

Theatre-Based Teaching Activities to Enhance Artistic Creativity for Science and Technology Students in Chongqing City

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Abstract

Creativity is increasingly recognized as a core competence in higher education, yet conventional teaching often prioritizes logic and technical outcomes over artistic expression and emotional engagement. Grounded in Rhodes' Creativity 4P Theory and informed by flow theory, this study examined the effectiveness of drama-based pedagogy in enhancing creativity among undergraduates. A mixed-methods, single-group pretest-posttest design was adopted. Twenty undergraduate students participated in a two-month intervention comprising ten 90-minute sessions integrating creative drama, color psychology, and flow-oriented learning design. Creativity was measured using the Chinese revised Kaufman Domains of Creativity Scale (K-DOCS-CSV), with qualitative data collected through interviews and reflection records. Results showed that total creativity scores increased significantly from 81.00 (SD = 16.28) to 114.05 (SD = 12.18), $t(19) = 6.21$, $p < .001$. All creativity domains improved significantly, with the greatest gains in artistic creativity and performance-based creative problem solving, while mechanical/technical creativity showed comparatively smaller improvement. Qualitative findings further indicated enhanced embodied expression, stronger flow experiences, greater process-oriented creativity, and reduced resistance to artistic expression. These findings suggest that drama-based pedagogy is an effective and feasible approach for broadening creativity development in education by integrating artistic, emotional, and embodied dimensions into learning.

Keywords: drama-based pedagogy; artistic creativity; higher education; flow experience; arts integration

1. Introduction

Against the backdrop of the global knowledge economy and the rapid acceleration of technological innovation, creativity has been widely recognized as a core competence for driving social innovation and improving the quality of higher education. In particular, the ability to solve complex problems, transfer knowledge across contexts, and engage in innovative design has become a central educational objective. However, existing studies indicate that traditional education remains heavily oriented toward logical reasoning, technical efficiency, and outcome-based assessment. As a result, creative dimensions such as artistic imagination, emotional experience, and embodied perception have long been marginalized, which may constrain the holistic development of students' creativity (Kang, 2019; Smith & Strong, 2018). In response to these limitations, STEAM education has gradually emerged, emphasizing the integration of the arts to reconstruct the cognitive, emotional, and social dimensions. Empirical evidence suggests that STEAM approaches yield more pronounced educational benefits in terms of emotional engagement and creative thinking (Wannapiroon & Pimdee, 2022; Gracia et al., 2024).

From a theoretical perspective, Rhodes' Creativity 4P Theory (1961) provides a useful framework for understanding creativity as a multidimensional construct. According to this theory, creativity consists of four interrelated dimensions: Person, Process, Press, and Product. The Person dimension emphasizes individual characteristics such as emotion, imagination, motivation, and personality; Process refers to the cognitive and behavioral operations involved in creative activity; Press concerns the environmental and social conditions that either support or inhibit creativity; and Product denotes the outcomes or expressions generated through creative engagement. This framework suggests that creativity should not be understood solely as an internal mental ability or a final performance outcome, but as the result of ongoing interactions among learners' personal qualities, creative experiences, contextual support, and expressive outputs. However, instructional practices have often placed disproportionate emphasis on procedural accuracy and measurable outcomes, while giving less attention to the emotional, contextual, and expressive dimensions of creativity highlighted in the 4P model. Among various modes of arts integration, drama-based pedagogy has attracted growing attention due to its strong situational grounding, embodied participation, and social interactivity. Prior research demonstrates that drama and improvisational activities can enhance learners' creative thinking, expressive confidence, and learning motivation through role-taking, collaborative expression, and non-verbal action (Hu & Shu, 2025; Rzyeva, 2025). In higher and professional education contexts, drama-based instruction has also been shown to improve communication skills, emotional awareness, and reflective learning experiences (Gabitova et al., 2018; Johnston & Jafine, 2022). Nevertheless, most of these studies have focused on the humanities, teacher education, or medical and nursing education, where learners typically possess stronger foundations in emotional expression or interpersonal interaction. Systematic empirical research on the application of drama-based pedagogy within student populations remains comparatively limited.

Moreover, Rhodes' Creativity 4P Theory (1961) also provides a valuable framework for explaining why drama-based pedagogy may be especially relevant in education. In many classrooms, students are often accustomed to structured tasks, fixed criteria, and performance-oriented evaluation, which may restrict opportunities for imaginative risk-taking and expressive exploration. From the perspective of the 4P framework, this suggests that creativity in contexts is influenced not only by students' internal characteristics (Person) or the steps involved in creative engagement (Process), but also by the classroom climate, instructional support, and degree of freedom available for experimentation (Press), all of which ultimately shape the originality and diversity of creative outcomes (Product). Therefore, introducing drama-based pedagogy may serve as a way to rebalance these dimensions by creating a more supportive and expressive environment in which students can participate creatively, experiment with meaning, and generate more diverse forms of artistic and imaginative output.

Interpreted through Rhodes' 4P lens, drama-based pedagogy provides a holistic creative ecology for learners. It activates learners' emotion, identity, and imagination (Person); engages them in dynamic, improvisational, and embodied meaning-making (Process); builds an interactive and low-risk classroom atmosphere through collaboration and role-play (Press); and leads to expressive and often multimodal outcomes such as performances, symbolic representations, or creative interpretations (Product). In this sense, drama-based pedagogy is not merely an instructional technique, but a potentially powerful means of reconstructing the conditions under which creativity can emerge and develop. From a learning-mechanism perspective, flow theory provides an important theoretical lens for understanding how drama-based pedagogy may foster creativity. Flow is characterized by a psychological state of deep concentration, diminished self-consciousness, and altered time perception, arising under conditions of balanced challenge and skill, clear goals, and immediate feedback. This state has been widely associated with enhanced creative performance. Research indicates that immersive, improvisational, and collaboration-oriented learning activities are particularly conducive to eliciting flow experiences, thereby supporting learners' creative engagement (Duncan, 2020; Oubibi & Hryshayeva, 2024). In parallel, studies on STEAM and arts integration suggest that externalized mediational tools, such as visual symbols, bodily movement, or artistic materials, can lower the psychological threshold for participation in creative tasks, facilitating emotional expression and cognitive flexibility (Townsend, 2017). However, how drama-based pedagogy can be systematically designed to cultivate flow conditions in educational contexts, and how specific emotional mediators can be employed to support artistic creativity, remains underexplored, particularly through classroom-based empirical research with undergraduate students.

In light of these gaps, the present study moves beyond merely advocating methodological innovation and instead examines the practical effects of drama-based pedagogy within higher education settings. Grounded in Rhodes' Creativity 4P Theory and informed by flow theory, this study seeks to explore how drama-based instructional intervention may support students' creativity by engaging the personal, procedural, environmental, and productive dimensions of creative learning. Specifically, it addresses the following research questions:

- (1) In learning environments traditionally dominated by rational and technical training, can the introduction of drama-based pedagogy significantly enhance students' overall creativity, particularly their artistic creativity?
- (2) During drama-based instruction, does the use of color as a mediator of emotion and meaning help reduce students' psychological resistance to artistic expression while supporting emotional articulation and imaginative generation?
- (3) In authentic classroom contexts, is drama-based pedagogical intervention feasible and positively experienced by students, thereby demonstrating its educational value in education?

2. Methods

2.1 Research Design. This study employed a mixed-methods research design within a single-group pretest-posttest quasi-experimental framework, with undergraduate students at Chongqing University of Technology as the research participants, examining the overall effects of a drama-based pedagogical intervention on the development of artistic creativity among students; the intervention was implemented in an authentic classroom setting, and to systematically analyze the development of students' artistic creativity and the mechanism of the intervention, this study adopted Rhodes' Creativity 4P Theory (1961) as the top-level analytical framework, which decomposes creativity into four interdependent core dimensions, guiding the entire research process by focusing on changes in students' creative personality traits, cognitive abilities and intrinsic motivation (Person), dynamic changes in their creative thinking and behavioral processes during drama-based activities (Process), evaluating the novelty, applicability, and value of their artistic works or creative expressions (Product), and examining the supporting role of

the authentic classroom setting (Press), thus avoiding the one-sidedness of single-dimensional analysis and laying a theoretical and methodological foundation for in-depth exploration of the intervention's effectiveness and underlying mechanisms.

2.2 Participants. Participants were undergraduate students enrolled in programs (science, technology, engineering, and mathematics) at Chongqing University of Technology, primarily in their second and third years of study. According to official university statistics for the 2023–2024 academic year, the total population of this group is approximately 8,000 students. This population was selected because, while students typically demonstrate strengths in logical reasoning and technical analysis, they often have greater potential for development in emotional expression, divergent thinking, and artistic creativity. These characteristics align closely with the study's aim of fostering creativity through arts-based pedagogical approaches.

Participants were recruited using a combination of purposive sampling and voluntary enrollment. Inclusion criteria were enrollment in a undergraduate program at Chongqing University of Technology, voluntary participation, and the ability to complete all instructional activities and data collection procedures. Students from arts-related majors, as well as those with formal performance training or extensive experience in drama clubs, were excluded to minimize the influence of prior artistic experience on the intervention outcomes.

The final sample consisted of 20 students. This sample size met the basic requirements for pretest–posttest statistical analysis and allowed for in-depth classroom observation and qualitative inquiry. Efforts were made to balance gender representation to reduce potential gender-related effects. The final sample included 10 male and 10 female students. Most participants were sophomores or juniors, aged between 18 and 22 years, and represented a range of disciplines (see Table 1). Following the intervention, eight participants were selected for semi-structured interviews. Interviewees were chosen using a maximum variation sampling strategy based on pretest creativity levels, gender, disciplinary background, and observed classroom engagement. This approach ensured the inclusion of diverse learning experiences and perspectives. All interview participants completed the full intervention and questionnaire assessments.

Table 1. Demographic characteristics of participants (N = 20)

Variable	Category	n	%
Gender	Male	10	50
	Female	10	50
Year of study	Sophomore	11	55
	Junior	9	45
Age (years)	18	2	10
	19	6	30
	20	7	35
	21	4	20
	22	1	5
Major	Pharmacy	2	10
	Accounting	2	10
	Industrial Engineering	1	5
	Industrial Design	1	5
	Vehicle Engineering	1	5
	Intelligent Vehicle Engineering	1	5
	Chemical Engineering and Technology	1	5
	Chemistry	1	5
	Electrical Engineering	1	5
	Internet of Things Engineering	1	5
	Material Forming and Control Engineering	1	5
	Applied Statistics	1	5
	Business Administration	1	5
	Human Resource Management	1	5
	Tourism Management	1	5
	E-commerce	1	5
	Pharmaceutical Biology	1	5
Biopharmaceuticals	1	5	

2.3 Intervention

This study implemented a drama-based pedagogical intervention grounded in creative drama as the primary instructional approach. Visual arts elements, particularly principles from color psychology (Roohi & Forouzandeh, 2019), were integrated, and flow theory served as the overarching theoretical framework for instructional design (Beard, 2015). Through dramatic improvisation, role enactment, and collaborative expression, the intervention aimed to support students in developing imagination and expressive capacity within classroom contexts, with a specific focus on dimensions of artistic creativity. Color was employed as a mediating tool for emotion and meaning to reduce students' psychological barriers to engaging in dramatic expression.

The intervention spanned two months and consisted of ten classroom sessions, each lasting 90 minutes. All sessions were conducted during regular class hours, and no extracurricular assignments were required. Instruction was delivered consistently by researchers with formal training in drama pedagogy who were also involved in the study design. The instructional content was organized according to a progressive sequence, moving from introductory activities to more complex forms of engagement, including emotional activation, embodied expression, group co-creation, and thematic performance.

The learning objectives, core activities, and key design features of each session, as informed by flow theory, creative drama, and color psychology, are summarized in Table 2. Throughout the intervention, task difficulty and instructional pacing were dynamically adjusted in accordance with flow principles. Clear goals and immediate feedback were emphasized to sustain student engagement, while maintaining a classroom environment that was both psychologically safe and socially acceptable. This structured and consistent implementation provided a stable foundation for subsequent quantitative and qualitative analyses.

Table 2. Overview of drama-based intervention activities and key design elements

Session	Activity title	Core instructional focus	Flow design features	Creative drama focus	Role of color psychology
1	Sound awakening: Ritualized sound and embodied characters	Ritualized sound guidance and bodily imitation	Focused attention; reduced self-consciousness	Imitation and ritualized embodied experience	Establishing links among color, emotion, and bodily sensation
2	Between stillness and movement: Mindful activation and group sculpture	Transformation from static forms to dynamic movement	Gradual balance between challenge and skill	Freeze–expand bodily narration	Color as a parameter regulating movement rhythm
3	Emotional color palette: Color-driven ensemble drama	Collective creation of visual compositions	Group flow and action integration	Non-verbal drama and spatial relationships	Color shaping emotion and spatial hierarchy
4	One line, many meanings: Emotional spectrum and dyadic improvisation	Improvised dialogue with emotional shifts	Cognitive disruption eliciting intuitive responses	“Yes, and...” principle of collaborative improvisation	Color facilitating rapid emotional transitions
5	Four-color drama: Narrative elements and color coding	Autonomous creation of short dramatic scenes	Structured constraints enabling creativity	Micro-narratives and concise expression	Color subtly guiding thematic conflict
6	Narratives of objects: Props, color, and improvisation	Emotional projection onto objects	Interruption and recovery of flow states	Anthropomorphic object-based storytelling	Color as an immediate emotional regulator
7	Color resonance field: Collective improvisational action	Collaborative role interaction	Clear goals and immediate feedback	Co-presence of roles and subtle embodied communication	Breathing-based internalization of color–emotion links
8	Final call: Performance planning and role incubation	Establishment of a public performance goal	Long-term goals enhancing intrinsic motivation	Transformation of personal experience into shared narratives	Color marking roles and emotional trajectories
9	Weaving the network: Integrated group rehearsal	Collective rehearsal and coordination	Group synchrony fostering collective flow	Process-oriented, open dramatic structure	Lighting color directing emotional progression
10	The legacy of sound: Ritualized collective performance	Final non-verbal ensemble performance	Peak experience and group resonance	Drama as a medium for social empathy	Color functioning as a transpersonal emotional language

2.4 Research Instruments

2.4.1 Kaufman Domains of Creativity Scale (K-DOCS-CSV)

This study employed the Chinese revised version of the Kaufman Domains of Creativity Scale (K-DOCS-CSV) to assess students' creativity across multiple domains (Zhang et al., 2023; Jiang, 2018). The K-DOCS-CSV is a self-report questionnaire consisting of 29 items rated on a five-point Likert scale, yielding a total score ranging from 29 to 145. It measures five dimensions of creativity: Self/Everyday, Scholarly, Artistic, Mechanical/Scientific, and Performance/Creative Problem Solving. Among these, the Artistic Creativity dimension is closely aligned with the present study's focus on imagination and expressive ability.

Previous research has demonstrated that the K-DOCS-CSV exhibits strong psychometric properties in samples of Chinese university students. Reported internal consistency is high for the overall scale (Cronbach's $\alpha = 0.898$), with subscale α coefficients ranging from 0.737 to 0.839, and test-retest reliability reaching 0.993. These findings support the suitability of the scale for assessing creativity in the current research context. In the present study, both total scores and subscale scores were analyzed to examine changes in creativity before and after the intervention.

2.4.2 Semi-Structured Interview Guide

A self-developed semi-structured interview guide was used to explore students' perceived mechanisms underlying changes in artistic creativity during the drama-based intervention. The guide was informed by flow theory, creative drama, and color psychology and consisted of nine open-ended questions (see Appendix A). The questions focused on changes in students' understanding of creativity, experiences during drama activities, development of imagination and expressive ability, the role of color in emotional expression, immersive experiences, and perceived connections to interdisciplinary learning. Interview questions were anchored in specific classroom activities and encouraged participants to reflect on their personal experiences, thereby enriching the interpretation of quantitative results.

2.5 Data Collection

Data collection was conducted across two phases: before and after the intervention. The K-DOCS-CSV was administered as a pretest one week prior to the intervention and as a posttest within one week after its completion. All questionnaires were completed anonymously.

Qualitative data were collected after the intervention and included semi-structured interviews, students' classroom reflection notes, and researchers' instructional reflection logs. Interviews were conducted with informed consent and audio-recorded for transcription. Reflection materials and classroom records were used to document students' process-oriented experiences. The use of multiple data sources provided a basis for triangulation in subsequent analyses (Lauri, 2011).

2.6 Data Analysis

Quantitative data were analyzed using SPSS. Descriptive statistics were first calculated to summarize the distribution of creativity scores before and after the intervention. Given the relatively small sample size, intervention effects were primarily examined through paired pretest-posttest comparisons. Changes in both the total K-DOCS-CSV score and subscale scores were analyzed to evaluate the impact of the drama-based intervention on students' creativity. The level of statistical significance was set at $p < .05$.

Qualitative data were analyzed using thematic analysis (Terry et al., 2017). Interview transcripts, students' reflection notes, and researchers' instructional reflections were analyzed collectively. The analysis followed an inductive, bottom-up coding approach, beginning with initial coding and progressing toward the identification of themes through constant comparison and iterative refinement. To enhance the credibility of the findings, data from different qualitative sources were cross-checked during analysis to confirm the consistency and stability of the emergent themes.

3. Results

3.1 Quantitative Results

To examine the effect of the theatre-based teaching intervention, paired-samples t tests were conducted on the pre- and post-test scores of the K-DOCS-CSV. The results indicated that the total creativity score increased significantly after the intervention, rising from a pre-test mean of 81.00 (SD = 16.28) to a post-test mean of 114.05 (SD = 12.18), $t(19) = 6.21$, $p < .001$, demonstrating a substantial overall improvement in creativity following the intervention (see Table 3).

Table 3

Pre-Post Comparison of K-DOCS-CSV Scores (N = 20)

Domain	Pre-test (M ± SD)	Post-test (M ± SD)	Mean Difference	t	df	Cohen's d	p
Total Creativity	81.00 ± 16.28	114.05 ± 12.18	33.05	6.21	19	1.39	< .001
Self/Everyday Creativity	3.03 ± 0.60	4.06 ± 0.49	1.03	5.83	19	1.3	< .001
Scholarly Creativity	2.79 ± 0.60	3.81 ± 0.57	1.02	4.22	19	0.94	< .001
Artistic Creativity	2.81 ± 0.63	4.14 ± 0.45	1.33	7.75	19	1.73	< .001
Mechanical/Technical Creativity	2.38 ± 1.07	3.40 ± 1.09	1.02	2.51	19	0.56	< .001
Performance-Based / Creative Problem Solving	2.89 ± 0.58	4.00 ± 0.49	1.11	6.66	19	1.49	< .001

Note. Paired-samples t tests were conducted. $p < .05$ indicates statistical significance.

At the domain level, all five creativity dimensions showed statistically significant increases after the intervention (all $p < .001$). Artistic creativity exhibited the largest gain, with the mean score increasing from 2.81 (SD = 0.63) to 4.14 (SD = 0.45), $t(19) = 7.75$, indicating a strong intervention effect. Performance-based/creative problem-solving creativity also showed a marked improvement, increasing from 2.89 (SD = 0.58) to 4.00 (SD = 0.49), $t(19) = 6.66$. Self/everyday creativity increased from 3.03 (SD = 0.60) to 4.06 (SD = 0.49), $t(19) = 5.83$, while scholarly creativity rose from 2.79 (SD = 0.60) to 3.81 (SD = 0.57), $t(19) = 4.22$.

In contrast, mechanical/technical creativity showed a relatively smaller increase, with mean scores rising from 2.38 (SD = 1.07) to 3.40 (SD = 1.09), $t(19) = 2.51$, although this change remained statistically significant. Overall, the intervention demonstrated stronger effects on creativity dimensions related to imagination, expression, and situational responsiveness.

3.2 Qualitative Results

Based on semi-structured interviews with eight students who completed the full intervention, a thematic analysis was conducted. Five interrelated themes were identified, reflecting students' experiences of the drama-based teaching intervention in terms of creativity conceptions, expressive modes, and learning experiences. Representative excerpts are presented below to illustrate each theme.

Theme 1: A Shift in Creativity Conceptions from Outcome Orientation to Process Immersion

Interview data indicated that, prior to the intervention, students tended to conceptualize creativity as an outcome-oriented ability, emphasizing tangible products, novelty, and practical value. After the intervention, most participants described a broader understanding of creativity that foregrounded process, organization, and expression.

"Before, I thought creativity was mainly about producing something new that others couldn't think of. After these activities, I realized creativity is also about how ideas are organized and expressed in the process." (Participant 3)

"Creativity is more reflected in how you organize and express ideas, not just in the final result." (Participant 4)

Theme 2: Flow Experience as a Supportive Condition for Creative Engagement

Many participants reported experiences of deep engagement during the activities, characterized by heightened concentration, reduced awareness of time, and diminished self-consciousness. These experiences most frequently occurred during improvisational and group-based tasks.

"During group improvisation, I felt completely focused and forgot about time." (Participant 1)

"When everyone was working together, I didn't think about whether I was doing it right or wrong." (Participant 8)

Theme 3: Color as a Functional Scaffold for Emotional Expression

Color was consistently identified as an effective tool for facilitating emotional expression. Participants perceived color as providing a concrete reference for abstract or ambiguous emotions, thereby lowering the psychological threshold for expression.

"When emotions were connected to colors, it became much easier to express them." (Participant 2)

"Using color gave me a starting point, even when I didn't know how to explain my feelings." (Participant 7)

Theme 4: A Transition from Rational Control to Embodied Expression

Most students described a shift from logic- and language-centered modes of expression toward emotion-driven, embodied action. The body was increasingly perceived as an independent and effective expressive medium.

"As a student, I'm used to thinking logically, but in drama I learned to let emotions drive the actions instead of planning everything rationally." (Participant 4)

"Expressing things through movement felt more real than just talking." (Participant 5)

Theme 5: The Complementary Value of Artistic Experience for Learning and Personal Development

Several participants further reflected on how the artistic experience complemented their learning and personal development. Reported effects included greater cognitive flexibility, enhanced interpersonal understanding, and emotional release.

"Arts education makes my thinking more flexible and less confined to rigid rules." (Participant 5)

"I felt more relaxed, as if a stone in my heart was moved away." (Participant 3)

4. Discussion

This study systematically examined the mechanisms through which a two-month drama-based pedagogical intervention influenced the development of artistic creativity among undergraduate students. Quantitative findings indicated a significant post-intervention increase in overall creativity, with all creativity domains showing statistically significant gains. The most pronounced improvements were observed in artistic creativity and performance/creative problem-solving, whereas gains in mechanical/technical creativity were comparatively modest. Qualitative findings further revealed structural changes in students' understanding of creativity, modes of expression, learning experiences, and emotional states. These changes were characterized by a shift from outcome-oriented to process-oriented learning, from rational control to embodied expression, and toward greater psychological openness under conditions of high engagement. Collectively, the results suggest that drama-based pedagogy not only activates students' artistic creative potential but also reshapes the internal structure of their creativity.

At the level of overall effectiveness, the findings align closely with prior research demonstrating the positive effects of drama- and performance-based learning on creativity and learner engagement. Existing studies have shown that participatory, contextualized, and embodied instructional approaches can enhance creative performance, self-efficacy, and learning motivation (Toivanen et al., 2011; Dussault, 2020). Unlike most previous work, which has focused on teacher education, the humanities, or language learning contexts, the present study introduced drama-based pedagogy into a student population traditionally oriented toward logical and technical training. By demonstrating significant gains in artistic creativity within authentic classroom settings, this study extends the applicability of drama-based education to new learner groups and responds to recent calls within STEAM education to address the relative neglect of emotional and creative dimensions in learning through arts integration (Wannapiroon & Pimdee, 2022).

A key explanatory mechanism emerging from the qualitative data is the recurring experience of flow. Students frequently reported heightened concentration, diminished awareness of time, and reduced self-consciousness during improvisational, collaborative, and non-verbal activities. These experiences closely correspond to core assumptions of flow theory, particularly the balance between challenge and skill and the presence of immediate feedback. Prior research has shown that immersive and performative activities can create low-judgment, high-engagement environments that support creative risk-taking and intuitive responses (Grewe et al., 2015; Athimoolam, 2018). The distinctive contribution of this study lies in its use of sequential and progressively structured drama tasks, which enabled the establishment of sustained flow experiences among students rather than isolated novelty effects. This continuity appears to have provided stable psychological conditions conducive to creative development.

In addition, the integration of color psychology as an emotional scaffold represents a key innovation of the present study. Students consistently described color as an "operational entry point" for emotion, helping to reduce uncertainty and psychological resistance associated with emotional expression. This finding resonates with perspectives from art therapy and arts education that emphasize the role of externalized mediational tools in facilitating emotional expression, although such approaches remain relatively uncommon in integrated research (Sanders et al., 2023). Compared with drama-based instruction that relies solely on language or spontaneous improvisation, color functioned as a transitional tool in this intervention, enabling students to bridge rational cognition and emotional experience. This mediating role may also help explain why gains in artistic creativity were substantially greater than those observed in mechanical or technical creativity.

Despite these consistent and encouraging findings, several limitations should be acknowledged. First, the small sample size and the single-group pretest-posttest design constrain the external validity of causal inferences. Future studies could address this limitation by increasing sample size, incorporating control groups, or adopting multi-site designs. Second, creativity assessment relied primarily on self-report measures. Although these instruments demonstrated strong reliability and validity, they may still be susceptible to social desirability bias. Subsequent research could strengthen measurement by incorporating product-based evaluations or behavioral indicators of creativity. Finally, the relatively concentrated intervention period precludes conclusions about the long-term sustainability of the observed creativity gains. Longitudinal follow-up studies or the integration of drama-based pedagogy into regular curricula would help to evaluate the durability and transferability of its educational effects.

5. Conclusion

This study demonstrates that drama-based pedagogy can effectively enhance artistic creativity among undergraduate students. Following a two-month intervention integrating creative drama, color psychology, and flow-oriented instructional design, students showed significant gains in overall creativity, with the strongest improvements in artistic creativity and performance-based creative problem solving. These results suggest that creativity development in education can extend beyond technical domains through embodied and expressive learning experiences.

The findings highlight two key mechanisms. First, sustained flow experiences supported deep engagement and creative risk-taking. Second, color functioned as a practical emotional scaffold that reduced resistance to artistic expression and facilitated the transition from rational control to embodied and affective exploration. Together, these elements contributed to a shift from outcome-focused to process-oriented conceptions of creativity.

Overall, the study shows that drama-based teaching can be feasibly implemented in classrooms and positively experienced by students. By integrating artistic and emotional dimensions into learning, such approaches offer a practical way to broaden creativity development and support more balanced forms of higher education.

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