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Development of scaffolding learning activities to enhance choreography ability for vocational students

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Abstract

The purposes of this study were to 1. develop scaffolding learning activities to enhance choreography abilities for vocational students, 2. compare choreography abilities using the scaffolding learning activities between pre-test and post-test, and 3. study student satisfaction with the scaffolding learning activities. The sample comprised 40 first-year students from the dance art program at Jiangxi Transportation Vocational and Technical College during the first semester of 2024, chosen via simple random sampling. Research tools included 10 lesson plans based on a five-phase scaffolding model (goal setting, knowledge activation, collaborative practice, skill refinement, and autonomous performance evaluation); a choreography ability test measuring technical proficiency, creative expression, cultural authenticity, and overall performance; and 13 items satisfaction questionnaire. Data analysis employed percentages, means, standard deviations, and paired t-tests. The results showed that 1. the scaffolding learning activities received an average suitability score of 4.29 (S.D. = 0.40) from expert evaluation, indicating high appropriateness, 2. students had significantly higher choreography ability post-test (M = 60.00, S.D. = 5.07) than pre-test (M = 33.55, S.D. = 11.80), with t = 25.127, p < 0.001, and 3. overall student satisfaction was at a high level (M = 4.43, S.D. = 0.44). These findings highlight that scaffolding learning activities not only improves choreography skills and student engagement but also promotes creative autonomy and cultural appreciation among vocational students. Additionally, the study contributes to the advancement of culturally responsive education by

integrating artistic creativity with the preservation and transmission of cultural heritage, thereby cultivating both technical excellence and a profound sense of cultural identity among students.

Keywords: scaffolding learning activities, choreography ability, vocational students

Background and Significance

Vocational dance education faces ongoing challenges in preparing students for the creative and rapidly evolving demands of the performing arts industry. Traditional pedagogical models that emphasize repetition and imitation are often insufficient for developing higher-order choreography skills such as creativity, problem-solving, and expressive interpretation (Smith-Autard, 2010). In this context, educational innovation is essential to cultivate both technical proficiency and artistic autonomy. Scaffolding learning theory, which provides structured and gradually reduced support as learners gain competence (Vygotsky, 1978; Wood et al., 1976), has been widely recognized for its potential to bridge the gap between guidance and independence in creative learning.

Previous research in performing arts education has shown that guided and reflective learning environments enhance creative development and learner engagement (Bruner, 1983; Sawyer, 2011). For instance, structured scaffolding models have successfully improved performance outcomes in music and visual arts education (Hmelo-Silver et al., 2007; Fisher & Frey, 2013). In dance pedagogy, scaffolding can support students in exploring movement vocabulary, spatial awareness, and compositional structures, while progressively shifting responsibility from instructor to learner (Smith-Autard, 2010). However, in vocational settings, especially within folk dance traditions, instruction still relies heavily on rote imitation, limiting opportunities for students to integrate creativity with cultural understanding (Biggs & Tang, 2011).

Applying scaffolding learning activities in vocational dance education provides a promising approach to strengthen students' choreography abilities. By designing learning stages that include goal setting, knowledge activation, collaborative creation, skill refinement, and autonomous performance, students are encouraged to experiment, reflect, and internalize both technical and cultural elements. This research therefore addresses the urgent need for instructional reform that not only enhances technical performance but also promotes cultural appreciation, creativity, and lifelong learning among vocational dance students.

Objectives

1. To develop scaffolding learning activities for choreography abilities.
2. To compare choreography abilities using the scaffolding learning activities between the pre-test and the post-test.
3. To study student satisfaction with the scaffolding learning activities

Literature Review

The development of scaffolding learning activities to enhance choreography abilities among vocational students integrates theories of educational psychology, dance pedagogy, and creative learning. The review is organized into four sections: 1) scaffolding in dance pedagogy, 2) choreographic skill development, 3) technological integration in performing arts, and 4) cultural authenticity in dance education.

Scaffolding in dance pedagogy

Scaffolding theory, first proposed by Vygotsky (1978) and further developed by Wood et al. (1976), describes a process in which teachers provide structured support that is gradually removed as learners become more independent. This concept aligns with the Zone of Proximal Development (ZPD), emphasizing the balance between assistance and autonomy. In dance education, scaffolding transforms instruction from passive imitation to active exploration, allowing learners to engage in creative problem-solving and reflection (Smith-Autard, 2010).

Researchers such as Hmelo-Silver et al. (2007) and Fisher & Frey (2013) emphasize that effective scaffolding includes continuous feedback, collaboration, and gradual withdrawal of teacher control. In this study, the five-phase scaffolding model applied in lesson design consisted of:

1. Goal setting – identifying learning objectives and performance criteria.
2. Knowledge activation – connecting prior dance knowledge with new concepts.
3. Collaborative learning – encouraging peer dialogue and shared choreography design.
4. Skill refinement – applying feedback and revising movement sequences.
5. Autonomous performance – performing and reflecting independently.

This model supports both technical proficiency and creative autonomy, consistent with studies in music and art education (Sawyer, 2011).

Choreographic skill development

Choreographic ability involves integrating technical skill, creative composition, and expressive communication. Smith-Autard (2010) emphasizes that true choreographic competence requires learners to understand both movement principles and artistic intention.

In summary, choreographic skill development in vocational dance education requires a balance of technical proficiency, creative ideation, and cultural contextualization. The overemphasis on imitation in the current curriculum at Jiangxi Transportation Vocational and Technical College limits creative growth. Scaffolding, through its structured phases of observation, analysis, experimentation, refinement, and presentation, can address this gap by gradually fostering student independence. Research shows that scaffolded pedagogy enhances knowledge retention, promotes creative risk-taking, and increases originality, offering significant potential for bridging the technical and creative aspects of dance education.

Technological integration

Technological tools such as video feedback, motion analysis, and digital choreography platforms can enhance precision and creativity in dance learning. When combined with scaffolding, technology allows teachers to offer individualized feedback and promote learner autonomy. For example, reflective video analysis has been shown to improve performance retention and spatial awareness. In this study, technology was used as a supportive medium during the knowledge activation and skill refinement phases, helping students visualize and evaluate their choreography.

In summary, while digital tools like motion capture, video analysis, and 3D visualization have the potential to enhance technical precision and spatial awareness in dance education, their integration in vocational programs remains limited. Scaffolding can amplify the benefits of these technologies by structuring their use, such as through digital portfolios and motion capture feedback, fostering student autonomy and competence. This approach aligns with self-determination theory, promoting intrinsic motivation and better preparing students for the dynamic demands of the arts industry.

Cultural authenticity

Maintaining cultural authenticity is essential in choreography, especially for traditional and folk-dance education. Scholars such as Kaeppler (2000) and Shay (2006) emphasize that dance embodies cultural identity and meaning. Scaffolding learning allows students to engage with cultural materials critically by observing, interpreting, and re-creating movement patterns within their cultural context. Biggs & Tang (2011) suggests that combining cultural understanding with reflective learning leads to higher learner motivation and cultural sensitivity.

In summary, preserving cultural authenticity is essential in dance education, particularly for Jiangxi folk dances that represent regional identity. Scaffolding effectively integrates cultural exploration, improving cultural knowledge retention through guided analysis. The use of digital tools, such as video archives, further enhances this process, promoting meaningful reinterpretation of traditions and ensuring that cultural heritage is preserved while encouraging creative innovation.

Based on the literature review above, the researcher concludes that integrating scaffolding learning in dance education helps fill critical gaps in technical skills, creativity, and cultural authenticity in vocational dance training. By providing structured support, scaffolding enhances students' ability to integrate technical skills with creativity, cultural authenticity, and the effective use of digital technologies. This approach fosters independence, encourages creativity, and ensures cultural heritage preservation while promoting the creation of new work through the integration of scaffolding and technology. As a result, students are better prepared to face the rapidly changing challenges of the performing arts industry, bridging the gap between traditional teaching methods and the current demands of dance education.

Conceptual framework

Based on the researcher's study of theoretical concepts and review of related research literature, a conceptual framework for the research has been established, as shown in Figure. 1.

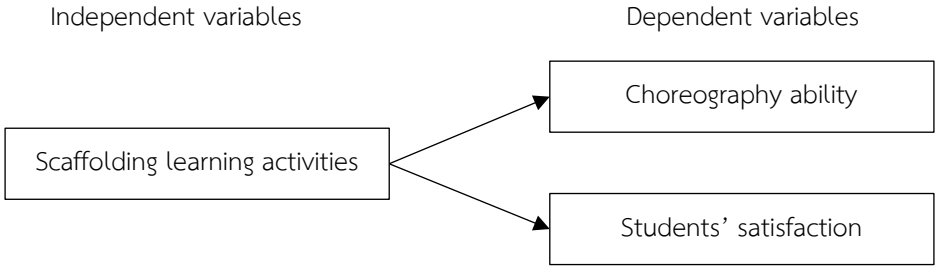

Figure. 1 Research conceptual framework

Methods

This study is exploratory research. The researcher has outlined the following research steps:

1. Population and sample

The population comprised 80 first-year students in the Performing Arts Program at Jiangxi Transportation Vocational and Technical College during the first semester of 2024.

A simple random sampling method was used to select 40 participants (15 males, 25 females, aged 18–20 years). Among them, 60% had no prior dance experience and 40% possessed basic dance training. Randomization was performed using an Excel random generator to ensure gender and experience balance.

2. Research tools

Three research tools were developed for data collection:

Lesson Plans: The researcher designed 10 lesson plans aligned with the scaffolding learning model to improve students' choreography ability. The plans were designed based on research in dance education and scaffolding theory, with a total teaching time of 450 minutes over 10 weeks. The plans were evaluated for appropriateness by experts and revised based on their feedback.

Choreography Ability Test: The researcher created a test to measure students' choreography abilities across technical proficiency, creative expression, cultural authenticity, and overall performance. The test utilized a 5-level rating scale, and the inter-observer consistency was evaluated using the Item Objective Congruence (IOC) method.

Satisfaction Questionnaire: A 13-item satisfaction questionnaire was developed to assess student engagement, clarity of objectives, cultural relevance, and effectiveness of multimedia tools. The questionnaire used a 5-point Likert scale and was validated by experts before being administered to the students.

3. Data collection

Data collection was conducted in four stages:

Pre-test (O1): The choreography ability test was administered to the 40-student sample to assess baseline scores. The test evaluated students' technical skills, creativity, cultural authenticity, and overall performance.

Intervention (X): A 10-week scaffolding intervention, consisting of 10 sessions of 40–60 minutes each, was conducted in a dance studio with multimedia and motion capture technology. The intervention followed a five-phase scaffolding model, including goal setting, knowledge activation, collaborative learning, skill development, and autonomous evaluation.

Post-test (O2): After the intervention, the choreography ability test was re-administered to measure students' improvement. The test was identical to the pre-test to ensure accurate comparisons.

Satisfaction Survey: Following the post-test, students completed a 13-item satisfaction questionnaire to assess their overall experience with the scaffolding learning activities.

4. Data analysis

Data analysis was conducted using Microsoft Excel. The pre- and post-test scores were analyzed to calculate percentages, means, and standard deviations for each dimension (technical proficiency, creative expression, cultural authenticity, and overall performance). A paired t-test (dependent samples) was used to compare pre-test and post-test scores and test the hypothesis that post-test scores would be significantly higher. Satisfaction data were analyzed by calculating means and standard deviations for each item, and overall satisfaction was measured using a five-point Likert scale to measure students' satisfaction (Likert, 1932). The results were cross-checked and stored securely for reproducibility.

Results

1. To develop scaffolding learning activities for choreography abilities.

Ten lesson plans were developed based on the five-phase scaffolding model. Each plan integrated technical, creative, and cultural components, encouraging students to progress from guided movement imitation toward independent choreography. Expert evaluation using a 5-point rubric indicated that the learning activities achieved a high level of appropriateness (M = 4.29, S.D. = 0.40). The evaluation criteria included content accuracy, clarity of objectives, pedagogical relevance, and cultural suitability. This confirms that the scaffolding model was well designed for enhancing vocational students' choreography abilities.

2. To compare choreography abilities using the scaffolding learning activities between the pre-test and the post-test.

Table 1 presents the comparison of students' choreography ability before and after the 10-week scaffolding intervention. The total score of the choreography test was 80 points. The pre-test mean score was 33.55 (S.D. = 11.80), while the post-test mean score increased to 60.00 (S.D. = 5.07). A paired-samples t-test showed a statistically significant improvement ($t = 25.127$, $p < 0.001$). The effect size (Cohen's $d = 3.18$) indicates a very large improvement.

Table 1 Comparison of choreography ability scores

Test	Mean	S.D.	t	df	p	Cohen's d
Pre-test	33.55	11.80	25.127	39	< 0.001	3.18
Post-test	60.00	5.07				

These results demonstrate that the scaffolding learning activities significantly enhanced students' choreography abilities, particularly in technical proficiency, creative expression, and cultural authenticity.

3. To study student satisfaction with the scaffolding learning activities

Student satisfaction was assessed using a 13-item questionnaire rated on a 5-point Likert scale. The overall mean score was 4.43 (S.D. = 0.44), interpreted as a high level of satisfaction. The highest-rated items included "improves basic skills via multimedia" (M = 4.50, S.D. = 0.42) and "enhances participation with classmates" (M = 4.50, S.D. = 0.42). All items scored above 4.35, indicating consistently positive responses to the learning activities.

Table 2 Student satisfaction means

Item	Mean	S.D.	Level
Improves basic skills via mixed media	4.50	0.42	High
Enhances participation with classmates	4.50	0.42	High
Clarity of learning objectives	4.45	0.45	High
Effectiveness of multimedia resources	4.44	0.43	High
Support for creative expression	4.43	0.44	High
Cultural relevance of activities	4.42	0.45	High
Feedback improves learning efficiency	4.41	0.46	High
Engagement in collaborative tasks	4.40	0.44	High
Autonomy in choreography design	4.39	0.45	High
Overall course engagement	4.38	0.46	High
Ease of understanding movement concepts	4.37	0.47	High
Practicality of spatial design tasks	4.36	0.46	High
Support for technical skill development	4.35	0.47	High
Overall	4.43	0.44	High

Note: Rating scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. Interpretation criteria: 4.51–5.00 = Very High, 3.51–4.50 = High, 2.51–3.50 = Moderate, 1.51–2.50 = Low, 1.00–1.50 = Very Low.

The satisfaction results suggest that the scaffolding learning activities provided an engaging and culturally meaningful learning experience. Students reported higher motivation, greater participation, and improved understanding of choreographic processes through technology-enhanced lessons.

Discussion

The purpose of this study was to develop scaffolding learning activities to enhance choreography ability and to assess their effectiveness among vocational dance students. The discussion below interprets the findings in relation to the research objectives and previous international studies.

1. Development of scaffolding learning activities

The lesson plans developed in this study received a high suitability score (M = 4.29), confirming their appropriateness for vocational dance education. The five-phase scaffolding model goal setting, knowledge activation, collaborative learning, skill refinement, and autonomous performance provided a structured yet flexible framework for learning. This finding aligns with Hmelo-Silver et al. (2007), who emphasized that scaffolding supports learners in constructing complex knowledge through guided participation. Similarly, Fisher & Frey (2013) highlighted that gradual withdrawal of teacher support enhances learner autonomy and engagement. In this context, the structured scaffolding process encouraged students to connect technical skills with creative exploration, addressing the limitations of traditional imitation-based teaching methods.

2. Comparison of choreography abilities between pre-test and post-test

The results demonstrated a significant improvement in students' choreography ability after the scaffolding intervention (Cohen's d = 3.18). This large effect size suggests that scaffolding provides meaningful learning support. The improvement mirrors the findings of Sawyer (2011), who argued that creativity in performance art emerges through iterative cycles of guided practice and independent experimentation. The integration of technology such as video playback and motion analysis—enhanced feedback precision and supported reflective learning.

3. Student satisfaction with scaffolding learning activities

The high satisfaction level (M = 4.43) indicates that students perceived the scaffolding approach as engaging and relevant. The results align with Deci & Ryan's (2000) self-determination theory, which states that learning environments promoting autonomy, competence, and relatedness foster intrinsic motivation. By allowing students to collaborate, self-assess, and perform independently, the scaffolding lessons cultivated ownership of learning and a sense of accomplishment. Furthermore, the incorporation of cultural elements in lesson design increased students' appreciation of local traditions while maintaining creative freedom, echoing Kaeppler (2000) and Shay (2006), who emphasized the importance of preserving cultural meaning in dance education.

Overall, the results confirm that scaffolding learning activities are highly effective in enhancing choreography abilities among vocational students. The structured five-phase process improved both

technical and creative dimensions while maintaining cultural authenticity. The large statistical effect and high satisfaction scores reflect the pedagogical value of scaffolding as a learner-centered approach. This aligns with global trends in performing arts education that emphasize creativity, reflection, and student empowerment. Hence, scaffolding can be considered a sustainable pedagogical innovation that integrates theory and practice, responding to the evolving needs of 21st-century dance education.

New body of knowledge

This study provides new insights into the integration of scaffolding learning activities in developing choreography skills, particularly in the context of vocational dance education. The approach combines technical skills, creativity, and cultural authenticity. The use of the scaffolding model not only helps students develop technical skills but also fosters creativity and preserves cultural heritage, which is vital in dance education. The integration of digital technologies, such as motion capture and multimedia, enhances both technical proficiency and spatial awareness. This development ensures that the teaching methods effectively respond to the rapidly changing demands of the performing arts and dance industries. The results from the pre-test and post-test comparison show clear improvements in students' choreography skills, with progress in technical ability, creativity, and cultural authenticity. The student satisfaction survey also reflects high levels of satisfaction across all areas, particularly in skill development through multimedia and collaborative group work. Connecting learning activities to cultural heritage adds depth to the content, enabling students to understand and create work that is unique and culturally meaningful.

Suggestions

1. Suggestions for applying research results

1.1 Integration of Scaffolding in Dance Curriculum: The scaffolding model should be integrated into dance curricula to develop both technical skills and creativity.

1.2 Use of Digital Tools: Digital tools such as motion capture and multimedia should be incorporated into teaching to enhance learning effectiveness.

1.3 Cultural Authenticity: Cultural authenticity should be preserved by integrating folk dance and cultural symbols into the curriculum.

1.4 Collaboration: Group work and student engagement should be encouraged to foster creativity and teamwork.

2. Suggestions for future research

2.1 Longitudinal Studies: Future research should examine the long-term impact of scaffolding on skill retention.

2.2 Cross-Institutional and Cross-Cultural Research: Research should expand to multiple institutions and diverse cultural contexts for broader insights.

2.3 Control Group Studies: Future studies should include control groups to validate the findings

with stronger evidence.

2.4 Exploring Other Digital Tools: The use of additional digital tools like Virtual Reality (VR) or Artificial Intelligence (AI) should be explored for enhancing dance education.

2.5 Creative Skill Assessment: Future research should focus on developing frameworks to assess creative skills like improvisation in dance education.

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