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Article

Use of artificial intelligence in interior architecture education and case study an example of using Vizcom artificial intelligence tool in Kocaeli University interior architecture education

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ABSTRACT

The aim of this study is to determine the necessary conditions for the inclusion of artificial intelligence in design education in interior architecture and to evaluate the use of artificial intelligence technology that creates renderings from sketches in this context. Literature review, and "experimental model" method, one of the quantitative research types, were used in the study. The experimental study was carried out with thirty-eight students studying in the Department of Interior Architecture, Faculty of Architecture and Design, Kocaeli University. As a result of the study, it was determined that students express their thoughts more easily in their designs and produce three-dimensional presentation works faster with the artificial intelligence tool that creates renderings from sketches. In addition, when the visual that emerged as a result of editing with artificial intelligence was evaluated according to the determined design criteria, it was observed that the visual content was directly proportional to the student's professional competence and the success of hand drawing. It has been revealed that the inclusion of artificial intelligence tools in interior design courses will be useful in developing creative thinking skills in terms of working with more than one proposal and producing different alternatives with the help of various visuals.

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INTRODUCTION

The use of artificial intelligence technology for design and visualisation in the interior architecture profession, as in every professional field, has recently increased considerably and continues to increase. Those who are indifferent to this development will find it very difficult to remain competitive in the sector and to stay current in the profession. It is

therefore essential to train interior designers who can filter and use artificial intelligence effectively, and to investigate ways to include these innovations in education.

The human brain is likened to a computer in terms of its working structure. This view can be explained by various (D. Adrian, 1913; H. Berger, 1929; W. Penfield and T. Rasmussen, 1957; A. Turing, 1950) developments in science

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(Tarlacı, 2022). In this context, it can be said that artificial intelligence studies are directly related to the functioning and imitation of the human brain (Yıldırım & Demirarslan, 2020). Even if artificial intelligence is assumed to think like humans, creativity plays a role in design. More than intelligence, is needed for creativity. As Hawkins & Blakeslee (2007) say, "A human being is more than an intelligent machine". Cognitive skills such as intelligence, knowledge, and affective skills come to the fore in creativity. Not only being aware of one's own emotions, but also being aware of the emotions of others, establishing interpersonal relationships, cooperating with the team, developing others, communication and persuasion skills can serve as a useful component in the development of the creative product. In addition, people can use technology as a tool in the development of creative products.

Design can be defined as a problem-solving process in which creativity is at the forefront. While interior architecture education, a design-oriented discipline, expects a creative product as an output, it also supports the development of students' creative thinking skills. The inclusion of technology in the development process of interior architecture students' creativity has been the subject of recent discussion. In this context, there is a need for studies investigating the impact of the inclusion of artificial intelligence technologies in interior architecture education.

Review of the Literature

Due to the development of large-scale artificial intelligence models and the acceleration of artificial intelligence studies, the study took into consideration literature that was expected to emerge between 2022 and 2024. Especially in Türkiye it has been observed that there are many studies examining the relationship between artificial intelligence and interior architecture education. As of now, there are 3603 records in the Higher Education Institute Thesis Centre in the field of artificial intelligence. While 58 of these are in the field of architecture, eight of them are in the field of interior architecture (YÖK, 2024). The study titled "Evaluation of the Interaction of Artificial Intelligence and Space Design in Today's Design Education," conducted by Ekin Bayrak in 2022, is the closest to this study in terms of its subject. In Bayrak's (2022) study, the aim was to determine the views of students studying interior architecture and environmental design on the integration of interior design and artificial intelligence. Unlike Bayrak's study, this article includes the measurement of students' competences in the use of artificial intelligence and the experiments with artificial intelligence conducted by the author.

It is also necessary to briefly mention other studies in the field of 'Artificial Intelligence and Design' in the literature that support this study. Özdemir (2022) conducted a study titled "The Effect of Artificial Intelligence on Graphic Design and Designer", which clearly argues that artificial

intelligence is in the role of an assistant supporting the designer (Özdemir, 2022). Deveci (2022) emphasised in the study titled "Reflection of Artificial Intelligence Applications on Art and Design Fields" that designers save time with the use of artificial intelligence and that it contributes to the development of their creativity (Deveci, 2022). Jaruga-Rozdolska's (2022) study "Artificial Intelligence as Part of Future Practices in the Architect's Work: MidJourney Generative Tool as Part of a Process of Creating an Architectural Form" proves that Artificial Intelligence (AI) is a valuable tool for architects and supports creative thinking when used appropriately (Jaruga-Rozdolska, 2022).

Pamuklu & Fındıkcı (2023), "The Future of Graphic Design: Artificial Intelligence and Human", they conducted a survey with graphic designers and concluded that artificial intelligence is an important assistant for the field of graphic design (Pamuklu & Fındıkcı, 2023). Arisha's (2023) study "Transforming Interior Design Education through Generative Artificial Intelligence (AI) Trend" proves this point. It definitively shows that the use of artificial intelligence technologies in interior architecture education will produce different design alternatives (Arisha, 2023). Taluğ & Eken's (2023) study titled "The Intersection of Human Creativity and Artificial Intelligence in Visual Design" emphasises that while artificial intelligence can contribute to the visual design sector, it can also have negative consequences in terms of the creativity of the artist and therefore should be used carefully (Taluğ & Eken, 2023). The study "Is Midjourney-AI a New Anti-Hero of Architectural Imagery and Creativity?: An Atypical Era of AI-Based Representation & its Effect on Creativity in the Architectural Design Process" claims that artificial intelligence has some advantages such as creativity, speed and diversity in architectural imagery, as well as disadvantages such as being limited to images in memory and not being able to transfer human experience to the work of art (Radhakrishnan, 2023). "Using Text-to-Image Generation for Architectural Design Ideation" definitively demonstrates how text-to-image generation tools can support human discrete creativity in the early-stage concept design process (Paananen et al., 2023) "Robotecture and Artificial Intelligence (AI) Technology and its Impact on the Creativity", which argues that artificial intelligence technology can revolutionise the interior design industry by accelerating the creative process and increasing productivity (Gbr, 2023).

Çeken & Akgöz (2024) conducted studies in the field of visual design and as a result, they agreed on the data visualisation success of artificial intelligence, but argued that the resulting product was automated in the artistic context (Çeken & Akgöz, 2024). Coşkun's (2024)'s study titled "Productive Artificial Intelligence Systems in the Field of Art and Design" in which he stated that artificial intelligence supports the creative process in terms of obtaining content in direct proportion to the user's artistic competence (Coşkun,

2024). Sivri's (2024) study titled "The Future of Visual Arts in the Framework of Artificial Intelligence" in which he argues that the use of artificial intelligence in the fields of art and design will reduce the need for manual skills and that people who can use these tools effectively with the right inputs will come to the fore and that artificial intelligence should be used effectively in education while all this is happening (Sivri, 2024). In their 2024 study, Kahraman et al., (2024) explored the integration of AI in interior design education, emphasising its role as an auxiliary tool for designers in the creation of conceptual images based on keywords (prompt). The study underscores the significance of designers' interpretation and adaptation skills, emphasising that these cannot be replaced by AI in this context. This study aligns with the research themes of this article, as do other studies in this field (Kahraman et al., 2024).

A review of the literature on the role of artificial intelligence in design education was conducted. This revealed both the advantages and disadvantages of using artificial intelligence in this field. However, no study had previously been conducted that involved direct questioning in the field of education. In this context, it is hypothesised that the present study will contribute to future research in this field, specifically examining the use of artificial intelligence in design education in interior architecture and investigating its effect on students' creativity skills.

Artificial Intelligence and Interior Architecture Education

Artificial intelligence is the imitation, by computer programs controlling machines, of behaviours that are called intelligent, when performed by humans, (Pirim, 2006). The concept of artificial intelligence officially emerged as the name of a new research discipline during a workshop at Dartmouth College in 1955 or 1956, according to different sources. John McCarthy named this discipline for further study using the term "Artificial Intelligence (AI)" in a project application on 31 August 1955 (Aydın & Değirmenci, 2018).

Designing with AI has a significant impact on the interiors of various environments, including homes, workplaces, and public spaces. With the rapid development of digital technology, the integration of AI into these spaces is becoming increasingly common. The effects of AI on interior design are as follows:

- AI technology can make a great contribution to interior design by accelerating the creative process and increasing efficiency,
- With the help of AI, designers can create work in a shorter time than they would using traditional methods. Furthermore, AI can help designers to optimise their designs in terms of functionality, sustainability and cost,
- With the help of AI, the design process has the potential to be more efficient and effective, but it is

extremely important to preserve the personal touch that constitutes the artistic value of interior design. The human touch is vital in interior design and cannot be completely replaced by technology,

- AI can help designers quickly create and explore a wide range of design options, enabling them to test and develop their ideas more efficiently (Gbr, 2023).

The current quality of AI and the lack of readiness of computers to perform the complex tasks associated with both design itself and relating the designed buildings to the surrounding context make many people sceptical; they doubt that AI can be developed to replace humans in particularly complex fields such as architecture. According to Kolata & Zierke (2021), "AI itself cannot exist without the creativity of the people who create it. Artificial intelligence facilitates the development and implementation of innovative ideas and solutions. It makes the idea possible. It does not create the idea in the first place" (Kolata & Zierke, 2021).

Creativity is the focus of education and learning outcomes in interior architecture (Williams et al., 2010). Interior architecture education is an education model in which the student is offered the opportunity to comprehend problem-solving methods. In this education model, the course instructor directs the students and the students are involved in the design creation process with their creativity (Güzenci et al., 2012). In this context, creativity is among the criteria for evaluating the designer and the final product (Christiaans & Venselaar, 2005).

Interior architecture education is a model that includes theoretical courses as well as applied basic vocational courses, company-site visits and workshops that support students to create a designer identity. The aim of the workshops is to strengthen hand-eye-brain coordination, assimilate the information learnt from theoretical courses and develop creativity (Zorlu et al., 2012). According to Aydın (2015), architectural education should not be limited to the transfer of knowledge, but should be such that students are encouraged to think inquisitively and creatively, and their imagination is nurtured. In this context, the use of AI in the interior design process was examined in this study. Furthermore, it was aimed to investigate how AI would contribute to students' creativity.

In the literature, it is observed that the interior design process consists of various parts such as definition, integration, analysis, decision and implementation stages. Although this classification differs from source to source, it is commonly used in applications (Özker, 2014). In Choa & Suhb's (2020) study, the interior design process is segmented as follows; definition of the problem (analysis of user needs), concept development (analysis of precedent studies), schematic design (presentation of the design with visual expression techniques) and implementation (Figure 1) (Choa & Suhb, 2020).

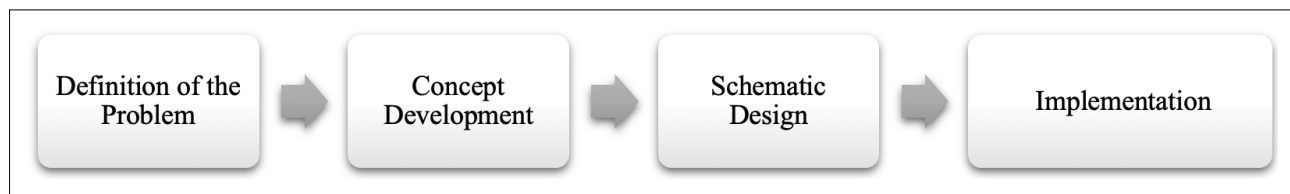


Figure 1. Stages of the interior design process (Choa & Suhb, 2020).

According to the above-mentioned interior design stages of Chao & Suhb (2020), a classification study of artificial intelligence technologies used in interior design was carried out on the AI technologies active as of this study's date (Figure 2) (Choa & Suhb, 2020).

Within the scope of the study, "Artificial Intelligence Technologies for Creating Renderings from Sketches" have been examined in the experimental field. A sketch is draft data suitable for development; it is the expression of the first thought of the design. The sketch, which is a stage of the design process, defines the outlines of the design and leads to the result step by step. Sketching in architecture, which is the language of expression of the line, creates the opportunity to produce fast and numerous ideas (Özker, 2014). Computerised presentation techniques are frequently used in the visualisation phase, which is one of the interior design stages. At this stage, a space or product is modelled in three dimensions based on two-dimensional drawings. A realistic image of the modelled product is created by assigning coating materials and lighting with the help of a camera. This image is called rendering (Özgel Felek, 2019). AI tools, in which sketches are quickly converted into renderings, are frequently preferred in interior design today. In this study, the "Vizcom" artificial intelligence tool was selected for its free usage right, user control of the similarity rate decision to the draft drawing, fast and high quality, image creation, prompts (keywords) entered in addition to the sketch, and the ability to upload reference images where prompts are insufficient.

Vizcom is an AI-supported rendering software that can transform sketches into photorealistic images in a short time. Its main features are as follows;

- Direct input of sketches or uploading of various artwork images to the platform,
- Fast artificial intelligence processing for photorealistic image transformation,
- High-resolution 4K output for quality visuals,
- A suite of creative tools including Prompts, Live Render, 3D Painting and Drawing Tools,
- Enterprise-level security with compliance standards for data protection,
- Cross-platform compatibility for accessibility on a variety of devices,
- Collaboration features such as Teams, Projects and Folders for shared workspaces,
- It is designed to save up to 80% of the time by automating repetitive design tasks (McFarland, 2024).

METHOD

The study, which evaluates the use of artificial intelligence technology that creates renderings from sketches in interior design courses according to the determined design criteria, aims to test the professional competencies of interior architecture students. For this purpose, "Interior Design Criteria" were created using Choa & Suhb's (2020) interior design process stages and the Professional Standards (CIDA, 2023) used by the Interior Design Accreditation Council to evaluate interior design programmes. The criteria are summarised below.

Adequacy of User Profile: Demographic characteristics and behavioural tendencies are discussed under the sub-headings.

- **Determination of Demographic Characteristics:** Demographic characteristics are the innate physical, social, economic and geographical characteristics of the individual that explain the individual and his/her position in the society (Tekvar, 2016). The study evaluated the relationship between the physical, social, economic, and geographical characteristics of the user profiles determined by the student and the designed project.

- **Determination of Behavioural Tendencies:** In the analysis phase of an interior design, it should be calculated how the user will behave in the face of

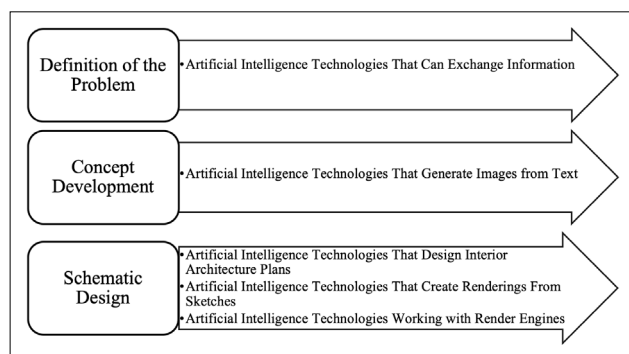


Figure 2. Classification of artificial intelligence technologies used according to the stages of interior design (Figure by [Elif Küçük], 2025).

which event. The behaviour of a person in the face of a situation depends on factors such as personality structure, environmental factors, interests, habits, etc. (Özkalp, 1981). In this context, the relationship between the behavioural characteristics of the user profiles determined by the student and the designed project was evaluated.

Adequacy of the Function Diagram: Adequacy of the list of requirements and adequacy of the schematic representation are discussed under the sub-headings.

- **Adequacy of the Needs List:** For a correct design; space needs should be determined completely, the equipment to be used should be classified functionally positioned in appropriate places in the later stages of the design (Sümer, 2011). In the study, the needs list created in line with user profiles and space needs was evaluated.
- **Sufficiency of Schematic Representation:** Drawing is the healthiest way to share information with the user in the discipline of interior architecture. Schematic representations are tools that help the designer in thinking and problem solving (Yi-Luen Do & Gross, 2001). In the study, the function diagram created in line with the list of needs was evaluated.

Adequacy of the Concept Study: The adequacy of the research section and the adequacy of the design of the project in line with the determined concept were discussed under the sub-headings.

- **Adequacy of the Research Department:** The way in which the concept determined as the starting point will be reflected in the space is directly proportional to the adequacy of the preliminary preparation. Kaya & Fitöz (2020) stated in their study that the prerequisite for creativity is knowledge. As the width of the knowledge treasure increases, the limits of thought increase (Kaya & Fitöz, 2020). In this context, the adequacy of the research conducted by the students before the idea generation phase was evaluated in the study.
- **Adequacy of the Design of the Project in line with the Determined Concept:** At this stage, two-dimensional and three-dimensional drawings of the project created by the designer were evaluated along with research data.

Sufficiency of Interior Architecture Expression Techniques: Compliance with technical drawing rules and adequacy of the presentation sheet are discussed under the subheadings.

- **Compliance with Technical Drawing Rules:** The correct transfer of the design is possible by drawing basic drawing types such as plan, section, perspective as they should be (Cho & Suhb, 2019). The conformity of the drawings made by the students to the rules of technical drawing standards was evaluated at this stage.

- **Adequacy of the Presentation Sheet:** Visual presentation sheets describing the design should be able to stand alone without verbal expression (Dodsworth, 2012). At this stage, the adequacy of the presentation sheets prepared by the students was evaluated.

Ergonomic Competence: It is handled under the sub-headings of space organizational, physical compatibility, and environmental compatibility.

- **Space Organisation:** It is evaluated under the category of the functionality.

Functionality: All elements in the space should provide cues and open possibilities to help users determine the right sequence of interactions to achieve their goals. Proper space organisation allows individuals to perceive and navigate through the primary cues in the environment (Nehme et al., 2020). The space designs drawn by the students were evaluated in line with user needs and the relationship between the spaces.

- **Physical Compatibility:** It was evaluated under the headings of compliance with anthropometric measurements and accessibility.

Compliance with anthropometric measurements:

Anthropometry is an ergonomic study discipline related to human body measurements and physical characteristics. Anthropometric data are used in product and space design at the stage of sizing in accordance with the user (Shamaileh, 2022). In the study, the suitability of the designed spaces with anthropometric dimensions was evaluated.

Accessibility: According to the Dictionary of Architecture and Construction, accessibility is "a building, facility or area that can be approached, entered and used by a physically disabled person" (Acırlı & Kandemir, 2021). In this context, this study evaluates whether the spaces can be designed for everyone.

- **Environmental Compatibility:** It was assessed under the headings of lighting, acoustics and air conditioning.

Illumination: It has some effects on human physiology and psychology. Proper lighting helps to protect eye health and provide an efficient working environment. The user exposed to a poorly lit environment may experience negative effects such as fatigue, distraction, and irritable mood (Gürel, 2001). The study evaluated whether the spaces designed have lighting comfort suitable for the function.

Acoustic: Acoustic design is the design process for providing acoustic comfort that aligns with the space's function. In some cases, the lack of acoustic comfort does not even allow the realization of the main purpose of the space (Çalışkan, 2014). The study evaluated that the designed spaces provide acoustic comfort suitable for their function.

Air Conditioning: In order to create healthy and comfortable living conditions, thermal comfort, humidity, ventilation, and natural lighting conditions must be designed correctly. In this context, air conditioning has an important place in interior design (Ali & Say Özer, 2012). The study evaluated whether the spaces designed are suitable for providing air-conditioning comfort.

Structural Competence: Structural competence in space and structural competence in reinforcement were handled under the sub-headings.

- **Structural Competence in Space:** The concept of structure refers to the holism formed by the combination of parts and is primarily used in the sense of a building. In the right design, the parts that ensure integrity and functionality must be constructed correctly. In general, the structure, which is the system used to sustain the form, is one of the main components of architecture (Akçaova & Sungur, 2022). In this context, the structural adequacy of the designed spaces was evaluated.
- **Structural Competence in Reinforcement:** Fittings are objects with functional and aesthetic features that give meaning to the interior space and define it (Güremen, 2011). Design should be developed within the framework from form-space-structure components. The inclusion of the structure, which constitutes the basic fiction of the design, in the design process also increases creativity (Akçaova & Sungur, 2022). In this context, the structural adequacy of the designed reinforcement elements was evaluated.

The visualisation component of the interior design process enables designers to transfer visuals from their minds to graphic images on paper, then analyse, refine and finally present them to customers as a successful solution. In this context, it can be observed that visualisation ability is important in interior design. Images are an important part of visualisation. There are three types of visual images. These are perceptual, which is to see or experience the physical world through our senses, mental, which is to create an image by rotating the perceptual image in our mind, and graphic image, in which the mental image is recorded (Nussbaumer & Guerin, 2000). The perceptual image mentioned is the use of visual perception elements within the scope of the study, and the mental image is organized to perceive realism. "Three-Dimensional Interior Architecture Visual Creation Criteria" were created to evaluate the design competence of the images produced with artificial intelligence. These criteria are summarised as follows.

Use of Visual Perception Elements:

- **Adequacy of the Use of Light and Colour:** The correct combination of light and colour contributes to the user's perception and provides a positive spatial

experience (Podma, 2009). The evaluation showed that the visuals created in the study were selected in light levels and colours appropriate to the function and concept.

- **Adequacy of the Use of Form:** Form is the first and most important design element. Form, which is the external appearance of objects, creates a boundary with the environment through its surfaces. The form used have a great role in the perception of space (Kaptan, 2004). The visuals created in the study were evaluated to determine if they were designed in accordance with the function, concept, and structure.
- **Adequacy of Material and Texture Use:** The choice of material and texture is an important aspect of design in terms of its effect on the user (Ataoglu, 2015). The visuals created in the study were evaluated as being designed with materials suitable for the function, concept, and structure.

Perception of Reality:

- **Correct Use of Ratio and Proportion:** The way to ensure the authenticity of the created image is through the correct use of ratio and proportion in drawings (Civcir, 2015). In the study, the design elements in proportions appropriate to the perception of reality were evaluated.
- **Reflection Gloss and Shadow Representation:** Reflected brightness and shadow provide a three-dimensional perception of the drawing and are very important in terms of adding meaning to the space (Coles & House, 2012). The study evaluated whether the design elements had brightness and saturation values suitable for the perception of reality.

The experimental study was conducted with thirty-eight students enrolled in the "ICM 305 Interior Space Design 3" course at Kocaeli University, Faculty of Architecture and Design, Department of Interior Architecture, in the 2023-2024 autumn and spring semesters. Since the students should have competence in visual presentation and technical knowledge, students taking 'ICM 305 Interior Design 3' course were selected for the study. The study carried out with thirty-eight participants, was based on volunteerism. In order to carry out the experiment, permission was received from the Ethics Committee with document date and number "19.10.2023-E.487611". In addition to the project designed in the interior design course, each student designed a seating-recreation area to be created by the researcher with artificial intelligence. In order to test the functionality of artificial intelligence, students designed in 5 different interior design styles (Art Deco, Bauhaus, Japanese, Country and Neo Classical) determined by lottery method. In this study, the students' sketches of the seating-recreation area constitute the

control group, and the visuals created by the researcher with artificial intelligence constitute the experimental group. The evaluation of whether the students who prepared the sketches constituting the control group were competent in the use of artificial intelligence was made according to the 'Interior Design Criteria'. The experimental study is not only focussed on the final product. Students' work was followed from the first sketches to the final submission, taking into account their creative thinking skills throughout the process. The adequacy of the product produced with artificial intelligence was evaluated according to the 'Three-Dimensional Interior Design Visual Creation Criteria'.

FINDINGS AND EVALUATION

The Interior Design Criteria, which are explained in detail in the Experimental Study Section, were prepared according to a 5-point Likert scale. The results obtained were graphed with SPSS (IBM SPSS Statistics 27) (Figure 3).

As a result of the evaluation of the student interior design projects according to the "Interior Design Criteria," it was determined that the average of the total scores of 38 students was 3.37. In the study where full grade was considered to be five, and accordingly passing grade was considered to be 3, the average of the total scores of 8 students for 16 criteria was below 3, while the remaining 30 students scored above 3. The most successful topic in the students' projects was "Determination of Demographic Characteristics" with a score of 3.73, while the most unsuccessful topic was "Functionality" with a score of 2.92. The only criterion that did not receive a passing grade was "Functionality". In line with the results obtained, it can be said that interior architecture third-year students, are competent to use AI in their educational life, considering the general success of their projects.

In the visualisation stage, the last step of the interior design, alternative hand-drawn drawings of the sitting

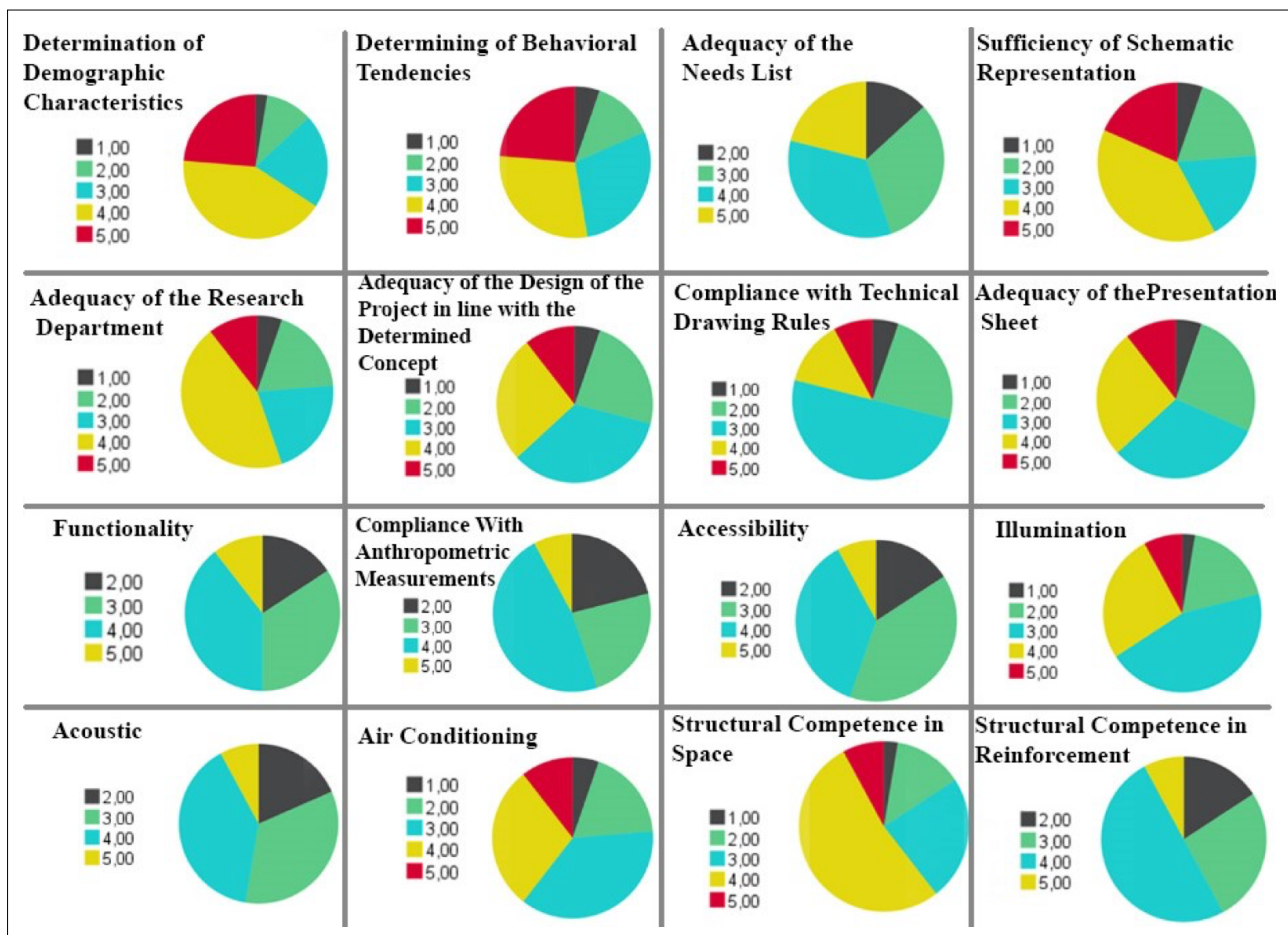


Figure 3. SPSS generated graphs of the evaluation results of student projects within the scope of "Interior Design Criteria" (Figure by [Elif Küçük], 2025).

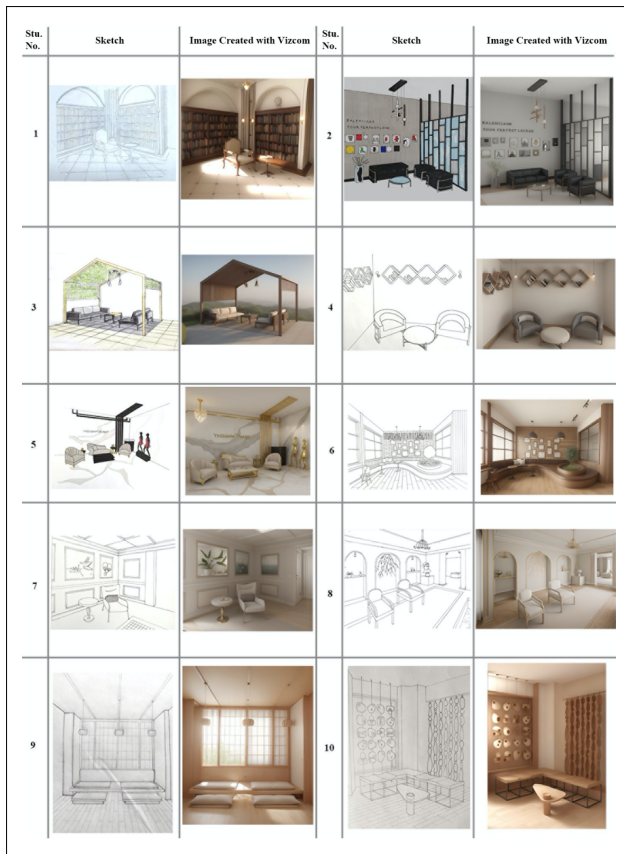


Figure 4. Student sketches and visuals created with Vizcom-Part 1 (Sketches created by students, Vizcom visuals by [Elif Küçük], 2025).

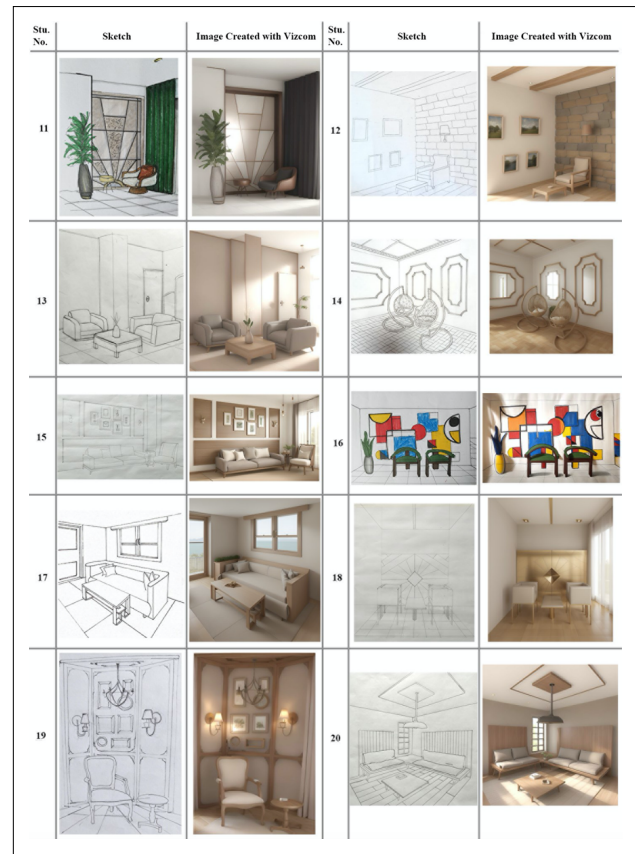


Figure 5. Student sketches and visuals created with Vizcom-Part 2 (Sketches created by students, Vizcom visuals by [Elif Küçük], 2025).

and relaxation corner by the students were created with artificial intelligence by the researcher. Thirty of the sketches were visualised by the researcher with the help of artificial intelligence by entering only prompt information (Figure 4; Figure 5; Figure 6), and eight of them were visualised by using additional reference images in addition to prompt (Figure 7; Figure 8). To ensure consistency in each visual created with Vizcom, the drawing influence section was set to 60%. Prompts included the project concept of each student and the words "sitting-rest corner". Prompt language is English. Within the working system of Vizcom, by entering the same prompts and influence values, each rendering of a sketch recreated using these inputs produces different results. The researcher created an option for each student sketch within the scope of the study.

The design adequacy of the created visuals was evaluated using a 5-point Likert scale according to the "Three-Dimensional Interior Design Visual Creation Criteria," and the results were graphed with the SPSS program (Figure 9).

As a result of the evaluation of the visuals created with Vizcom according to the "Criteria for Creating Three-Dimensional Interior Design Visuals", the average of the total scores of 38 visuals is 3.02. The criterion with the highest visual success is "Adequacy of Light and Colour Use" with a score of 3.21, while the lowest is "Reflection, Brightness and Shadow Representation" with a score of 2.63. The average of the visuals evaluated according to the criteria of "Reflection, Brightness and Shadow Representation" and "Correct Use of Proportion" did not receive a passing grade. The criteria by which student sketches were more effective in the formation of visuals were "Adequacy of the Use of Form-Form" and "Correct Use of Proportion-Proportion", while the criteria by which AI was more effective were "Adequacy of the Use of Light and Colour", "Adequacy of the Use of Material-Texture" and "Reflection, Brightness and Shadow Representation". Student drawings are less prominent, and the visuals created by Vizcom technology are more successful.



Figure 6. Student sketches and visuals created with Vizcom-Part 3 (Sketches created by students, Vizcom visuals by [Elif Küçük], 2025).

CONCLUSION

The ongoing development phase of the databases to which AI tools are connected means that they may contain incomplete, inaccurate or outdated information, thus leading to potential issues regarding the reliability of the outputs produced by AI. It is therefore recommended that designers and users exercise caution and verify the outputs of AI tools. This study posits that interior architecture students possess sufficient professional knowledge to apply artificial intelligence at an adequate level in the 3rd year of their undergraduate education.

The quality of the end product, which is the result of students' work with artificial intelligence, is directly proportional to the quality of their hand drawing and the adequacy of their professional knowledge. In particular, the criteria of "Adequacy of the Use of Form-Form" and "Correct Use of Proportion-Proportion" include the visual results in the hand drawing stage. The AI produced visuals with 60% similarity to the hand drawing presented as data. As the majority of the drawings were uncoloured, the remaining criteria were determined autonomously



Figure 7. Student sketches, visuals created with Vizcom, reference visuals and final products created using Vizcom and reference visuals Part 1 (Sketches were created by the students, Vizcom visuals were by [Elif Küçük], 2025. Reference images are taken from (Gassmann (2019); Big See (2022); Pinterest (n.d.a); Ramos (n.d.)).

by the AI. Kurak Açıcı & Sönmez (2014) emphasised in their study with third-year interior architecture students that a fundamental understanding of hand drawing is paramount for achieving the most accurate computer-aided design. In this context, it can be posited that hand drawing should be emphasised in the 1st and 2nd year interior architecture education in order to facilitate the creation of successful designs with AI starting from the third year.

The integration of artificial intelligence in interior architecture education enables students to articulate their ideas with greater ease by providing the capability to swiftly transform freehand drawings into realistic images. This increased efficiency affords students the opportunity to engage with a broader range of design content. The potential of this approach to develop students' creative thinking skills is notable because theoretical research has shown that there are studies that support that the use of AI in design enhances creativity.

The experimental field of study incorporated the "Vizcom" artificial intelligence tool, which facilitated



Figure 8. Student sketches, images created with Vizcom, reference image and final products created using Vizcom and reference image Part 2 (Sketches were created by students, Vizcom images were by [Elif Küçük], 2025). (Erdogan (2022); Pinterest (n.d.b); AliExpress (n.d.); Pinterest (n.d.c)).

the transformation of freehand drawings into realistic images, offering students a more efficient means of expressing themselves. The tool's free usage, the selection of the similarity ratio to the draft drawing, and its fast and high-quality image generation contributed to the study. However, the efficacy of the prompt command, which conveys changes to be made on the sketch verbally, was found to be inadequate in achieving the desired outcomes. It is noteworthy that the adequacy of the images produced for different prompts in the experimental studies conducted in August 2023 and the adequacy of the images

produced for the experimental study in April 2024 are not equivalent. This observation underscores the dynamic nature of AI, which is subject to continuous updates, enhancements, or deterioration on a daily basis. Vizcom, which can obtain clearer information with visual scans, has produced superior results with the processing of reference images in addition to the prompts. This feature assists students in the learning process by inspiring them to create their own design language and adapt it to their projects.

Each interior design student develops their skills by following the path shown by the course instructors. Due to the rapid pace of technological progress, it is impractical to teach all the intricacies of a computer programme in a school environment. Vizcom is only an example used in the limited time available for this study. It is the students' duty to keep abreast of the latest developments in the field of artificial intelligence. As with other artificial intelligence tools, Vizcom has positive and negative aspects. As new technologies emerge over time, it will be easier for each student to choose a more appropriate tool.

Although the number of students participating in the experiment, time and the choice of the artificial intelligence tool used as the only tool are seen as limitations of this study, it is valuable in terms of the data it provides in integrating artificial intelligence into interior design education.

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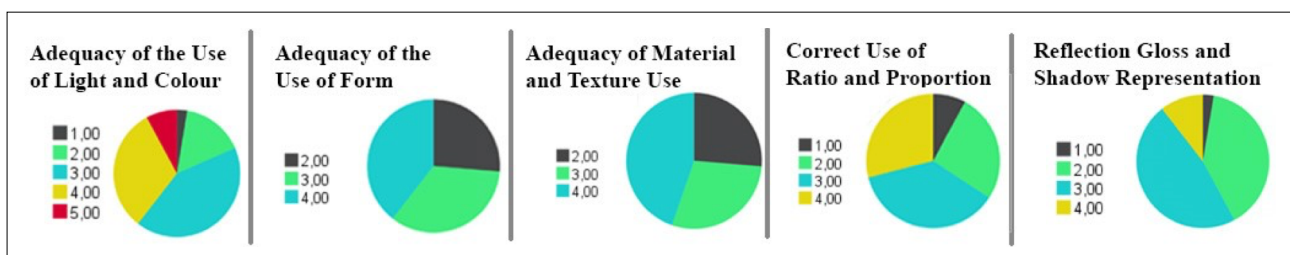


Figure 9. SPSS Graphs of the evaluation results of the visuals created with Vizcom within the scope of "Three-Dimensional Interior Architecture Visual Creation Criteria" (Figure by [Elif Küçük], 2025).

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