain, such as a lack of guidance in curriculum structure, a gap between theoretical and practical courses, and a mismatch between the training of early childhood professionals and societal needs (Li, 2020; Zhao, 2018). Many students in Early Childhood Care programs struggle to apply their academic knowledge effectively in the job market(Hong, 2022).

Gardner's "Theory of Multiple Intelligences" suggests that human intelligence is multifaceted, including musical, visual-spatial, kinesthetic, interpersonal, and intrapersonal types. Music, in particular, fosters creativity and learning by turning abstract theories into tangible experiences(Luo, 2021). Music education also promotes aesthetic sensitivity and cross-disciplinary knowledge integration.

The "Curriculum Standards for Art Courses in Vocational Schools" stress integrating music with other professional disciplines, encouraging students to explore its applications in real-world contexts. In Early Childhood Care programs, this integration enhances students' ability to design creative teaching and play activities, improving their practical skills and innovation (Ren, 2023).

Despite the benefits of music education, current Early Childhood Care curricula often focus on individual subjects, lacking integration with music as outlined in curriculum standards. This disconnect limits students' ability to apply knowledge holistically, hindering their overall development(Wei, 2024). Strengthening cross-disciplinary integration is crucial for enhancing students' skills and meeting the evolving needs of early childhood education(Li, 2020; Zhao, 2018).

This article proposes a teaching model that integrates music courses with vocational Early Childhood Care curricula, aiming to equip students with versatile skills and meet societal demands for skilled early childhood education professionals.

2. OBJECTIVES

2.1 To analyze the current teaching model of Early Childhood Care programs and its alignment with societal demands.

2.2 To construct a music-integrated teaching model for Early Childhood Care programs.

2.3 To validate the teaching model of music integrated with the Programs of early childhood care.

3. LITERATURE REVIEW

3.1 Early childhood care

Early childhood care is defined as services for children aged 0-6, emphasizing their physical, social, emotional, and cognitive development through a nurturing, play-based learning environment. This concept is recognized globally, with varying systems in countries like Canada, the United States, and Malaysia, all focusing on comprehensive child development (Rahmatullah et al., 2021). In China, the Ministry of Education stresses the importance of kindergarten care for children's overall development (Hong, 2022). The growing global focus on early childhood education drives the integration of multidisciplinary content to develop professionals with broad expertise.

3.2 Teaching models in early childhood care programs

Studies suggest that Early Childhood Care curricula are still evolving to meet societal demands. For example, research by(He, 2021) indicates that current curricula often fail to align with employer needs(Du, 2022),advocates for integrating care and education, while(Xin, 2022a)calls for strengthening music education within Early Childhood Care programs. In Canada, vocational schools focus on practical, application-oriented training to meet diverse societal needs(Xu, 2021).

3.3 Music education in early childhood care

Music plays a vital role in early childhood development. Research by (Lee Nardo et al., 2006) emphasizes music's role in emotional, aesthetic, and cognitive development. Studies in Australia (Barrett, 2016) and Finland (Ruokonen et al., 2021) show that music activities enhance literacy, social skills, and emotional regulation in children. Integrating music across early childhood education programs is essential for fostering holistic development Integration of Early Childhood Care Programs and Curriculum(Du, 2022).Curriculum integration model,such as those proposed by (Fogarty, 1991), emphasize interdisciplinary teaching. Integration of music with subjects like psychology and language in Early Childhood Care programs enhances students' practical abilities and organizational skills (Xin, 2022b). Project-based learning and thematic activities, such as those studied by (Lu, 2020), further enhance integration and provide hands-on learning experiences.

3.4 1+X vocational certificates

The "1+X" certification system, launched in 2019, aims to reform vocational education by integrating industry and education. It allows students to earn both an academic certificate and multiple vocational skill certificates, enhancing their employability (Liao, 2024). Music can be incorporated into this system, offering students certificates in areas such as early childhood music education, music therapy, and cultural industries, expanding their career opportunities (Kang, 2021; Li, 2024).

3.5 Theoretical research on the curriculum integration teaching model

Interdisciplinary teaching models in early childhood education, such as Project-Based Learning (PBL), collaborative learning, and contextual integration, are gaining attention. These include practices aligned with STEAM education, as well as models integrating language and professional courses, ideological education with professional courses, and physical health with professional courses, broadening and deepening the discipline. Key approaches to curriculum integration include:

Fogarty (How to Integrate the Curricula) proposed ten integration models based on multiple intelligence theory, including discrete, linked, nested, parallel, shared, webbed, threaded, integrated, infused, and networked approaches, each with its unique integration method.

Currently, the most widely used integration model is found in STEAM education, especially in Project-Based Learning (PBL), Problem-Based Learning (PBL), Design-Based Learning, and the "5E Learning" approach(Craig H. Hart, 1997). Among these, PBL is the most commonly applied, combining classwork with projects and integrating activities with projects.

The introduction of the 1+X qualification system, where students earn a primary degree plus multiple skill certificates, has created both challenges and opportunities for curriculum integration and interdisciplinary teaching in early childhood education. However, research on teaching models for curriculum integration is limited, with few case studies on how to foster interdisciplinary thinking in vocational settings through integrated curricula (Wang, 2024). Interdisciplinary education requires meaningful, multidimensional teaching contexts and methods. Through such education, we can better cultivate early childhood educators with comprehensive and innovative skills, thus improving the quality and effectiveness of early childhood education.

At present, research on curriculum integration still requires innovation in theory, exploration of practical teaching models, and development of evaluation systems. Therefore, this study, based on the analysis of the above literature, is feasible and draws on the theoretical foundations for developing this teaching model, primarily based on Multiple Intelligences Theory, the 5E Teaching Model, and Fogarty's Curriculum Integration Model.

4. METHODS AND PROCESS

This study uses a mixed research approach, combining both quantitative and qualitative methods to achieve its objectives through literature review, surveys, in-depth interviews, and focus group discussions.

4.1 Data collection

Qualitative methods:

Literature review: Review of national policies, books, academic papers, and journal articles to examine issues related to integrating music into early childhood education.

In-depth interviews: Semi-structured interviews will explore the status of music integration in early childhood education, teacher needs, and alumni feedback.

Focus group discussions: To further discuss and analyze the status and needs of the teaching model.

4.1.2 Quantitative methods:

The research method used was a questionnaire survey. The survey was distributed to 431 students, with 429 valid responses collected, resulting in a 99% response rate and 99% valid response rate. Reliability was tested using Cronbach's α coefficient, and the data was analyzed using SPSS software.

Table 1: Reliability statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
Total	0.968	0.969

As can be seen from the table, the Cronbach's α coefficient is above 0.9, indicating that the questionnaire has a very high internal consistency, exceeding the commonly accepted threshold of 0.70. In this study, the Cronbach's α coefficient of 0.969 not only indicates high reliability of the questionnaire but also enhances our confidence in the results, suggesting that the questionnaire effectively captures the measured characteristics in practical application. Based on the reliability analysis, the questionnaire is reliable for use in this study and suitable for subsequent data collection and analysis.

For validity analysis, KMO and Bartlett's Test were conducted, and the results are as follows:

Table 2: KMO and bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.947
Bartlett's Test of Sphericity	**Approx. Chi-Square**	7618.678
	df	91
	Sig.	0.000

The questionnaire validity data shows a KMO value above 0.7, and Bartlett's Test of Sphericity has a significance level of 0.000 < 0.01, confirming good validity. Based on reliability, validity analysis, and response rates, the results are statistically significant for analyzing the current teaching model and needs in early childhood education.

The data provides a comprehensive understanding of the teaching model and societal demands, supporting model development. Demographic variables, such as gender, were included, ensuring data authenticity. A total of 429 valid responses were collected. The demographic analysis is as follows:

Table 1: The demographic analysis of the samples

Frequency	N	Percent
Gender		
A. Male	18	4.2%
B. Female	411	95.8%
Grade		
A. First Year	53	12.4%
B. Second Year	177	41.3%
C. Third Year	193	45.0%
D. Graduated	6	1.4%
Have you participated in practical teaching or internship in Early Childhood Education?		
A. Yes	311	72.5%
B. No	118	27.5%

As shown in the above chart, the majority of students who participated in the survey are female, making up 95.8% of the respondents. The largest proportion of students is in their third year, accounting for 45.0%. Additionally, 72.5% of the students have experience with practical teaching or internships in the early childhood education program.

Table 4: descriptive statistics

Item Statistics

Item	Mean	Std. Deviation	N
The learning objectives of the early childhood education program courses are clear.	1.71	0.650	429
The teaching model of the early childhood education program stimulates my interest in learning.	1.80	0.712	429
The current teaching methods in the early childhood education program help me establish effective learning strategies.	1.78	0.707	429
The design of teaching activities in the early childhood education program is interactive and participatory.	1.67	0.632	429
The assessment and evaluation methods in the early childhood education program are reasonable.	1.69	0.652	429
I have a good understanding of the career development needs in early childhood education.	1.76	0.704	429
I have a clear plan for my career development.	1.84	0.728	429
The current teaching model in the early childhood education program aligns with career development needs.	1.83	0.770	429
Music plays an important role in early childhood education.	1.59	0.626	429
The integration of music elements with early childhood education knowledge helps enhance learning interest.	1.60	0.628	429
The combination of music courses and early childhood education courses helps stimulate innovative thinking.	1.65	0.667	429
Integrating early childhood education content into music courses helps connect various professional courses.	1.65	0.659	429
The combination of music and early childhood education courses can provide diversity for career development.	1.62	0.632	429
I am willing to participate in joint projects between music courses and other early childhood education courses.	1.64	0.675	429

This table provides descriptive statistics for the various items in the survey, including the mean, standard deviation, and number of respondents (N). The overall data showed that a higher average score indicated that students had a positive attitude towards early childhood education programs, especially in terms of clarity of learning objectives, integration of music, and alignment of teaching models with professional development needs. Students seem to be open to the idea of integrating music into the curriculum and see the value of this integration for learning engagement and career development.

Item	Correlation	Sig.
Clarity of Learning Objectives in the Early Childhood Education Program	0.701**	0.000
Teaching Model of the Early Childhood Education Program Stimulates My Interest	0.748**	0.000
Current Teaching Methods in the Early Childhood Education Program Help Me Establish Effective Learning Strategies	0.730**	0.000
Current Teaching Model in the Early Childhood Education Program Aligns with Career Development Needs	0.660**	0.000
Music Plays an Important Role in Early Childhood Education	0.535**	0.000
Integration of Music Elements with Early Childhood Education Knowledge Enhances Learning Interest	0.544**	0.000
Combining Music Courses with Early Childhood Education Courses Helps Stimulate Innovative Thinking	0.580**	0.000
Integration of Early Childhood Education Content into Music Courses Helps Connect Various Professional Courses	0.583**	0.000
The Combination of Music and Early Childhood Education Courses Provides Diversity for Career Development	0.590**	0.000
Willingness to Participate in Joint Projects Between Music and Other Early Childhood Education Courses	0.611**	0.000

Note:
Correlation is significant at the 0.01 level (2-tailed).

Table 2: Correlations

This table shows significant correlations ($p < 0.01$) between early childhood education factors and career development needs, indicating strong relationships. The study found that the teaching model positively correlates with students' learning interest ($r = 0.748$) and career development needs ($r = 0.660$), suggesting an effective model boosts engagement and career planning. Additionally, integrating music with early childhood education correlates with both learning interest ($r = 0.544$) and career options ($r = 0.590$), highlighting the value of interdisciplinary education.

Based on the survey, the findings can be summarized in three areas:

1. **Effectiveness and issues of the current teaching model**
   Students expressed low satisfaction with the current model, especially regarding learning objectives, engagement, and teaching effectiveness. While 35%-40% were satisfied, 9%-14% felt disengaged. Traditional methods, lacking practical application, limit teaching outcomes.
2. **Career development needs and curriculum alignment**
   Only 37.59% of students fully understood their career needs. Many aimed to be caregivers or art teachers, but the current model didn't support these goals. Teachers suggested more interdisciplinary content to better align with industry demands.
3. **Awareness and demand for music integration**
   Around 93% of students acknowledged the importance of music in early childhood care, believing it enhances learning interest and career prospects. Both students and teachers generally support music integration, though improvements are needed in applying music to child psychology and language development.

Summary:

Optimizing the teaching model, incorporating interdisciplinary knowledge, and enhancing the integration of music with care courses are key to improving student engagement and career development opportunities.

4.2 Teaching model development

Framework Construction: The data from Phase 1 will guide the development of the teaching model's conceptual framework, including theoretical foundation, objectives, procedures, strategies, and evaluation.

Based on literature analysis, survey questionnaires, interview data, and national art curriculum standards, a teaching model outline for early childhood education integrated with music courses has been developed. The outline consists of the following sections: theoretical foundation, teaching objectives, teaching procedures, teaching strategies, and evaluation.

4.2.1 Theoretical foundation

1. **Multiple intelligences theory (Gardner):** Emphasizes the integration of musical intelligence with interdisciplinary thinking, helping students understand the connection between music and early childhood education knowledge.
2. **Fogarty's curriculum integration model:** Provides three paths—shared model, webbed model, and integrated model—to support the deep integration of theory and practice.
3. **BSCS 5E teaching model:** Promotes active learning and curriculum integration through five stages: engage, explore, explain, elaborate, and evaluate.
4. **National vocational school art curriculum standards:** Guides course content to align with professional themes, strengthening the integration of music with core professional courses.

4.2.2 Teaching objectives

1. **Knowledge objectives:** Master the basic theory and skills of music courses and understand their relationship with core early childhood education content.
2. **Skills objectives**: Enhance interdisciplinary thinking and curriculum integration skills, and strengthen teamwork and problem-solving abilities.
3. **Emotional objectives:** Foster artistic cultivation and educational enthusiasm, and promote recognition of the value of integrating music and early childhood education.

4.2.3 Teaching procedures

Using the five stages of the BSCS 5E teaching model—engage, explore, explain, elaborate, and evaluate—this curriculum integrates Fogarty's curriculum models in the elaboration phase. The integration progresses through the shared model (conceptual crossovers), webbed model (thematic integration), and integrated model (project-based practice):

1. **Concept:** Basic level, emphasizing the core ideas of knowledge or cross-disciplinary themes.
2. **Theme:** Intermediate level, integrating multiple disciplines around a specific theme.
3. **Project:** Advanced level, involving the design and implementation of practical projects to achieve deep interdisciplinary integration.

4.2.4 Teaching strategies

1. **Integration principle:** Use music as the main thread and thematic activities as the medium, focusing on situational design and active student participation.
2. **Integration methods:** Employ situational, thematic, and project-based approaches to promote curriculum integration through real-world cases, interdisciplinary themes, and comprehensive project designs.
3. **Content integration:** Align music courses (singing, instrumental music, dance, drama) with early childhood education courses (life, learning, play, and physical activities), cultivating students' ability to integrate knowledge and solve real-world problems.

4.2.5 Teaching evaluation

1. **Evaluation methods**: Utilize process-based, performance-based, and summative evaluations, which cover two dimensions: music content and integrated curriculum.
2. **Scoring system:** Process evaluation (30%), performance evaluation (40%), and summative evaluation (30%).
3. **Comprehensive evaluation:** Use both qualitative and quantitative methods, focusing on personalized development and learning progress.

In summary, by combining Fogarty's curriculum integration models and the BSCS 5E teaching model, a deep integration teaching model is constructed to promote the interdisciplinary integration and application of music and early childhood education.

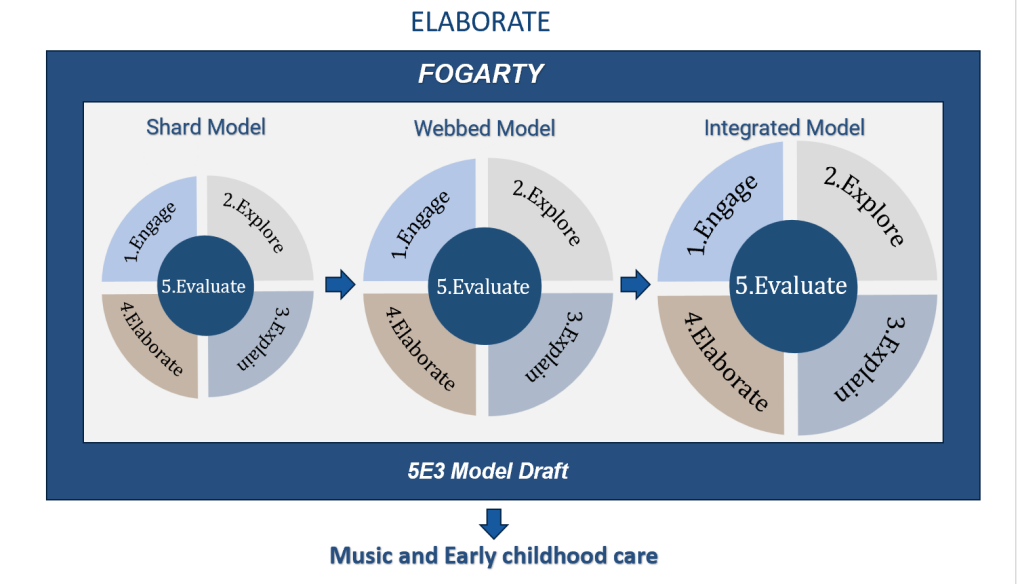

Figure 1: Draft of the teaching model

4.2.6 Explanation of the teaching model

1. **Top level:** Fogarty's ELABORATE Interdisciplinary Concept
   At the top, "ELABORATE" represents the extension phase of the BSCS 5E model, where curriculum integration primarily occurs. The second circle highlights Fogarty's course integration theory, guiding students towards interdisciplinary integration through his models.
2. **Middle level:** 5E Model (Engage, Explore, Explain, Elaborate, Evaluate)
   The diagram includes the five stages of the BSCS 5E model:

   Engage: Introduce real-world problems to spark student interest.

   Explore: Students independently gather resources and analyze knowledge.

   Explain: Teachers guide students to organize their understanding and solutions.

   Elaborate: Implement integrative activities using Fogarty's three models:

   Shared model (Concept): Single-concept interdisciplinary exploration.

   Webbed model (Theme): Multi-disciplinary integration around a central theme.

   Integrated model (Project): Deepening integration through project-based practice.

   Evaluate: Assess learning outcomes and activity effectiveness, using feedback to refine the 5E process and encourage higher levels of integration.
3. **Bottom level:** Integration of Music and Early Childhood Care
   At the bottom, "Music and Early Childhood Care" clarifies the focus of the teaching model, with music as the core element integrated with early childhood education content.

   The "5E3" model integrates Fogarty's three models into the 5E framework, allowing for a step-by-step integration of music and early childhood care curricula: Concept Exploration Theme Integration Comprehensive Project Practice

   This approach, combining Fogarty's models with the BSCS 5E model, guides students from conceptual exploration to thematic integration and project practice, fostering deep interdisciplinary integration and practical skills in music and early childhood education.

4.3 Expert validation of the teaching model

Once the teaching model was developed and optimized, the research entered the expert validation phase. A panel of five experts from vocational education, early

childhood education, music education, and curriculum design reviewed and evaluated the model for its scientific basis, feasibility, and practicality.

4.3.1 Evaluation content and process

The expert evaluation combined quantitative scoring and qualitative analysis. Experts assessed the clarity of the model's objectives, interdisciplinary integration, innovation, teaching procedures, student collaboration, and the scientific nature of the teaching assessment. They also evaluated the feasibility and effectiveness of specific activities like music and emotional management course design.

1. **Training:** Experts were briefed on the teaching model's design and objectives.
2. **Scoring and interviews**: Experts provided both scores (via a Likert scale) and qualitative feedback in focus group interviews.
3. **Data analysis:** The scores were averaged, and the interview feedback was analyzed for insights.

4.3.2 Evaluation dimensions:

1. Clarity of Objectives
2. Interdisciplinary Integration
3. Scientific Design of Teaching Procedures
4. Innovation in Teaching Strategies
5. Student Skill Development
6. Comprehensive Teaching Evaluation
7. Practical Feasibility
8. Alignment with Social Needs

4.3.3 Expert validation of the teaching model result

a. Experts' validation of the teaching model's effectiveness is assessed using a 5-point Likert scale (1 to 5):
    1. Strongly Disagree (indicating the expert completely believes the teaching model is ineffective)
    2. Disagree (indicating the expert believes the teaching model is ineffective or has poor results)
    3. Neutral (indicating uncertainty or no obvious effectiveness)
    4. Agree (indicating the expert believes the teaching model is effective)
    5. Strongly Agree (indicating the expert believes the teaching model is highly effective)

Typically, a score of 4 (Agree) or 5 (Strongly Agree) indicates that the teaching model is considered effective. If the average score of the experts reaches or exceeds 4, it suggests that they generally believe the teaching model is effective.

5E3 Teaching Model Effectiveness Evaluation - Expert Scoring Table

Scoring Dimension	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Average
Clarity of Objectives	5	4.5	5	4.5	5	4.8
Interdisciplinary Integration	5	5	4.5	5	4.5	4.8
Scientific Design of 5E Phases	4.5	4	5	4.5	4.5	4.5
Innovation in Teaching Strategies	5	5	5	4.5	4.5	4.8
Promotion of Student Ability	4.5	4.5	4	5	4.5	4.5
Comprehensive Evaluation	4.5	4.5	4.5	4.5	4.5	4.5
Alignment with Societal Needs	5	5	4.5	5	5	4.9
Practical Feasibility	4	4.5	4	4	4.5	4.2

Table 3: Expert scoring

1. **Clarity of objectives:** Average score of 4.8, indicating well-defined goals.
2. Interdisciplinary integration: Score of 4.8, with consensus on logical integration of music.
3. **Scientific design of procedures:** Average score of 4.5, showing mixed views on alignment with students' cognitive stages.
4. **Innovation in teaching:** Average score of 4.8, reflecting high praise for creative methods.
5. **Student skill development:** Average score of 4.5, highlighting strong growth in interdisciplinary skills.
6. **Comprehensive evaluation:** Score of 4.5, showing agreement on the thoroughness of the evaluation.
7. **Practical feasibility:** Score of 4.2, indicating some challenges in implementation.
8. **Alignment with social needs:** High score of 4.9, confirming the model meets societal demands.

Expert feedback summary: The experts praised the model's interdisciplinary integration and alignment with social needs. However, there were varying opinions on the design of teaching procedures and practical feasibility, suggesting areas for refinement. Overall, the model shows great promise for effective implementation.

b. Focus group insights:

1. **Expert 1 (policy scholar):** Praised the model's alignment with vocational education and societal needs.
2. **Expert 2 (early childhood education researcher):** Highlighted its potential to stimulate creativity and enhance practical abilities.
3. **Expert 3 (music education expert):** Emphasized music's role in holistic child development.
4. **Expert 4 (vocational education expert):** Acknowledged the model's practical application in vocational settings.
5. **Expert 5 (teaching model design expert):** Recognized the model's value in helping teacher's bridge theory and practice.

Expert evaluation summary: The 5E3 teaching model received positive feedback for its clarity of objectives, interdisciplinary integration, and alignment with social needs. Experts acknowledged its effectiveness in fostering student development, particularly in integrating music and early childhood care. However, they suggested improvements in the scientific design and practical feasibility of the model, recommending further optimization of the details.

4.3.4 Core improvement suggestions

a. **Optimization of the teaching model diagram:** Incorporate the three stages of Fogarty's teaching model (Shared Model, Webbed Model, Integrated Model) into the 5E3 teaching model diagram, to more clearly present the progressive logic of teaching design from concept exploration to theme integration, and finally to project practice.

b. Suggestions for teaching model outline content:

1. Refining objectives: Specify teaching objectives more clearly, outlining the cultivation requirements for different levels of student abilities, such as adding indicators for developing students' ability to design complete course plans under the ability objectives.
2. Add tasks for students with weak foundations in the Shared Model to help them establish basic connections between music and early childhood education courses.
3. In the Webbed Model, incorporate real educational scenarios, invite kindergarten teachers to participate in the teaching process, and provide more real-life case support.
4. Introduce personalized teaching strategies to address the diverse needs of students
5. Resource expansion: Increase the diversity of interdisciplinary teaching resources to enhance students' creativity and innovation abilities

6. Teacher training: Implement systematic training workshops for frontline teachers to enhance their understanding and application of the music integration teaching model.
7. Strengthening evaluation mechanisms: Introduce tracking and feedback on students' career development after graduation as part of the evaluation, and continuously assess the long-term effects of the teaching model.

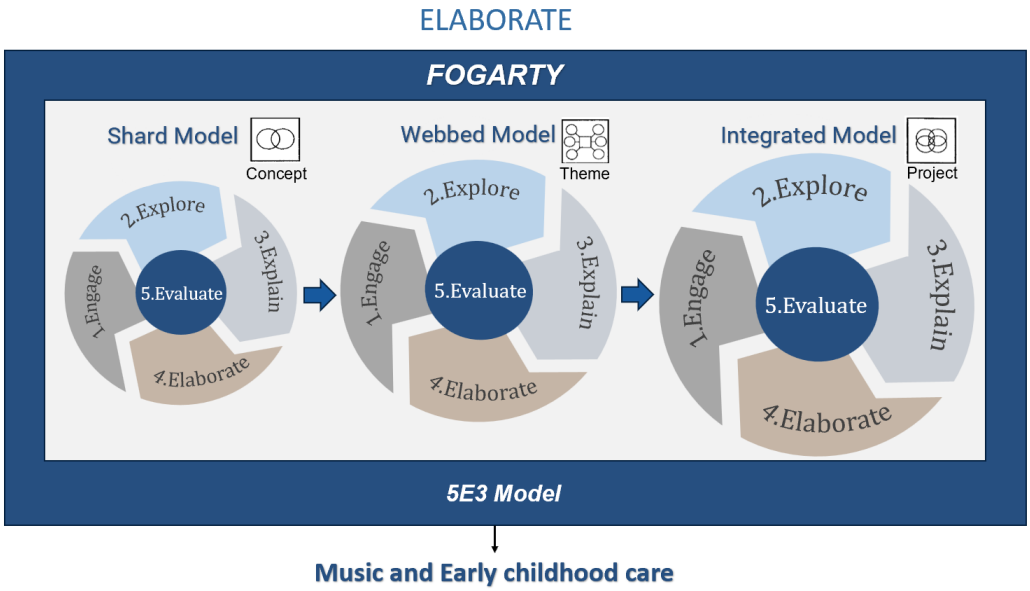

Figure 2: The revised teaching model

Summary: Expert feedback indicates that the 5E3 teaching model effectively integrates music with early childhood care courses. However, attention should be given to optimizing task designs, teacher training, and implementing a long-term evaluation mechanism. These revisions will enhance the model's practicality and application outcomes.

5. RESULT

This study develops a music-integrated early childhood care curriculum teaching model to address gaps in curriculum integration and interdisciplinary skills in vocational education. The chapter discusses findings from three research objectives.

5.1 Alignment with current teaching models and social needs

The study, based on literature, surveys, and interviews, reveals:

- **Limitations of single-subject models:** Current teaching lacks interdisciplinary connections and fails to meet complex job demands, limiting students' problem-solving abilities.
- **Need for interdisciplinary talent:** With the rise of high-quality early childhood education, there is a growing demand for professionals with interdisciplinary skills.
- **Role of music education**: Music helps integrate disciplines, aligning with Gardner's Theory of Multiple Intelligences and enhancing students' overall abilities.

Empirical data support the necessity of the music-integrated teaching model.

5.2 Construction and significance of the music-integrated teaching mode

The 5E3 teaching model, combining Fogarty's curriculum integration theory and the BSCS 5E model, progresses from concept exploration to project practice, offering both scientific and practical value.

5.3 Innovation and teaching strategies

1. **5E teaching model:** Includes five stages (Engage, Explore, Explain, Elaborate, Evaluate) to enhance active learning.
2. **Fogarty's integration models:** Develop interdisciplinary skills through Shared, Webbed, and Integrated Project Models.

3. **Adaptability:** Integrates music and early childhood care courses, expanding from basic concepts to multidisciplinary projects.
4. **Teaching strategies:**
5. **Contextual learning:** Use real-world cases for interdisciplinary connections.
6. **Personalized support:** Provide tasks for weaker students to connect music and early childhood care.
7. **Teacher training:** Workshops to deepen understanding of the model.
8. **Practical significance:** Enhances interdisciplinary problem-solving skills and offers a model for vocational education reform.

5.4 Expert validation and improvement

experts assessed the model's value and recommended:

1. Clarifying objectives: Define specific interdisciplinary skill goals.
2. Enhancing teaching strategies:
3. Add tasks in the Shared Model to build connections.
4. Introduce real-world scenarios in the Webbed Model.
5. Focus on teamwork skills in the Integrated Model.
6. Improving evaluation: Track graduates' career outcomes and enrich evaluation criteria.
7. Expanding resources: Provide more interdisciplinary teaching materials and case studies.

5.5 Achievement of research objectives

Objective 1: Data show that the traditional model fails to meet current needs for early childhood care professionals.

Objective 2: The 5E3 model successfully integrates music and early childhood care, enhancing interdisciplinary abilities.

Objective 3: Experts confirmed the model's scientific and practical value, with further design improvements needed, but the research goals were largely achieved.

6. DISCUSSION

The research mainly focused on the city of Chengdu, and the regional limitations of the sample limited the generalizability of the conclusions. The teaching model has not yet been verified in large-scale practice, the implementation sample is small, and there is a lack of tracking feedback data over time. The future research direction is to promote and verify the teaching model on a larger scale, further test its applicability and strengthen the dynamic adjustment and optimization of the teaching model, especially to introduce more technical means according to the personalized needs of different student groups, such as Digital teaching resources and through the above discussion. This study verifies the scientific nature and value of the early childhood care course teaching model based on music integration. In the future, through further optimization and promotion, this model is expected to become more initiatives in vocational education curriculum reform and make a contribution to cultivating high-quality child care talents that is more in line with social needs.

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