The Design Process in Interior Design Studio: Integrating Interdisciplinary Approach in Undergraduate Level for Improving Professional Practice

Alaa Makki(✉), Maham Farooq(✉), and Nojoud Alaskar(✉)

School of Industrial Design, Carleton University, Ottawa, Canada
{alaamakki, mahamfarooq, nojoudalaskar}@cmail.carleton.ca

Abstract. Design studio is considered as one of the most essential courses in interior design education. It is the place where students gain knowledge, develop critical thinking skills and enhance creativity. The aim of this paper is to highlight how collaborative design approaches can improve interior design studio courses using an interdisciplinary process. A historical background on design education is presented along with multi-strategies (Interdisciplinary Cooperation, Design Studio Environment, Communication Methods and Introducing Professionals and Stakeholders into Design Studio courses) for creating effective collaborative environments. These strategies habitually affects their decision-making in professional practice. The purpose of this paper is multi-faceted; (1) the importance of having a collaborative environment in design studios. (2) How introducing cooperative environments at undergraduate level helps prospective interior designers become successful professionals.

Keywords: Participatory design · Interdisciplinary approach · Interior design studio · Design education · Design process

1 Introduction

1.1 Definition of Interior Design Studio

Studio education offers a paradigm where students can effectively gain information, share the information with peers and receive feedback from instructors; it is a place where design experiences occur [1]. According to Cross [2], in traditional design education, students played a role of newcomers to the field of design and instructors who would be considered more experienced designers would guide the students through the process; by passing their knowledge, principles and support. Students gain and develop their skills by creating actual interior spaces; they assess the users needs and requirements, develop original and artistic ideas, and support their ideas using technical and logical evidence from interior design/architecture design studio courses [1, 3]. This reveals the importance of design studio courses in the design education system as a whole. Similarly, Wallach [4] as well as Kim et al. [5] explain that students

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are required to improve reasoning abilities and other essential skills in a design studio course. According to Tanrıöver et al. [1], examining the function of the design studio is considered essential, since design studios represent the foundation of design education. From the design pedagogical point of view, we must consider the subject of the general environment, students' progress from different points and how to evaluate this progress through an organized system [2].

The main points taught in design studios are obtaining skills like:

- Understanding user needs
- Critical thinking and problem solving
- Planning space functioning and circulation
- Critique analysis sessions
- Gaining technical skills
- Introduction to materials and building codes
- Learning professional practice methods.

The traditional models of design were always connected to professional training; that is to guide scholars through professional training to become experts and specialists in the design world [2]. Therefore, the main focus of this review is on how students gain skills and experiences through negotiation, discussion, and dealing with different people from diverse backgrounds in their design studio at undergraduate level. Hence, the studio atmosphere and collaborative approaches are considered very important for students to develop their professional skills.

1.2 The History of Interior Design Education

Design education reaches back to two schools [6]:

- Le Ecole des Beaux-Arts: 19th century - first presented in Europe, Paris. Later on, the philosophy was implemented in the United States. This movement relied on skilled instructors and learning by doing strategies.
- The Bauhaus movement that took place in Germany in the 1919. Walter Gropius, director of Bauhaus school explained that design is not based on logical or solid issues, instead it's mainly a fundamental aspect of producing modern ideas and developing technical skills [6].

The following stimulus of both methods was later extended into design education and is practiced worldwide [1, 6].

Around 20 years ago, a great transformation took place in the educational systems of the engineering curriculum; experts from the field were dissatisfied from the former students since they lacked skills to address the real life engineering challenges [7, 8]. Similarly, interior design students face the same challenge of lack of real life experience. Therefore, Konkel [8], while relating interior design profession to that of engineering explains that both educational systems require prospective cooperation and assistance in order to improve the proficiency of students.

The "Council of Interior Design Accreditation (CIDA)", points out that students are required to gain developing skills through collaboration and that interior design curricula must sustain the collaboration with students from different disciplines [9].

2 Importance and Relevance

Different point of views on interior design studio education are presented along with new learning environments where training and educating designers can fulfil their professional needs. Cross [2], proposes a divergent way of thinking the relation between design, sciences, and humanities to understand the clear vision of how design is shaped in human thoughts. He presents three main parts including "transmission of knowledge, phenomenon study of each culture and the appropriate methods along with values of each culture" [2]. Another way to explain the importance of collaboration is through involving social and cultural aspects to provoke common knowledge when training students [8].

Solving design problems is considered one of the basic elements in design education; that's why design students are obliged to consider every single aspect when it comes to suggesting solutions for a designated topic [8]. Designers tend to explore design problems, develop alternative solutions, and implement appropriate design methods to execute the given tasks [2]. Once involving students in interdisciplinary environments a sense of divergent thinking will develop progressively [8].

Several researchers explained that advanced thinking skills and artistic approaches in design training could only be obtained through involving people from different disciplines [8]. One way to demonstrate this, is through integrating students from different disciplines into design studio courses; in order for students to share knowledge and technical skills as a base for future collaboration in professional practice. That's why Konkel [8], suggests that design instructors and interior design–architecture programs focus on collaborative teaching sessions. For example, certain interior design projects requiring technical data and analysis from mechanical and electrical engineers could be presented by mechanical and electrical engineer fourth year students.

Therefore, this paper will present examples based on previous literature reviews on the importance of collaborative teams at undergraduate levels in order to gain professional and divergent thinking skills as previously mentioned. Other questions that this paper will address are; how to obtain a collaborative studio? And what are the main points to achieve a collaborative environment?

2.1 The Importance of Interdisciplinary Approach

Interior designers require expertise from different disciplines like "architects, mechanical & electrical engineers along with contractors and furniture designers" in real life projects [10]. However, when individuals from different disciplines collaborate in the design field, some communication gap exists in-between; in order to reduce that problem, communicating through mapping, sharing ideas and editing on the spot generate strong participatory educational tools [11]. Design programs acknowledge the importance of interdisciplinary methods when design professionals are involved in the academic situation [11]. According to Webb and Miller [12] as well as Cho and Cho [10] students tend to develop complicated design skill tasks when working in groups. The space where collaboration occurs is not significant, however the value and importance of progression is; through dividing tasks, clustering and transmitting ideas, students are capable of developing innovative problem solving skills by leewaying on

the shared needs of team participants [10, 13]. Part of the profession is to associate with clients, design colleagues, and experts who share their thoughts and points of view [10]. Participation in interdisciplinary collaboration is what improves the students' abilities and efforts of gaining different thinking skills and boosts their creativity.

2.2 The Importance of Collaborative Environments for Professional Practice

This section will answer how collaborative undergraduate studio education contribute to the students' development to be professionals and experts in the design field. According to Konkel [8], interior design education requires prospective cooperation and assistance in order to improve the proficiency of students and group work. Collaborating skills are considered vital and necessary for students in interior design education [14]. The Council of Interior Design also highlighted the importance of involving interior design students in collaborative groups that consist of students from various disciplines [14, 15]. Students in the design studio are involved in designing projects that are based on real problems, this allows the students to be a part of an exceptional atmosphere where they combine both, theoretical and professional aspects [10, 16].

When students are engaged in collaborative environments they tend to grasp and share information naturally and indulge in the learning process which automatically reduces monotony [14, 17]. According to Cho and Cho [10], collaborative atmospheres tend to produce knowledgeable outcomes. Both Haythornthwaite [18] and Cho and Cho [10], believe that collaboration expands work rate levels, since the quantity of effort produced by a group is more than that of one individual.

Part of the cooperative environment is the assortment in the process where individuals share their ideas through writing, discussions, teamwork assignments, cooperative solving skills and using other supportive methods [10]. When architects, designers and stakeholders share technical matters and problems during the development of a project, this produces collaborative environments [10]. Gradually, this method is connected to collaborative education systems. Another example that shows the importance of cooperation in professional practice is about "…infection prevention and control in neonatal intensive care units" in the healthcare industry; this paper explains how incorporating groups of stakeholders, nurses & medical staff, along with on-site observations helps design researchers understand more intensely the environment and medical concerns to create an improved-designed space [19].

Although collaborative mediums are considered important in design studios, yet some complications might occur during the process [10, 14, 20, 21]. The researchers continue to explain more thoroughly that actual collaboration does not happen quickly. Similarly, Chung [22], explains the reverse reactions that take place. Although shared proposals happen, individuals from different backgrounds tend to show negative reactions, doubts, different point of views and misconceptions during the process. Yet these negative misconceptions are considered to be the motivating elements that lead to advanced and creative idea generation [22]. Therefore, in order to attain collaborative environments, certain points must be covered; the place, what mediums are used to

reduce communication gaps, who is involved in the process, and critiques and comments from expertise and professionals in the field to nurture effective results.

3 Strategies for Designing Collaborative Studios

Interior design follows a chronological structure when it comes to executing a project. When designing, the first phase of the design process is to analyze the brief, identify key requirements and create accommodation lists. 1. This first stage presents the brainstorming and structuring part in the design process. 2. The second part is drawing relationship diagrams, researching similar projects and creating conceptual designs. This could all be presented through sketching and prototyping models. 3. The third part is client feedback, implementation phase and evaluating the completed design. That could be reached through professionals, clients and peers feedback. Similarly, in the design studio, the brainstorming and structuring process is what students from different disciplines and interior design will share. They will communicate and understand different perspectives and focal points. From the prototyping and sketching they will be able to present their thoughts more clearly and implement on critical decisions and open discussions. Feedback from professionals and stakeholders will also introduce students to wider and professional points of view. There are many modes of collaboration and new approaches will always develop, because interior design is an evolving major that always develops depending on society and technology development.

In order to improve interior design education, it is better to focus on a new approach rather than on the problem itself, you can constantly examine the problem, but it's a designer's job to solve the problem [2]. The following are the four main points that together can build a collaborative interior design studio:

3.1 Interdisciplinary Collaboration

Inspiration and creativity at educational level are attained through diverse reasoning [5, 23, 24]. Innovative reasoning is directly linked with organizing ideas that require designer's flexibility in complex conditions [5, 25]. Collaboration between members from different cultures poses concrete and innovative intelligence since it involves communication among diverse individuals to acquire information [8]. Liberate thoughts are obtained when ideation is linked to identifying problems and relating these problems with ideas, this translates from fixation into developing exceptional results [5, 26].

In a study, Kim et al. [5] combined 3rd year Korean interior design students and 4th year Malaysian architecture students in the design studio; both from different educational and cultural backgrounds. Their aim was to redefine Korean students intellectual styles through importance of gathering different points of views and motivating the students to share information about designing buildings and structures to prevent fixation. The students were divided into 19 teams, each team consisted of two students, one 3rd year Korean interior design student and one 4th year Malaysian architecture student and the project given was to redesign affordable housing for the informal settlement of urban squatters in the Kampong village of Puah Seberang at the center of Kuala Lumpur. The project was beneficial for the students from different perspectives,

including collaboration, prevent routine mentality, and consider designing the villages urban housing with limitations in terms of materials and cost. There were instructors guiding the students throughout the project and critique sessions to improve work efficiency.

Bringing together the students from various departments and disciplines allows them to share their knowledge and skills and to influence each other. What triggers cross cultural and cross disciplines aspects is the multi-cultural environments in universities, where students come from different social and cultural backgrounds. Therefore, the design studio is a place to share skills, cultural norms and beliefs plus educational backgrounds and theories. Additionally, design as a profession aims to explore different inspirations and art movements from different cultures and environments.

This case shows the importance of student collaboration from different disciplines and how the critical thinking skills develop in different societies. This encourages creative thinking and understanding of individual and shared issues in design.

3.2 Design Studio Environment

The latter also mentions that for designing a space where collaboration develops, individuals must seek to define the scope of work and the volume of space to be allocated prior to converting the space for specific teamwork [10]. Classroom designs can affect students' behavior and thinking skills. The colors, the organization, the amount of light entering the room, the circulation and movement all influence students' behavior. That's why the studio should adopt user-centered design principles, to produce a place where students will spend most of their time. This will help trigger their creativity and nurture their thoughts. As the authors, Jaasma et al. [27] explain that during the progression of Blue Studio course, some observations took place, which revealed that the environment of the studio triggered the innovation and creativity levels of stakeholders. The Blue Studio was designed by university lecturers and participants from different professions, to create a convenient studio for stakeholders from various fields [27]. The International Federation of Interior architects/designers, also explained that a relation between individuals and spaces exists, affecting both psychological and physical aspects of individuals [1, 28]. Most of the students spend their time in design studios, that's why it should adopt a clear and comfortable space to generate and nurture creative thoughts. That proves that design of the space affects the working rate and productivity of the students. Therefore, adopting a convenient environment is considered one of the crucial requirements that shape the design process in interior design studios.

3.3 Communication Methods

There are many modes of communication to help connect individuals, workers or students together. Some of the methods are prototyping in early design stages, others are through series of play. Chung [22] explains how prototyping in collaborative teams at primary stages can increase generating ideas, solving problems and understanding different disciplines work and process of thinking. Chung [22] introduced the CFCP

model (Cross Functional Collaborative Prototype), were he believed that prototyping must occur in the early design stages in order to reduce multiple failures and increase the knowledge and experience of the collaborative groups, presenting their ideas in sensible form of communication. He also considered the CFCP model as a good approach for collaboration among students from different disciplines in universities, and that this method fosters interdisciplinary approaches. Another parallel point of view is by Gore [29], "students build and rebuild their projects for critical review and group discussion. Lessons learned from this way of working have to do with development of a critical attitude towards "craft," direct experience of the real through serious play, and innovation, coming out of the merger of craft and play. The word craft should be considered very broadly, meaning any human transformation of raw material into another object" [29]. Gore [29], also believes that examining objects based on real and tangible projects, and made by bare hands develop a relation between the creator and the item, and between the creator and the viewers or classmates. Increasing the understanding of physical objects is a result of sharing students point of view. When students connect directly with materials, they tend to develop massive thoughts [29].

3.4 Introducing Professionals and Stakeholders into Design Studios

Individuals develop ideas through exterior presence and interaction with other individuals [27]. As a replacement for academic rational thinking principles that are taught in everyday life, individuals tend to formulate their understandings through exterior presence and interaction with other individuals [27, 30]. One of the effective ways to introduce stakeholders and professionals in the field is through the design studio, i.e.:

- Representatives from companies, site visits, markets demands.
- Introducing materials and new technology.
- Skype conversations with famous designers and lecturers to expand knowledge.
- Open design concept sessions.

All of these factors are considered important aspects for adding into the collaborative studio environment. Lecturers from different places can share their expertise and knowledge with other students around the globe, thus enhancing more rich sessions and lectures where different perspectives are presented. As for open design concepts, students can ask professionals about new approaches in the design field, and professionals can teach students new techniques in the market to enrich their creativity and practice new techniques.

Critique sessions are considered one of the vital systems of tutoring and learning. They expand students knowledge throughout the design process, and enhance the students outcomes and perspectives, adding to that, critique sessions function as the main and primary aspect in the design process [1]. Similarly, professionals and stakeholders can also contribute and be part of the critique sessions, were students can gain extra knowledge and perspectives along with the instructors feedback. Each project done by a student can undergo different point of views from the materials, to the cost, to the users and markets point of view to get a hands-on experience of clients or users feedback of the space and how it functions.

4 Conclusion

Interior design as a profession is based on group work, where designers work and communicate with other individuals to reach design solutions [10]. The aim of this paper is to redesign the studio based on the four strategies presented which seek to provide collaborative decision making in the design process by incorporating students from different backgrounds and disciplines of knowledge into the design environment to share ideas, explore new challenges and critical-thinking problems and propose real situations they face in future professional practice.

According to Özker and Makaklı [31], the design studios require additional work time particularly for senior students since the design studio is considered an essential course in interior architecture education; considering increasing studio hours will set an example for students about how it is like to work in a professional office and what constraints they will face during the process. Also, a professional work environment would include engineers, decorators, stakeholders, constructors and clients working together. That's why a real cross discipline approach is required from the very beginning. Professionals and field expertise will assist students through the design process and improve their ability to understand different spaces across their field and discover new boundaries. Another example is, students will be introduced to various projects with different aspects and technical requirements. They will begin thinking more deep about every problem and how they can solve it due to the presence of real life examples.

All of the previous cases show the importance of the topic and that action must be taken towards connecting education and profession. The question for future research is: How will educators design a new studio space that fosters collaborative environments and link the students' experiences with the interior design profession for best effective results?

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