The Role of Drama Participation in the Development of Creative Imagination Capabilities

Dinesh Goyal[1], Dr. Anil Sharma[2], Kanika Seth[3], Dr. Rama Singh[4], Prem Colaco[5], Lakshay Bareja[6], Dr. Sagar Gulati[7]

[1]Quantum University Research Center, Quantum University, India. dinesh.ca@quantumeducation.in

[2]Academic Head, Parul Institute of Management and Research-MBA, Parul University, Vadodara, Gujarat, India, Email Id- anil.sharma29469@paruluniversity.ac.in

[3]Chitkara Centre for Research and Development, Chitkara University, Himachal Pradesh-174103 India, kanika.seth.orp@chitkara.edu.in

[4]Assistant Professor, Department of Commerce, ARKA JAIN University, Jharkhand, India, Email Id- dr.rama@arkajainuniversity.ac.in

[5]Assistant Professor, Department of ISME, ATLAS SkillTech University, Mumbai, Maharashtra, India, Email Id- prem.colaco@atlasuniversity.edu.in

[6]Centre of Research Impact and Outcome, Chitkara University, Rajpura- 140417, Punjab, India, lakshay.bareja.orp@chitkara.edu.in

[7]Director, Department of Computer Science and Information Technology, Jain (Deemed to be University), bangabre, Karnataka, India, sagar.gulati@jainuniversity.ac.in

Abstracts

In an era where creativity drives innovation and problem-solving, creating imaginative skills is more crucial than ever. Drama, a dynamic art form involving role-play and improvisation, offers a unique opportunity to support creative imagination. However, the specific impact of drama on enhancing imaginative capabilities has not been extensively explored. This research explores the transformative potential of drama participation on creative imagination. It seeks to uncover how involvement in drama activities can dynamically enhance creative thinking and problem-solving skills. While drama is often used to foster creativity, there is a lack of clear evidence demonstrating how and to what extent drama participation affects creative imagination capabilities. The study involved 120 middle school students (ages 11-14), split into experimental (drama program) and control groups. Pre- and post-tests, such as the Torrance Tests of Creative Thinking (TTCT) measure, were utilised to evaluate the level of creativity. Chi-square tests, independent sample t-tests, and paired sample t-tests were among the statistical analyses used. The study revealed significant improvements in creativity for students participating in the drama program. Specifically, 7th graders showed the most significant increase in creativity scores, indicating a substantial effect. Engaging in drama activities can be a valuable strategy for enhancing creativity and should be considered in educational and developmental programs. Further research could explore long-term effects and the impact on

different age groups.

Keywords: CreativeImagination, drama participants, Problem-solving skills, Role play, Improvisation.

Introduction

Creative imagination is one of the important parts of human growth that boosts thinking capability and problem-solving [2]. It is the capacity to make innovation and creativity from the existing stock of knowledge and information. In the rapidly changing world of the 21st century, the encouragement of creative imagination is more crucial, as people's creative ideas contribute to the advancements in different spheres of human activity, such as art, science, and technology [13]. Theatrical performance exercise is among the activities that can play a great role in the enhancement of creative imagination [14]. Drama helps people learn how to think, feel, and act in a variety of roles in specific contexts [16]. It enables people to become unique and interested in various circumstances, which extends the brain's creative muscles and fosters the development of problem-solving skills. Drama enhances aspects such as the ability to act based on impulse, the freedom to express one's choices, and the ability to understand others, all of which are elements of creativity [6]. How role-playing and theatrical exercises helped students think creatively, play pretend, and develop a range of perspectives. The process of adopting many personas and experiences enhances understanding of various narratives and inspires creative performance [11]. Drama is a dynamic activity, which makes it a good area for the exercise and growth of creative imagination. The study's aim is to determine how participation in drama program improves creative imagination skills. It investigates the relationship between enhanced creativity and participation in drama.

Related article

With the use of relational space, the study [3] aimed to provide a theoretical framework for digital design that could support children's growth in Science, Technology, Engineering, and Mathematics (STEM) concept generation. The article proposed a design philosophy that transcends the binary of digital and non-digital.

The article [15] examined a project that blended maker space and theatrical activities. Documentation of props, interviews, observations, field notes, and video recordings were all used. Thematic coding and analysis based on activity theory were used, the findings demonstrated that some girls acquired 21st-century abilities and developed interests in science and technology, including creativity, problem-solving, and teamwork. In maker space projects, the research highlighted the importance of including plays.

In both science majors and non-majors, the study [10] investigated the effects of creative performing arts on attitudes towards science, future interest, and contextual curiosity. They answered the pre-tests for the "Test of Science-Related Attitudes" and the "Individual Interest Questionnaires". The study revealed a considerable improvement in the career interests and

attitudes of science majors. Furthermore, some students' perspectives of scientific and scientific-related jobs changed after participating in the task.

The author [12] employed a combination of methods to examine the correlation among pre-schoolers' involvement in dramatic activities and classroom expectations. The Preschool Contextual Assessment Scale - Revised was used to assess each classroom's quality. The results showed that children's dramatic play and academic success were positively correlated.

The aim of the research [1] was to ascertain if the involvement of young individuals in drama, specifically their continuous involvement, significantly influences their capacity for creativity and emotional intelligence. The age range of the 222 young people in the research sample was 13 to 21. The findings were examined in context with the potential advantages of participating in theatrical activities for young people's skill development at a crucial and demanding time in their lives.

The purpose of the article [4] was to investigate a theoretical foundation for future study on the interpretation of children's play as creative expression, as well as to explain the relationship between play and creativity. The article attempted to describe the play as a process and a goal in itself by using the idea of the four stages of the creative process as a basis. The statement implied that a play might combine "humour with action," resulting in a creative and humorous ending.

The vast amount of study on child-led or non-digital situations utilized in the article [8] examined how kids played in digital environments. It explored the characteristics of children's play and the elements influencing it by combining qualitative and quantitative research approaches. The findings show that children seek particular social-technical arrangements as restricting their capacity to engage in agency-building play in digital settings and freely develop their identities.

The research [5] investigated the relationship between kids' play, imagination, and linguistic skills. Overall, 151 children from middle-class European American households participated in the study: 75 girls and 76 boys. Among those were the receptive and expressive language tasks for the Test of Early Language Development, Third Edition (TELD-3), developing up with an original tale using materials, and writing a description of their artwork while finishing the adequate Harris Draw a Person activities. According to these findings, play, language, and creativity were all related, and children might benefit greatly from having these skills and abilities for learning and development.

Integrative Drama-Inquiry Learning (IDI) was the subject of the article [7]. It was a quasi-experimental study design that used a variety of methods to determine the impact of IDI on middle school students' performance in a biology unit. IDI combined drama-based education with inquiry-based learning. The investigation confirmed the self-determination theory's assertion that learners' motivation was positively influenced by the fulfilment of psychological needs connected to competency, relatedness, and autonomy.

The purpose of the article [9] was to identify (a) how kindergarten children's social orientations related to their assessed fluency, imagination, originality, and creative thinking skills; and (b) how kids' participation orientations happened about their peers and teacher. The Think Creatively in Actions and Movement (TCAM) evaluation and the Reunamo child interaction

instrument provided the original data sources. According to the results, creative thinking abilities were strongly associated with a participative attitude, even if it was rare in adult social circumstances.

Theoretical framework

The theoretical framework of this study examines how different performance activities contribute to the enhancement of creative imagination skills. It should be noted that the focus is on showing how certain elements of drama, including theatrical exercises, are associated with divergent thinking, perspective-taking, as well as emotional expression. This model integrates psychological viewpoints and behavioural theories to show how drama might stimulate the parts of the brain that are associated with creativity.

Creative Thinking

Creativity connotes the capacity to produce new ideas, approaches, visions, viewpoints, or techniques for problems. It is characterized by several key elements:

- Divergent Thinking: The method of thinking of several possible ideas or solutions.
- Perspective-Taking: working from different angles.
- Emotional Expression: Expression and regulation of feelings.

Role of Drama Activities

Dramatic activities such as storytelling, improvisation, and role-playing, are hypothesized to foster creative imagination through numerous mechanisms: Dramatic exercises, such as improvisation, storytelling, and role-playing, are hypothesized to foster creative imagination through various mechanisms:

- Role-playing: Improves perspective and cognition flexibility by actors playing different characters and adopting different roles.
- Improvisation: Encourages creative thinking and emotional communication via improvisation and adaptability.
- Story Telling: Develops narratives by creating a storyline with ideas and emotions, which improves both creativity and empathy.

Neural and Cognitive Mechanism

- Brain Mechanism: Involves parts of the brain such as the prefrontal cortex, which deals with planning and the limbic system, which deals with feelings emotions and creativity.
- Cognitive Flexibility: Enhances cognitive integration and plasticity to enhance problem-solving and stress management.

- Integration: Drama engages neural connections about creativity, has a positive impact on emotional and cognitive development, and helps nurture creative imagination by incorporating movement and speech into the learning process.

Methodology

Participants and Procedure

In this study, 120 students from three middle schools with comparable socioeconomic origins were split evenly into three age groups (11 to 14 years old). There were 40 students in each of the three grades: 6th grade (11-12), 7th grade (12-13), and 8th grade (13-14). Participants in each age group were split into two equal-sized sub-groups.

- The experimental group (students who received drama program) and
- Control group (Students that did not receive drama program).

Initially, all students take a pre-test to measure their levels of creative imagination, assessing divergent thinking, perspective-taking, and emotional expression. The experimental group then engages in a drama program, which consists of 3-hour weekly sessions over 3 months, featuring role-playing, improvisation, and storytelling. The control group continues with their usual school activities without drama involvement. At the end of the 3 months, both groups take a post-test, which is the same as the pre-test, to measure any changes in creative imagination. The results are analyzed to determine the impact of the drama program by contrasting both the experiment and control groups' pre- and post-test results. The Torrance Tests of Creative Thinking (TTCT) measure creative thinking by evaluating divergent thinking through tasks that require generating a range of ideas, perspective-taking by assessing the ability to view problems from multiple angles, and emotional expression by analyzing the depth and richness of emotional responses. These elements collectively capture the essence of creativity, including the generation of novel ideas, flexibility in thinking, and the expression of feelings.

Statistical Analysis

By comparing the pre-test and post-test outcomes of students in a drama school to those of students in a non-dramatic program, the study examines increases in creativity. Using independent sample, chi-square, and paired sample t-tests, it assesses changes in creativity levels across different age groups to determine the effectiveness of drama activities in enhancing creative skills.

Result

Paired sample T-test

The T-test for paired samples is a statistical technique that is employed to determine the statistically significant value of the average variance among two related groups. The test also compares the creative imagination levels before and after the students join the drama program to

ascertain if there is a significant improvement in the program. Table I and Fig 1 show experimental groups of students who received drama activities.

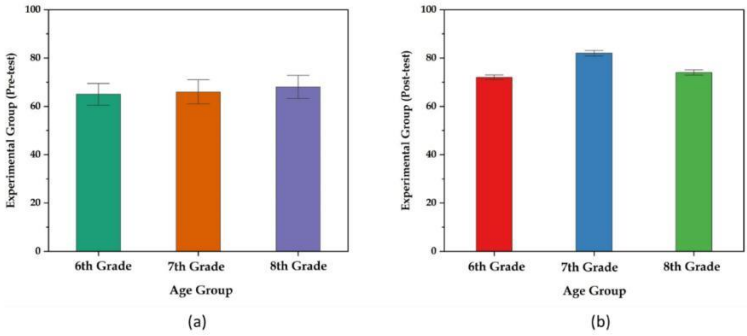

Fig 1 Outcome of Paired T-test for (a) Pre and (b) Post-test in EG (with drama programs) (mean ± SD)

Table I Findings of the EG pre- and post-tests (with drama programs)

Age Group (Grade)	Mean Score Pre-Test	Mean Score Post-Test	Standard Error (SE)	Mean Difference	Standard Deviation (SD)	t-Value	p-Value
6th Grade	65	72	1.01	7	4.5	6.93	0.0001
7th Grade	66	82	1.12	16	5	14.29	0.001
8th Grade	68	74	1.07	6	4.8	5.61	0.0002

The table above also shows that following their treatment and intervention, students in the experimental group had elevated TTCT scores. In the case of 6th graders, the mean raised from 65 to 72 with a mean difference of 7, and ($t-value = 6.93$, $p-value = 0.0001$). There was also a significant improvement across all the grades; with 7th graders performing the highest increase from 66 to 82, ($t-value = 14.29$, $p < 0.001$). The 8th graders' scores were from 68 to 74, mean difference of 6 ($t-value = 5.61$, $p-value = 0.0002$). This means that the drama program had positively impacted creativity among students, particularly among the 7th graders. Table II and Fig 2 show the experimental groups of students who participate in drama activities.

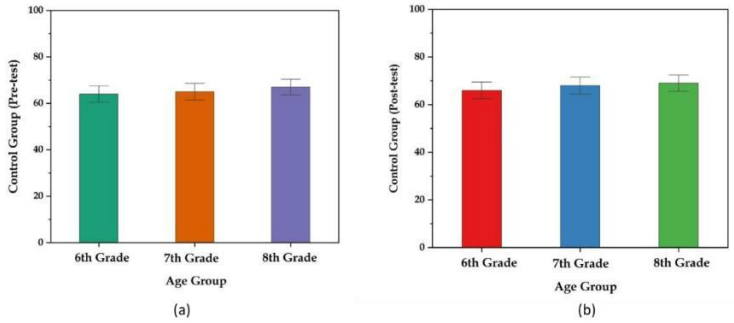

Fig 2 Outcome of Paired T-test for (a) Pre and (b) Post-test in CG (without drama programs) (mean ± SD)

Table II Findings of the CG Pre- and Post-tests (without drama programs)

Age Group (Grade)	Mean Score Pre-Test	Mean Score Post-Test	Standard Error (SE)	Mean Difference	Standard Deviation (SD)	t-Value	p-Value
6th Grade	64	66	0.78	2	3.5	2.56	0.015
7th Grade	65	68	0.8	3	3.6	3.75	0.002
8th Grade	67	69	0.76	2	3.4	2.63	0.014

Table II presents the outcomes of the control group, students who did not perform in the drama program. For 6th graders, the results showed that the mean score was from 64 to 66 with a mean difference of 2 ($t-value = 2.56$, $p = 0.015$) 7th graders' scores from 65 to 68, a mean difference of 3 ($t-value = 3.75$, $p = 0.002$). Scores of 8th graders improved from 67 to 69 with a slight mean difference of 2 ($t-value = 2.63$, $p = 0.014$) thus implying a slight significant change. While some positive changes are observed in the results of the control group, they are less significant compared to those of the experimental group, pointing out the minimal effect of factors outside the drama program on creative thinking.

Chi-square test

The significance of the relationship between two or more nominal scale variables can be evaluated using the chi-square test, a statistical method according to the analysis of the difference between the predicted and observed frequencies. The proportion of the students' creative levels who participated in the dramatic program and those who did not are compared. Based on the data, there are 30 students in the experimental group categorized as having high creativity, while only 5 students in the control group participating in drama can improve creativity and imagination. This difference underscores the possible effect of drama programs on the enhancement of creative thinking among students. The chi-square table is presented in the table below in Table III.

Table III Result of Chi-square test

Creativity Level	Experimental Group (Drama)	Control Group (No Drama)	Total
Low Creativity	10	30	40
Moderate Creativity	20	35	55
High Creativity	30	5	35
Total	60	60	120

Independent sample T-test

An independent sample T-test examines the statistics of two distinct sets to see whether they differ significantly from each other. In examining the role of drama participation in the development of creative imagination capabilities, the data reveals that students who participated in the drama program showed varying levels of improvement in creativity across different age groups. Table IV and Fig 3 illustrate the result of the experimental group with students who received drama activities.

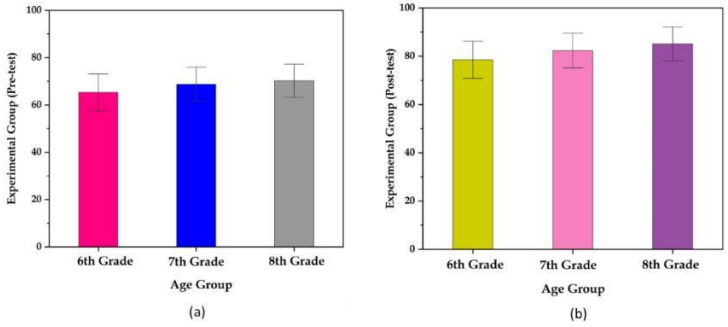

Fig 3 Outcome of Independent T-test for (a) Pre and (b) Post-test in EG (with drama programs) (mean ± SD)

Table IV Findings of the EG pre- and post-tests (with drama programs)

Age (Grade)	Group	Mean Score Pre-Test	Mean Score Post-Test	SD (Difference)	Sample Size (n)	t-value	p-value
6th Grade		65.3	78.5	7.8	20	1.85	0.075
7th Grade		68.7	82.3	7.2	20	2.95	0.002
8th Grade		70.2	85.1	7	20	1.75	0.095

The data reveals that drama participation 7th grade student has significantly high creativity in 12-13-year-old group, the mean score from 68.7 to 82.3 with mean different 7.2 ($t-value = 2.95$, $p-value = 0.002$). This significant improvement is not observed in the 11-12-year-old group, the mean score from 65.3 to 78.5 with mean different 7.8 ($t-value = 1.85$, $p-value = 0.075$), possibly due to less impact at this age. The 13-14-year-old group, the mean score from 70.2 to 85.1 with mean different 7 ($t-value = 1.75$, $p-value = 0.095$) shows improvement,

but it is not significant, suggesting that drama may be less effective as creative abilities mature. Table IV and Fig 4 illustrate the result of the control group with students who did not receive drama activities.

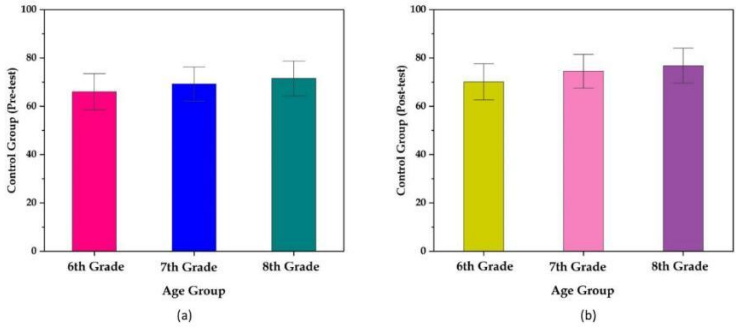

Fig 4 Outcome of Independent T-test for (a) Pre and (b) Post-test in CG (without drama programs) (mean ± SD)

Table V Findings from the CG Pre- and Post-tests (without drama programs)

Age Group (Grade)	Mean Score Pre-Test	Mean Score Post-Test	SD (Difference)	Sample Size (n)	t −value	p-value
6th Grade	66	70.1	7.5	20	1.85	0.075
7th Grade	69.2	74.5	7	20	2.95	0.025
8th Grade	71.5	76.8	7.2	20	1.75	0.095

Table V presents pre-and post-test scores for creativity across three age groups in the control group (no drama program). For the 11-12-year-old group, the mean score rose from 66 to 70.1, with a $t-value = 1.85$ and $p-value = 0.075$, indicating a marginally non-significant improvement. The 12-13-year-old group saw a mean increase from 69.2 to 74.5, achieving a significant result with a $t-value = 2.95$ and a $p-value = 0.025$. The 13-14-year-old group experienced a mean rise from 71.5 to 76.8, but with a $t-value = 1.75$ and a $p-value = 0.095$, the change was not statistically significant.

Discussion

The paired sample T-test reveals that students participating in the drama program showed significant improvements in creativity scores. For the experimental group, 6th graders' scores increased from 65 to 72 (mean difference = 7, $p = 0.0001$), 7th graders showed the largest increase from 66 to 82 (mean difference = 16, $p < 0.001$), and 8th graders' scores rose from 68 to 74 (mean difference = 6, $p = 0.0002$). This indicates a substantial enhancement in creativity due to the drama program, with the most pronounced effect on 7th graders. Conversely, the

control group, which did not receive drama activities, had smaller improvements: 6th graders' scores went from 64 to 66 (mean difference = 2, $p = 0.015$), 7th graders' scores increased from 65 to 68 (mean difference = 3, $p = 0.002$), and 8th graders' scores rose from 67 to 69 (mean difference = 2, $p = 0.014$). The chi-square test further demonstrates the effectiveness of the drama program, showing more students in the experimental group (30) with high creativity compared to the control group (5). The independent sample T-test confirms significant improvement in creativity for the 12-13-year-old group ($p = 0.002$), while the 11-12 and 13-14-year-old groups showed less significant changes.

Conclusion

Consequently, the study shows that drama activities play a crucial role in developing creativity among middle school learners. The largest statistically significant change was found for the 7th graders who demonstrated the most significant improvement in scores on creativity. Students in the seventh grade demonstrated the most significant advancement in creativity, demonstrating a remarkable impact. This result suggests a very highly significant effect of the drama program on their creative imagination. Similar changes were also evidenced in other age groups, although the greatest and most dynamic changes were observed in the 7th graders. These findings suggest that drama should be incorporated into educational systems as a powerful technique for enhancing people's thinking ability and problem-solving skills. There is a limitation in the sample group to an age range, meaning it may not be universally applicable across all learning environments. Further studies should address the question about the lasting effects of drama on creativity and include participants of different age groups to analyse the efficiency of the program at different stages of development.

WORKS CITED

Alfonso-Benlliure, V., Teruel, T.M., & Fields, D.L. “Is it true that young drama practitioners are more creative and have a higher emotional intelligence?” Thinking Skills and Creativity, 39, 100788, 2021.

Benedek, M., Beaty, R.E., Schacter, D.L., & Kenett, Y.N. “The role of memory in creative ideation.” Nature Reviews Psychology, 2(4), 246-257, 2023.

Fleer, M. “Conceptual playworlds: The role of imagination in play and learning.” Early Years, 41(4), 353-364, 2021.

Hammershøj, L.G. “Creativity in children as play and humour: Indicators of affective processes of creativity.” Thinking Skills and Creativity, 39, 100784, 2021.

Holmes, R.M., Kohm, K., Genise, S., Koolidge, L., Mendelson, D., Romeo, L., & Bant, C. “Is there a connection between children’s language skills, creativity, and play?” Early Child Development and Care, 192(8), 1178-1189, 2022.

Koç, N., & Sungurtekin, Ş. “Promoting preschool children's social-emotional learning skills through creative drama integrated music activities.” International Online Journal of Primary Education, 12(3), 210-227, 2023.

Kolovou, M., & Kim, N.J. “Effects of implementing an integrative drama-inquiry learning model in a science classroom.” The Journal of Educational Research, 113(3), 191-203, 2020.

Livingstone, S., & Pothong, K. “Imaginative play in digital environments: Designing social and creative opportunities for identity formation.” Information, Communication & Society, 25(4), 485-501, 2022.

Nikkola, T., Reunamo, J., & Ruokonen, I. “Children’s creative thinking abilities and social orientations in Finnish early childhood education and care.” Early Child Development and Care, 192(6), 872-886, 2022.
Ong, K.J., Chou, Y.C., Yang, D.Y., & Lin, C.C. “Creative drama in science education: The effects on situational interest, career interest, and science-related attitudes of science majors and non-science majors.” EURASIA Journal of Mathematics, Science and Technology Education, 16(4), em1831, 2020.
Puozzo, I.C., & Audrin, C. “Improving self-efficacy and creative self-efficacy to foster creativity and learning in schools.” Thinking Skills and Creativity, 42, 100966, 2021.
Robertson, N., Yim, B., & Paatsch, L. “Connections between children’s involvement in dramatic play and the quality of early childhood environments.” Early Child Development and Care, 2020.
Saha, S., & Chattopadhyay, K.N. “Exploring the scope of imagination, creativity and innovation in Indian schools through the lens of NEP 2020.” Education@ETMA, 3(1), 64-74, 2024.
Van de Water, M. “Drama in education: Why drama is necessary.” SHS Web of Conferences, 98, 02009, EDP Sciences, 2021.
Walan, S. “The dream performance – A case study of young girls’ development of interest in STEM and 21st century skills, when activities in a makerspace were combined with drama.” Research in Science & Technological Education, 39(1), 23-43, 2021.
Wu, J., Chen, K., Ma, Y., & Vomočilová, J. “Early intervention for children with intellectual and developmental disability using drama therapy techniques.” Children and Youth Services Review, 109, 104689, 2020.