FIGURALCREATIVITY IN STUDENTS MAJORING IN ARCGITECTURAL ENGINEERING

By
Jenifer Ruth Lapa Ala[1], Marianah Dinah Charlota Lerik[2], R. Pasifikus Christa Wijaya[3]
[1,2,3] Psychology Departement, Universitas of Nusa Cendana
Email: *[1]jeniferruth669@gmail.com, [2]mdinah.lerik@staf.umdana.ac.id, [3]pcwijaya@staf.undana.ac.id

Article History:
Received: 06-06-2025
Revised: 28-06-2025
Accepted: 09-07-2025

Keywords:
Figural Creativity, Students, Architecture

Abstract: *This study aims to determine the level of figural creativity among students of the Architectural Engineering Department at Nusa Cendana University, focusing on the ability to generate new ideas through drawings, as assessed using the Torrance Tests of Creative Thinking (TTCT). The research employs a quantitative descriptive method involving 66 students as samples. Data were collected through a figural test that evaluated the aspects of fluency, flexibility, originality, and elaboration. The results show that the majority of students fall into the average creativity category (55%). This study indicates that most students of the Architectural Engineering Department at Nusa Cendana University possess a moderate to high level of figural creativity. The environmental factors within the Architecture Department at Undana provide a conducive setting for the development of figural creativity, illustrating that Architecture Engineering students have a strong capacity for figural creativity*

INTRODUCTION

Creativity is one of the essential cognitive abilities across various fields of life, especially in areas that require innovation and visual problem-solving, such as architecture. Torrance (1974) defines creativity as a process that involves sensitivity to problems, deficiencies, gaps in knowledge, missing elements, or disharmony; identifying difficulties; searching for solutions; making guesses or formulating hypotheses about the deficiencies; testing and retesting these hypotheses; and finally communicating the results. This definition shows that creativity is not just about generating new ideas, but also about the ability to solve problems innovatively.

In the context of architecture, creativity plays a very vital role**.** Lawson (2005) emphasizes that architects must be able to think creatively to produce designs that are not only functional but also aesthetic and innovative. Figural creativity — the ability to create, manipulate, and understand visual forms — is highly relevant in architecture because it involves the visualization of space, form, and structure (Guilford, 1967).

Torrance (1966) developed the concept of figural creativity as part of the Torrance Tests of Creative Thinking (TTCT), which distinguishes between verbal and figural creativity. Figural creativity involves the ability to work with images, shapes, and visual symbols, which aligns well with the demands of the architectural profession. According to Torrance,

components of figural creativity include fluency, flexibility, originality, and elaboration within visual and spatial contexts.

Previous studies have shown that architecture students possess unique creativity characteristics compared to students from other disciplines. Cross (2006), in his study, found that design students, including those in architecture, tend to use different problem-solving approaches that emphasize visual exploration and design iteration. This highlights the importance of understanding figural creativity characteristics, particularly in the population of architecture students.

Nusa Cendana University, as one of the higher education institutions in Kupang City, has an Architecture Engineering Study Program that aims to produce competent and creative graduates in the field of architecture**.** However, to date, no specific research has examined the level of figural creativity among students in this program. Yet, understanding students' level of figural creativity can provide important insights for developing more effective curricula and teaching methods.

The importance of creativity in architectural education is also highlighted by Schön (1983), who stated that learning architectural design is a process of "reflection-in-action" that requires creative and flexible thinking skills. Architecture students need to develop the ability to view problems from multiple perspectives and generate alternative, creative solutions. In this context, figural creativity is crucial because architecture is fundamentally a visual and spatial discipline.

Research on figural creativity among architecture students also has significant practical implications. The results can be used to identify students with high creative potential who can be given more optimal development opportunities. Conversely, for students with relatively lower levels of figural creativity, special programs can be designed to enhance their creative abilities.

Considering the importance of figural creativity in architectural education and the lack of specific research on this topic among students in the Architecture Engineering Program at Nusa Cendana University, this study is necessary. It is expected to contribute to the development of architectural education, particularly in the area of student creativity development. Moreover, the results of this research could serve as a foundation for further studies related to creativity in the context of architectural education in Indonesia.

Thus, a study on figural creativity among students in the Architecture Engineering Department at Nusa Cendana University is both relevant and important to gain a deeper understanding of students' creativity profiles and their implications for the learning process and future curriculum development.

METHOD

This study utilizes primary data obtained directly from respondents through a figural creativity test based on Torrance's theory as adapted by Utami Munandar. The participants in this study consisted of 66 active students from the Department of Architecture Engineering, aged between 16 and 19 years. The instrument used was the Figural Creativity Test (TKF), originally developed by E. Paul Torrance and adapted by S.C. Utami Munandar.
The analytical method employed in this research is descriptive statistics, aiming to provide an in-depth overview of the research variables by observing specific aspects and collecting

ISSN 2798-3471 (Cetak)
ISSN 2798-3641 (Online)

data relevant to the problem and research objectives (Sugiyono, 2017). The descriptive statistical analysis includes calculations of the mean, median, mode, standard deviation, maximum, and minimum values, utilizing JASP software version 0.18.1.0.
The collected data were then processed, analyzed, and interpreted based on the theoretical framework studied, allowing for conclusions to be drawn from the findings.

RESULT AND DISCUSSION

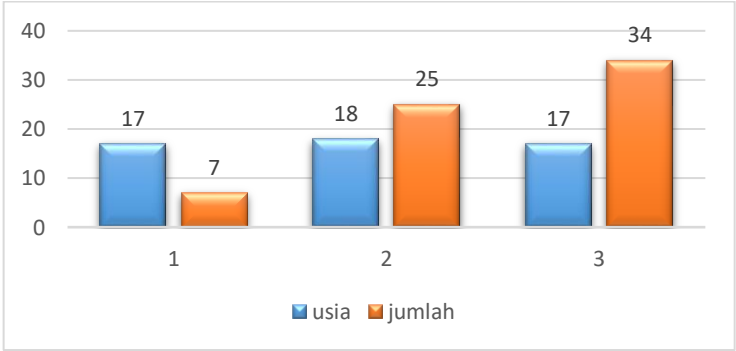
The total number of active students in the Architecture Engineering Department is currently 434. In this study, the researcher selected a sample from students in the 2nd, 4th, and 6th semesters, totaling 212 students. Based on sample size calculations, the intended sample size this study was 140 students. However, this number was further refined based on age criteria, specifically students aged between 16 and 18 years, resulting in a final sample of 66 students.

These 66 students subsequently participated in the administration of the Figural Creativity Test.
"The following is a description of the percentage of participants based on gender and age.:
1.Gender

Figure 1. Participant Gender Distribution

The figure shows the number of research participants based on gender. Out of 66 participants, 38 (57.58%) were male and 28 (42.42%) were female. From these numbers, it can be concluded that the participants in this study were predominantly male.

2. Age of participants



.

Figure 2. Participant Age Distribution

Based on the figure above, out of 66 participants, 7 students (10.61%) were 17 years old, 25 students (37.88%) were 18 years old, and 34 students (51.52%) were 19 years old.

Figural creativity was measured using the Torrance Tests of Creative Thinking (TTCT) 1993 edition. The data used were standardized scores from the study, which are raw figural creativity scores that have been standardized (norm-referenced), and then the total standardized score was converted into a Creativity Quotient (CQ) to facilitate classification. The creativity data description includes minimum and maximum values, range, mean, median, and standard deviation.

The participants in this study were second-semester students from the Architecture Engineering Department at Nusa Cendana University, aged 16 to 19 years. Data were collected using the Torrance Tests of Creative Thinking (TTCT). The sample consisted of 66 students from the Architecture Engineering Department at Nusa Cendana University. The data were then analyzed to examine the students' creativity levels.

Table 1 Categorization of Creativity Quotient (CQ) for Total Figural Creativity of Architecture Engineering Students

Figural Creativity Category	Amount	Percentage
Low	0	**0%**
Border	0	**0%**
Below average	10	**15%**
Average	36	**55%**
Above average	16	**24%**
Superior	3	**5%**
Very superior	1	**2%**
Total	66	**100%**

Based on Table 1, out of 66 participants, 10 students (15%) were in the below-average creativity level category, 1 student (2%) and 16 students (24%) were in the above-average figural creativity category, 1 student (2%) was in the very superior creativity category, while 3 students (5%) were in the superior creativity category. The majority of participants were in the average creativity category, totaling 36 students (55%).

Table 2 Description of Architecture Engineering Students at Nusa Cendana University Based on Age

	Age					
	17	Percentage	18	Percentage	19	**Percentage**
Creativity Category						
Low	0	0%	0	0%	0	**0%**
Border	0	0%	0	0%	0	**0%**
Below Average	1	14%	4	16%	5	**14%**
Average	3	43%	14	56%	19	**56%**
Above average	3	43%	7	28%	6	**18%**
Superior	0	0%	0	0%	3	**9%**
Very superior	0	0%	0	0%	1	**3%**
Total	**7**	**100%**	**25**	**100%**	**34**	**100%**

ISSN 2798-3471 (Cetak)
ISSN 2798-3641 (Online)

Based on Table 2, out of 66 participants, the highest category for 18-year-olds was very superior, with 4 students (20%), and the lowest category was below average, with 1 student (14%) at age 17, 4 students (20%) at age 18, and 5 students (15%) at age 19. For 17-year-olds, the highest category was superior, with 4 students (20%), and for 19-year-olds, 1 student (3%) was in the superior category. The lowest category was below average, with 1 student (14%) at age 17, 4 students (20%) at age 18, and 5 students (15%) at age 19. In the average category, there were 3 students (43%) aged 17, 4 students (20%) aged 18, and 19 students (56%) aged 19.

In the above average category, there were 3 students (43%) aged 17, 4 students (20%) aged 18, and 6 students (18%) aged 19.

Meanwhile, in the superior category, there were 4 students (20%) aged 18 and 1 student (3%) aged 19.

Table 3, Description of Figural Creativity Based on Participant Gender

The description of participants based on gender can be seen below:

	Gender				
	L	Percentage	P		**Percentage**
Creativity Category					
Low	0	0%	0		**0%**
Border	0	0%	0		**0%**
Below Average	9	24%	1		**4%**
Average	20	53%	16		**57%**
Above average	9	24%	7		**25%**
Superior	0	0%	3		**11%**
Very superior	0	0%	1		**4%**
Total	38	100%	28	66	**100%**

Based on Table 3, it shows that the majority of participants in the Architecture Engineering Department at Nusa Cendana University are male, totaling 38 students, while the minority are female, totaling 28 students. Description of Figural Creativity Aspects.

Table 4 Description of Figural Creativity Aspects

	Fluency	Fleksibilitas	Orijinalitas	Bonus Orijinalitas	Elaborasi
Valid	66	66	66	66	66
Missing	0	0	0	0	0
Minimum	1	1	7	0	3
Maximum	20	19	78	20	20
Mean	10	8	17	8.	8.
Std Deviation	3.738	3.671	8.697	3.440	4.083

Based on Table 4, the minimum scores for the aspects of figural creativity are: fluency with a score of 1, flexibility with a score of 1, originality with a score of 7, originality bonus with a score of 0, and elaboration with a score of 3.

The maximum scores are: fluency with a score of 20, flexibility with a score of 19, originality with a score of 78, originality bonus with a score of 20, and elaboration with a score of 20.

The mean scores for each aspect are: fluency at 10.455, flexibility at 8.424, originality at 17.803, originality bonus at 8.833, and elaboration at 8.227.
The standard deviations are: fluency at 3.738, flexibility at 3.671, originality at 8.697, originality bonus at 3.440, and elaboration at 4.083.

Discussion

This study aims to describe the figural creativity profile of Architecture Engineering students at Nusa Cendana University. Data on figural creativity levels were collected using the Torrance Test of Creative Thinking (TTCT), which was administered over a 10-minute session. The results show that the majority of students (55%) fall into the average category, followed by above average (24%), below average (15%), superior (5%), and very superior (2%). No students were found in the low or borderline categories, indicating that all participants possessed functional levels of figural creativity.

Figural creativity was assessed across five dimensions, each with specific score ranges: fluency (1–20), flexibility (1–19), originality (7–78), originality bonus (0–20), and elaboration (3–20). The low minimum scores for fluency and flexibility (both 1) suggest limited divergent thinking potential among some students. The wide range in originality scores (7–78) indicates significant variation in students' abilities to generate unique ideas. A minimum score of 0 in the originality bonus dimension suggests that not all students were able to contribute ideas with high levels of novelty. The variation in elaboration scores (3–20) reflects differences in the ability to develop ideas into more complex and mature forms.

Category-based analysis revealed interesting patterns. Students in the very superior category excelled in both elaboration and originality, indicating a strong ability to generate unique ideas and develop them in detail. The superior group showed high originality but lower elaboration scores, implying an ability to conceive new ideas but a challenge in refining them structurally. Students in the above average and average categories tended to perform better in originality but lower in originality bonus, suggesting their ideas were relatively unique but lacked strong novelty. Meanwhile, students in the below average category showed some potential in originality bonus but had low fluency, indicating difficulty in generating multiple ideas.

These findings align with Torrance's (1974) theory, which defines creativity as the ability to identify gaps, formulate new hypotheses, and communicate outcomes through three core elements: fluency of ideas, flexibility in thinking, and originality. Munandar (2002) also emphasized that creativity emerges from the interaction between the individual and their environment. The Architecture Engineering program appears to provide a conducive environment that encourages the development of visual and spatial creativity through design activities and imaginative idea visualization.

This is supported by Damaen (2016), who stated that creativity in architectural design is stimulated by computer-aided design, practical experience, sketching, physical modeling, learning environments, and visual references. Zami (2025) also highlighted the importance of figurative sketching in enhancing the progress of students in design studios. Furthermore, Beetlestone (2011) asserted that creativity aids in understanding abstract concepts through curiosity, discovery, exploration, and enthusiasm. Therefore, figural creativity is essential for helping students grasp complex subjects and develop themselves in alignment with the architectural field they are studying.

ISSN 2798-3471 (Cetak)
ISSN 2798-3641 (Online)

CONCLUSION

Based on the descriptive analysis results, the figural creativity level of most students falls into the average category, accounting for 55%. This indicates that students' figural creativity still needs to be enhanced and given more attention. The aspects of creativity assessed included fluency, flexibility, originality, and elaboration. Some students demonstrated high levels of creativity, such as by producing unique and original drawings.

The academic environment within the Architecture Department at Nusa Cendana University (Undana) has proven to be a supportive setting for developing figural creativity. This suggests that Architecture Engineering students possess a good capacity for figural creativity and that the curriculum and academic activities in this field have, either directly or indirectly, contributed to nurturing students' creative potential.

Suggestion

Considering that some students are still categorized as having below-average figural creativity, it is recommended that the Architecture Study Program at Nusa Cendana University consider organizing training sessions or activities focused on developing figural creativity. In addition, conducting figural creativity assessments at the time of student admission could be beneficial as a basis for mapping students' creative potential. This is important, as creativity is a skill that can be developed through a supportive learning environment and serves as a fundamental competence in the field of architecture.

REFERENCES

[1] Cho, J. Y. (2012). The relationship between creativity and academic achievement in architectural design education. Journal of Asian Architecture and Building Engineering, 11(2), 347-354.
[2] Edwards, B. (2008). Understanding architecture through drawing. Taylor & Francis.
[3] Guilford, J. P. (1967). Creativity: Yesterday, today and tomorrow. The Journal of Creative Behavior, 1(1), 3-14.
[4] Kim, K. H. (2006). Is creativity unidimensional or multidimensional? Analyses of the Torrance Tests of Creative Thinking. Creativity Research Journal, 18(3), 251-259.
[5] Lawson, B. (2005). How designers think: The design process demystified. Routledge.
[6] Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books.
[7] Torrance, E. P. (1974). Torrance Tests of Creative Thinking: Norms-technical manual. Scholastic Testing Service.
[8] Amabile, T. M. (1996). Creativity in context: Update to the social psychology of creativity. Westview Press.
[9] Cross, N. (2006). Designerly ways of knowing. Springer-Verlag.
[10] Guilford, J. P. (1967). The nature of human intelligence. McGraw-Hill.
[11] Ikatan Arsitek Indonesia. (2019). Standar kompetensi arsitek Indonesia. IAI Pusat.
[12] Lawson, B. (2005). How designers think: The design process demystified (4th ed.). Architectural Press.
[13] Oxman, R. (2006). Theory and design in the first digital age. Design Studies, 27(3), 229-265.
[14] Torrance, E. P. (1966). Torrance Tests of Creative Thinking: Norms-technical manual.

Personnel Press.
[15] Torrance, E. P. (1974). The Torrance Tests of Creative Thinking: Norms-technical manual. Ginn and Company.
[16] Torrance, E. P., & Safter, H. T. (1999). Making the creative leap beyond. Creative Education Foundation Press.

ISSN 2798-3471 (Cetak)
ISSN 2798-3641 (Online)