

SENSORY EXPERIENCE IN ARCHITECTURAL DESIGN EDUCATION: AN EXPERIMENTAL VISUAL PERCEPTION STUDY WITH SERIAL VISION METHOD

MİMARİ TASARIM EĞİTİMİNDE DUYUSAL DENEYİM: SERİ GÖRÜŞ
YÖNTEMİ İLE DENEYSEL BİR GÖRSEL ALGI ÇALIŞMASI

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ABSTRACT

Architectural Design is a process that creates products that are perceived by sensory experience and appeal to the senses of the designer and the user, therefore, it is essential to include the senses in architectural education. In recent years, it has been discussed that design appeals to all senses and their sensory scale. For this reason, a sensory experience was planned within the scope of the Interior Reinforcement Relation course, and experimental processes were carried. In this study, students' perceptions of the city and its urban meaning were examined through visual sensory perspectives, and it was aimed to construct the relationship between architectural education and visual experience. The method of the research is a process that integrates visual perception and meaning by creating perspectives with serial visions. Students were given two shopping centers in Adana and were asked to photograph these places. Each stopping point is defined with a perspective and named with concepts that characterize students' perceptions. Consequently, it has been seen that the inclusion of sensory experiences in education contributes to the design education process by making students more sensitive to their environment, and the education process can be enriched by including different senses in architectural design education.

Keywords: Architectural Design Education, Sensory Experience, Visual Perception, Serial Vision Method.

ÖZET

Mimarlık yapılı çevreyi inşa eder, insanlar da yapılı çevreyi oluşturan kentsel mekânı duymalar yoluyla algılar. Mimari mekân algısında, görsel, işitsel, dokunsal, koku alma ve hatta tat alma gibi farklı duygular ve çağrışımlar eş zamanlı olarak yaşanmaktadır. Mimari Tasarım ise, duymal deneyim ile algılanan, tasarımcının ve kullanıcının duymalarına hitap edecek ürünler ortaya çıkarılan bir süreçtir ve bu nedenle mimari mekân tasarımının öğrenilme süreci olan mimarlık eğitiminde duymaların eğitime dâhil edilmesi oldukça elzemdir. Son yıllarda tasarımın tüm duymalara hitap ettiği ve duymal ölçüğü tartışılmakta, tasarım eğitiminde de duymaların dâhil edilmesi önemli görülmektedir.

Bu nedenle Çukurova Üniversitesi Mimarlık Bölümü İç mekân Donatı İlişkisi dersi kapsamında duyuşal deneyim atölyesi planlanmış ve görme, işitme, koklama ve dokunma duyuları için ayrı ayrı deneysel süreçler yürütölmüştür. Bu çalışmada mimarlık öğrencilerinin kent algısı ve kentli anlamı görsel duyuşsal perspektifler üzerinden irdelenmiş, mimarlık eğitiminin görsel deneyimle ilişkisinin kurgulanması amaçlanmıştır. Sonuç olarak duyuşal deneyimlerin eğitime dâhil edilmesinin öğrencileri çevrelerine karşı daha duyarlı hale getirerek tasarım eğitimi sürecine katkı sağladığı ve mimari tasarım eğitiminde farklı duyuşlara yer verilerek eğitim sürecinin zenginleştirilebileceğı görölmüştür.

Anahtar Kelimeler: Mimari Tasarım Eğitimi, Duyusal Deneyim, Görsel Algılama, Seri Görüş Yöntemi.

1. INTRODUCTION

Architects give a new meaning to the existing built environment with each new design they create and communicate with the environment. As the built environment affects people, people also show behavioral reactions by perceiving the architectural structures that define the existing built environment. At this point, it is useful to distinguish the sensory, formal, and symbolic interactions between users and their built environment in the design process.

In the perception of architectural space, different emotions and associations such as visual, auditory, tactile, smell, and even taste are experienced simultaneously. Architectural Design, on the other hand, is a process that is perceived with sensory experience and products that will appeal to the senses of the designer and the user are created, and for this reason, it is very essential to include the senses in architectural education, which is the process of learning architectural space design. As in all fields of education, cognitive and affective teaching objectives contribute to the acquisition of learning skills by improving the perception potential of design students. For this reason, the structure of the expressions used in architectural education is mostly based on visual perception (Bırer ve Kaya, 2019).

In recent years, it has been discussed that design appeals not only to the sense of sight but also to all senses, and it is considered important to include the senses through experiences in design education. Especially after the global pandemic, the importance of learning by experience in the architectural education process is emphasized even more. Due to the lack of physical participation in education during the pandemic, the lack of experiential teaching and learning in architectural education and the importance of practice with peers has been learned by experience (Marshalsey, 2023).

Architectural education includes theoretical and practical courses for a series of design problems spread over a wide range of intellectual and emotional perspectives in which the profession of architecture, which is a multifaceted field, is learned. For this reason, the development of architect candidates in two different areas is aimed during the education process. These are; the cognitive field that supports the person's thought system and knowledge and the affective skills that enable the development of intuition and imagination. For this reason, in architectural education, architect candidates should know by perceiving, feeling, and experiencing the environment. According to Aydınlı, the effective development of architect candidates depends on visual education. Visual education starts with visual analysis and continues throughout the architect's professional life. Various visual research methods have been developed according to different perspectives for students to see what they look at, to perceive by feeling, to think about what they see, and to produce concepts (Aydınlı, 1992). This study focuses on the visual perception experience of architecture students, and within the scope of the study, visual evaluations and orientations of students on interior space perception were examined.

Çukurova University Department of The Relationship Between Space and Furnishing course 2022-2023 Autumn term 14 weeks sensory experience workshop was carried out with the students taking the course and experimental processes were carried out separately for the senses of sight, hearing, smell, and touch.

This study focused on visual perception. In the research, architectural students' perception of interior space, interior space experience, orientation in space, and the semantic response that provides orientation were examined through visual sensory perspectives, and it was aimed to construct the relationship of architectural education with the visual experience. In this context, the aim of this study is firstly to create an awareness of the students about their senses and then to develop their creative thinking through learning by experience by including this awareness in the activities within the education.

2. LITERATURE REVIEW

2.1. Sensory Experience In Architecture Education

In the context of the human space relationship, people perceive space with all their senses. The inclusion of different types of sensory experiences in the education process of the architectural profession, which is the art of designing space, is indispensable for the teaching and practice of architectural design. Our ability to experience design and design education is significantly limited without sensory and embodied cognition. Since architectural design is inherently a discipline that feeds on human activity and existence, it cannot exist without practice and experience, and this experience is traditionally realized in the design studio. However, with the inclusion of the senses in the educational process, the concept of learning in context has emerged in recent years. In this context, it is argued by educators that for deeper learning to take place, students should apply the knowledge themselves in context (Readman v.d., 2021).

Learning domains have been defined and teaching models have been developed to implement experiential learning in contemporary design education. Thornburg (Thornburg, 2013) defined a model for the learning domain under the following four definitions, accordingly;

1. Campfires: A learning space where learners are the audience and learn from experts. In the campfire model, it refers to storytelling or lecture where students are supported by the presentation of learning materials.
2. Watering Holes: A teaching model creates a social learning space where students learn from their peers. It is defined as managing a collaborative process in which students socialize and engage in peer dialogue.
3. Caves: It is defined as the creation of a self-directed, reflective learning space for an individual student to form a concept.
4. Life is defined as a learning area that reflects the real world to students.

Within the scope of this study, theoretical information was given with the 'campfire' technique defined by Thornburg in his model, and the 'Life' and 'Watering Holes' techniques were applied in the application and visual experience stage.

2.2. Visual Research in Architecture

Within the scope of the study, which is based on the sensory awareness and experiencing process of architecture students, the sense of sight and visual perception are focused on, and visual research methods are examined.

Designers, while creating the built environment, are inquisitive about the results and social effects of the designs they create, and research the extent to which they respond to the social and psychological needs of the users (Polatoğlu, 2012). As a result of the design research, which is formed by the evaluation of the built environment by the user based on perceptual factors, the aim is for the designer to obtain general information about the subject. These researches are carried out both before and after the design and aim to create general design data by cooperating with different disciplines. The method applied in this study is a visual research method. In this sense, the basic concepts of the method and information are gathered under this title.

Environment-behaviour studies investigate the relationship between human behavior and the socio-physical environment (Garling ve Golledge, 1989). The use of the knowledge obtained as a result of investigating the relationship between humans and the environment in the field of application is of great importance in improving the quality of life of society (Turgut, 1990).

Visual research, which is covered by environment-behavior research, examines the contribution of visual quality research with the public to design by emphasizing the importance given by architects to public values in the design process. Some architects made their designs by defending their subjective values in the design process and did not prefer to include the aesthetic judgments of the public in the process. However, the participation of the public in the process is considered very important in the creation of visual quality and some techniques have been developed as a result of visual environment research (Sanoff, 1991).

The designer generates ideas and creates projects to change the existing environment. The process starts with thinking about the project and ends with the completion and implementation of the drawings of the final product. The process stages are generally listed as programming, preliminary, final design, application drawings, and implementation of the project (Zeisel, 2006). The classification and correspondence of visual objects and their design applications are considered to be among the weakest phases of the design process. This deficiency is reflected in the design product itself. Researches reveal that visual dissatisfaction is part of an important conflict/incompatibility between people and the built/structured environment by considering the criticisms made on the architectural products (Lozano, 1974). The methods developed to establish a relationship between people and the environment have been developed to solve the problems arising from the user side and to minimize the differences between the designer, researcher, manager, and user (Polatoğlu, 2012).

The relationship between architecture and human sciences is important in terms of establishing the behavioral relationship between the built environment and people and developing a design process in this direction. Considering that the architect has an active role and responsibility in the creation of the built environment, an irregular and inadequate relationship between the architect and the user, that is, the people who live the environment and perceive the architectural structures that are an element of the built environment, also affects the design (Erkman, 1982).

According to Erkman's quote from Zeisel (Zeisel, 2006), the architect imposes his thoughts and values on the users in three ways: behavioral, symbolic, and aesthetic.

- Behaviourally, the architect designs a building according to how the user wants to live. As a result, an incompatibility and conflict may arise between the environment and people.
- Symbolically, the architect determines how the user will move, position, and behavior.
- Aesthetically, it can be said that the difference between the architect and the user is the most different point in terms of cultural accumulation. The reason for this is that the architect mostly prefers to design with a common aesthetic style understanding, and these aesthetic values are not meant for the user belonging to another culture (Erkman, 1982).

Changes in the built environment affect what people do. In addition, people's experiences in their past environments shape their future aspirations. Therefore, as a designer, understanding how people see the environment and what they know about it depends on understanding the behavioral and emotional responses of users (Zeisel, 2006).

Zeisel analyzed people's reactions to the environment under five headings: what they see in the environment (perception, meaning), what they feel about the environment (thought, value), what they do about the environment (place, path, relationship), what they do to the environment (adaptation, representation, message) and what they know about the environment. Within the scope of this study, which focuses on sensory experience and visual analysis in architectural education, visual perception was included as an essential topic (Zeisel, 2006).

2.3. Perception and Space Experience

The question of how and under what conditions people react to their environment is one of the fundamental questions of human-environmental studies, which describes the nature of the mechanism linking people and their environment (Rapoport, 1977). The visual value or visual quality of any environment or space affects both the perceptions and emotions related to the mental structure of the observer and determines the spatial features that constitute the visual value (Aydınlı, 1986).

Environmental perception is one of the important issues in environment-behavior studies. People perceive the environment they live in through their senses, synthesize it in their minds and enter into communication by perceiving the environment (Çolak, 2004). The perception of space starts with the sense of sight and the human perceives his/her environment through various senses, which are in a continuous mutual interaction with the human environment. This interaction takes place in the form of perception-image-cognition respectively (Polatoğlu, 2012).

3. RESEARCH DESIGN

In scientific studies in the field of architecture, the research method is one of the elements that make up the research design. In this sense, the research design is a road map that includes certain topics and constitutes the main framework of the study. In this study, Babbie's research design framework consists of interest, idea, hypothesis generation, conceptualization, research method selection, operationalization (measurement method selection), sample determination, observation, data processing, analysis, and implementation (Babbie, 2009).

This study aims to design a process that includes sensory experience in architectural education, has high environmental sensitivity, and is aware of the fact that architecture is a phenomenon that appeals to all senses, beyond the drawing environment and design studio, in experiential learning areas, with peers, by seeing, experiencing and reflecting these experiences to the entire professional life of the architect candidate. The research question is "How does creating a visual experience area on the interior space perception of architecture students affect the education process? And according to which visual stimuli students are orientated in these experimental areas and what is the semantic equivalent of these perspectives?" The hypothesis established on the research question is determined as "H1: With the creation of visual experience areas in architectural education, architecture students' visual awareness increases, and the visual effect on the perception of interior space is effective in increasing awareness". Visual research techniques were analyzed as a research method for this hypothesis.

3.1. Methodology: Serial Vision

Within the scope of the study, the research method used to define a visual experience area for architecture students is Gordon Cullen's serial vision method, which is included in the visual research methods in architecture and is based on the analysis of the visual dynamic perception of the urban environment (Cullen, 1961) (Image 1).

According to Cullen, perception of the environment is mostly based on visual perception. The sense of sight helps to mobilize memories, experiences, and emotions. Cullen says that the emotional response provided by the environment consists of 3 factors. These are defined as optics, place, and content. In the 1st factor, 'optics', Cullen revealed that the perception of the city is realized by the movements of the observer within the city and that different perceptions emerge as they move through the city and he defined this as the concept of 'sequential sight' (Cullen, 1961).

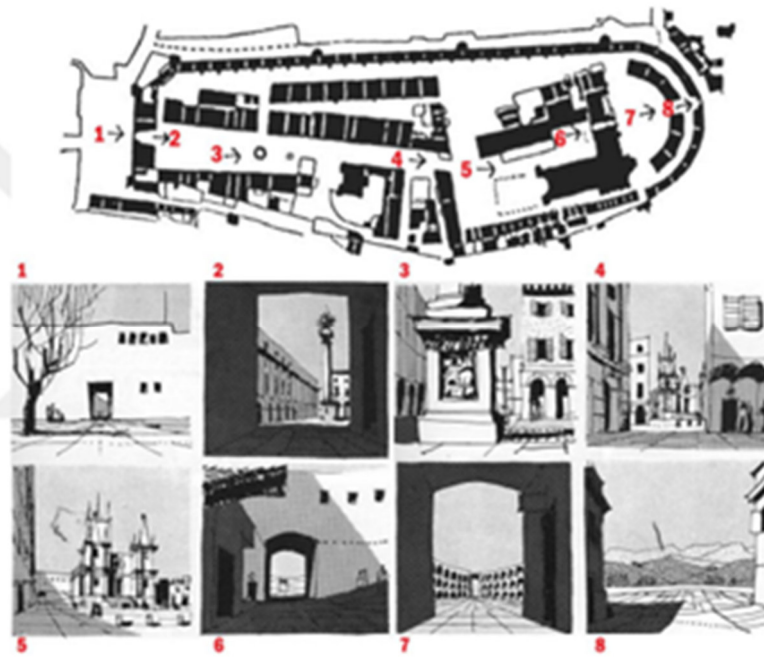


Fig. 1. The elements perceived in the city as you move along the map are respectively included in the perspective drawings (Berk, 2019).

The first of Cullen's categorizations, optics, is related to the concept of serial vision. According to Cullen, the perception of urban space is formed as a result of a series of views obtained as a result of constant movement. The concept of serial vision is used to express the visual experiences gained while traveling around the city. According to Cullen, roads offer a series of different views to urbanites. For example, the sequential vision of a straight road is different from the sequential vision of a curved road. When individuals experience a winding road, their sequential vision will change at every corner, and a new image will suddenly appear before them. Although individuals are traveling at a constant speed, their visual experience will constantly change and differentiate. This situation also reveals the effect of the structural components of urban spaces on the perceptions of individuals. According to Cullen, a long and straight road has little effect because the first sight is digested in a short time. As a result, the process becomes monotonous. The experience provided by curved roads is far from surprising and monotonous. Serial vision analysis provides a visual assessment of the physical, natural, historical, and cultural dimensions of urban spaces on the move (Cullen, 1961). Within the scope of this study, the serial vision method was used not for the perception of urban space, but for the indoor perceptual experience of a shopping center, which is close to the city scale in terms of size and has urban space features with its street-type plan scheme.

4. FINDINGS AND DISCUSSION

Sensory experience study designed for architecture students;

- Determination of the research question
- Hypothesis creation
- Determination of Factors
- Serial Vision study (Case Study)
 - Interior Visual Perception Experience
 - Creation Perspectives and Routes
 - Defining the Concepts
- Data Analysing
- Discussion, consists of stages (Fig.2).

An Experimental Visual Perception Study with Serial Vision Method

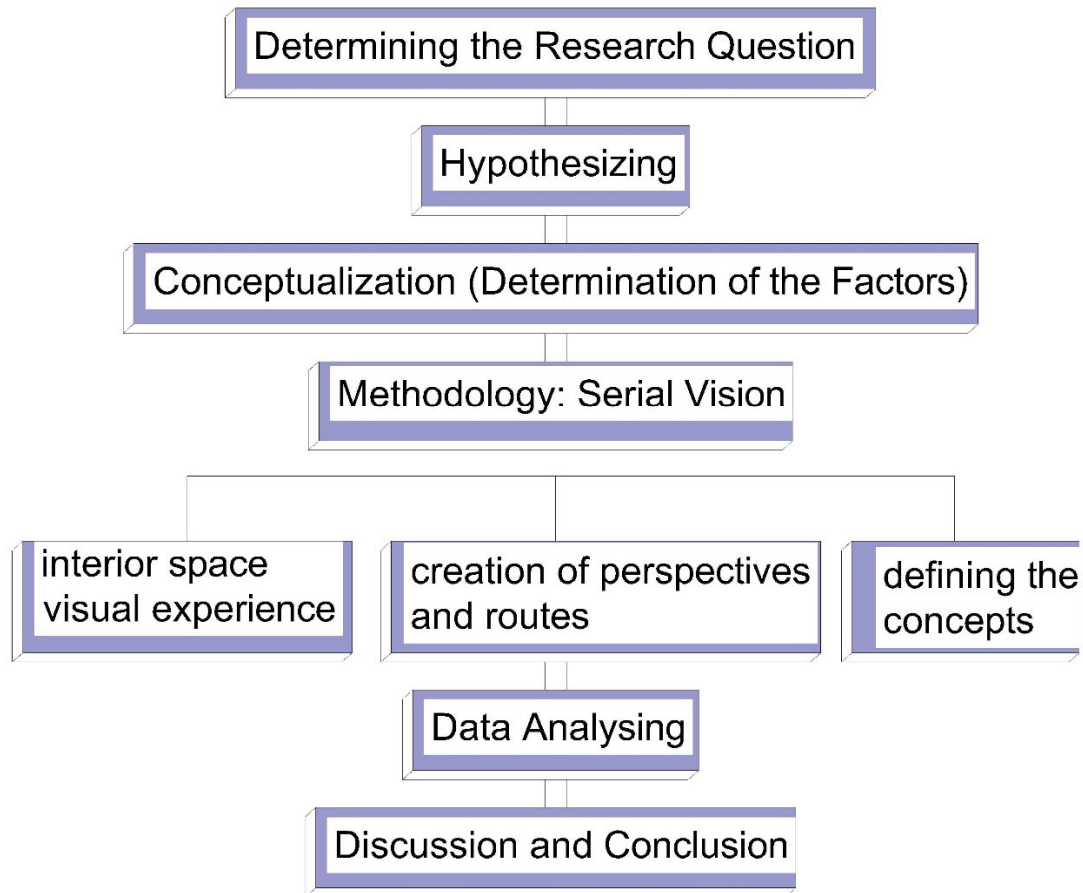
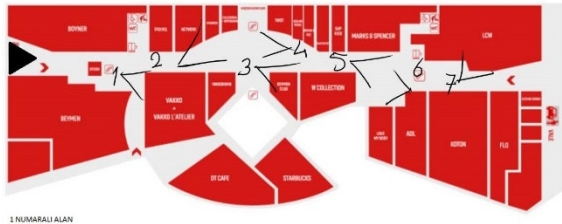





















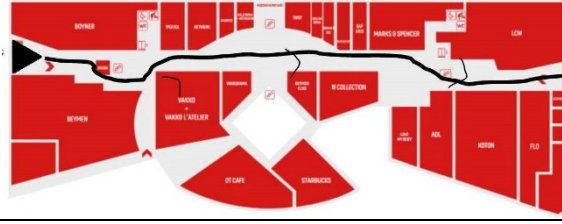






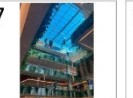






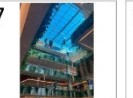






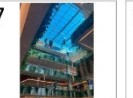
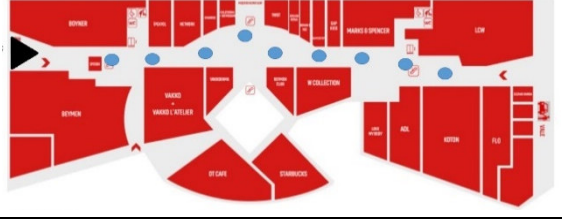

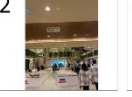

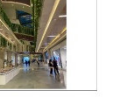


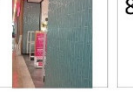


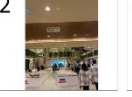

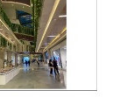


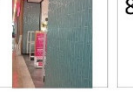


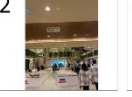

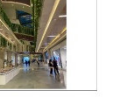


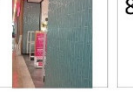

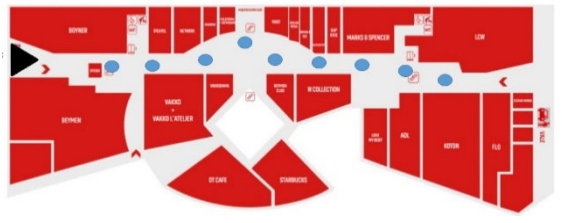
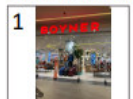







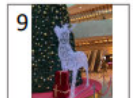


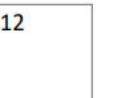
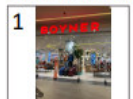







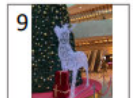


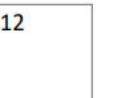
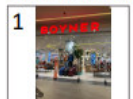







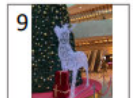


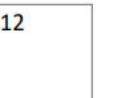
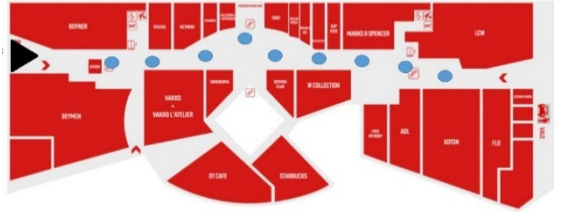
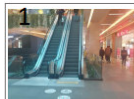



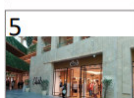



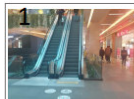



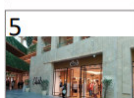



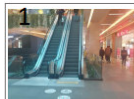



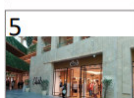





Fig.2. Steps of the Experimental Perception Study with Serial Vision Method

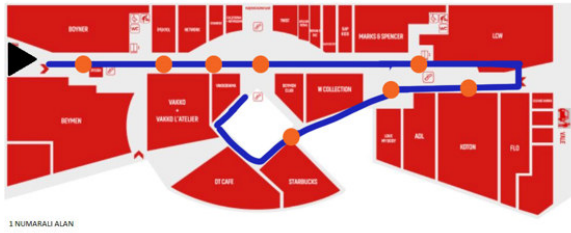
In the Serial Vision study, the students were given the 'Esas 01' Shopping Centre in the city of Adana for fieldwork. In this area, students were given a starting point and asked to experience the space by considering visual stimuli. Students participating in the study;

- Start traveling the space from the given starting point,
- Create your route taking into account the elements that will affect your visual perception.
- Mark and photograph the stopping and directional decision points on the map
- Explain why you are orientated to that point with keywords (at least 3 reasons). The data obtained accordingly are combined in the table below.

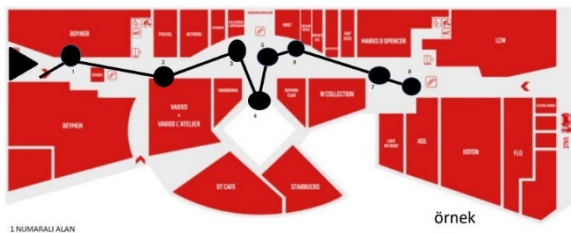
Table 1. Perspectives and Routes

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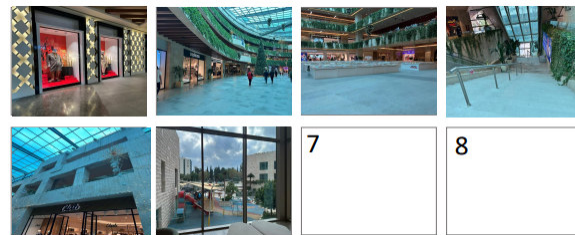
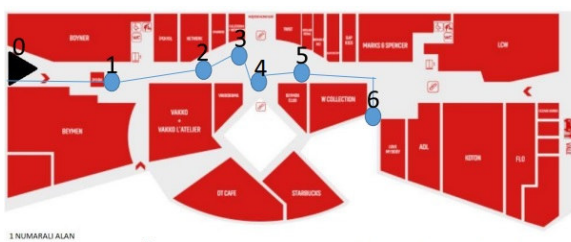
Participant 6



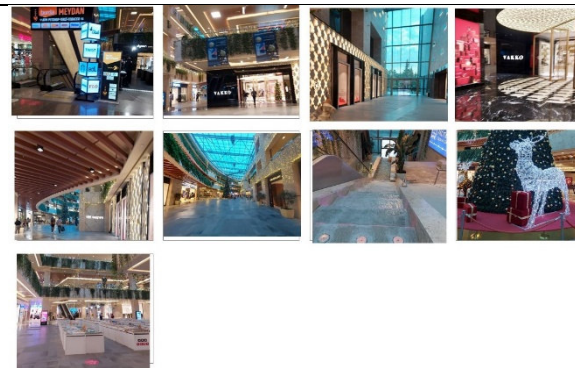
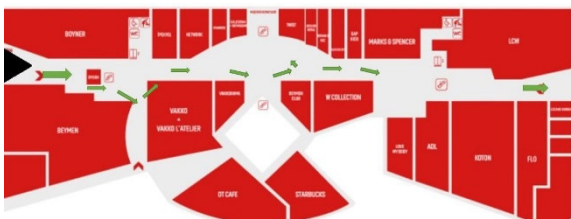
Participant 7



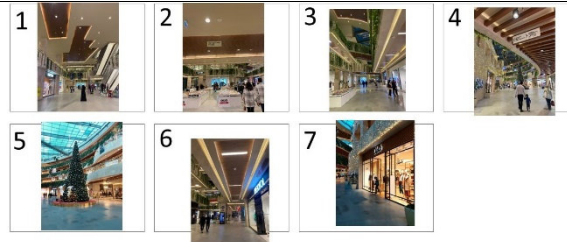
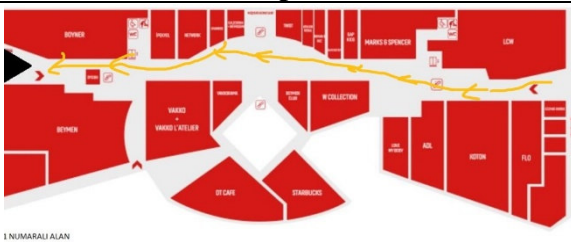
Participant 8



Participant 9



Participant 10



The concepts affecting the orientation of the students according to the routes determined are;

- For the 1st participant; light, density of indoor plants, gaps, glass material, construction system, ceiling detail,
- For 2nd participant; color, hanging indoor plants, Christmas tree, ceiling structure, glass material, texture
- For 3rd participant; gallery space, light, ceiling tiling, Christmas tree, texture
- For the 4th participant; color, wall covering, ceiling lighting, ivy plants, Christmas tree, aisle lighting
- For the 5th participant; color, glass material, wall element, texture, reflection, book stand
- For the 6th participant; color, texture, object, smell, temperature, material
- For the 7th participant: color, light, order, ornament, water learning, transparency, sky
- For the 8th participant; wall design, atrium, plants, daylight, staircase
- For the 9th participant; information boards, gallery space, orientation elements
- For the 10th participant, light, ceiling detail, decorations, and material effect.

The concepts guiding the orientation of the students in the interior space formed their routes, and it was seen that these concepts were, in summary, lighting, material, texture, interior decorations, and orientating reinforcement elements.

5. CONCLUSION

There is currently a lack of awareness of what it is to be human and the need to be aware of how to listen to the body for guidance and direction in education. When we listen to the body through the lens of sensory impact, we can adjust and strengthen reflective teaching and student engagement in design education. Sensory impact influences the experiences of many individuals and groups in the various learning spaces available in design and higher education.

Design education in architecture and related disciplines is the cornerstone of design professions that contribute to shaping the built environment of the future. Architects design multi-sensory communicated design products for users, but the sense of sight is the most dominant of these. For this reason, the study aims to increase the visual perception awareness of individuals who will produce architectural design and receive education in this profession.

In line with the feedback received from the students, after the study, students' awareness of interior space perception, orientation, and visual perceptions for people who will use the space has increased and it has been observed that visual traces in their designs affect the orientation in the use of interior space. By including a visual experience study in the education process, it is expected that students will include visual traces and concepts that will guide the user in their professional lives in their design processes and an interactive, experiential design process will be carried out.

Architectural education is not a process in a classroom where only the instructor explains and the student listens. Practical education is given in design studios, but experiential learning has been frequently discussed for architecture in recent years. Architecture covers multi-sensory perception parameters and appeals to all senses. At this point, the study provided the first stage of students' access to their sensory awareness in the education process, and the gains of the visual experience study were listed in line with the feedback obtained. Accordingly, with this experimental study, students stated that they gained visual awareness about which concepts affect their orientation when they walk in an interior space, a built environment, or an urban space.

As a result, it is argued that the use of senses in design education can help students to make more impressive designs by increasing their creativity, becoming more sensitive to their environment, and creating a more positive impact on people, and it is argued that architectural education can be developed in a way to improve students' design skills by obtaining more sophisticated results with different sensory activity studies.

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