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From Story to Space: Narrative as a Generator of Architectural Design

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Abstract

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Concept generation is one of the most challenging stages of architectural design, as translating abstract ideas into coherent spatial concepts is often difficult for students and designers. This research investigates storytelling as a conceptual generator in architectural design by examining how narrative structures influence concept development and spatial organization. A comparative experimental study was conducted with eighty first-year architecture students. The students were distributed into two groups with balanced academic performance based on GPA. The control group followed a conventional concept development approach, while the experimental group applied a narrative-driven design method in which stories were translated into spatial compositions through stages of interpretation, abstraction, and spatial transformation. Student projects were evaluated through a multi-jury review system and analyzed using descriptive statistics and independent samples t-tests. The results show that narrative-driven design significantly improved conceptual clarity, spatial composition, and creativity, highlighting storytelling as a structured framework for generating architectural concepts. The study contributes empirical evidence to architectural design education by demonstrating the effectiveness of narrative-driven approaches in supporting concept generation and spatial design development.

Keywords: Storytelling; Narrative-driven design; Architectural design thinking; Concept generation; Spatial composition; Architectural education

1. Introduction

Concept generation represents one of the most complex stages of architectural design, requiring designers to translate abstract ideas into coherent spatial structures. In architectural education, students often struggle to transform conceptual thinking into structured spatial compositions, particularly during the early stages of design development. As a result, design studios frequently emphasize formal outcomes rather than the conceptual processes that generate meaningful spatial ideas and guide spatial organization.

Research in design cognition has shown that architectural design involves iterative cycles of analysis, synthesis, and evaluation through which designers construct conceptual frameworks that inform spatial decision making (Cross, 2011; Lawson, 2006; Oxman, 2017). Within this process, the development of clear conceptual strategies plays a central role in enabling designers to transform abstract ideas into architectural form. However, the mechanisms by which conceptual ideas are generated and structured during early design stages remain a topic of ongoing investigation in architectural research and education.

One emerging perspective suggests that narrative thinking can provide a framework for structuring design processes. Narrative approaches organize events, meanings, and experiences into coherent sequences that may inform spatial organization and architectural composition. Architecture itself has frequently been interpreted as a form of spatial narrative, where built environments communicate meaning through sequences of spaces, movement, and experiential progression (Psarra, 2009). From this perspective, storytelling can function not only as a representational device but also as a conceptual generator that guides the development of spatial design strategies.

Recent studies have further explored narrative frameworks within architectural design and education, highlighting their potential to support conceptual development and spatial imagination. Narrative-based design strategies have been shown to stimulate creative exploration, strengthen conceptual clarity, and contribute to the formation of meaningful spatial relationships in design processes (Aguspriyanti, 2023; Naiboğlu, 2024). Additionally, emerging research has begun to examine the integration of storytelling approaches into contemporary architectural pedagogy and digital design environments, suggesting that narrative structures can serve as effective tools for organizing spatial design thinking (Özeren, 2025; Wang, 2025).

Despite this growing interest, empirical investigations examining how narrative-based approaches influence concept generation within architectural design studios remain limited. Relatively few studies have conducted comparative experiments evaluating narrative-driven concept generation against traditional design methods commonly employed in studio teaching. Understanding how narrative thinking influences conceptual clarity, spatial organization, and design outcomes is therefore important for advancing both architectural pedagogy and design research.

To address this gap, the present study investigates storytelling as a generator of architectural design through a comparative design experiment conducted within a basic design studio. Eighty first-year architecture students participated in the study and were divided into two groups. The control group followed a conventional concept-generation approach typically used in design studios, while the experimental group employed a narrative-driven design method in which students translated narrative structures into spatial compositions that informed the design of an architectural pavilion. The resulting design proposals were comparatively evaluated to examine how narrative-based thinking influences conceptual development and spatial design outcomes.

The objective of this research is to examine whether storytelling can serve as a systematic framework for generating architectural concepts and supporting spatial design development. By exploring the relationship between narrative interpretation and spatial composition, the study contributes to ongoing discussions on design thinking in architecture and highlights the potential of narrative frameworks as tools for concept generation.

1.1. Concept Generation in Architectural Design

Concept generation is a fundamental stage in the architectural design process, during which abstract ideas evolve into spatial configurations and architectural form. Research in design cognition suggests that architectural design involves iterative processes of analysis, synthesis, and evaluation through which designers construct conceptual frameworks that guide spatial decision making (Cross, 2011; Lawson, 2006). Within this process, conceptual strategies play a crucial role in enabling designers to transform intangible ideas into structured spatial solutions.

Within architectural education, design studios serve as the primary environment where these conceptual processes are explored and developed. However, several studies have highlighted that students frequently encounter difficulties in the early stages of design due to the abstract nature of conceptual thinking and the lack of structured methods for generating ideas. Consequently, students often rely on intuitive approaches that may lead to fragmented spatial outcomes rather than coherent architectural concepts.

To address these challenges, researchers have explored alternative pedagogical approaches to enhance conceptual thinking and creative exploration in design studios. Experimental learning frameworks and interdisciplinary design strategies have been proposed to support conceptual development and stimulate innovative thinking in architectural education (Abusafieh, 2022).

1.2. Narrative Thinking and Spatial Design

Narrative thinking has increasingly been recognized as a conceptual framework capable of structuring spatial design processes. Narratives organize experiences, events, and meanings into coherent sequences, which can subsequently inform spatial organization and architectural composition. Narrative theory suggests that stories structure human understanding of time, events, and meaning, allowing complex experiences to be organized into coherent interpretive frameworks (Ricoeur, 1984). Narrative structures also function as cognitive frameworks that help individuals organize experiences, intentions, and actions into meaningful sequences (Herman, 2002).

From this perspective, architecture can be interpreted as a form of spatial storytelling in which built environments communicate meaning through spatial sequences, movement, and experiential progression (Psarra, 2009). Architectural theory has similarly emphasized the role of events and spatial sequences in shaping architectural experience, suggesting that spatial movement and interaction can be interpreted through narrative structures embedded within architectural environments (Tschumi, 1996).

The relationship between narrative and spatial organization has been widely discussed in architectural theory, particularly in studies exploring the experiential and phenomenological dimensions of architecture. Narrative frameworks allow designers to link spatial elements with thematic or experiential structures, enabling architectural environments to convey meaning through spatial relationships and user experiences (Pallasmaa, 2012).

More recent studies have expanded this perspective by examining narrative approaches within architectural design education. Narrative-driven design methods encourage designers to interpret abstract ideas through storytelling, transforming narrative elements into spatial compositions that guide architectural form (Naiboğlu, 2024). Architectural theorists have also emphasized the role of narrative structures in shaping spatial representation and architectural form (Coates, 2012).

Narrative interpretation also plays a fundamental role in shaping human perception and understanding of environments, influencing how spatial experiences are interpreted and remembered (Bruner, 1991). Recent research in neuroarchitecture and environmental cognition further suggests that structured experiential frameworks can influence perception, emotional engagement, and spatial understanding within built environments (Burattini et al., 2024).

Recent research in environmental psychology and spatial cognition further suggests that narrative structures can influence how individuals perceive, interpret, and mentally organize spatial experiences, supporting the role of narrative frameworks in architectural design processes (Coburn et al., 2020).

1.3. Narrative Approaches in Architectural Education

In architectural design studios, storytelling has been introduced as a pedagogical strategy to help students explore conceptual design through narrative interpretation. Narrative-driven design processes encourage students to organize spatial ideas according to sequences of events or experiential scenarios, thereby supporting the development of coherent spatial structures.

Recent studies suggest that storytelling approaches can enhance creativity and conceptual clarity by providing structured frameworks for idea generation in architectural design education (Aguspriyanti, 2023; Özeren, 2025).

These methods enable students to translate narrative structures into spatial relationships and architectural compositions, facilitating deeper engagement with conceptual design processes.

Furthermore, advances in digital technologies have expanded the possibilities of narrative-driven design strategies. Emerging research highlights the integration of spatial narrative frameworks with immersive digital environments and computational design tools, suggesting new opportunities for exploring narrative-based spatial design in contemporary architecture (Wang, 2025).

Narrative frameworks, therefore, provide a structured mechanism for translating abstract story elements into spatial concepts that can guide architectural design processes. The transformation from narrative interpretation to spatial composition can be conceptualized as a sequence of cognitive and design stages, as illustrated in Figure 1.

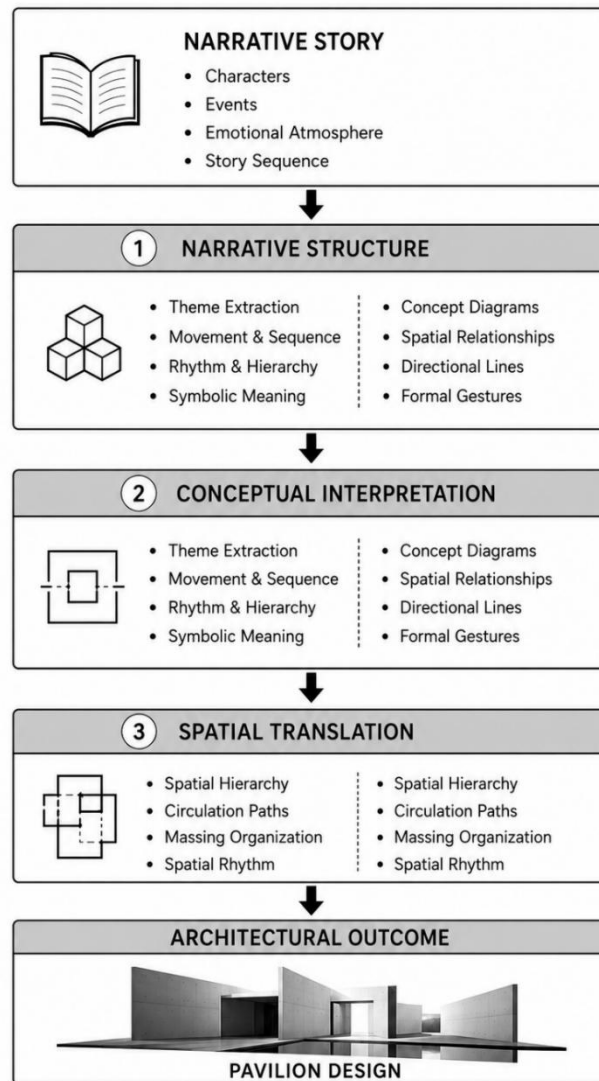


Figure 1. Narrative to spatial translation framework illustrating the process through which narrative elements are interpreted, abstracted into conceptual diagrams, and translated into architectural spatial compositions.

1.4. Research Gap

Despite the increasing interest in narrative approaches within architectural theory and design education, empirical studies examining how narrative-based concept generation influences spatial design outcomes remain limited. Few investigations have conducted controlled comparisons between narrative-driven design strategies and traditional concept development methods commonly used in architectural studios.

Understanding how narrative thinking influences conceptual clarity, spatial organization, and spatial creativity may therefore provide valuable insights into the role of storytelling in the generation of architectural design. Addressing this gap is essential for advancing both architectural pedagogy and design research, particularly by identifying structured methods that support concept generation in the early stages of architectural design.

The present study addresses this gap by examining storytelling as a generator of architectural design through a comparative studio experiment that compares traditional and narrative-based concept-generation methods. Accordingly, the study examines whether students who use a narrative-driven design approach achieve higher levels of conceptual clarity, spatial organization, spatial composition, and creativity than students who use conventional concept-generation methods.

2. Materials and Methods

This study adopted a comparative experimental approach to investigate the role of storytelling in generating architectural design concepts. Experimental methods within architectural design studios are increasingly used to evaluate how alternative conceptual frameworks influence design thinking, spatial reasoning, and creative exploration in architectural

education (Lee et al., 2023; Özeren, 2025). Such approaches allow researchers to systematically examine how different design processes influence architectural outcomes when applied to the same design task.

In this research, two groups of architecture students were assigned different approaches to concept development while working on the same architectural design project. The first group followed a conventional concept generation process commonly used in architectural design studios, which typically relies on intuitive exploration, precedent analysis, and iterative sketching to develop design ideas (Lawson, 2006). The second group employed a narrative-driven design method in which storytelling served as the primary generator of architectural concepts. By comparing the design outcomes produced by the two groups, the study examines how narrative-based thinking influences conceptual clarity, spatial composition, and the overall coherence of architectural design proposals.

2.1 Research Design

The research employed a controlled comparative experimental design to investigate the influence of storytelling on architectural concept generation. Comparative design experiments are commonly used in architectural research to examine how different conceptual strategies influence design development and spatial reasoning (Cross, 2011; Oxman, 2017). The experiment was conducted within a basic architectural design studio where students were asked to develop a pavilion design proposal. The pavilion project was selected because it allows students to explore spatial organization, circulation, and architectural form while maintaining a manageable scale appropriate for early design education.

The experimental structure followed a two-group comparison model. Students were divided into a control group, which used conventional concept-generation approaches, and an experimental group, which used a narrative-driven design method. Both groups worked on the same design task to ensure that differences in design outcomes could be attributed primarily to the concept generation method.

The narrative-driven design process followed the narrative-to-spatial translation framework illustrated in Figure 1, in which narrative elements are interpreted, abstracted into conceptual diagrams, and translated into spatial compositions that guide the development of architectural design. This framework informed the conceptual methodology applied to the experimental group in the study. The overall structure of the comparative experiment conducted in the architectural design studio is illustrated in Figure 2, which presents the distribution of participants into the control and narrative-driven design groups, the design task assigned to both groups, and the evaluation process used to analyze the resulting design outcomes.

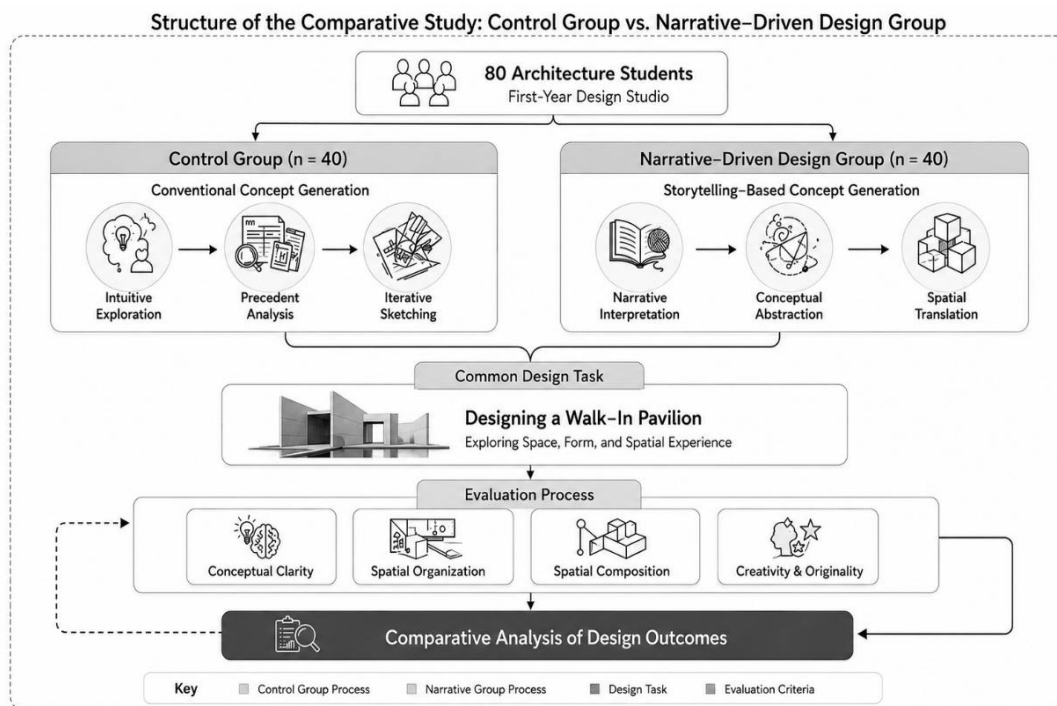


Figure 2. Experimental Research Structure.

2.2 Participants

The study involved eighty first-year architecture students enrolled in a basic architectural design studio. Students were randomly divided into two equal groups of 40 students each.

The first group served as the control group and followed a conventional concept development process typically used in architectural design studios. This approach generally relies on intuitive sketching, precedent references, and iterative exploration to generate architectural concepts. The second group served as the experimental group, in which students applied a narrative-driven design approach, using storytelling as the primary mechanism for concept generation.

Both groups were assigned the same architectural design task to ensure that differences in design outcomes could be attributed to the conceptual development process rather than to variations in the design brief. The structure of the comparative experiment and the distribution of students between the two groups are summarized in Table 1.

Table 1. Structure of the comparative design experiment.

<i>Group</i>	<i>Number of Students</i>	<i>Concept Generation Method</i>	<i>Design Task</i>
<i>Control group</i>	40	Conventional concept development	Pavilion design
<i>Experimental group</i>	40	Narrative-driven concept generation	Pavilion design

To minimize potential bias related to students' academic performance, participants were assigned to the control and narrative-driven groups based on their cumulative grade point averages (GPAs). This approach ensured that both groups included students with comparable academic performance levels. As a result, the student distribution aimed to maintain a balanced representation of higher, average, and lower-performing students in each group, reducing the likelihood that differences in design outcomes could be attributed to variations in academic ability rather than to the conceptual design approach used in the experiment.

2.3 Design Task

The design exercise focused on developing a walk-in pavilion, a small-scale architectural structure intended to enable students to explore spatial relationships, circulation patterns, and architectural form. Pavilion design projects are widely used in architectural education because they allow students to focus on spatial composition and conceptual development without the complexity of larger building programs (Lawson, 2006).

Students were asked to develop a pavilion design that demonstrates key spatial design principles, including spatial hierarchy, circulation paths, massing organization, and spatial rhythm. The pavilion project, therefore, provided a suitable design context for examining how narrative interpretation could influence spatial composition. Both the control and experimental groups worked on the same pavilion design project during the studio exercise.

2.4 Narrative-Based Design Process

Students in the experimental group followed a storytelling-based concept generation method structured according to the narrative-to-spatial translation framework presented in Figure 1. This design process consisted of three main stages.

The first stage involved narrative interpretation, during which students analyzed narrative elements such as characters, events, emotional atmosphere, and story sequence. These narrative components served as the conceptual input for the design process.

The second stage involved conceptual abstraction, in which narrative interpretations were translated into conceptual diagrams and spatial relationships. This stage included the development of sketches, directional lines, and conceptual gestures representing thematic or symbolic aspects of the narrative.

The final stage involved spatial translation, in which conceptual diagrams were transformed into spatial compositions that informed the pavilion's architectural design. Students developed spatial hierarchy, circulation paths, mass organization, and spatial rhythm based on their narrative interpretations. This process reflects broader theories of design thinking in which abstract conceptual ideas are progressively transformed into spatial form through iterative exploration and representation (Cross, 2011).

2.5 Evaluation Criteria

The design proposals from both groups were evaluated to examine the influence of storytelling on spatial design development. Evaluation focused on several key criteria related to architectural design quality, including conceptual clarity, spatial organization, spatial composition, and creativity. These criteria represent fundamental dimensions of architectural design thinking that are commonly considered in studio-based design assessment, including conceptual development, spatial reasoning, and creative exploration (Dilmaç & Dilmaç, 2025; Milovanović, 2026).

To ensure a consistent and transparent evaluation process, each criterion was defined through specific indicators and assessed using a structured scoring scale, as summarized in Table 2. Student projects were evaluated through a structured review process conducted by studio instructors and external reviewers.

Table 2. Evaluation framework for assessing student design outcomes.

<i>Evaluation Criterion</i>	<i>Indicators Considered in Assessment</i>	<i>Description</i>	<i>Scoring Scale</i>
<i>Conceptual clarity</i>	Concept articulation, relationship between idea and form, clarity of design intention	Measures how clearly the architectural proposal expresses a coherent conceptual idea	1–10
<i>Spatial organization</i>	Spatial hierarchy, functional relationships, and circulation logic	Evaluates the organization of spaces and the effectiveness of spatial relationships	1–10
<i>Spatial composition</i>	Massing arrangement, spatial rhythm, and formal coherence	Assesses the integration of spatial elements into a coherent architectural composition	1–10
<i>Creativity and originality</i>	Innovation of concept, uniqueness of spatial interpretation, and design exploration	Evaluates the originality and creative exploration demonstrated in the design proposal	1–10

To ensure objectivity and reliability in the evaluation process, the student projects were assessed through a jury-based review system. The evaluation was conducted by the course instructor together with six additional jurors, including three faculty members from the architecture department and three external jurors from professional practice. Each juror independently evaluated the design proposals according to the criteria presented in Table 2. The final score for each project was calculated as the average of the jurors' evaluations, ensuring the assessment reflected a balanced, collective judgment rather than a single evaluator's perspective.

To enhance the reliability and objectivity of the assessment process, all projects were independently evaluated by seven jurors using the same structured evaluation rubric. The assessment criteria were clearly defined prior to the evaluation process, and all jurors applied the same scoring framework. The final score for each project was calculated as the mean of all jurors' ratings, minimizing individual evaluator bias and increasing the consistency and robustness of the assessment outcomes.

2.6 Data Analysis

To compare the performance of the two groups, the evaluation results were analyzed using IBM SPSS Statistics software. Descriptive statistics, including means and standard deviations, were calculated for all evaluation criteria. The analysis examined differences between the control group and the narrative-driven experimental group in relation to conceptual clarity, spatial organization, spatial composition, creativity, and overall design performance. Independent samples tests were conducted to determine whether statistically significant differences existed between the two groups. A significance level of $p < 0.05$ was adopted for all statistical analyses.

Comparative analysis methods are commonly used in architectural education research to evaluate the impact of different design processes on student design performance and conceptual development (Cross, 2011; Oxman, 2017). The results of this comparative analysis are presented in the following section.

3. Results

This section presents the findings of a comparative experiment examining the influence of storytelling on architectural concept generation and spatial design development. The results are organized around two complementary levels of analysis. The first level addresses the quantitative comparison between the control group and the narrative-driven design group based on the predefined evaluation criteria.

The second level discusses the qualitative characteristics evident in the design outcomes, particularly conceptual clarity, spatial composition, and the coherence of architectural proposals.

The evaluation results were analyzed using descriptive statistics and independent-samples t-tests to examine differences between the control group and the narrative-driven design group across all evaluation criteria. Statistical significance was assessed at the 0.05 level. The quantitative findings are presented first, followed by qualitative observations of the design outcomes.

3.1 Comparative Evaluation of Design Outcomes

The design proposals from the two groups were evaluated against the criteria defined in the earlier evaluation framework. The analysis focused on four dimensions: conceptual clarity, spatial organization, spatial composition, and creativity. Mean scores and standard deviations were calculated for each criterion to compare performance between the control and narrative-driven groups. The descriptive statistics for this comparison are summarized in Table 3.

Table 3. Descriptive statistics for the control and narrative-driven groups.

Evaluation Criterion	Control Group Mean	Control Group SD	Narrative Group Mean	Narrative Group SD
Conceptual clarity	5.75	1.51	6.70	1.42
Spatial organization	6.65	1.39	7.50	1.15
Spatial composition	4.78	1.56	8.20	0.91
Creativity	5.70	1.54	7.50	1.15
Overall score	5.72	1.49	7.48	1.13

As shown in Table 3, the narrative-driven group achieved higher mean scores across all evaluated criteria compared with the control group. The mean score for conceptual clarity increased from 5.75 in the control group to 6.70 in the narrative-driven group. Similarly, spatial organization improved from 6.65 to 7.50, while creativity increased from 5.70 to 7.50. The most substantial difference was observed in spatial composition, where the mean score increased from 4.78 in the control group to 8.20 in the narrative-driven group. These results suggest that the storytelling-based approach significantly supported the translation of conceptual ideas into coherent spatial design proposals.

3.2 Statistical Comparison Between Groups

To determine whether the differences observed between the two groups were statistically significant, an independent-samples t-test was conducted on the overall design scores and on each individual evaluation criterion. This statistical method is commonly used in experimental studies in architectural education to compare performance between control and experimental groups. The results of the statistical comparison between the two groups are presented in Table 4.

Table 4. Independent-samples t-test results comparing the control and narrative-driven groups.

Criterion	Control Mean	Narrative Mean	t	p
Conceptual clarity	5.75	6.70	-2.90	0.0049
Spatial organization	6.65	7.50	-2.98	0.0039
Spatial composition	4.78	8.20	-11.99	<0.001
Creativity	5.70	7.50	-5.92	<0.001
Overall score	5.72	7.48	-5.95	<0.001

The t-test results in Table 4 indicate statistically significant differences between the control and narrative-driven groups across all evaluated criteria. For conceptual clarity, the narrative-driven group achieved a higher mean score ($M = 6.70$)

compared with the control group ($M = 5.75$), with a statistically significant difference ($t = -2.90$, $p = 0.0049$). Similarly, spatial organization showed a significant improvement from 6.65 in the control group to 7.50 in the narrative-driven group ($t = -2.98$, $p = 0.0039$). The most pronounced difference was observed in spatial composition, where the narrative-driven group achieved a substantially higher mean score ($M = 8.20$) compared with the control group ($M = 4.78$), indicating a highly significant difference ($t = -11.99$, $p < 0.001$). Creativity also showed a significant improvement, increasing from 5.70 in the control group to 7.50 in the narrative-driven group ($t = -5.92$, $p < 0.001$). Overall, the narrative-driven group achieved a significantly higher overall design score ($M = 7.48$) than the control group ($M = 5.72$), confirming the effectiveness of storytelling as a conceptual framework for supporting spatial design development. These statistical results provide quantitative evidence that narrative-based concept generation can significantly enhance conceptual clarity, spatial composition, and creative exploration in architectural design processes.

In addition to statistical significance testing, effect size analysis was conducted using Cohen's d to evaluate the magnitude of the differences between the control and narrative-driven groups. The results are presented in Table 5.

Table 5. Effect Size Analysis (Cohen's d).

Criterion	Cohen's d	Effect Magnitude
Conceptual clarity	0.65	Medium to Large
Spatial organization	0.67	Medium to Large
Spatial composition	2.68	Very Large
Creativity	1.32	Large
Overall score	1.33	Large

As shown in Table 5, the narrative-driven design approach produced medium-to-large effects on conceptual clarity and spatial organization, large effects on creativity and overall design performance, and a very large effect on spatial composition. These findings indicate that the observed improvements are not only statistically significant but also educationally meaningful, particularly in relation to students' ability to transform conceptual ideas into coherent spatial compositions.

3.3 Visual Comparison of Group Performance

To further illustrate the differences between the control group and the narrative-driven group, a graphical comparison of the mean scores across the four evaluation criteria is presented in Figure 3. Visual representations of experimental results help clarify the magnitude of performance differences between groups and support the interpretation of statistical findings. As illustrated in Figure 3, the narrative-driven group achieved higher mean scores across all evaluation criteria compared with the control group. The mean score for conceptual clarity increased from 5.75 in the control group to 6.70 in the narrative-driven group. Similarly, spatial organization improved from 6.65 to 7.50, while creativity increased from 5.70 to 7.50. The most substantial improvement appears in spatial composition, where the narrative-driven group achieved a mean score of 8.20, compared with 4.78 in the control group. This large difference visually confirms the statistical results reported in Table 4, indicating that storytelling significantly enhanced students' ability to translate conceptual ideas into coherent spatial design structures.

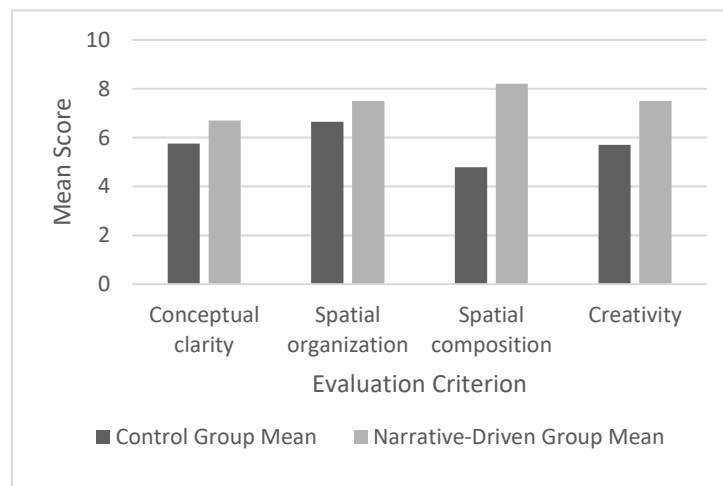


Figure 2. Comparative mean scores of the control group and the narrative-driven group across the evaluated design criteria.

Overall, the graphical comparison reinforces the statistical findings and highlights the effectiveness of storytelling as a conceptual framework that supports both creative exploration and spatial coherence in architectural design processes.

3.4 Qualitative Analysis of Design Outcomes

In addition to the quantitative findings, qualitative observation of the student design proposals revealed noticeable differences between the two groups. While the control group relied primarily on conventional concept-development

approaches based on intuitive sketching and formal exploration, the narrative-driven group demonstrated stronger conceptual coherence and clearer relationships among idea, form, and spatial organization.

Designs produced by the control group often focused on formal experimentation, without a clearly articulated conceptual framework to guide the spatial arrangement. As a result, spatial sequences and hierarchical relationships were sometimes less defined. In contrast, the narrative-driven projects exhibited more structured conceptual development, in which spatial arrangements were directly informed by narrative interpretation and conceptual abstraction.

Several projects in the narrative-driven group translated narrative elements such as sequence, atmosphere, and symbolic meaning into spatial transitions, circulation paths, and hierarchical spatial organization. As illustrated in Figures 4 and 5, the pavilion proposals produced through the narrative-driven approach demonstrate clearer conceptual articulation and more structured spatial organization than those developed using the conventional concept-generation method. Narrative-based projects reveal stronger relationships between conceptual ideas and spatial configuration, particularly in the sequencing of spaces and the organization of circulation. These observations support the quantitative results presented earlier, suggesting that storytelling not only improved evaluation scores but also contributed to more coherent and meaningful spatial design strategies.

Taken together, the quantitative and qualitative findings indicate that the narrative-driven design approach positively influenced students' architectural design development. The statistical analysis revealed significant differences between the control group and the narrative-driven group across all evaluation criteria, while the qualitative observations highlighted stronger conceptual coherence and clearer spatial organization in the narrative-based proposals. These results suggest that storytelling can function as an effective conceptual framework for guiding the transformation of abstract ideas into spatial architectural forms. The implications of these findings for architectural design thinking and studio pedagogy are discussed in the following section.

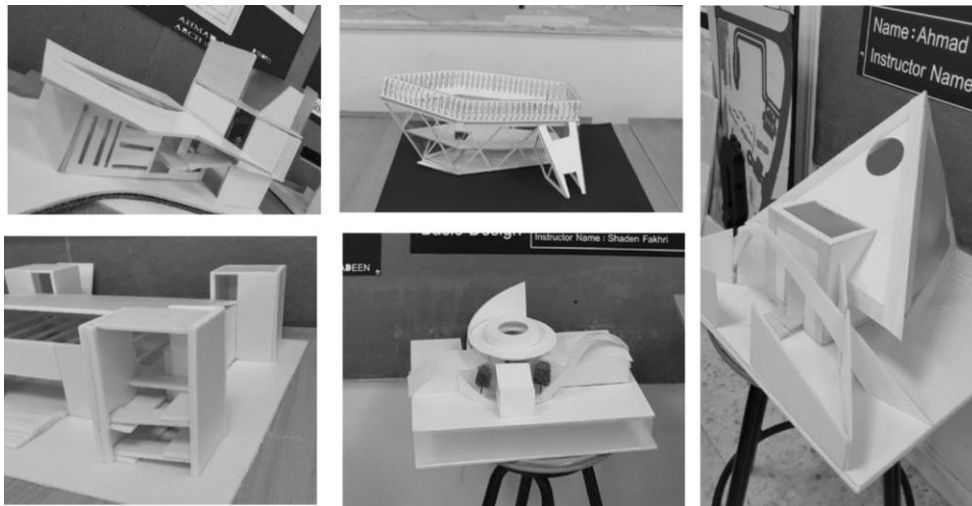


Figure 3. Example pavilion design proposal produced by the control group using the conventional concept generation method.



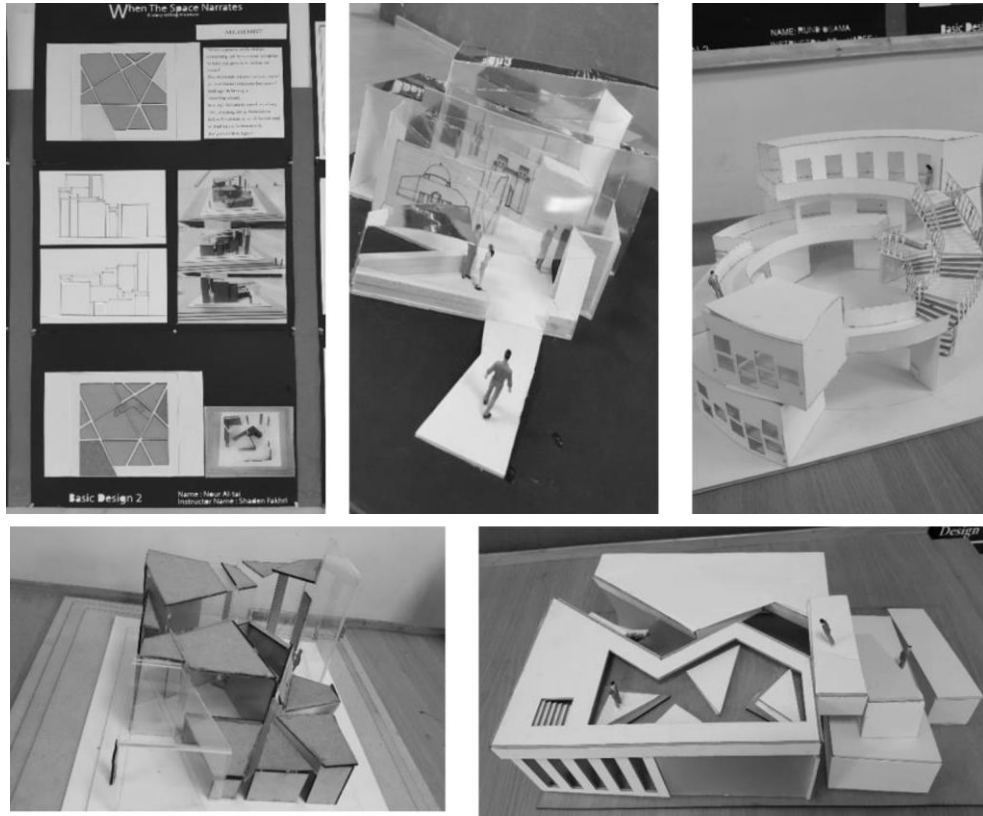


Figure 4. Example pavilion design proposal produced by the narrative-driven design group, illustrating how narrative elements translate into spatial organization.

4. Discussion

The findings of this study demonstrate that the narrative-driven design approach positively influenced students' architectural design outcomes across all evaluated criteria. Both the descriptive and inferential statistics revealed that the narrative-based group achieved significantly higher scores in conceptual clarity, spatial organization, spatial composition, and creativity than the control group. These results suggest that storytelling can function as a structured conceptual framework that supports the transformation of abstract ideas into coherent spatial design strategies.

One of the most notable findings of this study is the substantial improvement in spatial composition observed in the narrative-driven group. The mean score for spatial composition increased from 4.78 in the control group to 8.20 in the narrative group, representing the largest difference among the evaluated criteria. This result indicates that storytelling helped students translate conceptual narratives into spatial sequences, circulation paths, and spatial hierarchies. Such findings align with theories of architectural design cognition, which suggest that conceptual frameworks can support the organization of complex spatial relationships during the design process (Cross, 2011; Lawson, 2006).

The improvement observed in conceptual clarity and creativity also supports previous research emphasizing the importance of structured conceptual thinking in architectural design education. Design cognition studies have shown that designers often rely on conceptual structures or narratives to organize design ideas and guide the development of architectural form (Goldschmidt, 2014; Oxman, 2017). In this context, storytelling appears to provide an accessible cognitive mechanism for structuring design intentions and maintaining coherence between concept and form throughout the design process. Similar findings have been reported in recent studies of design education, which suggest that structured narrative and scenario-based approaches can enhance creative exploration, design reasoning, and student engagement during concept development (Lee et al., 2023).

From a pedagogical perspective, the findings reinforce the argument that alternative concept-generation methods can enhance design thinking in architectural studios. Architectural education scholars have long emphasized that design studios should support multiple modes of thinking and representation in order to foster creativity and critical reflection (Salama, 2015). By introducing storytelling as a conceptual design tool, the studio environment encourages students to explore spatial ideas through narrative interpretation, symbolic meaning, and experiential sequences, rather than relying solely on formal experimentation.

The qualitative observations of student projects further support this interpretation. Designs produced by the narrative-driven group demonstrated stronger conceptual coherence and clearer spatial logic compared with those developed through conventional methods. In several cases, narrative elements such as movement, atmosphere, and symbolic meaning were translated into spatial transitions and hierarchical spatial arrangements. These findings resonate with architectural theory that highlights the experiential and narrative dimensions of architectural space, in which spatial sequences and experiences can be understood as forms of storytelling embedded in the built environment (Holl et al., 2006; Pallasmaa, 2012; Tschumi, 1996).

Taken together, the results suggest that storytelling can serve not only as a source of creative inspiration but also as a systematic design strategy that supports conceptual development and spatial organization in architectural design

processes. The integration of narrative interpretation, conceptual abstraction, and spatial translation provides a structured pathway for students to move from abstract ideas to architectural form.

4.1 Limitations and Future Research

Despite the positive findings, several limitations should be acknowledged. First, the study was conducted with first-year architecture students within a single educational context, which may limit the generalizability of the findings to other academic levels and institutional settings. Second, the experiment focused on a pavilion design project, and different architectural design tasks may produce different outcomes. Third, although the evaluation process involved multiple jurors and a structured assessment rubric, design assessment inevitably includes a degree of subjective judgment.

Building on these limitations, future research may further explore the integration of storytelling with emerging design technologies. Digital tools such as parametric modeling, immersive virtual environments, and artificial intelligence-based design assistants may support narrative-driven design exploration by enabling designers to simulate spatial sequences and experiential narratives during early design stages. Future studies could investigate how narrative-based design thinking can be combined with computational design tools to support more advanced forms of concept generation and spatial experimentation.

Overall, this study contributes to ongoing discussions on architectural design thinking by providing empirical evidence that storytelling can function as an effective conceptual generator within the design studio. The originality of the research lies in its comparative experimental evaluation of narrative-driven and conventional concept-generation approaches, demonstrating how narrative frameworks can enhance conceptual clarity, creativity, and spatial design development. By structuring the relationship between narrative interpretation and spatial composition, storytelling supports both creative exploration and spatial coherence in the development of architectural design.

5. Conclusions

This research investigated storytelling as a conceptual generator in architectural design by examining how narrative-driven thinking influences concept development and spatial design outcomes. Through a comparative experimental study involving eighty architecture students, the study evaluated the impact of narrative-based concept generation on conceptual clarity, spatial organization, spatial composition, and creativity. Students were divided into two groups with balanced academic performance, as measured by GPA, and the resulting projects were assessed through a multi-jury evaluation process involving internal and external reviewers.

The quantitative results demonstrated that the narrative-driven group achieved consistently higher scores across all evaluation criteria compared with the conventional design approach. The most notable improvement was observed in spatial composition, indicating that narrative thinking supports the translation of conceptual ideas into coherent spatial structures. The findings suggest that storytelling provides a structured framework that guides designers from narrative interpretation to spatial organization and architectural form.

This study contributes to architectural design research by providing empirical evidence that narrative-based design strategies can enhance conceptual development, creativity, and spatial coherence in the early stages of architectural design. The originality of the research lies in its comparative experimental evaluation of narrative-driven and conventional concept-generation approaches. The findings demonstrate the educational value of storytelling as a structured framework for architectural design thinking and concept generation.

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Conflicts of Interest

The author reports no conflicts of interest.

Data Availability Statement

The datasets generated and analyzed in the current study comprise student design project evaluations and assessment scores collected in an architectural design studio experiment. Due to institutional and student privacy considerations, the full dataset is not publicly available but may be provided by the author upon reasonable request.

Institutional Review Board Statement

The study involved an educational design studio exercise conducted as part of a regular architectural design course. The research utilized anonymized evaluation data from student projects and did not involve medical, psychological, or sensitive personal information. Therefore, formal Institutional Review Board approval was not required according to institutional research guidelines.

CRedit Author Statement

Shaden Fakhri Abusafieh was responsible for conceptualization, methodology, data collection, analysis, visualization, and manuscript writing.

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