A ZERO WASTE INTERIOR ARCHITECTURE STUDIO PROJECT

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Abstract

The nature of interior architecture necessitates the adoption of a multidisciplinary approach, specifically in the initial research phases. It is important that students have a full grasp of this understanding during their education. The aim of this study was to enable interior architecture students to achieve an understanding and awareness of space and sustainable approach to interior design through a “Zero Waste Restaurant” project in Taris Building in Kusadasi, Turkey. Second year Interior Architecture and Environmental Design (IAED) students from the Faculty of Fine Arts and Design (FFAD) at Izmir University of Economics (IUE) were asked to design the interior and close surrounding of a restaurant with a focused theme. An important aspect of this project was that it was collaborative with the Department of Culinary Arts and Management at IUE and the Aydin Municipality. The architectural and historical significance of Taris building as an adaptive reuse project and the interdisciplinary approach of this project to interior design education. With this project, the aim was to give students an awareness of both a multidisciplinary and an environmentally responsible approach to interior architecture. While a multidisciplinary approach enables creative solutions to flourish, an environmentally responsible approach leads to responsible and sustainable interiors to be created. This paper focuses on a second year interior architecture studio project that has three main concerns: Delivering “environmental responsibility” with the adaptive reuse of a historical building in Kusadasi, considering the history and locality of the existing building and surrounding area; discussing the “zero waste” concept to be applied within the system of the restaurant, but more generally, in the totality of the project; and do this through multidisciplinary approaches with a restaurant design necessitating combining of interiors knowledge with a chosen cuisine and its culture. The students were required to design not only the restaurant, but also the campaign that will make the restaurant known for its responsible approach. Successful and contemporary projects were shared with the students, such as, from restaurants that use only misshapen vegetables and fruit, and campaigns that create awareness on food waste around the world. Within this context, the students were expected to do research on restaurants and a variety of cuisines, define the cuisine and user group, and generate a scenario for the space, and analyze (design principles, architectural structure and spatial quality) and present your interpretation of the existing space, fully with models, photographs, sketches, inspiration and concept boards, research, material choices and specifications, details, and a full detailed and rendered drawing set in the required scales. The project was fruitful in that, students gained awareness on a variety of issues that directly or indirectly influence and interact with interior architecture. It was important for the instructor team to communicate a holistic understanding to interior architecture early in students’ education. By enabling knowledge from a variety of sources, there was an increased opportunity for creativity.

Keywords: Interior architecture education, design education, sustainability, adaptive reuse, restaurant design, zero waste.

1 INTRODUCTION

Contemporary education, both in general and within the design fields increasingly requires an interdisciplinary approach. This analytic, creative, experimental, contemporary and multi-faceted thinking that new educational approaches necessitate, is what is now commonly called, design thinking [1], [2]. Design thinking, in contemporary use, is not only required in the context of design, but has also started gaining recognition in business settings, industry, thus, in all academic settings, students are required to be critical, logical, and creative, with system and teamwork skills. Design involves wicked problems that can be defined as vague at the start, demanding further elaboration in the definition, and have no clear ending [3]. They are unique and tried and true solutions do not always work, whereas, tame problems can be defined clearly, and have correct and/or true answers [4]. It necessitates divergent thinking skills as opposed to convergent thinking often used in engineering [2]. In addition, design is multi-faceted, in terms of involving a variety of knowledge coming from different fields. Therefore, developing the skill of first researching and collecting information from a variety of disparate sources, and then streamlining and putting them together is a
coherent and harmonious way would have rewarding results for students preparing for a profession necessitating this.

While specifying the particular needs of the field of design, and particularly interior design, there is a need for an interdisciplinary approach. Although this can be seen as presenting two different approaches, a balanced awareness on both ends might support the design process, horizontally integrating knowledge from various fields as well as vertically, in depth knowledge from the field itself. Cross mentions the value of identifying the intrinsic qualities of design before situating it within general education [5]. Seeing the larger picture as a system has become crucial for our century [6] this is the aim of this study.

2 INTERIOR DESIGN EDUCATION AND MULTIDISCIPLINARITY

Within this context, there is a need to include these skills within interior design education. Interior design education is unique, in the sense that it connects knowledge, helps to form links between ideas, information, knowledge, and people, especially in the sense of how people interact with their surroundings [4]. The interior design problem may be ill-defined necessitating the solution through methods that even the designer may not understand [7], [8]. The spatial design process requires both internal and external information. While internal information is specific to the problem domain, the external is related to cultural norms and standards [9].

In interior design, there is a necessity for both the conceptual development and the real-life human application of the creation of an interior that involves the emotional response given to a space and feeling with all senses. Interior design is not architecture, nor decoration, although it is tightly connected and carries characteristics of both, and therefore this unique identity and connection with other fields should be recognized in its education as well. A multidisciplinary approach may be useful in contributing to the overall process as well as the spaces created. Noticing, awareness, definitions, empathy, visual interpretation, balance, user experience, human-centered approaches, discovery, adaptability, simplicity, curiosity, morality, and details are key criteria in the field. For inspiration, an interior designer needs to have a wide variety of knowledge about many disciplines that contribute to his or her design. A significant part of design process consists of problem solving. Being acquainted to various disciplines helps with different point of views that will lead to creative solutions.

2.1 Environmental responsibility and adaptive reuse

Life cycle thinking or cradle-to-cradle design may be one of the most significant issues in the consideration of sustainable communities, and zero waste restaurants therefore, necessitate careful planning of life cycle in food processing and consumption. The planning involves not only food processing to the restaurant, but its careful disposal, and possible integration in secondary uses as well. Every effort is meaningful; however, an elaborate plan is needed so that results are not superficial. The affinity for nature, has been named, “biophilia” and has been linked to a variety of positive reflections on human beings [10], [11]. In interior design, it may not always be possible to fulfill our biophilic tendencies; however, there are ways to reflect qualities of nature in relation to the interior space [12]. Eco-effectiveness and cradle-to-cradle handle the topic positively and proactively, rather than negatively, incorporating a more comprehensive environmental benefit [13]. Within this context, food loss is an environmental, economic, and social problem. It is still largely unknown the amount of food that is wasted. There is a need to create methods to quantitatively and qualitatively assess just how much is wasted. Wasting food does not only refer to the amount of food being thrown away, but also the input consumed throughout the supply chain directly, and additional indirect sources [14]. Therefore, it would need to be considered in a multi-layered approach.

In interior architecture education, awareness of the student in these areas may significantly help reduce environmental damage in everything from the selection of materials, to coordination of the construction process. The current study, considered sustainability in a broader sense, considering, primary production, transport, storage, preparation of dishes and processing, distribution, consumption, waste management of food; the use of sustainable approaches and material in the interior design of the project space. Adaptive reuse means to retrofit old buildings for new functions, and to adapt ineffective spaces into effective ones, by bringing together environmental, social, and financial considerations. Building preservation and sustainability need to be joined harmoniously and effectively, which is difficult to realize.
3 METHODOLOGY

3.1 Case: A zero waste restaurant in a historical building

Students were given the Taris Building in Kusadasi, Turkey to study, as an interior adaptive reuse term project. The aim of the project is to design a “Zero Waste Restaurant” with a sustainable waste system. The students chose their cuisine and user group. The building needed to include main and service spaces varying from public to private. These spaces were determined by the students according to their user groups’ needs. While designing the restaurant for Taris Building in Kusadasi, students were asked to make a research about the culture and history of the cuisine that they have chosen. With the information they had gathered, they were able to find solutions for complex questions such as how to address the demands of a wide tourist consumer group, and at the same time give the design a style that reflects a specific culture and cuisine. The restaurant project had the great potential for leading the students to multidisciplinary learning. First, they would have to meet the expectations of a large variety of consumers. They also had to express a very specific culture and cuisine in their design. The initial function of the project building was an olive oil factory, but later it was not used for many years and left to deteriorate. The students worked on the adaption of the building to a new function; considering the history and locality of the existing building and surrounding area. Adaptive reuse was considered within the context of preserving history.

The task was to design a restaurant for a cuisine and related user profile defined by each student. In line with sustainability issues related to consumption of food, the restaurant to be designed would have to take a responsible approach to food as well. Students were first expected to understand the need to respect food and collect information on the several responsible and sustainable projects that have this aim worldwide. The second aim was to also design the conceptual system that explains how the waste will be reused (such as, waste food will be donated to animal farms). A variety of life-cycle proactive projects were discussed, such as, Zero Waste and “Wonky Veg”.

Students were expected to be creative in defining the needs, how they interpreted the requirements and to do constant research for creativity. The following requirements were expected for the users, and for facilities and items: all workers including the chef and cleaning personnel, visitors, the necessary space(s) should be accessible for people of all abilities (wheelchair users, pregnant, elderly etc.). Facilities and items expected were: Whole volumetric space, private, semi-public, public spaces appropriate to your scenario, exterior seating areas, entrance elevation (developing the entrance facade according to the corporate image/ identity), planting solutions, display and storage units, place(s) for personal belongings, surfaces including the floor, the walls, the ceiling (new boundaries can be defined by your proposal), plan arrangement, furniture and equipment, lighting (artificial lighting and daylight), materials and textures, color, HVAC, plumbing, acoustics, connection details, consideration of privacy issues (visual, audial, and other), exterior-interior connection and planting solutions, creation of an identity and logo, company profile, exterior and approach to the building, entry/ reservations area, a variety of seating areas, kitchen, preparation, service and storage areas.

The evaluation criteria were based on, the depth of analysis, success in use of design principles and architectural Structures, innovation, functionality, feasibility, aesthetic values, and presentation.

3.2 Interior design process

This section includes the discussion of the interior design process through nine projects. The project had a responsible and multidisciplinary approach in interior architecture. The main goals were gaining awareness on zero waste and adaptive reuse issues in the design process. First, they made research on zero waste, adaptive reuse and life cycling terms in related to interior architecture. The students needed to choose a cuisine and concept according to the building context. Because the building was an old olive oil factory in a seaside city, they generally leaned towards vegan cuisines that provide light foods cooked with olive oil, and in terms of material selection, they often opted for natural materials with greenish and brownish colors. The students had certain difficulties in terms of presenting the concept. Some attached importance to the zero waste issue more than the artistic and technical aspects. The process included the stages of, research, concept development, 2D and 3D representation, feasibility of the project regarding structure and architectural tectonics, as well as material choices. The projects that reflected various aspects of the project were chosen to exemplify the argument.

Project 1 was strong in the sense that it was able to adopt a systems approach, and based the concept on this. The feasibility regarding structure and spatial relationships and material choices was
successful; however, the main strength was about life cycling from growing vegetables to food waste recycling by including an agricultural lifestyle. The spatial quality needed improvement in terms of decreasing empty spaces that are defined as circulation. Positive aspects included, a defined the cuisine and user group, presentation of interpretation of the existing space, research, a full detailed and rendered drawing set in the required scales, a complete model of the site in 1/200 scale and the 1/50 model, and material choices and specifications (Fig. 1).

Figure 1. Project 1

Project 2 proposed a strong research and conceptual development, with technical requirements that were fully detailed with rendering drawings related with research about zero waste. Representation with diagrams for spatial design and adaptive reuse was well thought out and explanatory. Moreover, material choices were related with the building context and project concept. Positive aspects included, representation, a fully detailed and rendered drawing set in the required scales, technical requirements, architectural structure and spatial quality, interpretation of the existing space, a defined the cuisine and user group, material choices and specifications, details, material experimentation (Fig. 2).

Figure 2. Project 2

Project 3’s strength was about the representation of the concept that included hand skills and an artistic touch. The bubble and schematic diagrams were descriptive along with the representation in 2D. Architectural and spatial quality may have improved with research. Especially the 2D representation was successful in the sense that, the student drew all drawings by hand, constructing
even the tables as developed sketches. Positive aspects included a strong artistic touch (hand skills) and representation, representation of ideas, a quite basic model, photographs and hand sketches, inspiration and concept boards, bubble and schematic plans, and material choices and specifications (Fig. 3).

![Figure 3. Project 3](image)

Project 4 was strong with its concept and spatial quality that came from understanding and respecting the historical value of the building. Material choices were appropriate with the building context and interpretation of the existing space is shown. The model needed improvement in terms of furniture and materials. The research and conceptual development was strong and positive aspects included, architectural structure and spatial quality, interpretation of the existing space, inspiration and concept boards, respecting the historical and material context (Fig. 4).

![Figure 4. Project 4](image)

Project 5’s strength was in the representation in 2D and 3D, and conceptualizing. The visuals created fulfilled representation requirements, with the bubble and schematic diagrams and a full detailed and rendered drawing set. Material choices were appropriate to the space and the conceptualization of the
space was based on detailed research about street food and its conceptual application to the space. The 3D model also presented the material selection, spatial quality, and interpretation. Positive aspects included the bubble and schematic plans, presentation, conceptualization, interpretation of the existing space, architectural structure and spatial quality, material choices, and specifications (Fig. 5).

Project 6’s strength was specifically in the research and conceptual phases and the final requirements were also successful. Conceptual integrity was obtained with a unified design language from spatial quality to cuisine. A full detailed and rendered drawing set clearly presented the spatial approach. Respecting the building’s historical value and context was also one of the strengths of the project. Research findings were applied within the space appropriately from logo to furniture, and inspiration and concept boards were all consistent with the chosen concept, which was to design a vegan restaurant (Fig. 6).
The strength of Project 7 was in conceptual integrity from the spatial layout solutions to the logo. Representation with rendered drawings and bubble diagrams were successful in terms of showing material choices and spatial relation. Creating a design language based on research was another strength of the project. The 3D model needed to be improved in terms of furniture and materials. Positive aspects were conceptual integrity from the cuisine, to the logo, to the spatial layout solutions, design language, material choices and specifications, inspiration and concept boards, architectural structure and spatial quality (Fig. 7).

![Figure 7. Project 7](image)

Project 8’s strength was in research and applying it to the design language. The definition of the cuisine and user groups were related with the research in terms of life-cycling. Spatial and architectural quality took form with the 3D experimental forms in creation of sub-spaces. Positive aspects were, regarding research, architectural structure and spatial quality, a full detailed and rendered drawing set in the required scales, details, bubbles and schematic diagrams, inspiration and concept boards, 3D experimentation, and creation of sub-spaces (Fig. 8).

![Figure 8. Project 8](image)
The strength of Project 9 was in the design language and concept based on detailed research. Environmental factors such as the sun direction was shown in the bubble diagrams that created a descriptive representation. Architectural and spatial quality were other strengths of the project. However, the furnishing of the 3D model and synthesis of inspiration sources need to be improved. Positive aspects were the consistent design language, material choices and specifications, inspiration and concept boards, architectural structure and spatial quality (Fig. 9).

Figure 9. Project 9

4 RESULTS

While trying to establish an awareness of historical context in the built environment, it was observed that there was a lack in the approach to context in the digital environment. Another issue to be considered, is the role of social media on students’ design process. This in turn, has influences on how instructors speak with students as well. The effects of social media on students’ design process, in terms of being subjected to pieces of detached and fragmented information and imagery needs further discussion. Changing relations, in terms of a more democratic and fast communication often have fruitful results. Although awareness was gained with regards to respectful approaches to the built environment and waste in the most comprehensive sense, the historical sense needed to be emphasized in terms of research material collected and used during the process of design. The idea of historical context needs to be dwelled upon in relation to physical context (immediate surrounding), connected to geographical context, historical, users past, present, and future.

The multidisciplinary and participatory approach achieved through collaboration with the municipality was effective; results were shared and were well received. Likewise, the collaboration with the Dept. of Culinary Arts and Management within the university in presentations and juries was also quite helpful. Overall, most projects were of a standard that could, if developed and detailed, be applied in the actual building. Although this project was ambitious as it required deep research in a variety of areas, and there were concerns at the beginning regarding the students' level of development in design and ability to answer the needs, overall students produced projects that were developed in all aspects of the requirements of the project. The use of the digital educational tool of Blackboard proved effective, in that, very few print outs were required from the students as submissions, which contributed to the sustainable approach. For desk critiques, smaller size or draft versions of the assignments were accepted.
5 CONCLUSIONS

The need for communication and collaboration between various fields arises as the disciplines get further integrated with each other. For a user oriented design approach that answers the needs of stakeholders, this complex relationship needs to be understood by the designers. Chou and Wong stress the current significance of integrating various knowledge and input from traditionally different disciplines [15]. Hence, observation and combination of knowledge are the essential elements of problem solving in the design process. Each interior designer may have a unique approach to a design problem.

In the application part of this study, first, the given brief enabled students to gain environmental responsibility, through the adaptive reuse of a historical building in Kusadasi-Turkey considering the history and locality of the existing building and surrounding area. Second, the “zero waste” concept was applied within the system of the restaurant, but more generally, in the totality of the project, which was interpreted as both the waste of interior design material and resources, as well as food waste. The integration of this concept through the various layers enabled students to achieve a deeper understanding of the concept. Thirdly, the multidisciplinary approach led to restaurant design necessitating combining of interiors knowledge with a chosen cuisine and its culture, which was fruitful and helped enrich students’ creativity, at the same time leading to unique and project-specific research. Finally, the benefits of interdisciplinary design thinking in interior design education needs to be mentioned in terms of the content and variety of material that was learned.

Considering a building’s life cycle in the end, refraining from demolition, and achieving balance between costs and sustainable approaches has benefits in reducing costs and waste. Value is created by respecting the building’s heritage and bringing this together with a contemporary layer that will be meaningful for the future. This study combines these approaches for creative results and enables significant awareness in students, which will guide them in their profession for a lifetime.

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REFERENCES


