

# 초등 교육에서 도카츠 기반 활동을 통한 음악적 창의성 함양 Fostering Musical Creativity in Primary Education through Tokkatsu-Based Activities

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**Abstract** This study investigated the effectiveness of a Tokkatsu-based program in enhancing musical creativity and skills among primary school students, with a particular focus on their ability to apply these skills in music classes. A two-group pre-test-post-test experimental design was employed to evaluate the program's impact. The participants were forty fourth-grade students during the 2023-2024 academic year, with twenty students assigned to the experimental group and twenty to the control group. The experimental group studied music education topics using Tokkatsu activities, while the control group received standard instruction. The program was conducted according to a teacher's guide specifically designed for implementing Tokkatsu activities in music education, emphasizing experiential learning through rhythm, movement, singing, and practical music exercises. Data were collected using a musical creativity test. The findings revealed statistically significant improvements in both overall musical creativity and its sub-skills, with post-test scores significantly higher than pre-test scores. Furthermore, the program demonstrated substantial effectiveness in improving students' musical creativity, as evidenced by measurable gains in all sub-skill areas, highlighting its practical and educational value in primary school music instruction. These outcomes underscore the potential of Tokkatsu-based programs and recommend their broader application, as well as future studies to examine long-term benefits and adaptability across diverse educational settings.

**Key words:** Tokkatsu activities, creative thinking, musical creativity

**초록** 본 연구는 초등학생을 대상으로 도카츠(Tokkatsu) 기반 프로그램이 음악적 창의성과 음악 기술 향상에 미치는 효과를 검증하고, 이를 음악 수업 적용 능력 향상과의 관련성에 초점을 두었다. 연구는 사전-사후 검사 통제집단 실험설계를 활용하였으며, 2023-2024학년도 초등학교 4학년 학생 40명을 대상으로 하였다. 연구 대상은 실험집단 20명과 통제집단 20명으로 구성되었다. 실험집단은 도카츠 활동을 활용한 음악 수업에 참여하였고, 통제집단에는 일반적인 음악 수업을 실시하였다. 프로그램은 리듬, 신체 움직임, 노래, 실기 활동을 포함한 교사용 지도서를 기반으로 운영되었다. 자료는 음악적 창의성 검사 도구를 통해 수집되었다. 연구 결과, 실험집단은 음악적 창의성과 모든 하위 영역에서 통계적으로 유의미한 향상을 보였으며, 사후 점수가 사전 점수보다 유의하게 높게 나타났다. 결과적으로 도카츠 기반 프로그램은 초등학생의 음악적 창의성 향상에 효과적이며, 교육적 활용 가치가 높음을 보여준다. 또한 음악 교육 현장에서의 적용 가능성을 시사한다.

**주제어:** 도카츠 활동, 창의적 사고, 음악적 창의성

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## I . Introduction

Education is a fundamental pillar of national development, reflecting a society's ability to prepare generations capable of creativity, adaptability, and responding to the challenges of a rapidly changing world. Achieving holistic educational development—including academic, emotional, and social growth—begins at the school level and relies on investing in teachers' professional and personal competencies (Elwakeel, 2022; Fahmy et al., 2017). Global trends emphasize equipping educators with twenty-first-century skills, particularly creative thinking, to build effective learning environments (National Research Council, 2001; Ventista & Brown, 2023; Zhou et al., 2023).

The Tokkatsu curriculum integrates students' life experiences to promote lifelong learning, fostering values and skills aligned with societal demands. Tokkatsu activities enhance cooperation, responsibility, decision-making, and self-confidence, providing opportunities to apply skills in real-life contexts (Ministry of Education and Technical Education, 2023). In essence, Tokkatsu offers a comprehensive framework for developing creativity, social skills, and personal growth through practical, interactive exercises.

Music education is a prominent medium for supporting cognitive, emotional, and motor development due to its interactive nature, which stimulates creativity, attention, imagination, and motor-vocal expression (Elliott & Silverman, 2015; Hallam, 2010). Modern studies assert that the advancement and progress of nations are linked to their ability to cultivate creative, productive minds, making the integration of creativity into curricula, including music education, an essential requirement for meeting the challenges and demands of the twenty-first century (Craft, 2013; Robinson & Aronica, 2015).

In music, creativity is a core element. P. Berliner describes it as 'real-time composition' and the ability to make immediate decisions to develop musical materials (Berliner, 1994). Teaching music without fostering creativity denies its essence, as creative thinking invigorates learning and allows students to explore artistic potential (Gordon, 2018). Numerous studies have documented the critical role of creative thinking and improvisation in music education, given their direct impact on developing aesthetic sensitivity, enhancing musical awareness, and fostering innovation across various musical patterns (Beegle, 2010; Brophy, 2005; Douglas, 2005; Guilbault, 2004, 2009; Kiehn, 2003; Schopp, 2006). Music skills contribute to the child's social, emotional, motor, and cultural development, and music instruction plays a significant role in shaping students' personalities and cultivating their diverse abilities (Elwakeel, 2022).

Global music education organizations, including the National Association for Music Education (NAfME) and the National Association of Schools of Music (NASM), emphasize that students should have opportunities to develop creativity through various music disciplines, such as listening and appreciation, solfège, harmony, movement-based rhythm, and musical improvisation. They also stress the importance of a comprehensive, sequential arts education delivered by qualified teachers, with curricula designed to foster creativity, performance, and music literacy across all grade levels (National Association for Music Education, 1999; National Association of Schools of Music, 2025). The NAfME Core Music Standards (2014) further reinforce this approach by highlighting *Creating*, *Performing*, and *Responding* as essential processes, promoting improvisation, composition, critical listening, and music literacy to support students' creative and artistic development in line with twenty-first-century educational goals (NAfME, 2014).

However, the current reality of music instruction in elementary schools presents significant challenges that constrain the development of musical creativity. Drawing on extensive teaching experience, the researchers observed that the prescribed curriculum is rarely employed to foster creative engagement. Classroom practice is dominated by traditional activities, including solfège drills, structured music appreciation exercises, routine school singing, and repetitive vocal training. While these practices support foundational musical skills, they offer limited opportunities for students to engage in generative musical thinking, such as composing original melodies, improvising rhythmic patterns, or exploring diverse sound textures. This disparity highlights a clear gap between the curriculum's intended goals for cultivating creativity and the instructional approaches actually implemented, which lack advanced, skill-based, and project-oriented activities designed to nurture creative competencies. Field visits provided concrete examples of this gap: in multiple classrooms, students hesitated to create or adapt musical material independently, often relying on teacher guidance; in one observed case, learners avoided open-ended improvisation and instead repeated familiar songs rather than generating new musical ideas. These observations demonstrate a consistent avoidance of varied, creativity-enhancing activities and underscore the urgent need for curricular revision and professional development that prioritize creative practice in elementary music education.

An exploratory study conducted in several elementary schools revealed specific gaps in the integration of Tokkatsu activities within music lessons. These gaps included limited incorporation of Tokkatsu exercises into lesson plans, insufficient use to foster students' creative performance, and minimal alignment with broader musical learning objectives. Although Tokkatsu activities support skillful and creative performance, enhance social interaction, and strengthen cognitive-motor

coordination and decision-making, their implementation in classrooms remains inconsistent and underutilized. These findings highlight the need for educational programs that systematically incorporate Tokkatsu activities into music teaching to better meet the needs of the new generation and enhance students' creative abilities.

A review of the literature and field practices indicates that the educational system needs to integrate Tokkatsu activities into music education, as these activities contribute to skill development, promote collaboration, and enhance decision-making abilities—skills directly linked to musical creativity. Research shows that Tokkatsu activities can develop dialogue and collective thinking skills among primary school students (Ahmed, 2024) and improve face-to-face social interaction and cooperation among learners (Eskasasnanda, 2020), underscoring their role in cultivating non-cognitive skills such as leadership, empathy, and collaborative problem-solving. Although these non-academic activities are often underutilized in formal curricula, their implementation has been associated with positive educational outcomes in both cognitive and socio-emotional domains (Tsuneyoshi, 2019).

Several Japanese studies highlight the practical implementation of Tokkatsu in schools. A. Komoto noted that Tokkatsu fosters a school environment based on cooperation, collective responsibility, and positive interaction through daily activities such as classroom meetings, task organization, and participatory exercises that enhance self-awareness and behavioral regulation (Komoto, 2015). Similarly, K. Kusanagi emphasized that Tokkatsu is a comprehensive educational framework supporting thinking and decision-making skills, offering students opportunities to learn through observation, experimentation, and teamwork, which improves social interaction and life skills both inside and outside school (Kusanagi, 2020).

Field studies further demonstrate that implementing the Tokkatsu system contributes to improving self-discipline, developing communication skills, and enhancing students' sense of belonging to their classroom and school. Moreover, it equips learners with the ability to solve problems collaboratively. These studies indicate that Tokkatsu is not merely a set of activities but a holistic educational system that reshapes the school environment, making students active participants and fostering the comprehensive development of cognitive, emotional, and social capacities (Abdalla, 2020; Ahmed, 2024; Al Mousa et al., 2023; El-Naggar & Abdel-Baqi, 2024; Fouad & Samir, 2023; Kusanagi, 2020; Mohamed et al., 2023; Mohamed, 2023; Shafei, 2023; Tolba et al., 2023).

Integrating Tokkatsu activities into music lessons represents a unique educational opportunity because these activities rely on teamwork, movement, and experimentation, elements that align

with the nature of music learning, which is based on motor performance, creativity, and improvisation. Music learning inherently involves active participation, rhythmical awareness, and physical-motor interaction with sounds, practices that are directly consistent with the principles of Tokkatsu, which enhance collaboration, decision-making, and cognitive-motor coordination. Therefore, the integration of the two approaches can lead to a significant improvement in building students' creative musical experiences and enhancing their ability to express themselves, take initiative, and work collaboratively.

This convergence between the philosophies of music and Tokkatsu opens wide avenues for educators to develop an active learning environment that emphasizes movement, experimentation, and active engagement, rather than relying solely on rote teaching or traditional practices. This integration also transforms the music lesson into a space for holistic growth, fostering cooperative values, enhancing self-confidence, and enabling students to express creativity through innovative vocal and motor tools.

The current research problem revolves around the evident need to employ Tokkatsu activities in music lessons to develop musical creativity among elementary school students. This need arises from the researchers' field observations, findings from previous studies, and recommendations from international educational organizations, all indicating a deficiency in employing classroom and skill-based activities that promote creative thinking and musical improvisation. While modern studies have confirmed the role of music education in enhancing aesthetic sensibility, creative abilities, and students' social and motor skills, no prior research, to the researchers' knowledge, has systematically examined the integration of Tokkatsu activities within music education to develop musical creativity among elementary students.

Accordingly, this study seeks to answer two main questions: first, what is the educational program based on Tokkatsu activities for developing musical creativity among elementary school students; and second, how effective is this program in enhancing students' musical creativity thinking skills during music lessons. The overarching aim of the study is to evaluate the effectiveness of the Tokkatsu-based program in enabling elementary students to develop their musical creativity.

## II. Literature Review

Given that the current study aims to investigate the effectiveness of employing Tokkatsu

activities in developing musical creativity among primary school students, the theoretical framework addresses the following variables: Tokkatsu activities and musical creativity.

## 1. Tokkatsu activities

Tokkatsu (Tokubetsu Katsudō / Special Activities) is a structured component of the Japanese school curriculum designed to support students' holistic development in cognitive, social, and emotional domains. It aims to foster responsibility, cooperation, and a sense of belonging within the classroom and the wider school community (Mangaryous, 2018). In the Japanese educational system, Tokkatsu is considered a core element of non-cognitive education that complements academic learning by promoting active participation and collaborative problem-solving (Tsuneyoshi et al., 2019).

Tokkatsu is based on an educational philosophy that emphasizes developing well-rounded learners through experiential and collaborative learning. It provides structured opportunities for students to engage in dialogue, exchange ideas, and participate in decision-making related to school life (Sugita, 2019). Through these experiences, students gradually develop interpersonal skills, self-regulation, and a sense of shared responsibility.

Tokkatsu originated from post-war educational reforms in Japan, where 'Free Study' activities were introduced in 1947 to link students' interests with academic learning. These activities were later integrated into the formal curriculum as Special Activities, becoming a mechanism for balancing cognitive and physical development alongside academic achievement (Mangaryous, 2018). Today, Tokkatsu is widely recognized for promoting cooperation, communication skills, and social responsibility.

Tokkatsu is characterized by the development of student competencies, teamwork, and interpersonal relationships. It represents an integrated approach aimed at preparing learners for active participation in society. Kusanagi (2020) notes that Tokkatsu supports balanced mental and physical development, self-directed learning, and positive group participation. It also enhances concentration, reduces stress, and improves interpersonal relationships. Similarly, Komoto (2015) emphasizes that Tokkatsu creates engaging learning environments that foster self-realization and community participation. It also addresses learners' needs for belonging and autonomy, strengthening engagement and academic development.

F. Al-Bahnassawi argues that ethical instruction alone is insufficient if students are not engaged in meaningful school practices such as shared responsibilities (Al-Bahnassawi, 2018). Therefore,

everyday school life becomes a central learning context in Tokkatsu. Supporting this, Ismail and Al-Husseini (2021) highlight that Tokkatsu promotes a positive school environment by organizing student groups, addressing classroom challenges, and distributing responsibilities. It also supports character development through cooperative and independent activities that strengthen behavior and problem-solving skills (Tsuneyoshi et al., 2019).

Tokkatsu activities include organizing classroom tasks, rotating student roles, developing group projects, fostering goal-setting, building relationships, and promoting healthy habits. Studies such as Komoto (2015), Amin (2023), Mohamed (2017), and Al-Awadi (2024) show that Tokkatsu strengthens cooperation, communication, respect for others, and constructive problem-solving. It also supports student aspirations and ethical development both inside and outside school. Overall, Tokkatsu helps students identify problems, understand social relationships, communicate effectively, and make appropriate decisions.

Tokkatsu empowers students to actively improve school life while developing self-management and interpersonal skills in a collaborative environment (Komoto, 2015; Sugita, 2019). Its core components include class councils, guided discussions, rotating leadership, meetings, optional tasks, cleaning activities, school events, and silent learning (Tsuneyoshi et al., 2019).

The class council enables students to identify issues, discuss them, reach consensus, and evaluate outcomes (Tsuneyoshi et al., 2019). Guided discussions support problem-solving and independent thinking (Sugita, 2019). Rotating leadership promotes participation, empathy, and cooperation (Komoto, 2015). Morning and end-of-day meetings help students organize learning and reflect on experiences, improving communication and productivity. Optional tasks encourage creativity and engagement, while cleaning activities develop responsibility and teamwork. School events foster belonging and collaboration. Silent morning learning supports focus and self-discipline (Ministry of Education and Technical Education, 2020).

The teacher acts primarily as a facilitator. In class councils, the teacher guides discussion and reflection. In guided discussions, the teacher supports independent problem-solving. In leadership activities, meetings, optional tasks, cleaning, and school events, the teacher coordinates responsibilities and monitors progress. In silent learning, the teacher ensures structure, prepares materials, and models appropriate behavior. Across all activities, teachers support the development of empathy, cooperation, responsibility, creativity, and communication (Ministry of Education and Technical Education, 2020).

Tokkatsu provides a structured framework that supports students' creativity, including in music education. Its emphasis on collaboration, reflection, and active participation encourages students

to exchange ideas, explore approaches, and engage in problem-solving. Core elements such as class councils, guided discussions, rotating roles, optional tasks, cleaning, school events, meetings, and silent learning promote engagement and responsibility. These practices foster discipline, self-regulation, focus, and reflection, contributing to academic and social development. Overall, Tokkatsu supports a holistic learning environment that enhances life skills, cognitive growth, and creative expression, including musical creativity (Ministry of Education and Technical Education, 2020).

## 2. Musical creativity

Musical creativity is considered one of the fundamental approaches to understanding higher levels of human thinking, as it is closely linked to cultural, psychological, and cognitive development. A. Ousu emphasizes that musical creativity has historically been an integral part of human culture, where music was recognized in ancient times as a means of purification and therapy (Ousu, 2021), a view also supported by Aristotle. Historically, music has been used to reduce stress and anxiety, highlighting its strong connection to artistic education and emotional development. In this context, musical creativity is viewed as higher-order thinking expressed through musical responses characterized by fluency, flexibility, and originality, reflecting learners' ability to generate innovative musical ideas.

Linguistically, creativity refers to creation and innovation. According to Lisan al-Arab, “the thing is badi’ when it is created as something new...” (Ibn Manzur, 2003, p. 6), indicating that creativity is based on producing something without a prior model. Accordingly, creative thinking is a cognitive ability that enables individuals to freely generate alternatives, identify problems, and restructure experiences in different ways. These new patterns are characterized by originality and novelty for both the individual and society, and this ability can be developed through training (Abu Hatab, 2011, p. 347).

Creative thinking is a purposeful mental activity directed toward achieving specific goals and generating original ideas and solutions (Akasha, 2017). S. Abu Galala further explains that it involves identifying gaps in information and producing innovative solutions, particularly in situations where conventional thinking is insufficient (Abu Galala, 2012). Operationally, creative thinking refers to identifying problems, analyzing contradictions, forming new connections, and developing innovative solutions.

Researchers have examined creativity from multiple perspectives. Some focus on personality traits, others on the creative product, and others on creativity as a cognitive process. From the

trait perspective, Torrance emphasized the importance of identifying characteristics of creative individuals to support their development (Al-Shami, 2001). In music, creative individuals often demonstrate intuition, imagination, rhythmic sensitivity, and expressive fluency, enabling them to integrate thinking and emotion in composition and performance (Khalil, 2018).

Creativity as a product refers to its observable output. Wilson states that a creative product must be novel, useful, and aesthetically valuable (Abdel-Muttalib, 2003). Creative products may be intellectual, practical, or qualitative (Atoum, 2004). In music education, Elliott and Silverman define the creative product as students' engagement in composition or improvisation, provided that the output meets a certain quality level (Elliott & Silverman, 2015). Gordon adds that musical creativity depends on the learner's musical vocabulary (Gordon, 2007), while Morin emphasizes that musical knowledge is essential for producing creative outcomes (Morin, 2002).

Creativity as a process is widely accepted in educational literature, particularly in Wallas's model. This model describes creativity as a sequence of stages: preparation, incubation, illumination, and verification, moving from problem identification to the evaluation of solutions. These stages provide a structured explanation of how creative ideas are developed over time (Al-Badarain, 2006; Al-Husseini, 2007; Al-Sheikhly, 2001; Guilford, 1997).

Most researchers agree that creative thinking involves key skills such as fluency, flexibility, originality, sensitivity to problems, and elaboration (Akram & Rana, 2025; Al-Badarain, 2006; Al-Husseini, 2007; Bashara, 2003; Fauzi et al., 2025). Fluency refers to generating many ideas, flexibility involves shifting between thinking patterns, originality relates to producing uncommon ideas, sensitivity to problems is the ability to identify gaps, and elaboration refers to expanding and refining ideas.

Musical creative thinking is expressed through musical fluency, flexibility, and originality. Musical fluency refers to generating multiple responses to rhythmic or melodic stimuli, flexibility involves producing different categories of musical responses, and originality refers to creating novel musical ideas and understanding relationships between stimuli (Khalil, 2018). Music education plays a key role in fostering creativity by supporting learners' creative capacities and musical development (Sidhom & El-Wakeel, 2019).

Recent studies show that integrating music into education enhances divergent thinking and improves fluency, flexibility, and originality. H. Liu found that musical listening activities stimulate varied student responses and improve expressive skills (Liu, 2025). Dushniy et al. (2025) highlighted the role of musical creative thinking in professional development, while Odena and Giddings emphasized that structured educational approaches, including Tokkatsu, enhance creativity

through experiential learning and continuous practice (Giddings, 2022; Odena, 2018). Importantly, the development of musical creativity is also influenced by task design and assessment approaches. Research by Park (2010), building on the work of Kratus and Hickey, demonstrates that open-ended musical tasks promote greater exploratory behavior, while different evaluation criteria can lead to varying interpretations of students' creative performance. This highlights the importance of aligning instructional strategies with appropriate assessment methods when aiming to develop musical creativity.

Building on these findings, Tokkatsu activities provide a theoretically grounded framework for fostering musical creative thinking by integrating cognitive, emotional, and social processes within a holistic educational context. Its core principles—learning by doing, collaboration, experimentation, responsibility, decision-making, and active participation—align closely with the essential dimensions of musical creativity: fluency, flexibility, and originality. Through group-based tasks, guided discussions, class councils, and optional creative assignments, students are encouraged to generate multiple musical ideas (fluency), explore diverse approaches to rhythm, melody, and expression (flexibility), and produce novel or uncommon musical responses (originality) (Khalil, 2018; Sidhom & El-Wakeel, 2019; Sugita, 2019). These activities create a supportive environment that promotes experimentation, reduces the fear of mistakes, and enhances both independent and collaborative musical problem-solving, allowing students to reorganize their experiences in new formats (Giddings, 2022; Mangaryous, 2018; Odena, 2018). By combining structured Tokkatsu practices with music education, students can develop higher-order creative thinking skills while simultaneously strengthening social, emotional, and cognitive competencies (Ministry of Education and Technical Education, 2020; Sugita, 2019).

### III. Methods

#### 1. Research methodology

The current research adopts both descriptive and experimental methodologies. The descriptive methodology was employed to analyze the musical skills and difficulties encountered by pupils in music education, observe pupils' performance of musical skills, analyze the content of the music education curriculum, review related literature and previous studies, and present the theoretical framework of the research. The experimental methodology was applied to investigate

the effectiveness of a program based on Tokkatsu activities in developing musical creativity among primary school pupils.

## 2. Experimental design of the research

The researchers employed a two-group experimental design consisting of an experimental group and a control group, using pre-test and post-test measurements. Means and standard deviations were calculated, and t-tests were conducted to examine the statistical significance of differences both within and between groups. The study was conducted over twelve instructional sessions, each lasting 30 minutes, delivered twice weekly during the second semester of the 2023-2024 academic year. Prior to the intervention, a pre-test of musical creativity was administered. A teacher's guide was developed by the researchers, comprising ten carefully sequenced instructional topics addressing rhythmic patterns, musical notation and staff reading, solfege exercises, musical scales and meters, expressive musical elements, listening discrimination, and performance using band instruments. These topics were delivered to the control group using conventional instructional methods, whereas the experimental group received instruction through Tokkatsu-based activities. Upon completion of the program, a post-test of musical creativity was administered to evaluate program outcomes.

In the present study, the Tokkatsu-based intervention was operationalized through a set of pedagogical components derived from core Tokkatsu practices. These components included: (a) sequential, goal-oriented musical activities; (b) group organization with rotating roles (e.g., leader, recorder, evaluator) to promote shared responsibility; (c) guided group discussions, adapted from the class council model, to support collaborative decision-making and problem-solving in musical tasks; and (d) systematic reflection and peer evaluation at the end of each session to reinforce learning and creative refinement. In addition, student-led participation and responsibility for task management were embedded within the activities to align with Tokkatsu principles of active engagement and collective classroom management. To ensure implementation fidelity, the instructional guide included detailed procedures, activity sequencing, and clearly defined roles. Observation checklists were used to monitor adherence to the predefined Tokkatsu components, and the researchers supervised the instructional process to ensure consistency across all sessions.

The control group received instruction through traditional teacher-centered methods commonly practiced in the school. Instruction was based on direct explanation, teacher demonstration, and student imitation of rhythmic and melodic exercises. Learning activities were mainly individual

and focused on repetition and practice of textbook content, without structured collaborative learning, role assignment, or reflective discussion. Creative exploration and divergent musical production were limited compared to the experimental condition.

Both groups received the same total instructional time (12 sessions, 30 minutes per session, twice weekly during the same academic term). To control for teacher-related variables, instruction for both groups was delivered by the same researcher under the supervision of the research team. A standardized lesson plan was used for the control group, while a structured Tokkatsu-based guide was implemented for the experimental group. Classroom environment and teaching materials were kept consistent across both conditions, with the only variation being the instructional approach. Although the same researcher served as the instructor for both the experimental and control groups, this may introduce a potential researcher expectancy effect as a methodological limitation. To mitigate this risk, instructional procedures were fully standardized, with both groups following predefined lesson plans. In addition, implementation fidelity was ensured through systematic observation checklists and continuous supervision throughout the intervention period.

### **3. Research sample**

The research sample consisted of 40 fourth-grade primary school students who had elected to participate in the music activity at Al-Shaheed Massad Primary School, El-Robaa, Markaz Tami Al-Amdeed, during the 2023-2024 academic year. Participants were randomly selected from the fourth-grade classes and randomly assigned to two groups of 20 students each. One group was designated as the experimental group and the other as the control group, ensuring balanced group sizes and comparability. To further strengthen group equivalence, a matched-pairs approach was applied based on pre-test musical creativity scores and demographic characteristics, including age and gender. The groups were also matched in terms of overall academic performance, observed skill-related performance on Tokkatsu activities, and environmental factors such as residential area, thereby minimizing extraneous variability. The experimental group received instruction through Tokkatsu-based activities, while the control group followed the conventional music curriculum.

### **4. Equivalence of the research groups**

To ensure the internal validity of the study, equivalence between the experimental and control

groups was verified prior to the intervention. An independent-samples t-test was conducted on pre-test scores of the musical creativity test, and homogeneity of variance was assessed using Levene's Test for Equality of Variances. The following table presents the means, standard deviations, t-values, and significance levels:

<Table 1> Significance of the differences between the mean scores of the experimental and control groups in the pretest of the musical creativity test

| Test                    | Group        | Mean  | SD   | df | F    | t    | Significance |
|-------------------------|--------------|-------|------|----|------|------|--------------|
| Musical creativity test | experimental | 52.65 | 4.82 | 38 | .488 | .173 | .863(NS)     |
|                         | control      | 52.40 | 4.28 |    |      |      |              |

\* $p < .05$ , \*\* $p < .01$

The results indicate that there was no statistically significant difference between the experimental and control groups in pre-test performance. This confirms that the groups were equivalent in their initial level of creative thinking, supporting the internal validity of the study.

## 5. Research hypotheses

In light of the results of previous research and studies, as well as the objectives of the current research, the following hypotheses were formulated: There is a statistically significant difference at the level ( $p \leq .05$ ) between the mean scores of pupils in the experimental group in the pre- and post-applications of the musical creativity test (overall and across its dimensions: fluency, flexibility, and originality), and there is a statistically significant difference at the level of ( $p \leq .05$ ) between the mean scores of pupils in the experimental and control groups in the post-test application of musical creativity test (overall and across its dimensions: fluency, flexibility, and originality).

## 6. Research tools

The intervention tools included a teacher's guide designed to implement Tokkatsu-based activities in music education, prepared by the researchers. The primary research tool was a musical creativity test in music education, also developed by the researchers.

### 1) Musical creativity test development

The musical creativity test was developed following a systematic, theory-informed procedure. Its primary purpose was to assess the level of musical creative thinking among elementary school students and to evaluate the effectiveness of Tokkatsu activities in enhancing these skills. In constructing the test, the researchers reviewed a range of established creativity measures, including the Torrance Tests of Creative Thinking (Torrance, 1974), Williams' creativity tests (Williams, 1972), and Abdel-Ghaffar's measures of creative thinking (Abdel-Ghaffar, 1965). In addition, relevant studies in music education addressing the development of creative thinking, such as Khalil (1999) and Hassan (2006), were examined. Given the absence of a standardized instrument specifically designed to assess musical creativity among elementary school students, selected items were adapted and reformulated to align with the characteristics of the target age group and the objectives of the study.

The test dimensions were determined based on the core components of creative thinking: fluency, flexibility, and originality. Accordingly, the final version of the test consisted of 10 items designed to elicit students' creative musical responses. Scoring procedures were structured according to these three dimensions. Fluency was measured by counting the number of relevant, non-repeated responses provided by each student, with one point assigned to each valid response. Flexibility was assessed by calculating the number of distinct categories represented in the student's responses, with one point awarded for each category. Originality was evaluated based on the rarity of responses, following Torrance's scoring criteria (Torrance, 1974, p. 14). Specifically, three levels of originality were applied according to the frequency of each response within the study sample: responses occurring in 5% or more of the sample were assigned zero (0) points; responses occurring between 2% and 4.99% were assigned one point; and responses occurring in less than 2% of the sample were assigned two points. Because fluency, flexibility, and originality are derived from the number and statistical rarity of student-generated responses, total scores are not fixed a priori in the same manner as traditional closed-ended tests with predetermined maximum values. Instead, the attainable score range depends on the number and diversity of responses produced within the testing context. Accordingly, the score ranges reported in this study reflect the observed distribution of performance within the sample rather than a fixed theoretical maximum. This response-based scoring structure may lead to substantial variability in total scores, as well as pronounced differences between groups when students generate a greater number and diversity of responses. Consequently, this characteristic of the

measurement approach should be taken into account when interpreting the magnitude of the observed effect sizes.

For instance, in response to a melodic task requiring students to compose varied musical phrases within four measures, one student generated 8 responses. Of these, 7 were considered relevant and non-repetitive, yielding a fluency score of 7. The responses reflected 4 distinct structural categories (e.g., variation in rhythmic pattern, melodic contour, intervallic movement, and phrase structure), resulting in a flexibility score of 4. For originality, 4 responses were common ( $\geq 5\%$  frequency) and received 0 points, 2 responses were moderately rare (2-4.99%) and received 1 point each, and 1 response was highly rare ( $< 2\%$ ) and received 2 points. Accordingly, the originality score was calculated as  $(4 \times 0) + (2 \times 1) + (1 \times 2) = 4$ . The total score for this student was therefore 15 (Fluency = 7, Flexibility = 4, Originality = 4). This example illustrates how scores are derived from the quantity, diversity, and rarity of student-generated responses, in alignment with the operational definitions of fluency, flexibility, and originality.

Sample item (Rhythmic domain): (Rhythmic - Fluency & Originality) Generate as many rhythmic patterns as possible based on the given rhythmic figures (♩ · ♪ · ♩ · ♪ \_ ♩). Do not limit your thinking to previously learned patterns; instead, attempt to produce new and diverse rhythmic ideas. Sample item (Melodic domain): (Melodic - Fluency, Flexibility & Originality): Compose as many varied melodic exercises as possible within four measures,  using the studied rhythms and pitches. Your responses should demonstrate diversity in structure and originality in musical idea.

## 2) Validity of the musical creativity test

The current research employed two methods to verify the validity of the musical creativity test among primary school pupils who had chosen the music activity: content validity and internal consistency validity.

### (1) Content validity

To ensure content validity, the preliminary version of the musical creativity test was reviewed by a panel of expert faculty members in the field of music education. The experts evaluated the test items in terms of the accuracy of linguistic and scientific formulation, clarity and

simplicity of content, the appropriateness of the number of items per dimension, the logical sequence of the statements, and the relevance of each item to the objectives of the test. Based on the experts' feedback, the wording of several items was revised accordingly. As a result, the test was subjected to content validity procedures and finalized to consist of ten items. The following table presents the agreement coefficient for the musical creativity test.

<Table 2> Agreement coefficient for the musical creativity test

| Judging criteria                                         | Number of agreements | Number of disagreements | Agreement coefficient |
|----------------------------------------------------------|----------------------|-------------------------|-----------------------|
| Accuracy of linguistic phrasing of the statements        | 10                   | 0                       | 100%                  |
| Clarity and simplicity of the statements                 | 9                    | 1                       | 90%                   |
| Appropriateness of the number of items per dimension     | 9                    | 1                       | 90%                   |
| Logical sequence of the statements within each dimension | 8                    | 2                       | 80%                   |

The researchers employed the method of inter-rater agreement among ten experts to calculate the reliability of the judges in determining the evaluation criteria. Each expert independently reviewed the test items without consulting the others. The agreement coefficient was calculated using Cooper's formula: Agreement percentage = (Number of agreements / (Number of agreements + Number of disagreements)) × 100. The inter-rater agreement ranged from 80% to 100%, supporting strong content validity.

**(2) Internal consistency validity**

The musical creativity test was applied to a pilot sample consisting of ten primary school students drawn from outside the main study sample. Following the administration, the internal consistency validity of the test items was assessed using Cronbach's Alpha coefficient to estimate the overall reliability and item validity. This procedure is based on the internal consistency model, which relies on the average inter-item correlation among the individual items and the overall musical creativity test. The resulting overall reliability coefficient was .86, indicating a high level of reliability.

The following table presents the Pearson correlation coefficients between individual item scores and the total score of the musical creativity test.

**<Table 3>** Pearson correlation coefficients between individual item scores and the total score of the musical creativity test

| Item | Correlation coefficient | Item | Correlation coefficient | Item | Correlation coefficient | Item | Correlation coefficient |
|------|-------------------------|------|-------------------------|------|-------------------------|------|-------------------------|
| 1    | .88**                   | 4    | .80**                   | 7    | .82**                   | 9    | .80**                   |
| 2    | .80*                    | 5    | .83**                   | 8    | .86**                   | 10   | .84*                    |
| 3    | .81**                   | 6    | .85*                    |      |                         |      |                         |

\* $p < .05$ , \*\* $p < .01$ 

By interpreting the above table, it is evident that all correlation coefficients between individual item scores and the total test score are strong positive correlations, and all are statistically significant at the .05 and .01 levels. Based on these findings, it can be concluded that the test items exhibit a high degree of internal consistency, thereby supporting the internal consistency validity of the musical creativity test.

### 3) Reliability of the musical creativity test

To examine the reliability of the musical creativity test, it was administered to a pilot sample of 10 primary school students drawn from outside the main study sample. Test reliability was evaluated using two statistical methods: the split-half reliability method and Cronbach's Alpha coefficient.

The split-half reliability method involves administering the test once and dividing it into two equivalent halves, after which the correlation coefficient between the scores of the two halves is calculated. Based on this correlation, the predicted reliability coefficient for the full test is estimated to assess internal consistency. Split-half reliability coefficients were calculated using both the Spearman-Brown and Guttman formulas, while Cronbach's Alpha was used to estimate the overall internal consistency of the test items. Cronbach's Alpha provides an index of the extent to which the test items consistently measure the same underlying construct.

**<Table 4>** Reliability coefficients using the split-half method for Spearman/Brown, Guttman, and Cronbach's Alpha

| Test                    | Split-Half reliability |         | Cronbach's alpha |
|-------------------------|------------------------|---------|------------------|
|                         | Spearman-Brown         | Guttman |                  |
| Musical creativity test | .81**                  | .82**   | .83**            |

\* $p < .05$ , \*\* $p < .01$

The results indicate that the split-half reliability coefficients calculated using both the Spearman-Brown and Guttman formulas are statistically significant at the 0.01 level. In addition, the Cronbach's Alpha coefficient for the musical creativity test reached (.83), reflecting a high level of internal consistency and statistically significant reliability. Based on these results, it can be concluded that the musical creativity test demonstrates a high and acceptable level of reliability, confirming its stability and suitability for use in the current study. Based on the above, the final version of the musical creativity test consists of (10) items.

## IV. Results

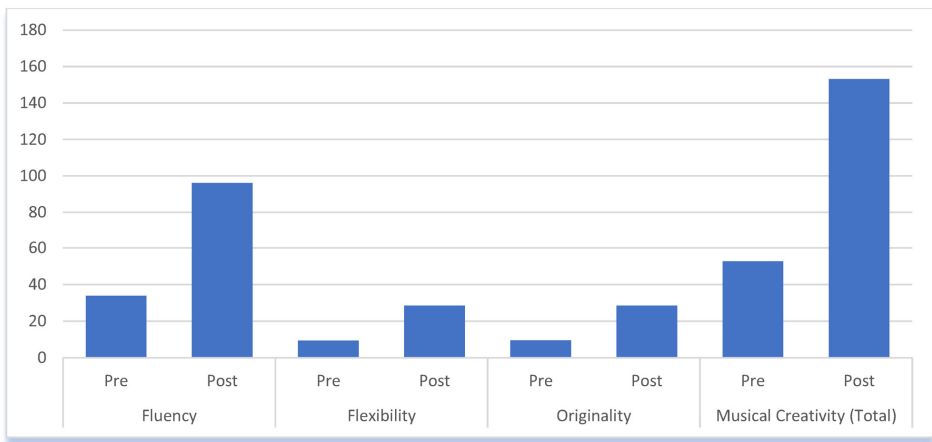
To verify the validity of the first research hypothesis, which states that there is a statistically significant difference at the level ( $p \leq .05$ ) between the mean scores of pupils in the experimental group in the pre- and post-applications of the musical creativity test (overall and across its dimensions: fluency, flexibility, and originality), a paired-samples t-test was conducted. This test was used to compare the mean scores of the experimental group in the pre-test and post-test applications of the musical creativity test, both as a whole and for each of its dimensions. The means and standard deviations of the experimental group's scores in the pre- and post-applications were calculated, and the following table summarizes these results.

<Table 5> Means and standard deviations of the experimental group's scores in the pre- and post-applications of the musical creativity test (overall and by dimensions)

| Component                    | Application | Mean (M) | Standard deviation (SD) | df | t-value  | Sig. (p) | Eta squared ( $\eta^2$ ) | Effect size (d) |
|------------------------------|-------------|----------|-------------------------|----|----------|----------|--------------------------|-----------------|
| Fluency                      | Pre-test    | 33.80    | 4.76                    | 19 | 43.504** | .000     | .990                     | 19.862          |
|                              | Post-test   | 96.15    | 3.13                    |    |          |          |                          |                 |
| Flexibility                  | Pre-test    | 9.35     | 0.59                    | 19 | 72.448** | .000     | .996                     | 33.181          |
|                              | Post-test   | 28.50    | 1.32                    |    |          |          |                          |                 |
| Originality                  | Pre-test    | 9.50     | 0.51                    | 19 | 53.912** | .000     | .994                     | 24.656          |
|                              | Post-test   | 28.45    | 1.54                    |    |          |          |                          |                 |
| Musical creativity (Overall) | Pre-test    | 52.65    | 4.82                    | 19 | 60.985** | .000     | .995                     | 27.911          |
|                              | Post-test   | 153.10   | 4.92                    |    |          |          |                          |                 |

\* $p < .05$ , \*\* $p < .01$

It is evident from the results summarized in the previous table that there is a statistically significant improvement in post-performance on the musical creativity test, both overall and across all its dimensions. This conclusion is drawn from the comparison of the pre- and post-test mean scores, where the calculated  $t$  values were statistically significant at the .01 level in favor of the post-application. In particular, the overall creative thinking score showed a highly significant difference ( $t = 60.985$ ,  $df = 19$ ,  $p \leq .05$ ), indicating a marked enhancement in musical creativity performance following the experimental treatment.



[Figure 1] Mean scores of the experimental group on the musical creativity test in the pre- and post-applications (overall and by dimensions)

To determine the magnitude of the effect of the instructional intervention, Eta squared ( $\eta^2$ ) was calculated. The calculation was based on the obtained  $t$  value for the musical creativity test (overall), where  $t = 60.985$  with a degree of freedom ( $df$ ) of 19. The computed effect size yielded a value of  $\eta^2 = 0.995$ . In addition, Cohen's  $d$  value, calculated from the same equation, reached 27.911. According to the reference criteria used to interpret effect size levels (small, medium, or large), this value indicates an exceptionally large effect size, far exceeding conventional benchmarks in educational research, and therefore requires cautious interpretation. This result confirms that the applied instructional strategy had a substantial and meaningful impact on developing students' musical creativity thinking skills, thereby supporting and validating the first research hypothesis.

To verify the validity of the second research hypothesis, which states that there is a statistically

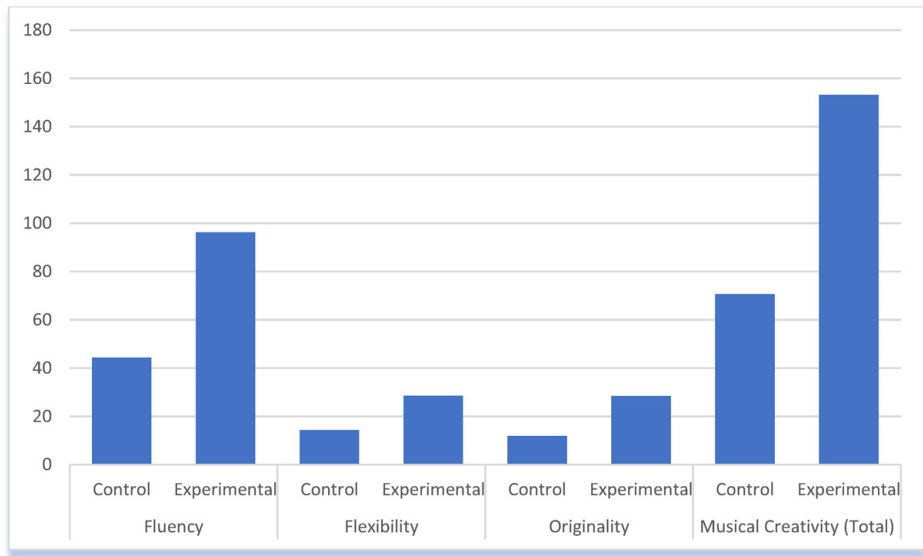
significant difference at the level of ( $p \leq .05$ ) between the mean scores of pupils in the experimental and control groups in the post-test application of the musical creativity test (overall and across its dimensions: fluency, flexibility, and originality), the means and standard deviations of both groups' post-test scores were calculated. The assumption of homogeneity of variances was checked, and an independent-samples t-test was applied to compare the mean scores of the experimental and control groups. The following table summarizes these results.

<Table 6> Means and standard deviations of the experimental and control groups' scores in the post-application of the musical creativity test (overall and by dimensions)

| Component                    | Group        | Mean (M) | Standard deviation (SD) | df | t-value  | Sig. (p) | Eta squared ( $\eta^2$ ) | Effect size (d) |
|------------------------------|--------------|----------|-------------------------|----|----------|----------|--------------------------|-----------------|
| Fluency                      | Control      | 44.40    | 3.13                    | 38 | 56.100** | .000     | .988                     | 18.092          |
|                              | Experimental | 96.15    | 2.68                    |    |          |          |                          |                 |
| Flexibility                  | Control      | 14.35    | 1.32                    | 38 | 20.360** | .000     | .916                     | 6.322           |
|                              | Experimental | 28.50    | 2.81                    |    |          |          |                          |                 |
| Originality                  | Control      | 11.90    | 1.54                    | 38 | 41.392** | .000     | .978                     | 13.283          |
|                              | Experimental | 28.45    | 0.91                    |    |          |          |                          |                 |
| Musical creativity (Overall) | Control      | 70.65    | 4.92                    | 38 | 63.317** | .000     | .991                     | 20.446          |
|                              | Experimental | 153.10   | 3.12                    |    |          |          |                          |                 |

\* $p < .05$ , \*\* $p < .01$

It is evident from the results summarized in the previous table that the calculated  $t$  values are statistically significant at the .01 level, indicating a statistically significant difference between the mean scores of pupils in the experimental and control groups in the posttest application of the musical creativity test, both overall and across its dimensions—fluency, flexibility, and originality—in favor of the experimental group. Accordingly, the second research hypothesis is accepted, which states that there is a statistically significant difference at the level of  $p \leq .05$  between the mean scores of pupils in the experimental and control groups in the posttest application of the musical creativity test, favoring the experimental group.



[Figure 2] Mean scores of the experimental and control groups on the musical creativity test in the post-applications (overall and by dimensions).

Although statistical significance confirms that the observed differences are unlikely to be due to chance, it does not, by itself, indicate the magnitude of the program's impact. Therefore, effect sizes were calculated using eta squared ( $\eta^2$ ) and Cohen's  $d$ . The obtained values (e.g.,  $\eta^2 = .991$  and very large Cohen's  $d$  estimates exceeding 20) suggest that a substantial proportion of the variance in students' musical creativity scores is associated with the Tokkatsu-based intervention. However, such effect sizes are uncommon in educational research and therefore require careful interpretation. These values are primarily attributable to the characteristics of the measurement approach used in this study, as the musical creativity test is based on a response-generated scoring system in which scores are derived from the number, diversity, and statistical rarity of student-generated responses (fluency, flexibility, and originality), rather than fixed maximum scores. Consequently, total scores are not bounded by a predetermined upper limit and may increase substantially when students generate a large number of diverse responses. This scoring structure can lead to substantial mean differences between pre- and post-test scores (e.g., overall scores increased from  $M = 52.65$  to  $M = 153.10$ ), while post-test variability remains relatively low. Statistically, this combination inflates both the  $t$ -statistic—by increasing the mean difference and reducing variance—and effect size estimates such as Cohen's  $d$  (which is sensitive to pooled standard deviation) and  $\eta^2$  (which reflects explained variance). Furthermore, the

relatively small sample size ( $n = 40$ ) and the controlled instructional conditions may have increased the sensitivity of the statistical estimates, contributing to the unusually large observed effect sizes. Accordingly, while the findings provide strong evidence of the effectiveness of the Tokkatsu-based program in enhancing students' musical creativity, the magnitude of the reported effect sizes should be interpreted within the specific measurement and experimental context of the study rather than as directly generalizable estimates. Future research employing standardized instruments with fixed score ranges, larger samples, and more diverse educational settings is recommended to obtain more conservative and generalizable effect size estimates.

## V. Discussion

The findings of the present study demonstrate that the Tokkatsu-based instructional program significantly enhanced the musical creativity skills of primary school pupils, particularly in fluency, flexibility, and originality. The statistically significant differences observed between pre- and post-test scores, alongside the very large effect size, indicate the program's high effectiveness in addressing the learning challenges identified at the outset, including low musical achievement, limited creative engagement, and weak performance skills.

The observed improvements can be understood through a theoretical lens connecting Tokkatsu principles with core constructs of musical creativity. Tokkatsu's emphasis on collaboration, responsibility, experimentation, decision-making, and active participation directly aligns with the dimensions of musical creativity—fluency, flexibility, and originality. Collaborative group tasks foster idea generation (fluency), experimentation with rhythm, melody, and expression encourages diverse approaches (flexibility), and opportunities for independent and collective creative projects support the production of novel musical responses (originality). By situating the program within this theoretical framework, the study clarifies how structured Tokkatsu-based practices are not only pedagogically effective but also conceptually linked to the development of higher-order musical thinking. This theoretical alignment is reflected in the design and implementation of the program's lessons, as described below.

A closer examination of lesson implementation helps explain these outcomes. The program included lessons on musical patterns, musical character, and analyze-and-critique, all structured progressively and integrating Tokkatsu-based activities. In the musical patterns lesson, pupils engaged in listening exercises to distinguish between fast and slow melodies, performed physical

movements corresponding to these patterns, and created simple rhythmic exercises. Classroom council discussions were used to assign group roles, plan activities, and reflect on performance, fostering responsibility, decision-making, and cooperative engagement. In the musical character lesson, pupils explored emotional expressions in music, such as joy, sadness, or excitement, through expressive facial movements, clapping, and instrumental accompaniment. They composed short exercises and collaborated in groups to match musical character with dramatic or narrative contexts. In the analyze-and-critique lesson, pupils practiced rhythmic patterns, identified musical symbols, and coordinated group activities involving playing, walking, clapping, and stamping, promoting both cognitive and psychomotor development.

The program's effectiveness can also be attributed to the structured group organization and clear role assignments implemented in each lesson. Pupils were divided into collaborative groups with specific responsibilities: in the musical patterns lesson, groups performed singing, fast movements (rabbit), or slow movements (turtle); in the musical character lesson, groups focused on musical performance, identifying the character of the music, or expressive facial gestures; and in the analyze-and-critique lesson, groups handled playing instruments, walking, clapping, or stamping. Each group had designated roles, such as leaders to coordinate activities, recorders to document decisions and observations, and scribes to write proposals and outcomes on the board. This structure allowed pupils to actively choose their preferred activity, take ownership of their participation, and collaborate in decision-making processes. The visual reminders of roles and rotation of responsibilities across lessons encouraged reflection, peer evaluation, and creative risk-taking.

Across all lessons, the Tokkatsu framework empowered pupils to participate actively and take ownership of their learning. Activities were highly interactive, combining singing, movement, improvisation, discussion, and peer evaluation, providing multiple entry points for creative expression. Pupils responded positively to collaborative group divisions, demonstrated enthusiastic participation, and showed motivation in both performing and evaluating musical tasks. Teacher observations indicated that pupils experienced joy and increased confidence when performing movements in time with music, designing rhythmic exercises, and coordinating group tasks, suggesting a positive impact on motivation, engagement, and creative involvement.

The consistency of these effects can be attributed, in part, to the controlled implementation of the program, as the structured teacher's guide, predefined activity sequences, and continuous monitoring ensured that the Tokkatsu components were applied uniformly across all instructional sessions. Importantly, the observed improvements should be understood in relation to the specific

pedagogical features of the Tokkatsu framework, rather than general active or multisensory instruction alone. While activities such as singing, movement, and improvisation are not unique to Tokkatsu, their systematic integration through role-based collaboration, classroom councils, and structured reflection distinguishes the present intervention. These elements promote not only active participation but also responsibility, collective decision-making, and iterative creative refinement, which are central to Tokkatsu philosophy. Accordingly, the effectiveness observed in this study can be attributed to the coherent orchestration of these components within a Tokkatsu-based instructional model, rather than to isolated instructional techniques.

These pedagogical mechanisms—progressive lesson sequencing, role-structured collaboration, classroom council practices, and multisensory engagement—can plausibly account for the observed improvements in musical fluency, flexibility, originality, and overall creativity. The results align with prior research highlighting the effectiveness of Tokkatsu-based methods in fostering musical and creative skills (Abdalla, 2020; Ahmed, 2024; Al-Mousa et al., 2023; Fouad & Samir, 2023; Komoto, 2015), while providing new empirical evidence that systematic implementation across lessons enhances multiple dimensions of musical creativity. From an educational perspective, the findings underscore the importance of incorporating Tokkatsu-based activities into music curricula as a developmentally appropriate and pedagogically effective approach for promoting both musical and creative growth.

Overall, the results provide strong empirical support for the effectiveness of the Tokkatsu-based instructional program in developing musical creativity among primary school pupils, directly addressing the study's research questions and supporting the hypotheses regarding the positive impact of Tokkatsu activities on pupils' creative musical performance and thinking.

Despite the promising outcomes, the study has several limitations. The sample size was relatively small and drawn from a single school, which may limit the generalizability of the findings. The study focused specifically on musical creativity and did not directly measure broader developmental outcomes such as social, emotional, or cognitive growth. While collaborative and reflective classroom activities may plausibly foster responsibility, decision-making, and cooperative skills, these outcomes were not empirically assessed and should therefore be interpreted as potential implications rather than confirmed effects. In terms of measurement, certain limitations related to construct validity should also be acknowledged. The musical creativity test relies on open-ended, response-generated tasks, which primarily capture divergent thinking components (fluency, flexibility, and originality) but may not fully represent other dimensions of musical creativity, such as aesthetic quality, emotional expression, or long-term compositional development.

Furthermore, scoring—particularly for flexibility and originality—may involve a degree of subjective judgment in categorizing responses and determining their rarity within the sample. Although scoring criteria were clearly defined and grounded in established theoretical frameworks, the absence of external validation using standardized musical creativity instruments limits the generalizability of the construct interpretation. Therefore, the results should be interpreted as reflecting specific operational indicators of musical creativity within the context of this study, rather than a comprehensive representation of the construct. Additionally, the research design did not include a long-term follow-up to examine the sustainability of gains or the transfer of skills to other contexts.

Moreover, caution should be exercised when generalizing these findings beyond the current research context. The results are most appropriately interpreted as applicable to similar primary school settings where Tokkatsu-based instructional principles can be systematically implemented under comparable classroom conditions, curriculum structures, and teacher support. Differences in school environments, teacher training, and student characteristics may influence the degree to which similar outcomes can be achieved in other contexts. Future research should involve larger and more diverse samples, incorporate longitudinal designs, and use broader assessment measures to examine the sustained and transferable impact of musical creativity instruction. Overall, the findings provide preliminary evidence suggesting the potential effectiveness of progressive, role-structured, and multisensory Tokkatsu-based instruction in enhancing musical creativity among primary school pupils, within the methodological boundaries of the present study.

## VI. Conclusion

In conclusion, this study provides strong evidence that a structured Tokkatsu-based program can effectively enhance the musical creativity of primary school pupils, improving their fluency, flexibility, and originality in music performance while supporting engagement, collaboration, and active participation. The program's emphasis on progressive lesson design, collaborative group work, multisensory activities, and structured role assignments contributed to its effectiveness, demonstrating the potential of Tokkatsu-based pedagogies in general music education. While the current study did not directly measure broader developmental outcomes such as responsibility, decision-making, or cooperative skills, the structured collaborative and reflective activities may plausibly support these competencies and are proposed as potential educational implications. It

is recommended that music educators consider incorporating Tokkatsu-based activities into curricula, provide training and workshops for teachers, and utilize Tokkatsu-based instructional guides to enhance learning experiences. Future studies should examine long-term impacts, scalability, and adaptability across grade levels, educational contexts, and inclusive settings, and explore whether musical creativity skills transfer to other areas of learning to further support pupils' holistic development.

## References

- Abdalla, S. R. (2020). The effect of using Japanese Tokkatsu activities to develop deep understanding and enjoyment of learning science among primary stage pupils. *Journal of Education and Human Sciences*, 12(4), 19-86. <https://doi.org/10.21608/armin.2025.433740>
- Abdel-Ghaffar, A. S. (1965). *Manual of the creative thinking ability test*. Dar Al-Nahda Al-Arabiya.
- Abdel-Muttalib, M. (2003). *Creativity: Concepts, principles, and applications*. Dar Al Maaref.
- Abu Galala, S. H. (2012). Development of higher-order thinking skills and creative thinking. *Journal of Education, National Committee for Education, Culture and Science (Qatar)*, 41(181), 165-194.
- Abu Hatab, M. (2011). *Creative thinking and its development*. Dar Al-Fikr.
- Ahmed, R. (2024). A program based on Tokkatsu activities to develop dialogue and collective thinking skills of primary school students. *Journal of Faculty of Education, Assiut University*, 40(6.2), 111-200. <https://doi.org/10.21608/mfes.2024.375248>
- Akasha, I. H. A. (2017). The effectiveness of using brainstorming strategy in teaching Arab music appreciation among music education students and its effect on developing creative thinking skills. *Journal of Qualitative Education Research*, 48. <https://doi.org/10.5539/ijel.v11n1p253>
- Akram, T. M., & Rana, R. A. (2025). Assessing prospective science teachers' creative thinking ability to solve environmental issues at higher education. *Qlantic Journal of Social Sciences and Humanities*, 6(1), 254-265. <https://doi.org/10.55737/qjssh.vi-i.25314>
- Al-Badarain, I. (2006). *Creativity and cognitive development*. Al-Yarmouk Publishing.

- Al-Bahnassawi, F. M. (2018). Benefiting from the integrated personality development model (Tokkatsu) Japanese education and the possibility of applying it in Egyptian schools. *AMESEA Scientific Journal*, 14(13), 153-162. <https://doi.org/10.21608/amesea.2018.75913>
- Al-Husseini, R. (2007). *Principles of creative thinking*. Modern Knowledge Press.
- Al-Mousa, D. A., Ibrahim, A. S., & Alam, S. A. (2023). A program based on Tokkatsu activities to develop creative listening comprehension skills among primary school students. *Journal of the Faculty of Education, Assiut University*, 39(4), 162-209.
- Al-Shami, H. (2001). *Personality traits of creative individuals*. University Press.
- Al-Sheikhly, A. Q. (2001). *Developing creative thinking*. Ministry of Youth.
- Amin, Z. M. (2023). The effectiveness of a Tokkatsu-based program to improve learning well-being and reduce cognitive stress among primary school students. *Journal of the Faculty of Education, Benha University*, 136(2), 37-108.
- Atoum, A. (2004). *Cognitive psychology*. Al-Maysara Publishing and Distribution.
- Bashara, M. (2003). *The effect of a training program for higher-order thinking skills on developing critical and creative thinking among tenth-grade students*. Doctoral dissertation, Yarmouk University, Jordan.
- Beegle, A. C. (2010). A classroom-based study of small-group planned improvisation with fifth-grade children. *Journal of Research in Music Education*, 58(3), 219-239. <https://doi.org/10.1177/0022429410379916>
- Berliner, P. F. (1994). *Thinking in jazz*. The University of Chicago Press.
- Brophy, T. S. (2005). A longitudinal study of selected characteristics of children's melodic improvisations. *Journal of Research in Music Education*, 53(2), 120-133. <https://doi.org/10.2307/3345513>
- Craft, A. (2012). Childhood in a digital age: Creative challenges for educational futures. *London Review of Education*, 10(2), 173-190. <https://doi.org/10.1080/14748460.2012.691282>
- Douglas, K. A. (2005). *The effects of a Music Learning Theory-based pattern instruction curriculum on the improvisational ability of middle school instrumental students*. Master's thesis, Michigan State University.
- Dushniy, A., Salii, V., Storonska, N., Molchko, U., & Shafeta, V. (2025). The role of creative thinking in the professional development of a performing musician. *Online Journal of Music Sciences*, 10(4), 1045-1059. <https://doi.org/10.31811/ojomus.1749663>
- Elliott, D. J., & Silverman, M. (2015). *Music matters: A philosophy of music education*

- (2nd ed.). Oxford University Press.
- El-Naggar, M. S., & Abdel-Baqi, A. A. (2024). Tokkatsu activities based on guided discussions and mnemonic strategies in a digital learning environment: Their impact on problem-solving, creative thinking, and self-management skills among primary school students in Egyptian-Japanese schools. *International Journal of E-Learning*, 12(3), 141-355.
- Elwakeel, M. (2022). The effectiveness of a training program based on hybrid learning to develop the technological competencies of music teachers to teach musical activities in light of the Corona pandemic. *Journal of the College of Education in Educational Sciences, Ain Shams University*, 46(2), 181-291.
- Eskasasnanda, I. D. P. (2020). Implementation of Tokkatsu to improve face-to-face interaction between students. *Advances in Social Science, Education and Humanities Research*. <https://doi.org/10.2991/assehr.k.200214.020>
- Fahmy, G. A., Qoura, A., & Hassan, S. (2017). Using SCAMPER-based activities in teaching stories to enhance EFL primary stage pupils' speaking skills (an exploratory study). *Journal of Research in Curriculum, Instruction and Educational Technology*, 3(4), 11-33. <https://doi.org/10.12816/0041906>
- Fauzi, W. N. A., Wuryandani, W., & Supartinah, S. (2025). Creative thinking in global primary education: Pedagogical innovations and learning outcomes through an integrated bibliometric and systematic review. *Social Sciences & Humanities Open*, 12, 102216. <https://doi.org/10.1016/j.ssaho.2025.102216>
- Fouad, F., & Samir, S. (2023). Tokkatsu activities and life effectiveness skills for Japanese school students. *Journal of Educational Sciences*. <https://doi.org/10.21608/jedu.2022.117828.1585>
- Giddings, S. (2022). Creativity in music education. In *Technology for unleashing creativity: Practical tips and tools for music educators* (pp. 9-17). Oxford University Press.
- Gordon, E. E. (2018). *Learning sequences in music: Skill, content, and patterns* (eBook edition). GIA Publications.
- Guilbault, D. M. (2004). The effect of harmonic accompaniment on the tonal achievement and tonal improvisations of children in kindergarten and first grade. *Journal of Research in Music Education*, 52(1), 64-76. <https://doi.org/10.2307/3345525>
- Guilbault, D. M. (2009). The effects of harmonic accompaniment on the tonal improvisations of students in first through sixth grade. *Journal of Research in Music Education*, 57(2), 81- 91. <https://doi.org/10.1177/0022429409337201>
- Guilford, J. (1997). *Creative talents: Their nature uses and development*. Bearly Limited.

- Hallam, S. (2010). The power of music: Its impact on the intellectual, social and personal development of children and young people. *International Journal of Music Education*, 28(3), 269-289. <https://doi.org/10.1177/0255761410370658>
- Hassan, T. M. (2006). Adapting some creative thinking development strategies to improve the performance of student teachers in field training: A proposed method. *Journal of Music Sciences and Arts*, 4, 55-72.
- Ibn Manzur, A. F. M. (2003). *Lisan al-Arab* (Vol. 8). Dar Sader.
- Ismail, I. S., & Al-Husseini, A. T. (2021). The effectiveness of a training program based on Japanese Tokkatsu activities and their practice in improving constructive thinking and psychological hardiness of basic education female teachers. *Port Said Faculty of Education Journal*, 33, 371-429. <https://doi.org/10.21608/JFTP.2021.47339.1091>
- Khalil, A. H. (1999). *The effectiveness of a proposed program for developing the performance of music education students in faculties of specific education in light of the concept of creativity*. Doctoral dissertation, Faculty of Education, Menoufia University, Egypt.
- Khalil, A. H. (2018). *Creativity and strategies for teaching music education*. Scientific Cultural House.
- Kiehn, M. T. (2003). Development of music creativity among elementary school students. *Journal of Research in Music Education*, 51(4), 278-288. <https://doi.org/10.2307/3345655>
- Komoto, A. (2015). *Collaborative efforts to build interpersonal skills and emotional maturity across school levels through tokkatsu: The case of Kuwabara Junior High School and Elementary School* (Working Paper No. 5, in the 21st Century International Educational Models Project). Center for Excellence in School Education, Graduate School of Education, The University of Tokyo.
- Kusanagi, K. (2020). Education for sustainable development and the implementation of “Tokkatsu” in Indonesia. In *Proceedings of the International Conference on Social Studies and Environmental Issues (ICOSSEI 2019)*. <https://doi.org/10.2991/assehr.k.200214.013>
- Liu, H. (2025). A qualitative study on the role of music in enhancing divergent thinking and creative writing in high school students. *Pacific International Journal*, 8(4), 74-81. <https://doi.org/10.55014/pij.v8i4.849>
- Mangaryous, F. B. (2018). Tokkatsu activities in Egyptian-Japanese schools. In *Proceedings of the 1st International Conference: Building a Better Child in Contemporary Society* (pp. 343-353). Assiut University.
- Ministry of Education and Technical Education (2018). *Teacher's guide for special activities:*

- Tokkatsu*. Egyptian Japanese Schools, in collaboration with JICA.
- Ministry of Education and Technical Education (2020). *Teacher's guide for special activities (Tokkatsu fundamentals): First grades of primary stage* (1st ed.). In collaboration with JICA.
- Ministry of Education and Technical Education (2023). *Teacher's guide for special activities: Tokkatsu*. Egyptian Japanese Schools, in collaboration with JICA.
- Mohamed, A. A. A., Rashwan, A. M. A., & Osman, S. A. (2023). A program based on Tokkatsu activities to develop creative speaking skills among fourth-grade primary school students. *Journal of the Faculty of Education, Assiut University*. <https://doi.org/10.21608/mfes.2023.320132>
- Mohamed, Z. M. A. (2023). The effectiveness of a program based on Tokkatsu activities to improve learning well-being and reduce cognitive load among a sample of primary school students. *Journal of the Faculty of Education, Banha University*, 136(2), 38-107.
- Morin, M. (2002). *Teaching musical creativity: Methods and practices*. Routledge.
- National Association for Music Education (1999). *National standards for music education: What every young American should know and be able to do in music*. Author.
- National Association for Music Education (2014). *NAfME core music standards: A guide to music learning*. Author. <https://nafme.org/standards>
- National Association of Schools of Music (2025). *NASM handbook for accredited institutions*. <https://nasm.arts-accredit.org>
- National Research Council (2001). *Educating teachers of science, mathematics, and technology: New practices for the new millennium*. National Academies Press.
- Odena, O. (2018). *Musical creativity revisited: Educational foundations, practices and research*. Routledge.
- Ousu, A. (2021). Musical creativity as a mechanism for educating and teaching children with autism. *Ataa Journal for Studies and Research*. <https://doi.org/10.34874/atae.v1i1.1631>
- Park, E. (2010). A comparison of the musical composition and musical creativity studies of M. Hickey and J. Kratus. *Korean Journal of Research in Music Education*, 39, 27-51.
- Robinson, K., & Aronica, L. (2015). *Creative schools: The grassroots revolution that's transforming education*. Viking.
- Schopp, S. E. (2006). *A study of the effects of National Standards for Music Education*,

- number 3, improvisation and number 4, composition on high school band instruction in New York State*. Doctoral dissertation, Teachers College, Columbia University.
- Shafei, N. I. (2023). Japanese Tokkatsu activities as an approach to developing some life skills for kindergarten children. *Childhood Journal*, 43, 1303-1340. <https://doi.org/10.21608/jchild.2023.179725.1099>
- Sidhom, J. J., & El-Wakeel, M. A. (2019). The effectiveness of SCAMPER's strategy for developing creative thinking in the subject of harmony for music education students. *International Journal of Education and Learning Research*, 2(2), 22-40.
- Sugita, H. (2019). The essentials of Tokkatsu. In R. Tsuneyoshi, H. Sugita, K. N. Kusanagi, & F. Takahashi (Eds.), *Tokkatsu: The Japanese educational model of holistic education* (pp. 37-54). World Scientific.
- Tolba, A., Madkour, A., & Abdelhady, W. (2023). Designing a mobile learning environment based on an intelligent virtual agent to deliver Tokkatsu activities and its impact on developing life skills among students in Egyptian-Japanese schools. *Scientific Journal of the Faculty of Specific Education*, 33(1), 295-328. <https://doi.org/10.21608/molag.2023.186844.1159>
- Torrance, E. P. (1974). *The Torrance Tests of Creative Thinking: Norms-technical manual* (Research edition). Personnel Press.
- Tsuneyoshi, R., Sugita, H., Kusanagi, K. N., & Takahashi, F. (2019). *Tokkatsu: The Japanese educational model of holistic education*. World Scientific.
- Ventista, O. M., & Brown, C. (2023). Teachers' professional learning and its impact on students' learning outcomes: Findings from a systematic review. *Social Sciences & Humanities Open*, 8(1), 100565. <https://doi.org/10.1016/j.ssaho.2023.100565>
- Wallas, G. (1926). *The art of thought*. Harcourt, Brace.
- Williams, R. (1972). *The williams creativity assessment battery*. Hodder & Stoughton.
- Zhou, X., Shu, L., Xu, Z., & Padron, Y. (2023). The effect of professional development on in-service STEM teachers' self-efficacy: A meta-analysis of experimental studies. *International Journal of STEM Education*, 10, 37. <https://doi.org/10.1186/s40594-023-00422-x>