

THE EFFECT OF MODIFIED CONCRETE LEARNING ON ELEMENTARY SCHOOL STUDENTS' CREATIVITY IN MUSIC EDUCATION

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Abstract

Creativity is an important dimension of music education because students need opportunities not only to reproduce musical materials but also to generate and express their own musical ideas. This study aimed to examine the effect of Modified Concrete Learning on elementary school students' creativity in music education. A quantitative approach was employed using a quasi-experimental pretest-posttest control group design. The participants were elementary school students divided into an experimental group and a control group. The experimental group received music instruction through Modified Concrete Learning adapted from music learning practices observed in Dutch elementary schools, while the control group received conventional music instruction. Students' creativity was measured before and after the intervention using a validated and reliable instrument. The data were analyzed using Analysis of Covariance (ANCOVA), with creativity pretest scores used as a covariate. The findings indicated that Modified Concrete Learning had a significant effect on students' creativity after controlling for their initial creativity scores. The learning activities provided students with opportunities to engage directly with musical materials, explore musical possibilities, and develop their own melodic ideas. These findings suggest that concrete and experiential musical activities can provide a meaningful learning environment for fostering creativity in elementary music education.

Keywords: Modified Concrete Learning; musical creativity; music education; elementary school students; experiential learning

INTRODUCTION

Creativity is an important component of music education because music learning involves more than the acquisition of technical skills and the reproduction of predetermined musical materials. Students also need opportunities to explore sounds, experiment with musical possibilities, and develop their own musical ideas. In elementary education, such opportunities are particularly important because children are developing their capacity to express ideas through various forms of artistic activity. Music learning can therefore provide a meaningful context in which students are encouraged to explore, create, and communicate through sound. In classroom practice, however, music instruction may still place greater emphasis on imitation, repetition, and reproduction of existing musical materials. Students are often expected to follow the teacher's demonstration or reproduce a predetermined melody with limited opportunities to make independent musical decisions. Although these activities can support the development of basic musical skills, learning that primarily emphasizes reproduction may provide fewer opportunities for students to experiment with their own musical ideas. This condition highlights the need for learning experiences that provide greater space for exploration and musical creation.

Musical creativity can be understood through students' ability to generate, modify, and express musical ideas in response to a particular musical context. In elementary music education, creativity does not necessarily require students to produce complex musical compositions. Simple activities such as improvising a melody, responding to a chord progression, varying rhythmic patterns, or creating a short musical phrase can provide opportunities for children to demonstrate creative thinking. The learning environment therefore plays an important role in determining whether students have sufficient opportunities to develop and express their musical creativity. One approach that may support such development is learning that emphasizes direct and concrete experiences. Children in elementary school are still developing their ability to understand concepts through abstract representation. Direct interaction with learning materials can provide a foundation for constructing understanding through observation, practice, experimentation, and reflection. In music education, concrete experiences can be realized through activities such as listening, singing, playing instruments, manipulating sounds, and responding directly to musical stimuli.

The present study applies Modified Concrete Learning adapted from music learning practices observed in Dutch elementary schools. The modification emphasizes direct engagement with musical activities rather than relying primarily on verbal explanations. Students are given opportunities to experience musical concepts through singing, playing the angklung, listening to musical patterns, and exploring melodic possibilities. One of the activities involves presenting students with a chord progression and providing opportunities for them to create their own melodic responses. Through this process, students are encouraged to move from experiencing musical stimuli toward producing individual musical ideas.

The use of regional songs and familiar musical materials also provides a contextual dimension to the learning process. Students interact with musical materials that are accessible within their cultural environment while simultaneously being encouraged to explore different musical possibilities. Such activities can create a learning situation in which students are not merely reproducing what the teacher demonstrates but are also making musical choices based on their own responses. Previous studies have discussed the importance of active, experiential, and creative approaches in music education. Nevertheless, empirical research examining the application of a modified concrete learning approach to students' creativity in Indonesian elementary music education remains limited. In particular, there is a need to investigate whether learning based on direct musical experience can produce measurable differences in students' creativity compared with conventional music instruction.

Therefore, this study aimed to examine the effect of Modified Concrete Learning on elementary school students' creativity in music education. The study focused specifically on whether students who participated in Modified Concrete Learning demonstrated different creativity outcomes from students who received conventional music instruction after their initial creativity scores were statistically controlled.

RESEARCH METHOD

a. Research Design

This study employed a quantitative approach with a quasi-experimental pretest–posttest control group design. The design was used to examine the effect of Modified Concrete Learning on elementary school students' creativity in music education. Two groups were involved in the study: an experimental group that received Modified Concrete Learning and a control group that received conventional music instruction. Creativity was measured before and after the intervention to identify changes in students' creativity following the learning process.

b. Participants

The participants were elementary school students who were assigned to an experimental group and a control group. The groups were selected based on the existing classroom arrangement at the research site rather than through individual randomization. The experimental group participated in music learning using Modified Concrete Learning, while the control group participated in the learning activities normally implemented by the teacher. The participants' creativity was assessed through pretest and posttest measurements.

c. Modified Concrete Learning and Creativity-Oriented Activities

The experimental group received Modified Concrete Learning adapted from music learning practices observed in Dutch elementary schools. The approach emphasized direct engagement with musical materials and encouraged students to construct musical understanding through listening, singing, playing instruments, exploration, and musical creation. Rather than presenting musical concepts primarily through verbal explanations, the learning activities provided students with opportunities to experience and respond directly to musical stimuli.

The learning activities incorporated regional songs, singing, angklung playing, listening to musical patterns, and exploration of melodic possibilities. The activities were organized to move students from concrete musical experiences toward independent musical responses. Students first engaged with the musical material through listening and performing, after which they were encouraged to explore different ways of responding to the musical stimuli.

The creativity-oriented activity involved presenting students with a chord progression and inviting them to develop their own melodic responses. Students listened to the chord progression repeatedly and explored possible melodies that could be performed over the harmonic pattern. They were not required to reproduce a predetermined melody; instead, they were given opportunities to generate, modify, and express their own musical ideas. Students could experiment with different pitches and melodic patterns before presenting their musical responses through performance.

Through this sequence, students engaged in listening, exploration, experimentation, melody creation, and performance. The chord progression functioned as a musical framework, while the melodic response provided space for individual creative choices. Consequently, different students could produce different melodic responses to the same musical stimulus. The teacher's role was to provide musical stimuli, demonstrate relevant musical concepts, guide the learning process, and provide opportunities for students to develop and express their own musical ideas. The intervention was therefore designed not only to develop students' understanding of musical concepts but also to provide concrete experiences that could stimulate creative musical expression.

d. Research Instrument

Students' creativity was measured using a creativity instrument developed for the study. The instrument consisted of tasks designed to assess students' ability to generate and express musical ideas in response to musical stimuli. The instrument was subjected to validity and reliability testing before being used for data collection. Content validity was established through expert judgment, while the reliability of the instrument was examined statistically. The same measurement procedure was administered before and after the intervention.

e. Data Collection Procedure

Data collection was conducted in three main stages. First, a creativity pretest was administered to both the experimental and control groups to identify students' initial creativity levels. Second, the experimental group received the Modified Concrete Learning intervention, while the control group participated in conventional music instruction. Third, a creativity posttest was administered to both groups following the completion of the learning intervention. The pretest and posttest data were subsequently used to examine differences in students' creativity outcomes between the two groups.

f. Data Analysis

The data were analyzed using Analysis of Covariance (ANCOVA). ANCOVA was selected because the study aimed to compare students' posttest creativity scores between the experimental and control groups while statistically controlling for differences in their initial creativity scores. In the analysis, the learning group was treated as the independent variable, posttest creativity scores as the dependent variable, and pretest creativity scores as the covariate.

Before conducting ANCOVA, the data were examined to determine whether the relevant assumptions for the analysis were satisfied. These included normality, homogeneity of variance, and the assumption of homogeneous regression slopes. The significance level was set at 0.05. A significance value below 0.05 was interpreted as indicating a statistically significant effect of the learning treatment on students' creativity after controlling for their pretest scores.

RESULT

Descriptive Statistics

The descriptive analysis was conducted to examine the distribution of students' creativity scores before and after the intervention. The analysis included the mean and standard deviation of the creativity pretest and posttest scores for both the experimental and control groups.

Table 1. Descriptive Statistics of Students' Creativity Scores

Group	Experimental	Control
N	22	22
Pretest Mean	47.73	41.27
Pretest SD	6.27	6.46
Posttest Mean	50.50	41.91
Posttest SD	6.01	5.77

Table 1 presents the descriptive statistics of students' creativity scores before and after the learning intervention. Both groups consisted of 22 students. The experimental group obtained a mean pretest score of 47.73 (SD = 6.27), which increased to 50.50 (SD = 6.01) in the posttest. Meanwhile, the control group had a mean pretest score of 41.27 (SD = 6.46) and a posttest mean of 41.91 (SD = 5.77).

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Descriptively, the experimental group showed a greater increase in creativity scores than the control group. The mean score increased by approximately 2.77 points in the experimental group, compared with approximately 0.64 points in the control group. These descriptive differences provide an initial indication of different changes in creativity between the two groups. However, because the experimental group also had a higher mean pretest score, further analysis using ANCOVA was conducted to determine the effect of the learning treatment while statistically controlling for the initial creativity scores.

Assumption Testing

Table 2. Tests of ANCOVA Assumptions

Assumption	Homogeneity of variance	Homogeneity of regression slopes
Test	Levene's test	Group $\times$ Pretest
Statistic	F = 4.774	F = 0.075
Sig.	.035	.786
Interpretation	Not satisfied	Satisfied

The assumptions underlying the ANCOVA were examined prior to the main analysis. Levene's test indicated a significant result, $F(1, 42) = 4.774$, $p = .035$, suggesting that the homogeneity of variance assumption was not satisfied. However, the test of homogeneity of regression slopes showed a non-significant interaction between treatment and creativity pretest scores, $F(1, 40) = 0.075$, $p = .786$. This result indicates that the relationship between pretest and posttest creativity scores did not differ significantly between the experimental and control groups. Because the variance homogeneity assumption was violated, a robust estimation procedure was subsequently considered for the main analysis.

Analysis of Covariance

An ANCOVA was conducted to examine whether Modified Concrete Learning had a significant effect on students' creativity after controlling for their initial creativity scores. The creativity pretest score was entered as the covariate, while the learning group was treated as the independent variable and the creativity posttest score as the dependent variable.

Table 3. ANCOVA Results for Students' Creativity

Source	F	p	Partial η^2
Creativity Pretest	299.599	< .001	.880
Treatment	18.000	< .001	.305

Dependent variable = creativity posttest; covariate = creativity pretest.

Table 4. Parameter Estimates with HC3 Robust Standard Errors

Parameter	Creativity Pretest	Treatment (Experiment)
B	0.869	2.983
Robust SE	0.042	0.692
T	20.898	4.308
P	< .001	< .001
95% CI	[0.785, 0.953]	[1.585, 4.382]

Reference group : Control

An analysis of covariance was conducted to examine the effect of Modified Concrete Learning on students' creativity while controlling for their initial creativity scores. The ANCOVA results showed that creativity pretest scores were significantly associated with creativity posttest scores, $F(1, 41) = 299.599$, $p < .001$, partial $\eta^2 = .880$. More importantly, the treatment effect was statistically significant, $F(1, 41) = 18.000$, $p < .001$, partial $\eta^2 = .305$. Because Levene's test indicated unequal variances across groups, robust parameter estimates using the HC3 method were also examined. The robust estimates showed that the treatment effect remained statistically significant, $B = 2.983$, robust $SE = 0.692$, $t = 4.308$, $p < .001$, 95% CI [1.585, 4.382]. The positive coefficient indicates that, after controlling for pretest creativity scores, students in the experimental group had higher adjusted creativity scores than those in the control group.

The creativity pretest was also a significant predictor of posttest creativity, $B = 0.869$, robust $SE = 0.042$, $t = 20.898$, $p < .001$, 95% CI [0.785, 0.953]. Overall, these findings provide evidence that Modified Concrete Learning was associated with higher creativity outcomes among the elementary school students participating in the study.

DISCUSSION

The Effect of Modified Concrete Learning on Students' Creativity

The findings of this study indicate that Modified Concrete Learning had a significant effect on elementary school students' creativity in music education. After controlling for students' initial creativity scores, the experimental group demonstrated higher creativity outcomes than the control group. The robust HC3 estimation also confirmed the significance of the treatment effect, suggesting that the finding remained consistent despite the unequal variances identified through Levene's test.

This finding suggests that the characteristics of Modified Concrete Learning may provide learning conditions that support students' creative engagement with music. The learning process emphasized direct interaction with musical materials and encouraged students to respond to musical stimuli through exploration and creation. Rather than positioning students primarily as performers of predetermined musical materials, the approach provided opportunities for them to make musical decisions and develop individual responses.

The finding is consistent with previous research emphasizing the importance of active and experiential learning in music education. When students are directly involved in musical activities, they have greater opportunities to experiment with sounds and develop personal interpretations. In this context, creativity is not treated as an additional activity separated from music learning but as an integral part of the learning process.

Concrete Musical Experience as a Foundation for Creativity

One possible explanation for the observed effect is the emphasis on concrete musical experience. In the intervention, students interacted directly with musical sounds, instruments, songs, and musical patterns. Such experiences provided immediate stimuli that students could hear, perform, modify, and respond to during the learning process. For elementary school students, direct engagement with musical materials can make abstract musical concepts more accessible. Instead of learning musical concepts solely through verbal explanations or symbolic representations, students encountered the concepts through actual musical activities. This process may help students develop understanding while simultaneously creating opportunities to experiment with different musical possibilities.

The findings can be viewed in relation to Piaget's concept of concrete operational development, in which children increasingly develop logical thinking through interactions with concrete objects and situations. In music education, however, concrete experience can extend beyond understanding concepts. Musical experience can also become a starting point for exploration and creative expression when students are encouraged to produce their own responses.

Exploration, Improvisation, and the Generation of Musical Ideas

A distinctive element of the learning intervention was the opportunity for students to generate melodic ideas in response to a chord progression. Rather than receiving a single predetermined melody to reproduce, students were given space to explore different melodic possibilities. This activity positioned students as active participants in the creation of musical material. The opportunity to improvise and create melodies may contribute to creativity because students are required to make choices concerning pitch, rhythm, melodic direction, and musical expression. Different students may respond to the same musical stimulus in different ways, allowing individual musical ideas to emerge. The absence of a single predetermined melodic answer can also provide a learning environment in which students are encouraged to experiment without being restricted to reproduction.

This finding reinforces the view that musical creativity can develop through activities that combine structure and freedom. The chord progression provides a musical framework, while the creation of melodies provides students with space to make individual choices. Thus, creativity-oriented learning does not necessarily mean providing completely unrestricted activities; rather, appropriate musical constraints can serve as a framework within which students explore possible solutions.

Modified Concrete Learning in Elementary Music Education

The findings also have practical relevance for elementary music education. The learning activities used in this study demonstrate that creativity-oriented music instruction can be implemented through relatively accessible

musical resources. The use of the angklung, regional songs, singing, listening activities, and simple melodic creation provides opportunities for students to engage creatively without requiring sophisticated technological equipment.

The use of familiar musical materials may also help students participate more confidently in creative activities. Regional songs can provide a contextual starting point from which students explore musical elements and develop their own responses. In this sense, music education can simultaneously support creative development and maintain connections with students' cultural environment. For teachers, the findings suggest the importance of designing music lessons that provide opportunities for students to move beyond imitation. Demonstration and repetition can remain part of instruction, particularly for developing basic musical skills, but they can be followed by activities in which students modify, improvise, or create musical ideas of their own.

Theoretical Implications

The findings contribute to the understanding of concrete learning in music education by indicating that direct musical experience may support not only students' understanding of musical concepts but also their creative engagement with music. The study connects concrete learning principles with opportunities for exploration, improvisation, and musical idea generation. This perspective broadens the role of concrete experience in elementary music learning. Concrete musical activities can function not merely as a means of illustrating concepts but also as a starting point for creative processes. When students are provided with meaningful musical stimuli and sufficient opportunities to respond, concrete experience may become part of a process leading toward individual musical expression.

Practical Implications for Music Teachers

The results suggest that elementary music teachers can incorporate creativity-oriented activities into regular music instruction by providing students with structured opportunities to explore and create. Teachers may begin with concrete musical experiences such as listening, singing, playing instruments, or responding to rhythmic and harmonic patterns, followed by activities that require students to generate their own musical ideas.

The teacher's role in this process is important. Rather than determining a single correct musical response, teachers can provide appropriate musical frameworks and guide students while allowing variation in their responses. Such practices may create a classroom environment in which students feel encouraged to experiment and express their musical ideas.

Limitations and Directions for Future Research

This study has several limitations. First, the participants were drawn from a specific elementary school context, which limits the extent to which the findings can be generalized to other educational settings. Second, the intervention was implemented within a limited instructional period, so the study does not establish whether the observed development in creativity would be maintained over a longer period. Third, creativity was assessed within a particular musical learning context and therefore may not represent all dimensions of students' musical creativity. Future research could examine Modified Concrete Learning with larger and more diverse groups of students and over longer intervention periods. Further studies could also combine quantitative measures with classroom observations, interviews, or analysis of students' musical products to provide a more detailed understanding of how students develop creative musical ideas during the learning process.

CONCLUSION

This study examined the effect of Modified Concrete Learning on elementary school students' creativity in music education. The findings indicate that Modified Concrete Learning had a significant effect on students' creativity after their initial creativity scores were statistically controlled. The learning approach provided students with opportunities to engage directly with musical materials, explore different musical possibilities, and generate their own melodic ideas.

The findings suggest that concrete and experiential musical activities can provide meaningful opportunities for creativity development in elementary music education. Activities involving musical exploration, improvisation, and melody creation allow students to move beyond reproducing predetermined musical responses and engage in making individual musical decisions. In the context of elementary music education, Modified Concrete Learning may therefore serve as an alternative approach for creating learning environments that support students' creative musical expression. The approach can be implemented using accessible musical instruments and familiar musical materials, including regional songs, while allowing students sufficient freedom to explore and develop their own musical ideas.

Future research may examine the implementation of Modified Concrete Learning with larger and more diverse groups of students and investigate its effects across different forms of musical creativity and longer instructional periods.

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