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Using Visuals to Inspire Students' Original Thought in the Design Studio: Transforming Cinematic Environments into Real-World Spaces

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Abstract:

Creative problem-solving in the field of architecture requires students to develop skills in visual representation. Creative idea representation is linked to the capacity to articulate spatial design principles. The purpose of this research was to determine whether students' ability to think creatively in architecture might be improved by exposure to filmic settings as a form of visual communication. It investigated the potential of a conceptual tool that adapts cinematic settings to real-world design as a means of fostering innovation in a design studio for architecture. We organized a design workshop with first-year college students to explore how to transform filmic environment into spatial design tools for creative thinking. In order to get students interested in and actively involved in expressing themselves in three-dimensional spaces, a curriculum was developed and implemented in a Visual Communication Design Studio for one semester, with a focus on using various elements of film to represent architectural languages, such as movement, frame, montage, light, color, and scene changes. The findings as a whole revealed that a way of teaching design that emphasized the importance of visual communication and employed film as a stimulating medium for creative thinking would help students develop more original ideas throughout the design process.

1. Introduction

Since originality is fundamental to the architectural
design process, many academics and teachers have stressed the need of encouraging students' creative thinking in design education. Researchers have sought for efficient means of stimulating students' creative thinking [1-8] because critical design thinking may be an excellent strategy to encourage numerous design concepts by providing an interactive knowledge of an ill-defined design challenge. Rather than a structured academic approach, design education has traditionally been offered to students via the subjective approaches of instructors [9]. Therefore, from a broad educational approach that prioritizes logic and evidence, design education is often overlooked. Promoting creativity is essential for design and should be stressed in a holistic, multidisciplinary way [10]. However, design education should include a model with more academic ways for enhancing creativity. Overall, students in an architecture program may expect to learn both the theoretical underpinnings of design and the practical implementation of design principles via their coursework. In order to provide a satisfying solution to a given problem, students in design studios in the school of architecture are frequently tasked with gathering information on the issue at hand, analyzing the materials gathered, transforming them into spaces, and critically presenting their ideas to the class. Interaction with different disciplines has led to the development of a wider range of architectural styles and languages within the area of architecture. There hasn't been nearly enough study of the educational implications of Buildings 2021, and instead researchers have mostly concentrated on more theoretical approaches to the built environment. This research presents an architectural design studio with the goal of exploring spatial expressions in many dimensions via the use of filmic qualities and a discussion of alternative methods of assessing the projects' success. The perception of time and space, the feeling of continuity, and the sensation of movement are all aspects of architecture and cinema that have commonalities. Since there is a similarity between actual locations and filmic environments, it was hoped that this would inspire students to think creatively as they explored film. Coursework would reflect the changing educational environment by emphasizing on creative stimulation rather than practical consideration and addressing the problem-based learning offered in the aforementioned literature. Because of the constant need for novel and integrated solutions to the complex and diverse problems linked with places, the profession of architectural design has a keen interest in creative spatial design.

In this light, the purpose of this research is to provide the results of a semester-long (16-week) course offered by the architecture department at a university in Korea to first-year students learning how to translate filmic settings into spatial designs. This research looks on the students' process of translating filmic settings into spatial designs in order to learn cutting-edge methods of expressing themselves architecturally. Based on theoretical considerations of space and cinema, the Visual Communication Design Studio seeks to identify the film's component aspects that may be incorporated into actual space. The primary goal of this design studio was to provide students a new approach to cultivating creative thinking while studying architectural design. In an attempt to describe the issue and the process of "finding a way to solve it" with the help of academics, the project aimed to delve into the difficulties encountered throughout the design development phase. The ability to reframe an issue in order to formulate a workable solution is crucial in architectural design. Instructors and students were encouraged to share their design ideas and iterations using a variety of representational means.

2. Related Research

2.1. Creativity and Design Education

The capacity to confront concepts of expression and generate original and beneficial results is a hallmark of creativity [11]. When it comes to coming up with new and exciting ideas, the creative design process is in a league of its own [12,13]. Creativity is a quality that is often evaluated after the fact, but it has also been linked to certain design methods that are more likely to produce creative objects [12,14]. Restructuring, which represents the designer's reimagining of the issue, is strongly tied to creative thinking [15]. As Guilford noted [16], the capacity to rebuild issues and reinterpret thinking leads to freedom from fixedness while constructing logical answers, which is essential for creativity. In order to encourage reinterpretations throughout the design process, conscious awareness is crucial [17,18]. By helping designers to shift their attention and take in information in new ways, constructive perception boosts their inventive potential [19].

Dorst [5] developed design-derived reasoning patterns, focusing on abduction as a foundational reasoning pattern for creative thinking and investigating the heart of design thinking for idea creation. Understanding the core features of students' design challenges and adopting good reasoning strategies to generate a creative design process are essential for maximizing the value of students' design outputs.

2.2. Representation in Architecture

Different but related frameworks have been proposed in many studies of architectural representation's function within the design process [23]. Goldschmidt postulated the major aspects of culture/history, cognition, and technology/media [24]. De la Fuente Suarez proposed splitting the creative and interpretative stages of thought apart [25]. Previous research on design representation has sought to define its functions and best practices in a variety of design settings; this literature has established that drawings are the primary representation for conveying ideas from the designer's head to the audience's eyes [26]. Computational technologies have an impact on architectural representations at every stage of the design process [28], and it was observed that representation approaches play an essential role in expressing design goals [27].

Many studies have compared how people react to different types of visual representations of objects, but until recently most of these studies relied on quantitative perceptual approaches [29, 30] in which statistical differences depended on accuracy or realism, as well as abstraction, participation, and completeness. While these techniques have improved our knowledge of how different assessment criteria relate to the accuracy of a representation, they have not yielded any concrete guidelines for architects when it comes to drawing their plans to scale. That is to say, these techniques have not had their perceptual behaviors and criteria for selecting, creating, and targeting architectural representation well explored [24,25]. Drawing is an architect's principal media [31], and it is the act of drawing that gives birth to something that did not previously exist [32]. Architecture has traditionally relied on drawings and representations for a wide range of purposes, from providing technical explanations and expressions to making daring recommendations and giving voice to the imagination. Throughout the design process, representation aids designers in creating, experiencing, communicating, and evaluating design ideas [23].

Representation may be more efficient than direct experience in drawing attention to a specific feature of an item being shown [25]. Architecture relies heavily on representation as a means of concretizing abstract concepts like information, thoughts, and feelings [33]. In architectural studios, the whole process is carried out to convey ideas via different media, therefore representation has great potential in the realms of art and design [30]. Although the potential of drawing as a medium for analysis is acknowledged, it has not received the same attention as its function in design and communication in architecture [34]. Understanding the connection between creativity and architectural design education across cognitive processes, representational choices, and perception is the primary emphasis of this research.

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2.3 Locations in Film

Breaking the fixating effects of design predecessors is essential for fostering original thought [35-37]. It has been proposed that encouraging designers to develop novel ways to frame issues may reduce design fixation [36], given the importance of problem framing in finding and comprehending design challenges. Design challenges need to be redefined outside of a designer's regular work scenario to prevent a fixation effect linked with earlier solutions [38]. The first definition of problems may be tied to work contexts that are comparable to those in which previous problems were defined. Choi and Kim [39] performed an empirical research that countered design obsession with a strategic approach to design in the virtual environment. As a novel method of identifying design issues, filmic settings may be able to serve as inspirational catalysts for architectural representation. Aesthetic and style visualization are achieved by the use of cinematic techniques as shooting, montage, and mise-en-scène [40]. These factors provide a fresh chance to create a student interface that, rather than relying on explicit criteria like genre and cast, may help students identify films of interest for the research of filmic spaces in a manner that is unique to them. Taking the time to examine these facets of cinema might lead to a dramatically enhanced watching experience [41].Film, like architecture, is an art form that combines temporal and spatial expression via the use of visual images, much like the latter's reliance on spatial elements such as a building's layout and its furnishings. Like other tangible objects, space is largely sensed via visual means. The movement of the camera has been the subject of several earlier research on cinematic methods in architecture [42–45]. Films are distinguished by their inherent feature of motion, and they provide a novel perceptual aspect, a feeling of reality via pictures and movement. Film is a non-material form of expression that depicts motion on a flat surface inside the frame by fusing time and space to create an alternate reality.

The film's temporal and spatial qualities have presented a novel means of articulating design concepts, resulting in a voluminous spatial vocabulary in the built environment.

3. Methods

## 3.1. Curriculum and Architectural Design Studio Setup

Students have wide access to the tools, techniques, and approaches created throughout the institution via their participation in introductory to advanced level academic programs. As part of the university's five-year undergraduate professional degree program, the visual communication class offers a one-semester (16-week) introduction to architecture and design. In the Visual Communication Design Studio, students are encouraged to try new things and explore where the results take them in terms of how they depict buildings. In the first year, students study the fundamentals of architecture and acquire the tools and techniques that encourage an adventurous and intellectual interest in the physical and social surroundings, creating what might be called a "adaptation period" via a learning-by-making approach. With the goal of discouraging and disrupting the creation of a single design methodology, the first-year course has three separate studios designed to encourage students to pursue a divergent variety of methods and methodologies for the aim of multiplicity. Individually inside studio projects, students were tasked with actively seeking out debates to influence their work, developing the skills necessary to effectively convey ideas, and actively challenging their own ways.

3.2. Studio Course Procedure

Fifteen first-year students spent the previous 16 weeks working on concepts for expressions employing representation methods in the first part of their architectural design education, the visual communication course. The studio's empirical grounding came from the research conducted by these students while they completed a modest design project in class.

(a)
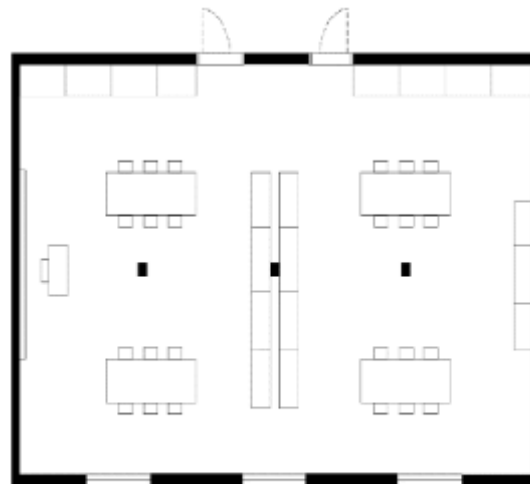
(b)

First-year students' perspective on the design studio. a) The desk is being used by many pupils at once. (b) A sketch of the floor layout for the studio.

3.2.2. The Artistic Process and the Stage of Design Development Wherein We Transform Our Ideas

During the expression technique phase (weeks 4-7), students used their own choice of expression techniques to adapt design ideas from film sequences into physical locations. We offered feedback on the students' preliminary ideas once a week, and they iterated quickly using representation tools. Students' ongoing projects were constantly addressed in one-on-one tutorials, group presentations, and juries with invited critics, where feedback led to refinements and the articulation of more nuanced and focused questions. During weeks 8-13, as the design was being developed, the students engaged in speculative experimentation and systematic engagement utilizing various methods. The jurors were given the opportunity to comment on the students' work and provide ideas for the designs during the presentation given halfway through the semester. The special judges wanted to see how imaginatively the pupils had taken the settings from the films and remained them as physical locations. The students were able to successfully present their concepts in the critical sessions by using a wide range of design tools.

3.2.3. The Last Critique: Putting It Into Pictures

At the conclusion of the studio process (weeks 14-16), students reworked and enhanced the design for the end-of-semester show based on feedback from the final critique. Students expanded on their earlier work, which had

shown an imaginary metropolis, by using their newly developed method of representation. After deducting the qualities of space shown in the movies, physical models were presented. Each student finished the semester with a robust analog and digital portfolio that detailed their unique and individual experience in the design studio. In addition to the portfolio and final exam, the students also had the chance to show the work they had created over the semester and reflect on it.

Design Assignment 3.3: Inspiring New Thoughts

The course's stated goal was to foster students' imaginations by dissecting various examples of successful filmic space manipulation. Beginning with Citizen Kane (1941) by Orson Welles, pupils moved on to Alfred Hitchcock's Rear Window (1954) and Vertigo (1958), Andrei Tarkovsky's The Mirror (1975), and Woody Allen's The Purple Rose of Cairo (1985). The pupils learned to look at a small section of a larger place by analyzing photographs of cinematic environments. These movies were chosen because of the striking similarities between their visual aspects in the actual and digital worlds [47]. The students studied film editing theory and examined various film editing expressions and approaches.
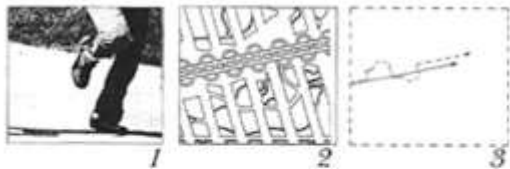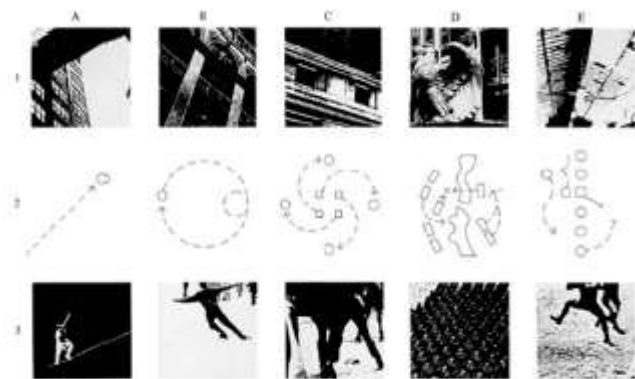
Figure 2: Bernard Tschumi's Manhattan Transcripts allow for alternative architectural interpretations by introducing discontinuities in function, appearance, and social significance [42].

Analysis Framework, Section 3.4

This research set out to determine how filmic space may be manipulated to best foster student creativity. With an emphasis on the inventiveness of visual communication, a paradigm for analyzing the adaptation of filmic settings into spatial architecture has been devised. Choi and Kim's [39] study provided the basis for our analytical framework, which we then refined with additional considerations related to the features of the innovative design process (see Table 3).

Table 3. A model for dissecting visual language's finer points.

Classification	Key Analysis Point
Problem reframing	Reconstituting the problem from various perspectives
Unconventional ideation	Reflecting on ideas in a different way
Brainstorming/Reflection	Mutual evaluation and communication to enable understanding
Divergent reasoning	Inferential thinking to produce diverse ideas
Representation of architectural language	Movement, frame, montage, light and color, and scene changes

4. Results

Stage 4.1: Project Growth

4.1.1.1 Spatial Reproductions of Film Locations

Initial Step: Brainstorming

One way designers may show what's going on in their heads is via sketches. Conceptual designing involves a wide variety of steps, including brainstorming, ideation, analysis, decision making, and visualization [49]. The students chose their own compelling sequences from the films mentioned above (in Section 3.3), analyzed them, and then used the extracted lines or circles and derived layers to create an entirely new environment. In this stage, rather than thinking about the idea of a city or a structure, students concentrated on producing a single, finished area out of the many parts of each layer established by conceptual drawings. The students' selections ranged from the shifting camera position to the static/dynamic interplay among the characters to the expressions on their faces. Using a variety of mediums, students tried to draw attention to contours, features, and spatial relationships (see Figure 3).
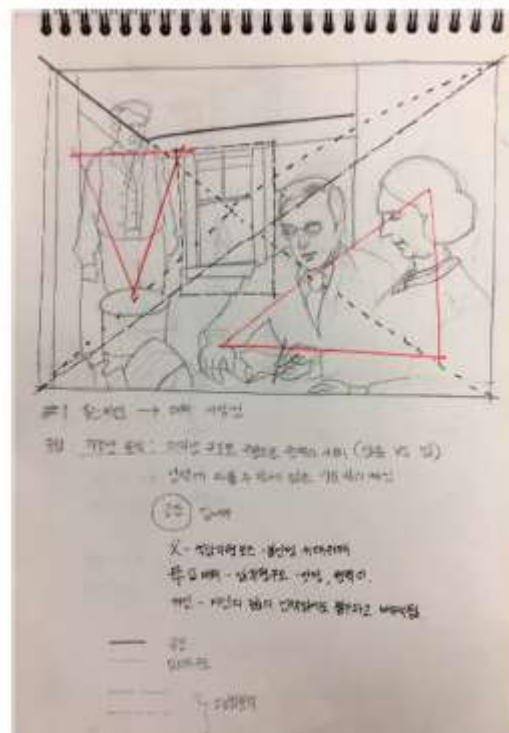
Figure 3: Student Work Sample The first week of the two-week drawing course focused on brainstorming and sketching ideas.

At first, the students had trouble articulating their visions for these cinematic realms. They were preoccupied with the prospect of locating architectural components and often took part in determining which technique was superior to others in terms of further development. Each student evaluated the setting and gained an understanding of how the pieces may be used to compose spaces during a private design session in weeks two and three. Instead of focusing just on urban or architectural features, we discovered that student film analyses provided fertile ground for exploring the theme of space. In addition, they avoided preconceived notions about the design process for buildings by analyzing the area for novel representational opportunities. The capacity to

classify and identify items that do not fit specific criteria was further bolstered via the use of conceptual drawings. Not

Outcomes of Representation 4.2.1: Representing Architectural Languages

The following is a summary of the students' analyses of film elements:

(1) Motion: A film's spatial shape was linked to a particular camera movement.

These shifts may be seen in a film in three ways: the protagonist's movement, the camera's movement, and the scene's movement via the passage of time.

The scene's movement is the consequence of the film's editing, and the other scenes are structured in a continuous and cohesive way; the movement brought about by the shift of gaze will create a genuine space. (2) frame - a rectangular picture that appeared on the screen when a film was projected. Students went beyond the confines of the frame, which had previously kept the thing inside a rectangular box. So the screen wasn't like a picture frame, but rather like a window or a city that only displayed a fraction of the full; Thirdly, the film's most fundamental and crucial component was montage. Montage's foundational principle was the juxtaposition and synthesis of seemingly unrelated parts via the process of editing. Indirectly, the montage showed a representation of time by altering the pictures' forward momentum toward the whole; Fourth, hues and tones: Filmic realism was achieved by the use of lighting and color in a mise-en-scène. The cinematic environments' ambiance and feeling were heavily influenced by the use of light and color. It was the contrast in lighting that best revealed the subject's psychology via its color, form, and texture. 5 The progression of time and space was the movie's plot.

5. Discussion and Conclusions

In the field of architecture, researchers looked at the effects of a semester-long course called Visual Communication Design Studio, with a focus on the role played by the use of representational tools in the cultivation of students' design-related ways of thinking. Basic skills in understanding and manipulating visual and spatial relationships between two- and three-dimensional spaces, as well as their role in architectural design processes, are taught in the Visual Communication Design Studio's introductory course. When they are working in studios, students face comparable constraints on their freedom of expression. Students in this research gained an appreciation for the importance of observation, analysis, and representation in contextualizing and articulating design works as they investigated the design problem. Creativity also has a diverse effect on various people due to their unique traits. We sought out studies that characterized the architectural design process, from the genesis of concepts and ideas to the development of students' individual modes of expression as problem-solving strategies in the face of challenges. The following are some concerns that should be addressed throughout various design studio phases as indicated by the findings.

It is important for students to understand the significance of representation throughout the architectural design process, not only at the end. Like an architectural project, the methods of representation should evolve over time via trial and error. The confusion that instructors and students have about representational issues in architecture suggests that other areas, like cinema in this subject, ought to be employed to obtain credible answers that might be applied to architecture in some manner. Second, the design studio should incorporate various elements of design education, including but not limited to: subject analysis, idea discussions, problem-solving, individual tutorials (the most distinctive component of the design studio education), juries composed of external jurors, and time to work on projects independently in the studio. There are rules and conventions that must be followed with regard to each of these components. In contrast to the empirical university paradigm's emphasis on objective rationality in education [50,51], the design field is often connected with subjective creativity. In order to tackle more academic and rigorous approaches to design education [50], a new paradigm of education based on creative experience inside university norms is required. From this vantage point, the Visual Communication Design Studio has the ability to inspire students' imaginations while also imparting important academic knowledge throughout the formative stages of their education. Drawing on what they've learned, students may create original visual representations and articulate their ideas via drawings or models, all while gaining an understanding of the fundamental components, concepts, and design processes.

Knowledge is often cited as a prerequisite for innovative design, but it is impossible to conceive creatively without it [21]. The design major places a premium on cultivating students' creative capacities since doing so aids in the development of their unique vision, the acquisition of essential skills, and the comprehension of the professional ethos and its underpinnings. It is important to note that both design creativity and theoretical underpinnings and knowledge have a role in the development of curricula, as shown by the programs recognized

in these specialties or the type of aims and outcomes. Students may develop their communication, critical thinking, and knowledge-acquisition skills while actively participating in the design process [51].

To prepare students for more advanced design work later in their careers, fundamental measures should be put in place to enhance their critical thinking and problem-solving capabilities.

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