Journal of **design studio**

Journal of **Design Studio**

AIM
The aim of the Journal of Design Studio is bringing different design studio researchers together on a multidisciplinary design studio research platform. This design studio research platform gives the researchers who made experimental studies in their design studio education to share their works with the other researchers in the same area or similar research fields. The scope of the Journal of Design Studios include all research and experimental works realized in all type of design studios.

SCOPE
Design studio pedagogy,
Design theories and methods for studio works,
Architectural design studio education,
Design principles for studio work,
Product design studios,
Interior design studios,
Urban design studios,
Landscape design studio,
Communication design studio,
Graphic design studio,
Media design studio,
Fashion design studio,
New trends in design studios,
Virtual design studios,
Design thinking,
Studio culture,
Studio teaching,
Innovative and creative works in design studios
Quality assessment in studio work,
Collaborative design studies in design studios,
Integrated design studio,
Design studio practice,
Design practice,
Design research,

ABSTRACTING / INDEXING
Acar Index, _AccessOn_, _ASOS Index_, _BASE (Bielefeld Academic Search Engine)_, _CROSSREF_, _Dimensions_, _EuroPub_, _GoogleScholar_, _Ideal online_, _Index Copernicus_, _OpenAIRE_, _OUCI - (The Open Ukrainian Citation Index)_, _Paperity_, Publons, _ROAD (Directory of Open Access Scholarly Resources)_, _Scilit_, _scite_ , _Wizdom_, _Worldcat_, World Catalogue of Scientific Journals,

Journal of **Design Studio**

WEB

https://www.journalofds.com

https://dergipark.org.tr/tr/pub/journalofdesignstudio

E-MAIL

editor@journalofds.com

ARTICLE SUBMISSION

https://dergipark.org.tr/tr/pub/journalofdesignstudio

SOCIAL MEDIA

| Twitter | Facebook | Instagram | Linkedin |
| @studio_journal | @journalofdesignstudio | journalofdesignstudio | Journal of Design Studio |

Journal of **Design Studio**

Contents:

Editorial

Orhan Hacihasanoglu 🆔

Faculty of Architecture and Design, Ozyegin University, Istanbul, Turkey

Editorial

The fourth volume's second issue of the Journal of Design Studio is now available. This issue of the Journal of Design Studio has two articles on design studio case studies and six research articles.

The first article of this issue is "The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners" by Yasemin Soylu, Berrak Karaca Salgamcioglu, Kubra Bıyuk Oksuz. The Industrial Design Competition sponsored by the Turkish Steel Exporters' Association (İMMİB) is significant for both professionals and students in the Turkish design community for a variety of reasons. This study's major goal is to identify the elements associated to the school that influence the student category performance in the İMMİB Industrial Design Competition. Data on the winners of the İMMİB Industrial Design Competition from 2015 to 2020 have been examined. In particular, working on competition projects during design studio classes is discussed in this essay along with its benefits. As a result of conducting the competition preparation during class hours, ethics and privacy are exposed as potential problem areas.

The second article, titled " Developing a design framework to methodize the architecture thesis projects with emphasis on programming and conceptualization process", was written by Rahman Tafahomi. Students writing their architectural theses employ programming and conceptualization in a variety of methods, but a sizable majority of them prefer to use precedents. However, the connection between the programming-conceptualization and the remainder of the thesis project seems to have drawn less attention. Architecture thesis projects often focus primarily on the studies, methodologies, and analysis. A design framework was created to bridge this gap by connecting the architecture findings to the design objective and tactics. In conclusion, the design framework may allow students writing their architecture theses to develop a variety of programming and conceptual alternatives that are nevertheless closely related to design choices.

Ugur Tuztasi, and Pinar Koc are the authors of the third research article which is entitled as "Vertical Design Studio In Architectural Education: A Summer Practice On Corner Parcel". This study explores the use of a vertical design studio approach in the architecture department of Sivas Cumhuriyet University. Such an endeavor aims to encourage peer learning and open communication channels within the studio. It was found that while there has been awareness of vertical studio as a technique that removes class-level boundaries and makes the studio open and accessible, the understanding of dialog and collaborative work for addressing the major subject and/or design decisions has not yet been created.

The article which is entitled "#eindakoa (what we've done): A Pedagogical Method of Interior Design Studio Method" written by Enoka Besa. This article previously presented and published as abstract in Architectural Episodes 02 "New Dialogues in Architectural Education and Practice 2nd International Conference, Istanbul Turkey 23-24 March 2022. This essay is based on a report from IDarte's second-year interior projects design studio course. An image serves as a visual summary of each activity in the course. A brief report detailing the approach, intellectual underpinning, historical and philosophical

allusions, as well as the pedagogical orientation and exercise plan, is included with each image. The uniqueness of this teaching approach is centered on giving students the most creative freedom possible but always keeping them within predetermined boundaries and a framework. This framework is made in such a way that it provides students with a full methodological palette through which they may digest the material in a subject like Projects, which is challenging to define and specify. Each activity creates a "network" with the others at the end, which is a tapestry. Therefore, the structure of this document is valuable because it already contains what may be referred to as "the design of the design."

Pedro Leão Neto was the authors of the article which was focused on self-reflection on architecture and urban change through photography. The title of this article is "Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography". This article previously presented and published as abstract in Architectural Episodes 02 "New Dialogues in Architectural Education and Practice 2nd International Conference, Istanbul Turkey 23-24 March 2022. The use of photography to study the dynamics of architectural and urban change is the focus of this paper, which synthesizes theoretical aspects of photography connected to architecture, city, and territory as well as case studies from the research project Visual Spaces of Change. A series of open discussions, public presentations, and exhibitions of contemporary photography projects related to the subjects of Architecture, City, and Territory during the years of 2019 and 2020 on various public spaces in Oporto City were all included in the methodological framework's integrative approach to Architecture, City, and Territory. The paper presents the findings from a qualitative survey conducted among visitors to four site-specific exhibitions that comprehended visual narratives created as part of the research project, as well as from a survey conducted among third-year (1st cycle) architecture students at the Faculty of Architecture of University of Porto (FAUP).

The research article, which was previously presented and published as an abstract in Architectural Episodes 02 "New Dialogues in Architectural Education and Practice 2nd International Conference, is entitled as "Shaping Sustainability in Architectural Education: The Integrated Design as a Tool" and written by Khansa Dhaouadi and Pierre Leclercq. This paper describes an experimental investigation that was conducted as part of an integrated design during the first year of the master's program in civil engineering and architecture at the University of Liège. The results show that integrated design is crucial in influencing sustainability in architectural education.

The first design studio case was written by Mine Tuncok Sariberberoglu and was entitled as "An Online Basic Design Studio Experience: From Point to Space". This article attempts to provide a model and discuss the advantages and disadvantages of the first-year Basic Design Studio course's online learning environment, which is founded on abstract architectural design thinking. The course is built around a connected yet separate set of exercises on fundamental design concepts, starting from the point and moving to the void space. Each study's overall rating was based on the requirements of the job and the involvement of the students. The paper explores the benefits and drawbacks of online courses for first-year architectural education and provides an example of an online architectural studio model.

The article "Teaching Ergonomics in the Online Studio" was written by Sudipti Biswas which was the second design studio case articles of the issue. Ergonomics and human factors are crucial components in the built environment. Such topics are typically covered in design studio courses for architects. The traditional design studio in an architecture degree adheres to the principle of experiential learning. The experience of tackling such a difficult assignment and solutions to the urgent situation of online learning are described in this essay. This essay is based on qualitative analysis of the observation methods and participant observation. Both developing human factors and distant learning in studio-based programs can benefit from the experiences.

The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB* Competition Student Category Winners

* Turkish Steel Exporters' Association

Yasemin Soylu
Faculty of Architecture, İstanbul Bilgi University, İstanbul, Turkey
Berrak Karaca Salgamcioglu
Faculty of Architecture, İstanbul University, İstanbul, Turkey
Kubra Biyuk Oksuz
Faculty of Architecture, İstanbul University, İstanbul, Turkey

Abstract: Turkish Steel Exporters' Association (İMMİB) Industrial Design Competition is important both for professionals and students among Turkish designer community for many reasons. In addition to its nationwide recognition, the winners are awarded with many monetary and non-monetary benefits. Particularly the international scholarship for graduate education is a major motivating factor for students for participating to the competition. The main objective of this study is to reveal school related factors that affect İMMİB Industrial Design Competition student category results. For this reason, data on 2015-2020 İMMİB Industrial Design Competition winners have been analysed. The analysis has been carried out by doing document analysis from secondary sources and applying an on-line survey to the winners. A total of 92 prizes have been distributed between 2015-2020 to 84 students. Out of 84 students, 42 participated to the survey and 40 valid responses were obtained. Results reveal that i) the older the department, the higher the frequency of winners coming from that particular university, ii) for students coming from universities adopting the central examination system, the majority of students have relatively high entrance exam scores, iii) the majority of the projects are done during course hours at school, particularly in the case of privately owned universities. This paper discusses the reasons and the outcomes of working competition projects during course hours particularly design studio courses. Ethics and privacy are revealed as potential problem areas as an outcome of carrying out the competition preparation during course hours.

Keywords: Design Education, Design Competitions, Design Studio Curricula, Student Design Competitions.

Introduction

Volker (2010) claims that competition is an essential design tool that enhances a certain level of architectural quality through jury assessment and enables a fruitful architectural debate. Starting with the Greeks, architectural competitions have been a means of creating major public buildings (Strong 1976).

Competition organisations are also contemplated in other design related disciplines such as engineering design. Industrial Design Competition organizations on the other hand are relatively new compared to other disciplines however they are fast becoming an important instrument for delivering innovative products and solutions thus corporations, foundations,

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners

125

governments or individual entrepreneurs sponsor and organise competitions with targets and prizes (Lampel et al. 2012, 83). Er (2021) stated that, when design competitions are concerned a distinction between design competitions and design awards should be made. In *design competitions* the artefact is presented as an idea, the jury members evaluate the concept, the designer is the applicant (Er et al., 2021). In *design awards* the artefact is already developed, so the jury evaluates the completed and launched product, the applicant is the brand (Er et al., 2021). However, in recent years the phenomenon is changing as some organizations (ex. the Red Dot Design Concept Award) have started to offer a new category of awards for the ideas to which students can also participate. According to Wang (2019), there are non-profit competitions that aim promoting the design industry or commercial awards that achieve the profitability of the design brand. Turkish Steel Exporters' Association (İMMİB) Design Competition is an example of non-profit competitions that aims to promote design at a national scale. Whether it is a design competition or a design award, the answer to the question regarding if competition preparation should be within the Capstone or Extracurricular remains debatable (Khorbotly & Al-Olimat 2010).

This paper is about Turkish Steel Exporters' Association (İMMİB) Design Competition student category winners between 2015-2020. It focuses if the schools that the winning students attend at the time of the competition have any direct impact on successful results. İMMİB Design Competitions have been studied by various authors (Dilek & Kaygan 2018; Gelmez 2011; Çopur 2017). Dilek and Kaygan focus on the jury factor whereas Çopur explores the competition in general during the 2005-2015 period. As to the knowledge of the authors, this paper is the first study that elaborates on the impact of school related factors on design competition performance in Turkey.

The major motivating factor for this study comes from the fact that the first and the second authors of this paper organized a design studio course in collaboration with a professional

designer for the 2nd year industrial design students in a newly established industrial design department. The results aroused the curiosity of the authors concerning if other schools also implement such an approach during the preparation for the competition. The main objective of this study is to reveal school related factors that affect industrial design competition student category results.

Student Design Competitions: Should they be included in the design studio curriculum or not?

Design studio pedagogy literature emphasizes that current approaches to teaching architectural design continue to follow the principles, rules, and practices under the influence of the traditional Beaux -Arts and Bauhaus models (Salama 2015). However, recent literature also suggests that the central role of the design studio in the conventional pedagogical structure of architectural education needs to be reconsidered, with an interdisciplinary approach (Toprak & Hacihasanoglu 2019) in order to respond to current social, economic, ecological and technological changes (Pasin 2017, 1270; Boyer & Mitgang 1996). Boyer and Mitgang (1996, 73) state that at virtually all schools, design is quite rightly considered the heart of the curriculum and they add that the term 'design,' as commonly used by architects and architecture educators, has taken on limited connotations, focusing more on the aesthetic and theoretical dimensions of design than on the integrative nature of the process itself.

Traditional approach to industrial design education is changing by means of moving away from the traditional notion of art and craft-based models to integrate more into the curriculum social sciences such as anthropology, sociology, psychology together with marketing, technology and a more systematic approach to the design and development process. (Frascara 2002; Popovic 2005). In this aspect student design competitions may turn out to be instrumental since participation to a student design competition is likely to increase student engagement in a multi-disciplinary research activity. According to Zhang and Wang (2018)

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners
126

the design competition conveys the voice of the market and the enterprise, and provides a new teaching method for the teaching practice of industrial design and the improvement of students' innovative ability. In addition, student design competitions enrich the classroom teaching methods and materials, so that education is closer to the market (Wang 2019, 5).

Particularly after the turn of the millennium, it is observed that in the curriculum of some universities in Poland, Brussels, China, Spain, US the design competition has been embedded in industrial design (Zhang & Wang 2018); in engineering (de-Juan et al. 2016; Raffeor et al. 2013; Khorbotly & Al-Olimat 2010; Wankat 2005) and in architecture teaching systems (Haupt et al. 2019; Hermand & Rajeb 2019; Senior & Holt 2014).

Existing literature (Kreiner 2009; Gottschling 2018; Hermand & Rajeb 2019) argues that design competitions are a unique opportunity in architecture design studio courses because they supply material for student portfolios, provide a common repository of guidelines, challenge participants to work together on complex integrated projects, develop skills in architectural augmentation and enhance communication. Wang (2019) claims that the ambiguity concerning the quality standard of design education leads the society to pay more attention to explicit achievements such as design competitions. Wankat (2005) argues that well designed student competitions increase student learning, help them learn practical aspects of engineering and motivate many students to work harder. According to Hermand and Rajeb (2019, 167) 'the relevance of the design competition is acknowledged worldwide and has several targets such as disclosing new talent to gain insight in competences'.

On the other hand, Hermand and Rajeb (2019) also claim that design competitions have some limitations in terms of studio pedagogy, because specifications are vague and not precise enough and the assessment criteria are difficult to quantify. Wang (2019) points out the danger concerning student performance evaluation

criteria when competitions are included in the curriculum stating that the academic evaluation criteria focus on a long-term basis whereas design competition evaluation focuses on short-term tactical applications. Lack of protection of intellectual property is another issue because in many design organisations as in the case of İMMİB, designs are seen by the organizers and the jury without any registration, only the winning designs are registered afterwards.

In Turkey, particularly between 1995-2014 the total number of industrial design departments has increased by 525 percent (Irkdaş Doğu et al., 2015). In developing countries like Turkey and China, the increase in the number of industrial design schools fosters rivalry during student admission between universities and in that aspect design competitions turn out to be one of the reference standards to judge the effectiveness of a running a school (Zhang & Wang 2018).

One of the questions this research elaborates on is the reason why some institutions consistently win a specific student competition and in that respect engineering design literature reveals the importance of tradition; the alignment of the curriculum with the competition; the teacher's critical role and student quality and motivation (Wankat 2005, 346).

Analysing existing literature on architectural, engineering and design education we identify *motivation* and *means* as two main school related factors in winning the design competitions. *Motivation* entails students' motivation, instructors' motivation and administrations' motivation. Motivational research requires in depth interviews and detailed qualitative analysis therefore it will be the subject of another paper that is planned to be written by the authors.

Means on the other hand concerns student quality, school tradition and alignment of the curriculum with the competition. In this paper, we aim to reveal the means of having which assets mostly, students achieved to win the competition between 2015-2020. In order to understand the effect of *student quality* we

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners
127

hypothesize as follows; H2: *Students coming from schools with special ability exam make up the majority of winners*. (As the authors have opposing views on this hypothesis, it has been tested as formulated by the first author. In Turkey, *admission with special ability exam* requires candidate students to draw sketches during the exam whereas *admission with central examination system* requires the candidates to solve multiple choice questions of math, physics, chemistry, biology and Turkish language. Therefore the first author believes that particularly in the early years of undergraduate education students coming from schools adopting the special ability exam have an advantage in better expressing their ideas visually.) H3: *For students coming from universities with central examination system, the majority of winning students have relatively high entrance exam scores*. In order to understand the effect of *school tradition* we hypothesize as H4: *The older the department, the higher the frequency of winners coming from that university*. In order to understand the *alignment of curriculum* we hypothesize as H1: *The majority of projects are developed during courses at universities.*

Methodology
This study comprises of two parts, the *exploratory research phase* and the *descriptive research phase*. Social science exploration is defined by Stebins (2001) as a broad-ranging,

purposive, systematic prearranged undertaking designed to maximize the discovery of generalizations leading to description and understanding. *Exploratory research* is the process of investigating a problem that has not been studied or thoroughly investigated in the past. Since this is the first study investigating the effects of school related factors on İMMİB student competition success, specific research questions and hypothesis used in the descriptive research phase were derived from compiling secondary sources. For this purpose, İMMİB catalogues between 2015-2020 and school websites have been deployed. All catalogues were available on the İMMİB website except for 2018. The 2018 competition results were obtained from İMMİB Secretariat via e-mail on April 8th 2021. Winner names, winner ranks, their schools and departments have been obtained from these catalogues. All the data was entered to an Excel Sheet and the following hypotheses were formed:

Hypothesis #1: The majority of projects are developed during courses at universities.
Hypothesis #2: Students coming from schools with special ability exam make up the majority. (As the authors have opposing views on this hypothesis, it has been tested as formulated by the first author.)
Hypothesis #3: For students coming from universities with central examination system,

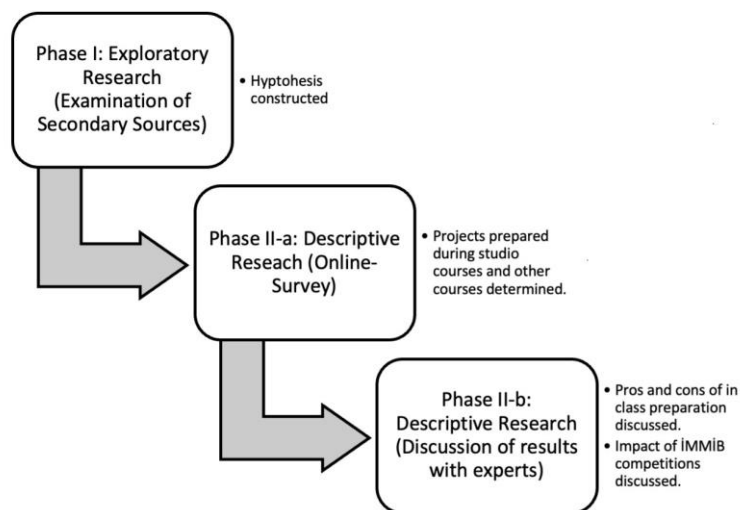*Figure 1: Main Stages of the Research*

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners

128

the majority of winning students have relatively high entrance exam scores.

Hypothesis #4: The older the department, the higher the frequency of winners coming from that university.

The *descriptive research phase*, was carried out by means of on-line surveying the winners in June 2021. The questionnaire was developed using exploratory findings and particularly taking into account the hypothesis constructed. Some of the critical data explored during the exploratory phase was also double-checked by means of the on-line questionnaire.

The sample population has been selected among İMMİB Industrial Design Competition Student Category Winners between 2015-2020. For six consecutive years in total 92 prizes have been distributed to 84 different students by İMMİB. Within the scope of this study, we reached 42 out of 84 of these winners. The contact was established in June 2021 by means of sending e-mails through LinkedIn and personal e-mail addresses where available. The winners were invited to participate to the on-line survey. The survey was delivered to the participants using Qualtrics Software. In total 42 responses were obtained. Out of 42 responses, 40 turned out to be valid, thus could be used for the analysis. Out of 40 winners whose data was used for the analysis 19 were from state owned universities

and 21 were from private universities. When compared to total population the state/private breakdown of the sample shows a similarity: 44/40 in total population versus 19/21 in sample population. Figure 1 demonstrates the main stages of the research.

Ethical Considerations
Prior to data collection, ethical approval for the research was granted by Istanbul University Social Sciences and Humanities Ethical Committee on 03.05.2021. All participants were informed about the scope and aims by means of Participants Information Sheet and Consent Form which was embedded at the beginning of the online survey. Participants were advised that their participation was voluntary and that they had the right to withdraw, without reason, at any time.

Findings
Phase I: Exploratory Research Findings
As an outcome of the exploratory research a database was formed. The database included the following columns: *year* (2015-2020), *industry categories* (plastics, metals, lighting etc.), *name of the projects*, *name of the student*, *name of the school*, *school category* (state-owned or privately-owned).

As the database was analysed it was observed that with a few exceptions more recently

Prizes
Student Category - Last 6 years (2015-2020)

- Winners from state-owned universities
- Winners from privately-owned universities
- Winners that participated to the study
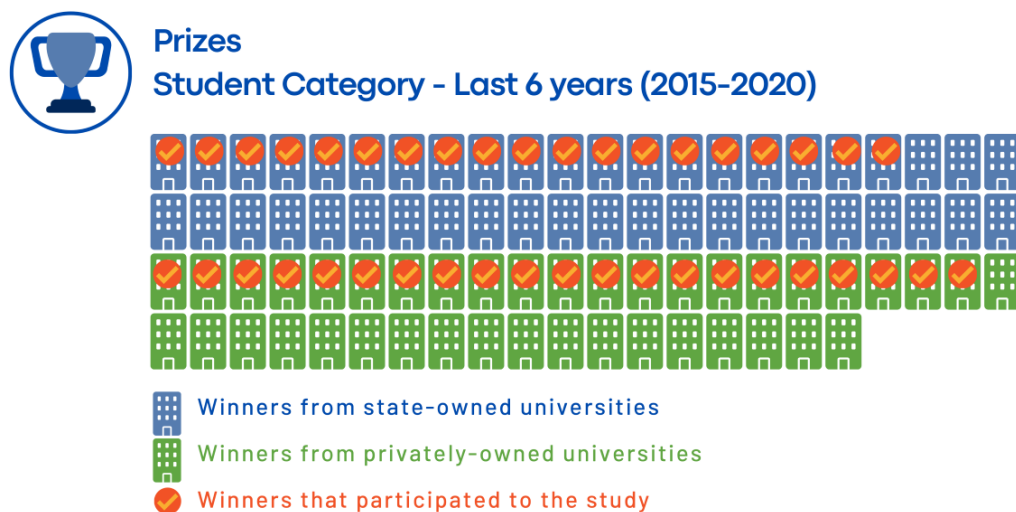
Figure 2: Study participants

established schools had accumulated less number of prizes in the past six years. Therefore, the correlation coefficient between the number of years since the establishment of the industrial design department and the total number of prizes accumulated, was investigated. The calculation was done using Excel and the correlation coefficient turned out to be +0.44. According to Ratner (2009), +0.44 means a moderate positive relationship. During the analysis it was noticed that for some schools there was a significant gap between the year of establishment and the enrolment of the first students. Therefore, the correlation coefficient between the number of years since the first enrolment of students and the total number of prizes accumulates was also calculated. This time the correlation coefficient turned out to be even higher with a value of +0,50, meaning that the longer the duration of the teaching experience, the higher the number of prizes accumulated. (Thus **hypothesis #4** was *not rejected* and it is concluded that the older the department, the higher the frequency of winners coming from that university. Table 1 demonstrates the data that was used for determining the correlation.

Table 1: *Number of winning prizes between 2015-2020 and number of years since the establishment of industrial design departments.*

	University Ownership	SCHOOL	# of Winning Prizes Between 2015-2020	% of Winning Prizes Between 2015-2020	Industrial Design Department Establishment Year	Industrial Design Department Enrolment Year of First Students*	# of Years Since Establishment as of 2021	Reference (for establishment year)
1	Private	Istanbul Medipol	12	13	2015	2015	6	https://www.medipol.edu.tr/akademik/fakulteler/guzel-sanatlar-fakultesi/dekanin-mesaji (accessed 23 March 2022).
2	State	Mimar Sinan***	11	12	1971	1972	50	https://msgsu.edu.tr/akademik/mimarlik-fakultesi/bolumler/endustriyel-tasarim (accessed 23 March 2022).
3	State	Marmara***	9	10	1985	1985	36	http://eut.gsf.marmara.edu.tr/genel-bilgiler (accessed 23 March 2022).
4	State	ODTÜ***	9	10	1979	1979	42	https://id.metu.edu.tr/en/history/ (accessed 23 March 2022).
5	Private	TOBB	9	10	2011	2013	10	https://www.etu.edu.tr/files/dosyalar/2017/12/21/f32ef8d92ca637c62c5505fc0325c5e4.pdf (accessed 23 March 2022).
6	State	Gazi	8	9	2012	2012**	9	https://mim-eut.gazi.edu.tr/view/page/65221 (accessed 23 March 2022).
7	Private	Bahçeşehir	6	7	2008	2010	13	http://content.bahcesehir.edu.tr/public/files/files/2011katalog_TR_binder4.pdf (accessed 23 March 2022).

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners

130

8	State	Anadolu (name changed to "Eskişehir Technical")	3	3	2000	2000	21	https://mtf.eskisehir.edu.tr/Icerik/Detay/endustriyel-tasarim-bolumu (accessed 23 March 2022).
9	State	İTÜ***	3	3	1993	1993	28	https://tasarim.itu.edu.tr/en/education/undergraduate-program (accessed 23 March 2022).
10	Private	Özyeğin	3	3	2013	2014	8	https://www.ozyegin.edu.tr/en/industrial-design/overview (accessed 23 March 2022).
11	State	Selçuk	3	3	2008	2013	8	https://www.selcuk.edu.tr/Hakkinda/guzel_sanatlar-endustriyel_tasarim-fakulte_bolum (accessed 23 March 2022).
12	Private	Istanbul Aydın	2	2	2013	2017	8	https://www.aydin.edu.tr/en-us/akademik/fakulteler/mimarlik/Pages/Dekanın-Mesajı.aspx (accessed 23 March 2022).
13	Private	Kadir Has	2	2	2004	2012	17	https://bologna.khas.edu.tr/program/50000672 (accessed 23 March 2022).
14	Private	Melikşah (now a part of Erciyes University)	2	2	2008	2009	13	https://dokuman.osym.gov.tr/pdfdokuman/arsiv/2009/2009_OSYS_TERCIH_KILAVUZU/tablo4.pdf (accessed 23 March 2022).
15	Private	Yaşar	2	2	2010	2010	11	https://obs.yasar.edu.tr/oibs/bologna/index.aspx?lang=tr&curOp=showPac&curUnit=6&curSunit=401133# (accessed 23 March 2022).
16	Private	Beykent	1	1	2012	2012	9	https://obs.beykent.edu.tr/oibs/bologna/index.aspx?lang=tr&curOp=showPac&curUnit=03&curSunit=1673 (accessed 23 March 2022).
17	Private	Istanbul Bilgi	1	1	2009	2011	10	https://www.bilgi.edu.tr/en/academic/faculty-of-architecture/about/ (accessed 23 March 2022).
18	Private	Istanbul Ticaret	1	1	2014 (establishment year unknown, enrolment of first students 2014)	2014	7	https://ticaret.edu.tr/uploads/dosyalar/1178/soru.pdf (accessed 23 March 2022).
19	Private	Izmir Ekonomi	1	1	2004	2006	17	https://fadf.ieu.edu.tr/en/dekanimizin-mesaji (accessed 23 March 2022).
20	State	Karabük	1	1	2005	2012	9	https://gstf.karabuk.edu.tr/icerikGoster.aspx?K=S&id=96&BA=end

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners

131

								ustriurunleri-en (accessed 23 March 2022).
21	Private	Izmir (name changed to "İzmir Democracy")	1	1	ID Dept. NA ****		NA	
22	State	Kocaeli	1	1	ID Dept. NA ****		NA	
23	State	Yıldız	1	1	ID Dept. NA ****		NA	
		TOTAL PRIZES	92	100				

* Reference (for Enrolment Year of First Students): ÖSYS (University Entrance Examination) Guide (2000-2019) (online), Available at: https://www.osym.gov.tr/ (accessed 31 March 2022).
** According to Gazi University website the first enrolment of students is in 2012. (https://mim-eut.gazi.edu.tr/view/page/65221). According to the Guide the industrial design department was first under the faculty of Fine Arts and first students were enrolled in 2008, the department was then transferred to the Faculty of Architecture in 2012.
*** Data on İTÜ, ODTÜ, Mimar Sinan, Marmara enrolment year of first students was taken from university websites since the Guide for related years was not available.
**** ID Dept. NA: Kocaeli, Yıldız and Izmir Universities do not have an industrial design department. Winners were from interior design and architecture departments. Therefore, data was not available for the year of establishment of the industrial design department.

When columns are compared particularly 3 schools, namely İstanbul Medipol University, İstanbul Technical University and Anadolu University seem to be the exceptions that form the fuzziness of the linear rule.

Phase II: Descriptive Research Findings

Descriptive research was carried out by the online survey. The valid number of responses from the survey turned out to be 40. In total 13 questions were asked to the respondents. The first five questions were concerning the consent form approval and personal data, so they have not been included in the findings.

Q6: What is the name of the department that you got/will get your undergraduate degree from?

Out of 40 responses 38 (95 percent) turned out to be from industrial design and 2 (5 percent) from interior design departments. It was observed that the majority of student winner category winners come from industrial design departments.

Q7: What is the name of the university that you graduated/will graduate from?

The respondents came from 16 different universities. The total population comprised of 23 universities. This means that 70 percent of the universities were represented in the sample population of this study.

Q8: Which of the following defines best the institution you graduated from/will graduate from?

- It is a state-owned university.
- It is a privately owned university.

In the total population, there are 44 (52 percent) winners coming from state owned universities and 40 (48 percent winners coming from privately owned universities in the 2015-2021 period. In the sample population, the number of winners coming from state owned universities is 19 (48 percent) and from privately owned universities is 21 (52 percent). In other words, when we analyse the state-owned/privately-owned university ratio both for total population and for sample population, almost half of the students are coming from state universities and the other half is coming from privately owned universities. Out of 23 universities in the total population, 10 (43 percent) of them are state owned and 13 (57 percent) of them are privately owned. In the sample population there are 16 universities of which 8 are state owned and 8 are privately owned. These figures suggest confidence on the representativeness of the sample population.

Journal of Design Studio, v:4 n:2

Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners

132

Q9: If you are a graduate of a privately owned university which of the following defines your status best?

- I studied with full scholarship.
- I studied with a 75 percent partial scholarship.
- I studied with a 50 percent partial scholarship.
- I studied with a 25 percent partial scholarship.
- Other

Since the number of winners coming from privately owned universities in the sample population was 21 it is expected to get 21 responses at maximum for this question. However, the total number of responses turned out to be 26 when the answers the responses were analysed qualitatively it was seen that 4 students coming from state owned universities selected *other* choice and one selected *full scholarship* choice instead of skipping the question.

In Turkey in order to be enrolled to an industrial design undergraduate programme between 2000-2018, students either had to pass a central university entrance exam or take a special ability test depending on the institution. Depending on their score and their choice they are placed to either state owned universities or privately owned universities. State owned universities usually require higher scores. Also students enrolled with full scholarship to privately owned universities have to have very high scores. The purpose of asking this question was to determine if higher scoring students with respect to university entrance exams made up the majority of the winners in the period 2015-2020.

In our sample population it was already mentioned that 19 students out of 40 came from state owned universities. As to the status of winners coming from private universities, 14 out of 21 turned out to have studied with a full scholarship. When we add the numbers 33 (19+14) out of 40 students turn out to have relatively high scores from university entrance exams. Therefore **hypothesis # 3**, students

coming from universities with central examination system, the majority of winning students have relatively high entrance exam scores was *not rejected.*

Q10: Did you get enrolled to the university by central entrance exams or special ability exams?

32 (80 percent) of the respondents were enrolled by central entrance exams and 8 (20 percent) of them were enrolled by special ability exams. Thus, **hypothesis # 2**: students coming from schools that accept students with special ability exams make up the majority of the winners *was rejected*.

Q11: How many prizes did you get from İMMİB?

It turned out that 28 respondents got a single prize, 8 winners were awarded twice and 4 winners were awarded three times.

Q12: Did you work on the winning project as part of a course?

In total, 21 students stated that they did their projects as part of a course. 19 of the students completed their projects as an extracurricular activity. Thus **hypothesis #1** was *not rejected* and it is concluded that the majority of projects are developed during courses at universities.

An important finding related to Q12 is that there is a statistically significant relationship between Q8 and Q12. When the universities are analysed, it is seen that mostly winners coming from state owned universities worked on their own while students coming from privately owned universities completed the project within a course. Out of 21 students who said that they did the project as part of a course 15 came from privately owned universities, whereas out of 19 who completed the project as an extracurricular activity only 6 came from privately owned universities.

The difference in the ratios of *state-owned universities/privately owned* universities between positive (71.4 percent vs. 28.8 percent) and negative (31.5 percent vs. 68.5 percent)

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners

133
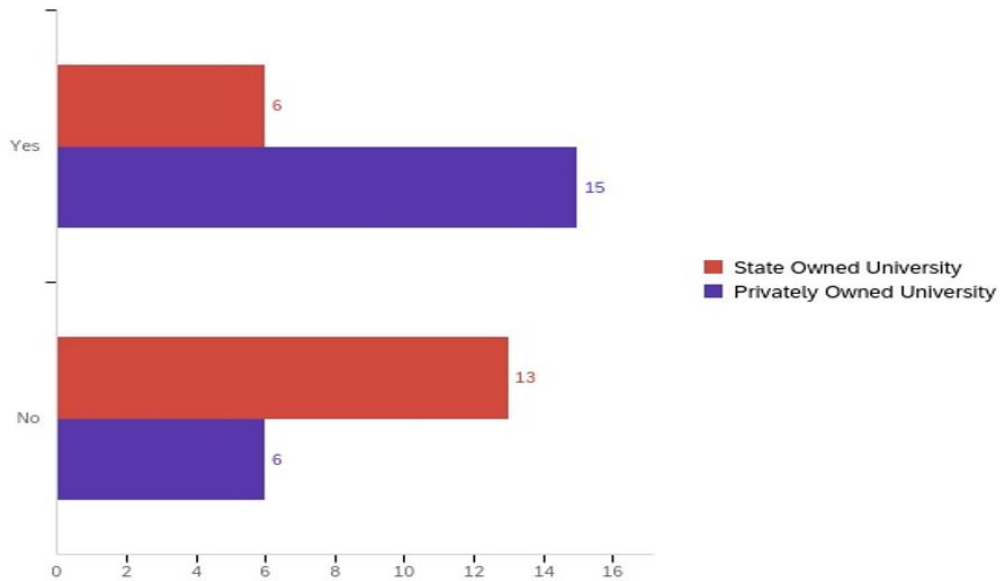
	Yes	No
State owned university	28.6%	68.5%
Privately owned university	71.4%	31.5%

Figure 3: Competition Project Developed as an Intra-curricular versus Extra-curricular Activity

responses suggests that privately owned universities are more willing to include design competitions to their curriculum (Figure 2). In order to test the significance, Fisher's exact test of independence has been used. The p-value turned out to be 0.025, meaning that the hypothesis cannot be rejected. In other words, there is a statistically significant relationship between if the winner comes from a state-owned university or privately owned university and whether the project is worked as part of a course or not.

Fisher's exact test of independence is a statistical significance test used to test the significance of statistical comparisons. It is called an exact test because it identifies exactly the difference from the null or no difference hypothesis (Connelly, 2016). The test is useful for categorical data that result from classifying objects in two different ways; it is used to

examine the significance of the association (contingency) between the two kinds of classification. Although in practice it is employed when sample sizes are small because it is more accurate than the chi-square test, it is valid for all sample sizes (Connelly, 2016). The Chi-square test was also applied for double-check and a significant association was repeated (p<0,05) (Camilli and Hopkins, 1978).

Q13: If you have developed your project within the course hours, which of the following describes best the course type?
- A studio course project
- Graduation project / Capstone course
- Course project (other than a studio course)
- Other

Out of 21 students who stated that the winning project was developed within a course 17 of the

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners
134

respondents developed the project within a studio course, 2 of them worked on the project within a course other than studio course, 1 of them worked on it as a graduation project and 1 of the respondents did not specify. As it is seen, the majority (81 percent) of winners who worked on the project within school hours used studio courses for this purpose.

Conclusion
The main objective of this study is to reveal school related factors that affect İMMİB industrial design competition student category results. For this purpose, four hypotheses have been constructed:

Hypothesis #1: The majority of projects are developed during courses at universities *(supported)*.

Hypothesis #2: Students coming from schools with special ability exam make up the majority of winners *(not supported)*.

Hypothesis #3: For students coming from universities with central examination system, the majority of winning students have relatively high entrance exam scores (supported).

Hypothesis #4: The older the department, the higher the frequency of winners coming from that university *(supported; correlation coefficient +0.44)*.

The following section discusses the findings with respect to existing literature and elaborates on the future implications of the results.

Discussion and Future Implications
The authors of this paper found that as the number of years since the establishment of the industrial design department increased, the total number of prizes accumulated from the İMMİB student design competition also increased in the period 2015-2020. In other words, the older the industrial design department the more are the chances of winning a prize. In this respect existing literature mentions the importance of tradition as a facilitator of self-confidence: 'When it becomes an institution's tradition that teams from the institution always win awards,

the current team believes it can win and it will not want the previous teams down.' (Wankat 2005, 346)

Between 2015-2020, in the total population of winners there were 23 universities represented. In the sample population we used for this study, there were 16 universities represented. Out of 16 universities, 8 were state-owned and the other 8 were privately owned universities. In Turkey, industrial design departments at state owned universities attract students having higher entrance scores. Privately owned universities on the other hand, offer full scholarship for students with higher scores. We tried to identify whether the winning students in our sample population were those with higher entrance exam scores. Indeed, 14 students enrolled to privately owned universities out of 21 had full scholarships. When we consider them together with the students coming from state owned universities (19+14= 33) 82,5 percent of students had very high entrance scores. Existing literature points out the importance of student quality on competition results: 'Most of the advisors also commented on the importance of motivated, high-quality students' (Wankat 2005, 346). The easiest and most objective way for us to assess student quality was to use university entrance exam scores together with scholarship merits and our findings support the findings of existing literature i.e. most of the prize winning students are high quality students.

Existing literature mentions the pressure on college admissions promotion (Zhang & Wang 2018). Successful student competition results are likely to be used by universities as a means of promotion because they increase a university's popularity. Also, successful student competition results are used as a proof of rigorous education particularly in departments/disciplines when accreditation is missing. Wang (2019, 4) also states that many colleges and universities use awards to promote their teaching achievements.

In the absence of a school policy dedicated to imparting the competition theme to future designers or the lack of staff members who are

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners

135

qualified to guide students through the competition, the benefits of participation in such competitions may be limited (Meir et al. 1996, 306). Wankat (2005, 346) found that students who competed in the competition that was closely aligned with the curriculum were successful; on the other hand, students who participated to another competition that was not closely aligned with the curriculum did not win awards during the same period. At present, in the curriculum of some universities in China, the design competition has begun to be embedded in the industrial design teaching system (Zhang & Wang 2018, 875). Our research findings demonstrate that almost half (21/40) of the winning projects were done as part of a course, the majority (17/21) being a studio course which means that the curriculum is aligned with the competition. The dominance of privately owned universities in the group of schools who taught the competition project as part of a course was significant. 71.4 percent of the intra-curricular competition projects belong to privately owned universities. One of the possible explanations for the adoption of the competition so much could be related to the rivalry between universities in terms of admission. Since privately owned universities struggle very hard to fill in the allocated number of places with candidates having higher entrance exam scores, successful design competition results may serve them as credentials to attract higher quality students because winners enjoy nationwide recognition, they are awarded with many monetary and non-monetary benefits. Particularly the international scholarship for graduate education is a major motivating factor for students.

We discussed the preliminary results of this research with professional designers and design instructors on Industrial Designers' Day 29th June 2021 at an on-line forum entitled "Diversity in Academia" organised by Industrial Designers Society of Turkey (ETMK). The forum was moderated by two design academicians. In total, six design academicians were invited as first speakers. Each speaker presented their research on different topics related to diversity in the academy. After each speaker, the online audience participating in the forum expressed their views on the subject and asked questions to the speakers, so that each topic was discussed by the designers, design academics and students. While the second author of this research was one of the moderators, the first author presented the preliminary results of the research as a speaker. Later on the audience elaborated on the subject. The audience pointed out *ethics* and *privacy* as potential problem areas as an outcome of carrying out the competition preparation during course hours. The ethics is related to working on the project with the support of an advisor versus on your own. Privacy on the other hand is knowledge sharing with the students' peers in the class. Both issues have to be investigated as a future study focusing on the student point of view.

Existing literature suggests that winning a competition has several impacts on students such as the enhancement of student self-confidence (Wankat 2005); help in getting the first job (Wang 2019; Zhang & Wang 2018; Wankat 2005); a means of earning money (Er et al., 2021); going abroad for graduate study. In order to identify how students' lives changed after winning the competition, in depth interviews with winning students should be carried out as a future implication.

Wankat (2005, 347) suggests further research to test if well-designed student competitions increase student learning, help them learn practical aspects of engineering and motivate many students work harder. According to the authors of this paper the issue concerning if competition participation leads to an increased student learning has to be explored with detailed qualitative studies that involve students and instructors.

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners
136

References
Boyer, E. & Mitgang, L. (1996) *Building Community: A New Future for Architectural Education and Practice.* Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Camilli, G. & Hopkins, K.D., (1978) Applicability of chi-square to 2×2 contingency tables with small expected cell frequencies. *Psychological Bulletin,* Vol. 85, No. 1, pp.163-167.

Connelly, L.M. (2016) 'Fisher's exact test', *MedSurg Nursing*, Vol. 25, No.1 (online), Available at: https://link.gale.com/apps/doc/A444912943/AONE?u=anon~762f4513&sid=googleScholar&xid=84c846ae (accessed 25 March 2022).

Çopur, M. (2017) *İMMİB Endüstrivel Tasarım Yarışmalarının Değerlendirilmesi (Evaluation of İMMİB Industrial Design Competitions).* Unpublished MSc thesis, Middle East Technical University, Ankara.

de-Juan, A., Fernandez del Rincon, A., Iglesias, M., Garcia, P., Diez-Ibarbia, A. & Viadero, F., (2016) Enhancement of mechanical engineering degree through student design competition as added value. Considerations and viability. *Journal of Engineering Design*, Vol. 27, No.8, pp.568-589.

Dilek, İ. & Kaygan, P. (2018) Different goals, different criteria: Perspectives of jury members in industrial design competitions in turkey. *A/Z ITU Journal of the Faculty of Architecture*, Vol. 15, No.3, pp.13-27.

Er, H.A., Özcan, C., Ertem, H. (2021) I'm design chat 10 memleketten tasarım manzaraları: "Tasarım Yarışmaları" (online), Available at: https://www.youtube.com/watch?v=ys-rglSUHIU (accessed 23 March 2021).

Fawcett, J., & Garity, J. (2009) *Evaluating Research for Evidence Based Practice.* Philadelphia, PA: F.A. Davis.

Frascara, J. (2002) Preface, in Frascara, J (Ed) *Design and Social Sciences: Making Connections.* London: Taylor and Francis.

Gelmez, K. (2011, December) İMMİB Endüstriyel Tasarım Yarışmaları Üzerine Bir Inceleme: 2005–2009 (An Analysis on İMMİB Industrial Design Competitions: 2005–2009), In *Endüstride, Tasarımda, Eğitimde 40 Yıl Conference*, pp. 339-353.

Gottschling, P. (2018) Where design competitions matter: Architectural artefacts and discursive events, *Journal of Material Culture*, Vol. 23, No, 2, pp.151-168.

Haupt, P., Wijas, M., Mochocka, S., & Chyb, A. (2019) Teaching architectural design through competition, motivation and challenge. *World Transactions on Engineering and Technology Education*, Vol. 17, No.3, pp. 338-342.

Hermand, S., & Rajeb, S. B. (2019, June) Using Design Competition Calls in a "Design Studio" Course. In *AMPS Conference 17.1*, pp. 167-176.

Irkdaş Doğu, D., Timur Öğüt, Ş. & Er, H.E. (2015) Characterizing industrial design education in turkey: A current synthesis for future directions. *Yedi*. Vol.14, pp. 39-50.

Kreiner, K. (2009) Architectural competitions empirical observations and strategic implications for architectural firms, *Nordic Journal of Architectural Research*, Vol. 21, No. 2/3.

Khorbotly, S. & Al-Olimat, K. (2010, October) Engineering Student-Design Competition Teams: Capstone or Extracurricular?. In *2010*

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners
137

IEEE Frontiers in Education Conference (FIE), pp. F1C-1.

Lampel, J., Jha, P. P., & Bhalla, A. (2012) Test-driving the future: How design competitions are changing innovation. *Academy of Management Perspectives*, Vol. 26, No. 2, pp.71-85.

Lobo, M.L. (2005) Descriptive research is the bench science of nursing. *Western Journal of Nursing Research*, Vol. 27, No. 1, pp.5-6.

Meir, I.A., Erell, E., Etzion, Y. & Pearlmutter, D. (1996) Are design ideas competitions hitting the target? Comments on the International Design Ideas Competition for a resort hotel by the Dead Sea, Israel. *Energy and Buildings*, Vol. 23, No. 3, pp.299-306.

Nassaji, H. (2015) Qualitative and descriptive research: Data type versus data analysis. *Language Teaching Research*, Vol. 19, No. 2, pp.129-132.

Pasin, B. (2017) Rethinking the design studio-centered architectural education. A case study at schools of architecture in Turkey. *The Design Journal*, 20(sup1), pp. S1270-S1284.

Popovic, V. (2005) Building a Collaborative Culture between Design Research and Practice Through Graduate Education. In *Giard, J & Pijawka, D (Eds.) Proceedings of the Fourth Conference Doctoral Education in Design. 4th Doctoral Education in Design, United States of America*, pp. 119-128.

Raffeor, W. S., Pung, C. P., & Joo, S. H. (2013, June) Using The ASME Student Design Competition as the Culminating Design and Build Experience in a Freshman Level Cad-Cam Course. In *2013 ASEE Annual Conference & Exposition*, pp. 23-1341.

Ratner, B. (2009) The correlation coefficient: Its values range between $+1/-1$, or do they? *Journal of Targeting Measurement and Analysis for Marketing,* Vol. 17, No.2, pp. 139–142.

Salama, A. M. (2015) *Spatial design education: New directions for pedagogy in architecture and beyond*: Routledge.

Senior, B. A., & Holt, R. J. (2014) Student Perceptions about Their Participation in the ASC Regions 6 and 7 Student Competition, *50th Annual International Conference Proceedings.*

Stebbins, R. (2001) *Exploratory Research in the Social Sciences*. Thousand Oaks, CA: SAGE, Vol. 48.

Strong, J. (1976) *Participating in architectural competitions: A guide for competitors, promotors and assessors*. London: The Architectural Press Ltd.

Toprak, İ., & Hacihasanoglu, O. (2019) Terms and Concepts on Design Studio in the Research Articles of 2010's. *Journal of Design Studio*, Vol. 1, No. 2, pp.13-22.

Volker, L. (2010, July) Designing a Design Competition: The Client Perspective, In *Durling, D., Bousbaci, R., Chen, L, Gauthier, P., Poldma, T., Roworth-Stokes, S. and Stolterman, E (eds.), Design and Complexity – DRS International Conference, Montreal, Canada.*

Wang, S. F. (2019, July) The impact of design competition on design education. In *IOP Conference Series: Materials Science and Engineering*, Vol. 573, No. 1, pp. 012060.

Wankat, P. C. (2005) Undergraduate student competitions. *Journal of Engineering Education*, Vol. 94, No. 3, pp. 343-347.

Zhang, F., & Wang, W. (2018, December) Research on the Method of Improving the Innovation Ability of Industrial Design Students Based on Design Competition. In *2nd International Conference on Art Studies: Science, Experience, Education (ICASSEE 2018)*, pp. 875-878.

Journal of Design Studio, v:4 n:2
Soylu, Y., Karaca Salgamcioglu, B., Biyuk Oksuz, K., (2022), The Analysis of the School Factor in Industrial Design Competitions: 2015-2020 İMMİB Competition Student Category Winners
138

Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

Rahman Tafahomi

Department of Architecture, School of Architecture and Built Environment, College of Science and Technology, the University of Rwanda, Kigali, Rwanda

Abstract: The research develops a design framework as an applied tool to structure the necessary stages throughout architectural design programs, in particular thesis projects. The architecture thesis students apply programming and conceptualization in several different ways, and a significant proportion of them prefers to use precedents instead. Architecture thesis projects tend to focus mainly on the studies, methods, and analysis, however, the relationship between the programming-conceptualization and the rest of the thesis project seems to have attracted less attention. To cover this gap, a design framework was developed to link the architecture findings to the design objective and strategies. The research employed qualitative methods, including structured observation, and content and graphical analysis. The data were also derived from thesis students' drawings offered in the final exam. The findings revealed the potential capacity of the design framework to connect the analytical outputs with the architectural design decisions through a specific concentration on the processes of programming and conceptualization. In conclusion, the design framework could enable architecture thesis students to create a range of alternatives with regard to programming and concepts, whereas these options are still well-connected to design decisions. This will undoubtedly help students and lecturers with the creation of a systematic process of inputs, activities, outputs, and possible impacts.

Keywords: Architecture, Studio, Thesis, Design framework, Programming-conceptualization.

Introduction

Programming and conceptualization are significant parts of the education in architecture, art, and engineering particularly, in the final year as the ultimate design project (Borden & Ray, 2006; Cross, 2005; Duerk, 1993). A significant part of architecture programs is supposed to end with either a final year project or a thesis project for graduation in different universities. The policy, process, and procedure of architecture schools such as curriculum determine what kind of final project is required. While there are some differences between final year projects and thesis projects, both approaches achieve a final project to evaluate the learning outcomes of the students (Tafahomi, 2021a). In the final year project, the students are supposed to select a project to design either in one semester or in a year based on the topic, site, and guidance of the studio coordinator. In the thesis project, the students are allowed to select supervisors, topics, and methods to develop the thesis project in one year. Studies highlighted that in both approaches the role of the studio coordinator is significant due to the apprenticeship tradition

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on
Programming and Conceptualization Processes

139

(Draper, 1977; Drexler, 1975; Garric, 2017). In opposite, in some architecture schools, the thesis approach is more developed to let the students select a research thesis based on the design proposal for one year of study to fulfill the project through the study, research, and design activities. In such program, the role of the supervisors and the panel of juries are important to lead the students through desk critics, comments on presentations, and marking pin-up as formative assessments.

The final project of the students is supposed to carry out the education experience including knowledge, skill, and ability to represent the level of the quality of design decisions by the students (DoA, 2012; FAED, 2009). Despite the confusion between the theoretical framework and the conceptual framework, seemingly, the theoretical framework refers to the studies based on the theoretical topics and outputs however; the conceptual framework refers to the research outputs and the synthesis (Tafahomi, 2021b). The studies indicate that achieving the design framework or conceptual framework is significant in the conceptualization process of the final project (Borden & Ray, 2006; Ghonim & Eweda, 2019).

Still, in some of the departments, a precedent studies-analysis process is a common way to understand the architecture projects that call learning through redrawing (Draper, 1977; Drexler, 1975; Garric, 2017). This approach has a strong root in the Beaux Art tradition that was constructed based on similarities between art and architecture in the application of drawing techniques to present their idea in terms of the final product (Griffin, 2022). In Beaux Art tradition, it was supposed that the students redraw projects of great architects in the same way art students do in art studios through redrawing the great masterpieces of great painters and artists. Apparently, creativity was meant in terms of a subjective intuition to design something new, artistic, and aesthetic (Draper, 1977; Drexler, 1975; Garric, 2017). Nonetheless, there is still some disagreement between the subjectivity-objectivity in research (Phillips, 1990) and assimilation-accumulation

in the learning process (Pena & Parshall, 2012; Tafahomi, 2021c) in science, engineering, and architecture where observed creativity and concept of the design in terms of a mysterious ability in an individual, private, and personal way. While this approach of teaching was a great innovation in response to the Romanticism atmosphere in France in the 17th century to advocate the vitalization of classicism style in the directory of Nicolas-François Blondel (1618-1686) (Griffin, 2022), seemingly, the time of Romanticism have changed to the new strange context full of problems and challenges to deal through design (Dorst, 2006).

The problem of this research is formulated in this way. It is common to see the final year students are faced difficulties to apply the results of the studies, analysis, and findings in the design process (Borden & Ray, 2006). Although the students have done a long process of studies about the thematic project or topic to discover the idea for the design stage, the link between the whole process of the thesis activities and the design stage becomes a mysterious activity for the students. This problem is mentioned in terms of "Ill-structured problem" in architecture education (Simon, 1973; Dorst, 2006). The students prefer to start the design process in terms of conceptualization from their own understanding and perception of the thesis topic without a clear link to the results of the analysis. In fact, while the students do some analytical activities based on the research process or precedents studies in the studio to present the analysis stage in the project, the application of the results in the design production is not clear. In detail, the students from the topic have a straightforward movement toward the programming and conceptualization for the design of the project. However, the students are less successful to present the lessons learnt through studies and the architectural findings in the analysis stages (Tafahomi, 2021b). Seemingly, the design outputs of the students could represent a weak connection between the architectural findings and the final outputs.

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

140

In this regard, the research question is designed in some subsidiaries questions such as is there a process to like the architectural problem and findings to the design objective and strategies? Do textural and graphical tables lead the students to accurate programming? How will be effective to detail the relationships between programs? Does diagrammatic programming lead the students to a deeper understanding of programming-conceptualization? To answer the questions, the objectives of the research are designed to test a design framework for programming-conceptualization activity in the architecture thesis studio to document the reactions of the students, analyze the outputs, and evaluate the learning outcomes of the students.

Literature review and studies on design framework

Taura and Nagai (2013) called the concept of design in terms of the most common stage in different fields of science such as engineering, art, and architecture. The study on conceptualization in engineering highlighted that the process of conceptualization at least included two stages programming and forming the idea (Pahl, Beitz, Feldhusen, & Grote, 2007). They developed the conceptualization process into four stages including planning, conceptualizing, development, and detail. According to this definition, conceptualization is a process of development that at least needs a stage in terms of planning or programming. However, another study claimed that concepts for design sometimes do not need any sketches and come into the mind of the designer such as a potter that does a pot directly from clay (Cross, 2005). Perhaps, for this reason, Lawson mentioned that reading of minds of designer is a complex task (Lawson, 2005). Nonetheless, not all concepts could be done through trial and error, nor all concepts come through a simple aspect of production, and seemingly, concepts have been forwarded for a more complex system of design products.

White (White, 1975) in his initiative work attempted to draw a guideline for the architectural concept based on the experiences in two approaches building-oriented and process-oriented and each of them perhaps includes different subordinations that he took into account in terms of values. Those values look paradoxical but represent some extreme aspects of the design such as artistic-scientific, consciousness- unconsciousness, and structured-unstructured similar to the analysis of the paradoxical relationships between the "inner-sense driven and problem-solving driven" in the thesis project of the students in the final year (Tafahomi, 2021a, p. 13).

Taura and Nagai mentioned that a concept is presented by two methods linguistic and visual. That the linguistic refers to the explanation of the logic of design such as planning and programming and the visual refers to the sketching, drawing, and presentation of the graphical ideas. The communicative tools in the architecture have included many approaches such as drawing, physical model making, and 3D animation presentation in terms of computer aids devices (CAD). Nonetheless, still, there are many problems to understand the process of conceptualization in the mind of designers, architects, and students, in which Goldman (Goldman, 2006) argued that even by analyzing the concept of the designer understanding the objective and values of the design is a complicated task. In this perspective, Mugerauer (Mugerauer, 1995) interpreted the idea of Heidegger that the latent objectives in the final products have been more than the conscious objectives of the designer, which referred to the effects of unconsciousness on the design process. This specification of the mind was called in terms of "active archive of mind" by Lawson (Lawson, 2005).

Architecture education

There is a movement in architectural education based on the philosophical transformation in the world that was documented based on the renaissance, neoclassicism, modern, and postmodern styles that referred to enlightenment, romanticism, realism and structuralism, and poststructuralism schools of thought respectively (Gomez, 2003; Hancock, 1995; Mugerauer, 1995; Proudfoot, 2000; Seamon, 2015; Tafahomi, 2021a). For example, the studies highlighted that the style of Beaux

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

141

Art was based on the redrawing of the great architectural projects and providing a portfolio of drawing the great Roman architectural projects in terms of fulfillment of the architecture education (Draper, 1977; Drexler, 1975; Garric, 2017; Griffin, 2022). This style of education in architecture continues for centuries in the world as a monologue in the educational style in which many institutes struggled to be free this style (Littmann, 2000; Madanovic, 2018; Griffin, 2022).

In opposite, there is a review on the education in architecture that referred to the Bauhaus approach in terms of integration of different styles of design and research in architecture workshops and studios such as painting, sculpture and technology (Marttila, 2018). This finding was in the same alignment with the important idea of Walter Gropius (1883-1969) that he advocated the role of education is to relieve the mind of the students from obstacles of principles to let them make a project alive (Gropius, 1970). Boradker applied the terms of multiple approaches to design education as an achievement of Bauhaus (Boradkar, 2010). In Bauhaus the traditional ateliers were replaced with workshops and studios such as clay, painting, sculpture, metal, and fabric to engage the mind of students with alternatives for design concepts, processes, and products. The applications of the different methods, approaches, and tools in the design process have a significant impact on the education process of the students (Tafahomi, 2022a).

Some architecture schools still emphasize the circle of the redrawing of the great architectural projects by the elite architecture as a way of understanding architecture and getting inspiration for the concept of architectural projects based on an orthodox tradition of Beaux Art (Draper, 1977; Drexler, 1975; Garric, 2017; Littmann, 2000; Madanovic, 2018; Tafahomi, 2021a; 2022a). This logic was constructed based on neoclassicism ideology in romanticism in the 17th century. They planned to vitalize the glory of classical architecture to represent the transcendent movement of the political power of the empire in France to train architects to design government and public buildings in terms of the "French official public architecture system" (Garric, 2017, p. 6). However, classicism was designed based on the enlightenment philosophical movement. With many changes in the 18th and 19th centuries, importantly positivism, historical dialectic, materialism, and realism, the expectation from architecture fundamentally changed and modernism took the place as the unique dialogue for design.

In this perspective, the studies argued that education in architecture, however; did not change deeply as philosophy did (Draper, 1977; Drexler, 1975; Garric, 2017), and the training of the students was even called an unmodern style of education (Garric, 2017). As matter of fact, in neoclassicism, environmental, sustainability, and psychological knowledge did not develop and the level of familiarity of the instructors was so far from the current time. For this reason, the foundation of education was based on aesthetics, order, and harmony as a Vitruvian approach to architectural design (Proudfoot, 2000). Just in the 20th century architecture schools faced with Bauhaus structure that rejected all traditional styles and searched for new ideas from reality and context (Gropius, 1970), based on movements in Europe importantly, socialism, Marxism, and modernism.

Programming in architecture
Programming is the essential and initial stage of the architecture project that in many counties was legalized as an official document in terms of an agreement between the architect and client (AIA, 2009). Hershberger mentioned that programming is a crucial stage for "functional efficiency" and both architectural "mistakes and insightful" could be happened in this process (Hershberger, 1999, pp. 2-3). Programming an architectural project perhaps is the first notion to change the condition for a better alternative that looks similar to problem solving. Apparently, the architectural programming stage is a reaction to the detected problems based on some analytical activities of architects to respond to the situation. Lang called a divergent stage of design that many solutions come into mind based on many

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes
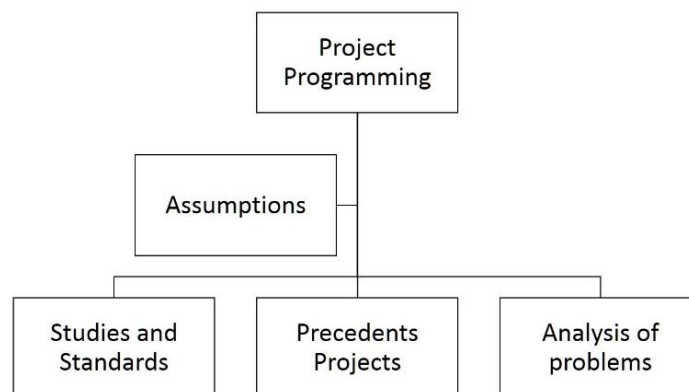
142

problems (Lang, 1987). Duerk defined programming in terms of a backward-forward movement between the problem and the ideal form for the project that perhaps could come into reality (Duerk, 1993). Architectural programs respond to the functions, activities, and environmental issues of a project based on the needs of the client, requirements of society, and essential environmental factors (Hershberger, 1999). He classified the methods for the programming into four clusters of programs including design-based, knowledge-based, agreement-based, and value-based (pp. 7-35) that referred to the assumption of the architect, some standards based on research, an agreement between client and architect, and design values respectively.

Pena and Parshall mentioned, "The programming is a process" than an event and are quite new in the architecture design. They called programming in architecture a skill to recognize the relationships and differentiation between need and want in the project (Pena & Parshall, 2012). However, they took into account the programming in terms of "problem seeking and analysis" than the initial stage of problem solving. They recommended five steps of programming in architecture including "establish goals, collect and analyze facts, uncover and test concepts, determine needs, and state the problem" in four categories of topics including "form, function, economy, and time" (pp. 14-26). They advocated that these steps

could be used in all architectural projects. However, in their definition, the stage of problem definition, studies, and analysis were mixed with the programming and even with the conceptualization task that made the application of the model difficult.

Nonetheless, there are other methods for architectural programming that have rooted in the tradition of architecture education in terms of design composition which refers to the integration of different programming and arrangement into the site as a way of innovation (Gokyer, 2013). This style of programming attempted to borrow models of site arrangement and composition such as programs, functions, and activities from precedent projects and apply them to a new site in terms of the application of best practices (Draper, 1977; Drexler, 1975; Garric, 2017). In fact, programming is a new activity in architecture design that was formed in the 20th century based on new achievements in environmental and psychological sciences (Hershberger, 1999).

According to the studies, there are some approaches in the programming and planning for design in engineering, art, and architecture including four approaches that can be called architect assumption, essential standards, composition in precedents projects, and architectural problem analysis. Figure 1 illustrates the classification.

Figure 1: Architecture programming approaches

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes
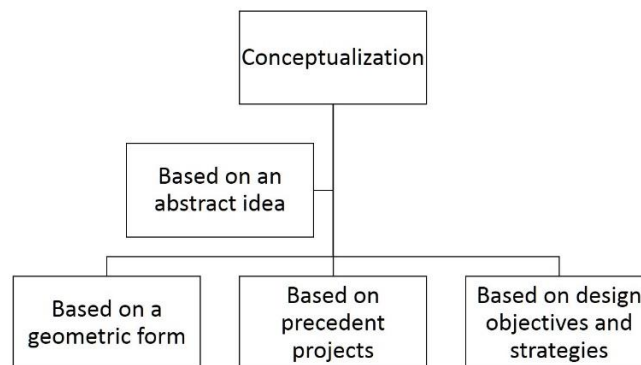
143

Conceptualization in architecture

The conceptual design and development in architecture have been a hot and great topic for discussion in both professional and academician literature (AIA, 2009; RIBA, 2014; Schon, 1984; Tafahomi, 2021a; 2021b). The engineering literature emphasized two stages for the design of a product importantly planning for design and conceptualization for design (Pena & Parshall, 2012) that the first task involved design tasks and the second task refers to materializing of the product. The studies also emphasized that both stages are processes than an event (Cross, 2005; Pena & Parshall, 2012; Tafahomi, 2021a) that are required a backward-forward interaction between two tasks (Hershberger, 1999).

Some studies emphasized the ability of the students to draw as a medium for conceptualization in architecture education (Ching F. D., 2010; 2015; Crowe & Laseau, 2011; Laseau, 2000). For example, Laseau (Laseau, 2000) highlighted that concept generation is a process through drawing and development of the mind that is started from the primary stage and developed into a complex idea (Goldschmidt, 2004). In the same approach, Ullman detailed the conceptualization in terms of decomposing of ideas, composition of ideas, and generation of a new concept (Ullman, 1994). In addition, Bakel (Bakel, 1995) classified concepts in architecture based on three sources including personal, situational, and international driven factors. This classification referred to the earlier classification based on subjectivity and objectivity in art and architecture (Phillips,
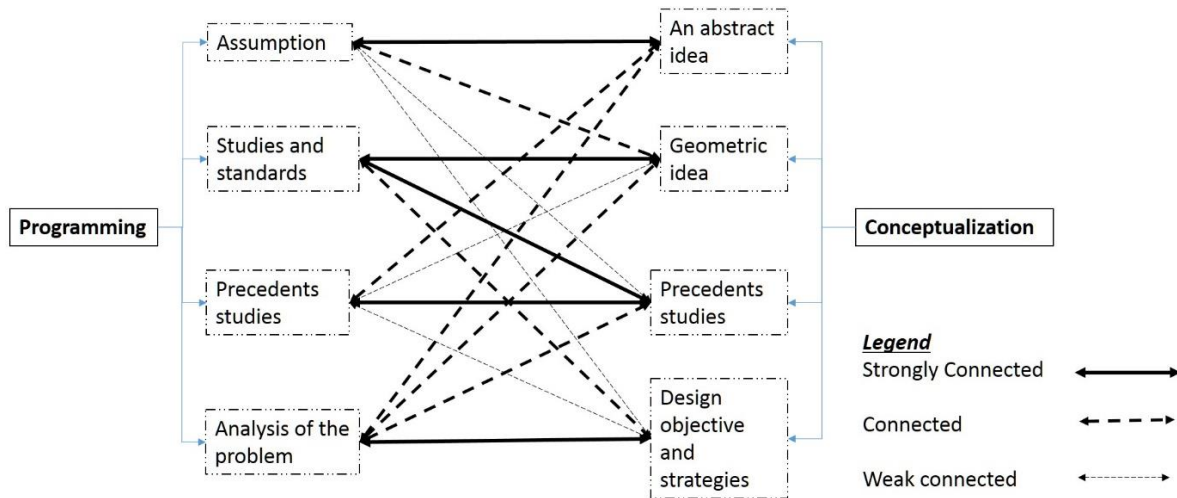
1990; Tafahomi, 2021c). In this case, the studies underlined that the students are under the influence of external factors such as the design studio environment to form specific behavioral patterns which was mentioned as a process of learning through observation and doing (Salkind, 2008; Tafahomi, 2021d).

For this reason, the classification of the problem-solving driven (Taura & Nagai, 2013) and inner-sense driven (Nichols & Stich, 2003) factors still are fitted to the architectural conceptualization (Tafahomi, 2021a). While this classification implies the subjective and objective approaches in design process, seemingly, art, architecture, and design are involved in both subjectivity and objectivity to some extent (Tafahomi, 2021a; 2021d). However, there are sets of critics that the subjectivity and objectivity could less appear as an absolute way and they are dependent on the social and contextual conditions to apply (Popper, 1977). Phillips (Phillips, 1990) interpreted the theory of Thomas Kuhn in terms of a paradigm that the designer follows the advocated approach by the context. Apparently, the application of each approach in conceptualization referred to the predominant paradigm in the specification of location and time.

According to the study, architecture conceptualization includes four approaches that can be listed in terms of abstract idea for development, a geometric form, composition in precedent projects, and the design objective and strategies. Diagram 2 conceptualizes the classification.

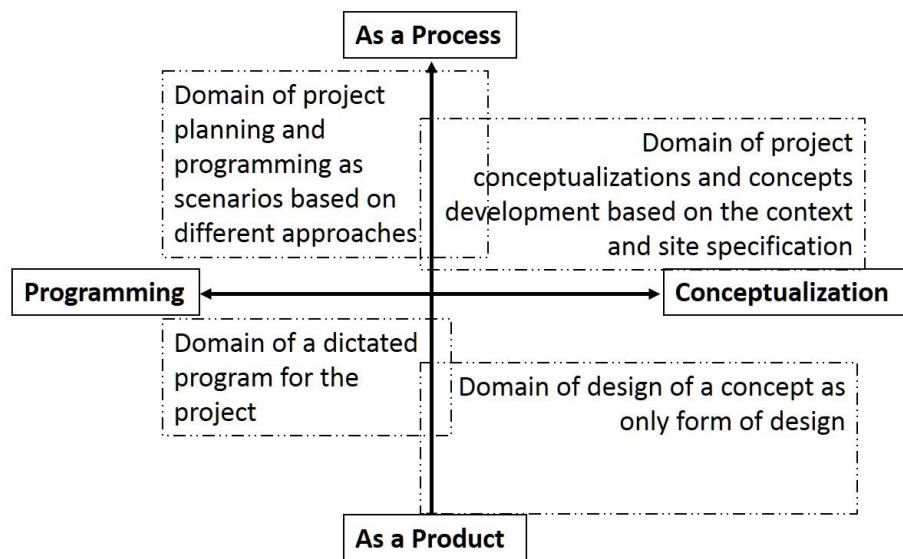

Figure 2: Bases of the conceptualization in architecture

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

144

Figure 3: Relationships between approaches in programming and conceptualization

Theoretical framework

There are some relationships between the programming and conceptualization in each approach and those approaches are dependent on the applied method, data, analysis, and results. Figure 3 attempts to represent the relationships between programming and conceptualization. The bolded lines refer to the strong connections between approaches in the planning and programming in the conceptualization and the possible selection of the conceptualization approaches although the dashed lines indicate the connections and weak connections respectively. According to Figure 3, the assumption-based in programming is related to the abstract ideas that both of them constructed based on the assumption of the designer. The studies and standards-based approach lead the designer to follow the essential aspects of the design that related to the geometric form (normally basic forms) and the precedents projects that are applied the standards in their projects somehow successfully. The precedent studies-based approach is constructed based on the selection of the composition of the site and projects and so it just could result in precedents projects' ideas for the conceptualization. Seemingly, just analysis of the problem-based approach could

Figure 4: Domains of the activities in the architecture design

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on
Programming and Conceptualization Processes

145

lead designers to conceptualization based on the design objectives and strategies.

As we explained programming is a process than an event, seemingly the programming and conceptualization have reciprocal interactions. It takes place from different points of view of designers in terms of taking into consideration both programming and conceptualization either as a process or as a final product (figure 4). The programming and conceptualization target the design stage as the final product of the architectural project that the relationships create a specific domain for each of them.

In summary, it is hypothesized that taking into account both programming and conceptualization as a process and problem-solving approach will help the students to develop the architectural thesis project in terms of a design framework for programming-conceptualization.

Methods and Materials
The methods and material of the research included five parts methodology, research design, research process, data specification, and the context of the study.

Methodology
Architecture education research enjoys qualitative, quantitative, and mixed methods research (Franz, 1994; Frayling, 1993; Groat & Wang, 2002; Niezabitowska, 2018) although still there is a movement to avoid these words in architecture studies (Tafahomi, 2022a). The quantitative methods applied to evaluate the perception and points of view of the users in architecture projects and education such as Tafahomi, Xi, and Yang based on the questionnaire and survey of the opinions of the users (Tafahomi, 2021a; 2021d; 2021c; Xi, Yuan, YunQui, & Chiang, 2017; Yang, Becerik-Gerber, & Mino, 2013). Qualitative research was applied to study the architectural problem in the context of projects (Cross, 2005; Gomez, 2003; Norberg-Schulz, 2019), education (Borden & Ray, 2006; Duerk, 1993; Hershberger, 1999; Schon, 1987; Tafahomi, 2021a), graphics (Crowe & Laseau, 2011; Goldschmidt, 2004; Laseau, 2000; Lawson,

2005), and analytical methods (Franz, 1994; Frayling, 1993; Gomez, 2003; Groat & Wang, 2002; Niezabitowska, 2018).

For example, the studies applied content analysis to evaluate the content of the thesis project of the students in architecture programs (Borden & Ray, 2006), analytical texts (Krippendorff, 2003), and architecture projects (Gomez, 2003; Norberg-Schulz, 2019; Mugerauer, 1995). The structure of the analysis was related to the level of interpretation of projects (Drisko & Maschi, 2016). The structure observation was applied to recording and mapping (Regis, 2003; Sperlregen, 2003) the specification of the form (Tafahomi & Nadi, 2021a; 2021b) and function of the built environment (Tafahomi & Nadi, 2020) or behavioral pattern of the users (Bonnes & Bonaiuto, 2002; Tafahomi, 2022b). The graphical analysis was widely applied for the evaluation, assessment, and interpretation of architectural drawing, sketching, and diagraming (Ching F. D., 2015; Crowe & Laseau, 2011; Goldschmidt, 2004; Laseau, 2000; Tafahomi & Nadi, 2021c).

Research Design
This research applied qualitative methods including structured observation, content analysis, and graphical analysis techniques. The content analysis was applied to structure the initial format for programming-conceptualization activities based on both visual and linguistic approaches (Taura & Nagai, 2013). It was supposed that the students could illustrate both textual and graphical information through diagrammatic (White, 1983; Tafahomi & Nadi, 2021c), graphical (Crowe & Laseau, 2011; Laseau, 2000), and drawing outputs (Ching F. D., 2015). In this logic, some textual and diagrammatic matrixes were designed to collect the opinions of the students in relation to the architectural thesis research achievements and design decisions for the programming-conceptualization.

To challenge the normal approach of the students in the conceptualization in terms of "precedents projects" two levels of activities were introduced in the thesis design studio

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on
Programming and Conceptualization Processes

146

including programming and conceptualization. It was recommended to fill out a matrix between the architectural issues and actions in terms of relationships between architectural findings in the analysis such as design objectives, strategies, programs, and schematic concepts, and specific issues for actions such as form, functions, site, and context. It was supposed that the students extracted important issues with the architectural thesis projects based on the results of the analysis of data and classified them as architectural findings in the list of issues. The recommended items for the significant architectural issues in the design framework included site, context, character, form, function, technology, and qualities. The logical relationships in the matrix are presented in Table 1.

The site item referred to the site specifications such as topography, orientation, location, and position. The context encompassed the climate, environment, cultural, and social factors that were effective on the design idea of the site. The character exposed the relationships between the architectural project and the contextual factors

to make transparent interactions between the projects and the materialization of the idea. The form was discovered through analysis of the different forms through analogous studies to find out the most relevant elements of the design into the programs and concept.

The function arranged the programs for the land, buildings, and the users' activities in both infilled and unfilled areas to clarify the indoor and outdoor relationships. The technology revealed the proposed specific technology and system with the buildings such as cooling, heating, and stability. The qualities in the table revealed the specific quality in the design that the students desired to add to the design such as human scale, natural-based, recyclability, and self-sufficiency.

To facilitate the programming processes, the instructor recommended some essential tables to fill out by the students about programs to express the level of privacy, scale, adjacency, and relationships between proposed programs. Table 2 shows tables to facilitate the programming.

Table 1: *The design framework matrix*

Actions Issues	Architectural Findings	Design Objectives	Design Strategies	Outdoor Programming	Indoor Programming	Design concepts
Site						
Context						
Character						
Form						
Function						
Technology						
Qualities						

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes
147

Table 2: *The programming process based on the tables*

No	Description	Image of the table	The legend of table
1	**Table of the scale of programs:** It was supposed that the students estimate sizes and scales of the programs for the project due to the site. They could either mark the table or draw a schematic scale for programs to illustrate the variety of scales.	Programs — Small scale — Normal scale — Large scale — Super scale; rows A, B, C, D, E, F	*Legends* / *Explanations* ✓ Symbol for existence * Symbol for non-existence — Or graphical diagrams for *scales* of each program in the table
2	**Table of the level of privacy:** The table of differentiation and relationships between the private-public programs was supposed to lead the students to arrange a hierarchy between programs.	Programs — Private — Semi-private — Semi-public — Public; rows A, B, C, D, E, F	*Legends* / *Explanations* ✓ Symbol for existence * Symbol for non-existence — Or graphical diagrams for the level of *privacy* of each program in the table
3	**Table of adjacency** It was supposed that the students draw the relationships between programs from adjacent to disconnected.	Programs — A — B — C — D — E — F; rows A, B, C, D, E, F	*Legends* / *Explanations* ✓ Symbol for existence * Symbol for non-existence — Or graphical diagrams to illustrate the level of *adjacency* programs in the table
4	**Conceptual arrangement of programs** It was supposed that the students based on achievements in the three mentioned tables arranged the programs to illustrate their spatial relationships.		*Legends* / *Explanations* ↔ Directly connected ← → Semi-connected ⋯ Weakly connected - - - Indirectly connected H1 / B / H Scales of the programs

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on
Programming and Conceptualization Processes

148

| 5 | Arrangement of the programs on the site It was supposed that the students before the conceptualization arrange all the programs on the site to understand the relationships between the programs and the site area. | | |

It was supposed that the students before the conceptualization arrange all the programs on the site to understand the relationships between the programs and the site area.

After this process, it was supposed that the students start the concept generation based on the sketches they did in the design framework matrix in terms of the conceptual solution for the architectural problems based on the design objective and strategies.

Research Process
The structure of the thesis project was already shared with the students based on the six stages including problem definition and discussion, studies, methodology and research design, data analysis, architectural finding, programming, and conceptual design, which each stage resulted in a specific thesis chapter. Therefore, it was expected that the students already have learnt the essential knowledge not only in the previous year but also through their research in the studies, data collection, and analysis processes. To arrange the research, the researcher presented three lecturers on the programming and conceptualization trends, norms, or styles in the thesis studio to introduce the students to the different approaches. It was requested that the students start to fill the design framework matrix and take into consideration relationships between programs. For those activities, specific workshops were designed to work together on the design framework and the conceptualization activities such as indoor-outdoor, floors, privacy, adjacency, and supportiveness of the programs. According to the shared educational materials, the instructor asked the students to communicate the process of concept generation and development through sequences of reporting, diagramming, or sketching. In the weekly desk-crits (desk critiques), the progress of the students was observed and the essential comments were shared.

Data specification
The data were combined from the designed boards of the students that they presented in the final exam of the thesis conceptualization phase. While there were some specific CATs (Continuous Assessment Testing) on the programming and conceptualization, the data were selected based on the final exam where the students applied all comments, crits, and suggestions to improve the outputs. The data in the boards were graphical data that the students uploaded simultaneously pdf files of the exam boards in the dropbox folder. Therefore, the relevant parts of the exam boards were selected to apply in terms of the data form analysis in this research.

The context of the research
The research took the place in the department of architecture at the University of Rwanda. The department started the program in 2009 based on an eclectic curriculum from another country in the region. The department registered between 25-35 students in each intake yearly and the total number of students is 136 from year 1 to year 5. The ratio of female students is almost close to 15 per cent although each year was different due to the number of registered students. Although the curriculum was designed based on the different styles of teaching in

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

149

architecture studios, the lecturers, instructors, and tutors led the program due to their style of learning in the architecture programs. For example, the department experienced clay workshops based on Bauhaus style, painting and graphical courses based on Beaux Art, and precedents projects based on Polytechnique styles of teaching. However, none of those styles continued except precedents study and analysis as the predominated way of teaching in the department.

The architecture program was designed based on five-year studies that the thesis course is served in the final year of study. Each year, the students pass the design studios and theoretical courses importantly, history, theory, and building technology. Both theoretical and practical modules take place in the design studios located on the second floor of the school's building. The design studios include portable chairs, drawing tables, and shelves for archiving the materials without offices for the instructors, divider partitions for students, or a fixed video projector. Place and things are flexible, portable, and changeable.

The students before the thesis studio already passed four years of studies in the department the major part of the learning process took the place in the style of the precedents studies for the design outputs in the studios. Therefore, the students are so familiar with this technique. However, the first semester of the thesis project includes the research and documentation that the students normally take into consideration as a study on the precedent projects than actual research. In this process, both programming and conceptualization also resulted in the selection of some parts of the precedent projects in terms of project and site composition for both programming and conceptualization.

This common way of understanding the thesis project is not the problem of the students but rather the style of teaching architecture in the department. For this reason, both supervisors and juries also look for precedent projects to compare the students' outputs in terms of design boards and ideal projects in programming and conceptualization activities. Apparently, any

new style of teaching architecture in this context faces with challenges, disagreement, and misunderstanding. The research took the place in an atmosphere where innovation and creativity of the students not only under the pressure from precedent projects but also application of a new style was not common dialogue for presentation, communication, and interaction of the thesis project outputs.

Results
The students presented their programming and conceptualization in the different styles and boards' arrangements in the both formative and summative exams in the department of architecture, the University of Rwanda. The results were analyzed in two following sections.

Architecture Programming
The students used the design framework matrix in different ways. The first group of students did not use the design framework matrix and attempted to arrange the programs for the project in a list and different format. They tried to innovate their own structures such as lists, tables, and diagrams to present their own understanding of the exercise. However, the results did not lead them to a logical stage for thoughtful programming and conceptualization. The second group of students used the matrix as an assumption to create their own design structure based on the lessons learnt in the program. Therefore, all applied titles and items were different from the matrix. While there was some similarities with the topics such as design objectives or programming but the logical style of the matrix was changed which did not lead them to present their ideas completely. This group of students understood the design framework as a new task to present their idea for the concept.

The third group of students followed up on the structure of the matrix and added the analytical achievements in terms of the architectural findings to fill out the design framework matrix. However, this group of students did not apply the achievements in the analysis section it terms of architectural findings to arrange the design framework. Rather, they applied the matrix to arrange new sets of objectives, goals, and

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes
150

strategies for the thesis project. The fourth group of students applied the matrix in a correct structure although the preliminary concepts of the column of the matrix did not support the achievements. While for this group of students the design objectives and strategies were formulated based on the highlighted problems in the analytical activities, the overlaying of the objectives and the programming and the preliminary concept in terms of the relations between the programs and sketches to solve the problem did not well develop. Finally, the fifth group of students did arrange the design framework matrix and presented the results on the final exam boards. Despite the high number of produced materials by the students, some of the attempts were selected as examples to represent the activities and style of arrangement in Table 3.

Table 3: Example of attempts to draw design framework

No	Description	Image of the Design Framework
1	**Structure:** columns based on the essential elements of design decisions, and rows based on qualities of design. **Content:** descriptive phrases for decision making **Personalization:** creating clusters of the findings for design decisions based on the architectural findings, and integration of preliminary and detailed sketches for conceptualization.	
2	**Structure:** columns arranged based on the essential elements of design decisions, and rows based on groups of users in terms of target groups. **Content:** applying both descriptive phrases and titles for decision making **Personalization:** arrangement of the design objectives based on the users than findings of the research, and integration of diagrammatic and detailed sketches for conceptualization	

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

151
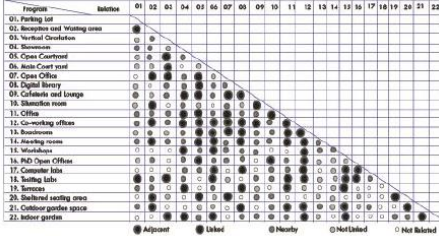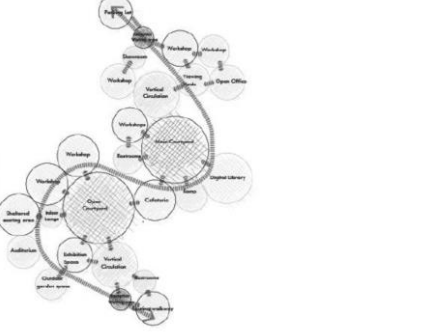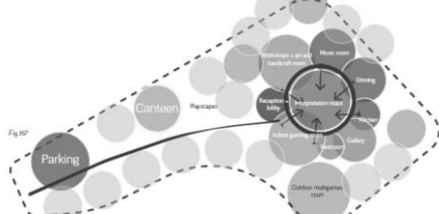
| 3 | **Structure:** columns based on the essential elements of design decisions, and rows based on layers of data analysis **Content:** descriptive phrases and titles for the design decision through programming **Personalization:** applying keywords in terms of the coding system for the programming based on findings and assumptions. Applying detailed redrawing for the illustration of the concept of the design. | | | | | | |

Analysis	Findings	Objectives	Strategies	Programs/ elements Indoor	Oudoor	Tactics/Sketches
Precedents	Different forms/ materials	To achieve spatial diversification	Integration of Primary and irregular forms	each program	Fauntain	
	Transparecy & Feeling exposed	Indoor/ Outdoor connection	Maximizing openess	Retail shops Market hall	Kiosk Retail space	
	Connection of spaces through open floor plan	To achieve collaboration	Double High spaces & Mezanine	Market hall wholesale shops		
Context	Views to mountains /Mt Kigali & Mt Jali	To create strong Indoor /Outdoor connection	Maximizing views through the design	Restaurant and caferia	Playground	
site	Social Interaction	To create interaction hotspot	Open space for MOB events	Cinema	Parking Garden	
	Slope integration	To blend into contours	Limeted Excation	Cinema	Sitting platform Garden	
	Wind /solar orientation	To achieve Interior comfort through protecting East-West	Use Cross/stack ventilation Sun screening material	Service area		
Data	80 % of users said existing spaces are not exposed to clients	To design exposed &transparent space	Playing with Variety in material/ form,...	Retail shops Market hall	Kiosk	
	72 % of users need a a common spaces	To achieve collaboration	Creating courtyards / squares	Restaurant/ Market hall	Kiosk	
	Promoters want Identity of Rwanda in Design	To fit Into context	using Local materials/	Restaurant/ Market hall	square	

In the relationships between the programs, functions and activities, it was supposed that the students used tables and diagrams to represent the relationships. The students presented their diagrams in the five approaches without diagram, with private-public matrix, with adjacency matrix, without fitting into the site, and fitted into the site that the results illustrated in Table 4.

Table 4: *Sample of application of the program's relationships by the students*

No	Description	Image of the table	Elements in the diagrams
1	The scale of programs: the table was arranged based on the bubble diagrams to show the scale of the programs and detailed columns were used to indicate the number of programs and floor addresses to present arrangement in the buildings.		List of programs Bubble maps for sizes Number of programs Addresses of programs in the floors
2	The level of privacy: The student marked the table to categorize the level of privacy.		List of program Marks

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

152

3	Table of adjacency The table was arranged based on the relationships between the program to show the level of adjacency with some titles such as adjacent, linked, nearby, not linked, and not related.		List of program List of specification Symbols for specification A personalized heiarchy for the adjacency of programs
4	Conceptual arrangement of programs The students arranged the program in a conceptual relationship to present the program based on the outdoor and indoor activities. Extra graphical lines were applied to link programs and users.		Bubble figures for the arrangement of the programs Scale of bubble to illustrate size of the programs Hatch as a symbol to show priorities Use of lines as the main connections between of programs
5	Arrangement of the programs on the site The students used the bubble diagram to illustrate the areas of the programs and the adjacencies on the site. While the arrangement was clear, open spaces did less covered by the programs.		Bubble diagrams Title of diagrams Size of program Line of connection Relationships between programs

The first group of students preferred to slip from the task and continue their own conceptualization by diagraming the programs to avoid any wasting time. The second group of students provided a table to evaluate the specification of the program due to the level of private-public specifications and attempted to make a logic for the program arrangement in the diagram. The third group of students not only provided the private-public diagram but also added the adjacency and supportiveness diagram as an achievement for the programming in the appropriate way. The fourth group in addition to the third group attempted to represent the relationships between the programs in some spatial diagrams but in an abstract way to discover interactions between programs. The fifth group of students brought the programs and diagrams into site-map to evaluate how the programs fitted well into the structure of the landform.

Conceptual Design

In the conceptualization stage, the students performed in the four categorical types including precedents projects, geometric, programming diagrams, and concepts in the design framework matrix. The first group of students according to the lessons learnt in previous years of studies in the program used precedent projects as sources of conceptualization to modify the forms into a new concept for the architectural thesis project. They applied both form and function of the precedent projects in two ways. First, they modify the forms as personalization and assimilation of the architecture knowledge into a new form that was common for many years in architecture schools. Second, they integrated the forms and function in terms of composition in the design process. The second group of students used geometric shapes to generate concepts for the architectural project. A significant part of the students used rectangular forms to form the concept for the programs and the project due to static measures. While the

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

153

students applied some geometrical forms such as squares, triangles, and combinations.

The third group of students applied the programming diagrams for the conceptualization particularly the arrangement of the programs due to adjacency. This approach for concept generation also led them to the geometric forms for the plan arrangement. While this group of students developed the concept to a more proper level such as facade and material, the composition of the programming and adjacency was predominated aspects of the conceptualization. Importantly, this group of students lost the opportunity to see the project as a united form between indoor and outdoor. For this reason, the relationships between the site and building (s) were weak. Fourth groups of the students followed the design framework at the first attempt or through desk-crits they returned back to generate the concept based on the preliminary sketches in the design framework column. This group of students had a process of concept generation through different sketches in the design framework matrix that made them rich in the generation, integration, and development of the concept. The concept included various aspects of the site, context, form, and functionality of the projects.

The Research Findings
The results of the research highlight five categorical aspects in the exercise that was common among the students to apply the design framework matrix. These findings include problem-solving approach, relationships between the programs, personalization of the matrix, inspiration for concept generation, and finally weaknesses of the application.

One of the continuous topics in architecture education is problem solving and the link between the problem definition and problem solving in the architectural design process. Apparently, the arrangement of the matrix is in the way to link the architecture problems and architecture findings. The creation of a link between data, methods, analysis, and design objectives and strategies is a successful result that reminded the students how to take decisions

for problem solving through programming and conceptualization. This organization of design decisions based on the architectural findings, design objective and strategies construct a forward-backward action between the stage of programming- conceptualization and research activities in the architectural thesis project. The students demonstrate awareness of problem-solving activities through the design framework. While there is a small group of students that prefers to apply their own ideas for programming-conceptualization than a process, the achievement of the design framework links the architectural findings and the design proposal.

The design framework highlights the relationship between all processes, stages, and activities. The design framework links all the activities in a matrix in terms of relationships. In detail, there are three relations in the design framework between programs, concept, and site. The detailed tables of the adjacency, private-public, and size of the programs lead the students to arrange the programs in a more proper way than a personal assumption. While the structure of architectural education is normally arranged based on design outputs in terms of design product, the process of learning is so important to build a logical foundation in the mind of the students. In addition, the programming process leads the students to fit the programs not only with the internal connections but also with the form of the site. This process of programming-conceptualization on the site leads the students to pay more attention to relationships between indoor-outdoor programs and activities on the site to find out the appropriate arrangements and alternatives. The diagrammatic arrangement of the programs on the site gives the students a general inspiration to find suitable forms for the next step of concept generation and development.

In detail, concept generation is a tough task for the students to select among many sources and alternatives. While it is common to see the students prefer to start with geometric from or precedents projects, the programming-conceptualization leads them to put all the

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

154

programs on the site and see the relationships in diagrammatic performance. This exercise helped the students to discover the appropriate form from the inside of the site than outside, from real relationships than assumptions, and the real form of the site than an abstract geometric. In fact, programming-conceptualization through diagramming creates an alternative to add to the other scenarios for the conceptualization commonly geometric, precedents studies, and abstract.

While the design framework includes a structure, the students personalize both structure and content of the matrix to innovate their own way of presentation, communication, and interaction of programming-conceptualization logic and proposal. The major part of the personalization takes place in the arrangement of the rows of the table based on their own way of understanding the processes, priorities, and importance of programming-conceptualization. For some of the students the quality of the design is important that they learnt in the theory and building technology. However, some of the students prefer to take into consideration users of the project. It is a great achievement for the students to pay more attention to the client and the final users of the project. Therefore, this activity could call in terms of the user-oriented design concept by the students. Another group of students applies directly the topic of the analysis activities as a driving factor to formulate the design objectives, strategies, and programming-conceptualization. This direct connection creates a clear link between the architectural problems definition and design solutions. Perhaps, both similarity and dissimilarity could be presented through comparison between two words of architectural analysis-driven and architecture findings-driven. Apparently, the architectural findings-driven is a higher level of an analytical approach to deal with programming-conceptualization activities.

The results of the analysis highlight that the design framework includes some weaknesses. First, this process of programming-conceptualization was started to dialogue in 1970-1980 to transparent the programming and conceptualization process, particularly for architects, artists, and design students. Therefore, the major part of the activities was designed based on freehand drawing, sketching and diagramming. For the students who are engaged from the first year of studies with computer software, the application of mind-hand activities is a difficult task, particularly; when they expect that software do all activities for them. Second, such kind of techniques is developed based on the environmental and psychological research activities that were advocated in the 1980-decade filling the gap of the self-driven design activities with more research-based activities. Therefore, for the students who are engaged in the in-studio learning activities based on the Polytechnique style of education, the application of the alternative in the final year is a revolution in the learning process and many of them prefer to continue in the same way as previous years. Third, to harmonize evaluating the quality of the students' products and design outputs through a design framework needs many guidelines for the supervisors, juries, and evaluators to construct similarities in the understanding of the task, process, and outputs that require time, passion, and system to achieve an effective result.

Discussion
The findings of the research underlined that the creation of educational processes for the training and educating of architecture students was a new generation of methods and approaches that took into account the modern time. While methods of education in architecture schools were constructed based on the training of the students through an apprenticeships tradition (Draper, 1977; Drexler, 1975; Garric, 2017), the modern style of education attempted to open the door for new ideas for the teaching and learning of architecture (Boradkar, 2010; Gropius, 1970; Marttila, 2018). In this logic, educational methods looked forward to inclusiveness for everyone based on the process than an event (White, 1975; 1983; Pahl, Beitz, Feldhusen, & Grote, 2007). Programming-conceptualization was documented recently as a new style of

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

155

teaching and learning in engineering, art and architecture (Cross, 2005; Borden & Ray, 2006; Pahl, Beitz, Feldhusen, & Grote, 2007; Pena & Parshall, 2012) to decode the design process as Lawson attempted to draw the process (Lawson, 2005). The bulk of studies analyzed the conceptualization process in different states or phases between the mind of the designer and the illustration of the idea that a major part of the studies at least agreed on two stages including planning and conceptualizing (Pahl, Beitz, Feldhusen, & Grote, 2007; Taura & Nagai, 2013). This progress of illustration of the design process based on programming-conceptualization took place in a scientific approach in the opposite of tradition advocated, "we teach as we have been taught" (Tafahomi, 2022a).

The findings of the research revealed that the design framework model had an effective role to connect architectural problems, architectural findings based on analysis, and programming in terms of problem solving in the architectural thesis studio. This activity created a process for the programming-conceptualization than an event that White illustrated the process profoundly (White, 1975; 1983). This achievement was advocated by studies in terms of the qualities of the architecture thesis projects (Borden & Ray, 2006; Ghonim & Eweda, 2019). While the studies challenged the architectural style of design in terms of ill-structured problems and answered the problem as a paradoxical approach to the design (Simon, 1973; Dorst, 2006), the design framework proposal attempted to draw a scaffold to align the fundamental activities in the thesis process in terms of a framework.

While programming in architecture was constructed based on the composition style through studies of the great architecture buildings importantly Roman style (Draper, 1977; Drexler, 1975; Garric, 2017; Littmann, 2000; Madanovic, 2018; Tafahomi, 2021a; 2022a), the new approach of education recommended documentation, analysis, and alternative based on a scientific process (Goldschmidt, 2004; Lang, 1987; Taura & Nagai, 2013; White, 1975; 1983). The findings

of research highlighted that application of programming activity in architecture education led the students to apply alternative approaches for programming activities from the step of assumption about programs to analytical and comparative stages similar to the finding of the methodological studies (Borden & Ray, 2006; Franz, 1994; Groat & Wang, 2002). The students applied five clusters of relationships in the programming including size-scale, private-public, adjacency between programs, and the site. These activities were designed based on processes of programming that let the students think deeply, revise continuously, and arrange alternatively. This achievement was in the same direction as Gropius in terms of a new alternative to architecture education (Gropius, 1970). In addition, the results were supported by the visual and linguistic presentation of the concepts (Taura & Nagai, 2013), display clearly the design objectives (Goldschmidt, 2004), decoding of the design process (Lawson, 2005), application of methods for programming (Tafahomi, 2022a), and changing an unmodern style of architecture education (Garric, 2017).

The exercise illustrated that the students obtained the idea for concept generation through the programming process. This finding challenged the idea of the concept as an event. In fact, the students through forward-backward activities in the programming-conceptualization attempted not only to get ideas as inspiration for the architectural concept in the thesis studio but also they evaluated the concept due to the design objectives and strategies in terms of design decisions. While this process was similar to White ideas (White, 1975; 1983), the achievement of the exercise supported the theory of active archiving of the designers' mind (Lawson, 2005), designing a process to eliminate all obstacles (Gropius, 1970), and an alternative way in architecture education (Marttila, 2018). The students took distance from the precedent projects toward attention to the site, context, and users in terms of the missing aspects of research in architecture that were discussed widely by studies (Franz, 1994; Groat & Wang, 2002; Hershberger, 1999; Niezabitowska, 2018; RIBA, 2014; Tafahomi, 2022a).

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

156

The students did not follow the proposed structure and they added some innovations and creativities to personalize the design framework. This flexibility of the matrix revealed that the students constructed their own way to apply the design framework in the programming-conceptualization activities in terms of accumulation of knowledge than assimilation (Tafahomi, 2021d). It was the target of the education in terms of a personal journey in learning activities (Tafahomi, 2021a) to enhance the quality of the thesis projects in architecture (Borden & Ray, 2006; Ghonim & Eweda, 2019). This activity allowed the students to apply, change, and redesign the design framework as their understanding of the exercise in terms of multiple approaches to the design (Boradkar, 2010). The personalization process of the design framework led the students to fit different ideas of the design through an innovative and creative approach which was disused widely in both engineering and architecture education (Borden & Ray, 2006; Cross, 2005; Crowe & Laseau, 2011; Ghonim & Eweda, 2019; Pahl, Beitz, Feldhusen, & Grote, 2007; Taura & Nagai, 2013).

Conclusion

Architecture, architects, and architecture education are under the regeneration process due to the development of new areas of knowledge. No one sees architecture projects, processes, forms, functions, and meanings as they were in the last century even one decade before. They are part of our history, context, and achievement. However, their time passed. They are regenerated into new forms, they are criticized for their mistakes and dysfunctionalities, they are challenged by new technology, and they are evaluated by users. Apparently, this transformation of architectural projects is an essential characteristic of the architecture profession. In the same way, architectural education also needs to be flexible due to time and space. Despite the long history of architecture education in any parts of the world, the western model of architectural education has been the predominated model in many institutions across the world that now it needs to take into account as a contextual topic.

The design framework is a logical matrix that leads students to link the architectural problem, architectural findings based on the analysis, and architectural problem solving through systematic design decisions for design objectives, design strategies, and programming-conceptualization. Despite the difficulties to apply the matrix by some of the students, whole participants in the thesis design studio applied the design framework in a personal way of learning as a new educational approach. The results of the application of the design framework in the thesis module reveal that the students innovate their own way to adapt, interpreting, and applying the educational approach into practice. Therefore, the students perceive the design framework as a rough material that needs to be manipulated in a personalized way in the specific themes and topics of thesis projects.

The logical process between the architecture task and the design objective and strategies is a crucial topic that needs to be planted in the earlier years of the architecture studies and look at this process as an approach than applying it just in the final year of study. Architecture education needs to be more inclusive in relation to approaches in education although there are some schools that preferred to be more orthodox than avant-garde. While the matter of education is not a style, rather than it is a scientific field that needs to take into account professionally. All fields of science and knowledge are going toward multidisciplinary and interdisciplinary approaches. Bringing a new approach to an architecture design studio to test the effects, results, and outputs is a quite comprehensive way to understand architecture in the current time and space.

The design framework includes some deficiencies as other techniques have. For example, the process of programming and diagramming is difficult for the students, particularly for those who apply CAD (computer aid device) software in every stage of design. For those students, the concept starts from an actual plan, section, and materials as the software do the design for them. This replacing the computer with the hand drawing

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

157

is dependent on the software for the logical relationships between programming-conceptualization that such kind of artificial intelligence will perhaps generate in future. While the students who apply graphical software to represent and redraw the programming process for the logical presentation, they seemingly, still need to make a balance between the sketchbook development and the application of software in architecture schools.

References
AIA, A. (2009). AIA Document B202™–2009. New York: AIA.

Bakel, V. A. (1995). *Styles of architectural designing: empirical research on working styles and personality dispositions*. Eindhoven: Technische Universiteit Eindhoven. doi:10.6100/IR437596

Bonnes, M., & Bonaiuto, M. (2002). Environmental psychology: From spatial-physical environment to sustainable development. In R. B. Bechtel, & A. Churchman (Eds.), *Handbook of environment psychology* (pp. 28-54). New York: John Wiley & Sons, Inc.

Boradkar, P. (2010). Design as problem solving. In R. Frodeman, *The Oxford handbook of interdisciplinary* (pp. 273–287). Oxford, UK: Oxford University Press.

Borden, I., & Ray, K. R. (2006). *The dissertation: An architecture student's handbook.* (Second, Ed.) New York: Architectural Press, Elsevier.

Ching, F. D. (2010). *Design drawing* (2th ed.). New Jersey: John Wiley & Sons, Inc.

Ching, F. D. (2015). *Architectural graphic* (6 ed.). New York: Willy.

Cross, N. (2005). *Engineering design methods: Strategies for product design*. Chichester: John Wiley & Sons Ltd.

Crowe, N., & Laseau, P. (2011). *Visual notes for architects and designers* (2 ed.). Wiley.

DoA. (2012). Architecture program specification. Kigali: Department of Architecture, The University of Rwanda.

Dorst, K. (2006). Design Problems and Design Paradoxes. *Design Issues*, 22(3), 4-17. Retrieved from
 https://www.jstor.org/stable/25224059

Draper, J. (1977). The Ecole des Beaux-Arts and the architectural profession in the United States: The case of John Galen Howard. In S. Kostof, The architect (pp. 209–238). New York: Oxford University Press.

Drexler, A. (1975). *The architecture of the Ecole des Beaux Arts*. New York: The Museum of Modern Art.

Drisko, J. W., & Maschi, T. (2016). *Content analysis*. Oxford: Oxford University Press.

Duerk, D. P. (1993). *Architectural programming: Information management for design*. New York: Wiley.

FAED, F. (2009). Program specification of architecture. Kigali: The University of Rwanda.

Franz, J. M. (1994). A critical framework for methodological research in architecture. *Design Studies*, 15(4), 433-447.

Frayling, C. (1993). Research in art and design. Royal College of Art Research Paper, 1(1), 1-5.

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

158

Garric, J.-P. (2017). The French Beaux-Arts. In M. Bressani, & C. Contandriopoulos, *The companions to the history of architecture, volume III, nineteenth century architecture, part I: Historicism, the Beaux-Arts, and the Gothic* (pp. 1-15). New York: John Wiley & Sons, Inc.

Ghonim, M., & Eweda, N. (2019). Instructors' perspectives on the pedagogy of architectural graduation projects: A qualitative study. *Frontiers of Architectural Research*, 8, 415–427. doi:10.1016/j.foar.2019.01.007

Gokyer, E. (2013). Understanding landscape structure using Landscape metrics. *Advances in Landscape Architecture*, 663-676. Retrieved from http://dx.doi.org/10.5772/55758

Goldman, A. I. (2006). *Simulating of Minds: the philosophy, Psychology, and Neuroscience of Mindreading*. New York: Oxford University Press.

Goldschmidt, G. (2004). Design representation: Private process, public image. In G. Goldschmidt, & W. L. Porter (Eds.), *Design Representation* (pp. 203–217). London: Springer.

Gomez, A. P. (2003). Hermeneutics as architectural discourse. Singapore: Department of Architecture, National University of Singapore.

Griffin, A. (2022). *The rise of academic architectural education: The origins and enduring influence of the Acadâemie d'architecture*. New York: Routledge.

Groat, L., & Wang, D. (2002). *Architectural research methods*. New York: John Wiley & Sons INC.

Gropius, W. G. (1970). *Scope of total architecture* (4 ed.). New York: Collier.

Hancock, J. (1995). The interpretive turn: Radical hermeneutics and the work of architecture. ACSA Annual Meeting History Theory Criticism, (pp. 183-188). New York.

Hershberger, R. (1999). *Architectural programming and predesign manager*. New York: McGraw-Hill.

Krippendorff, K. H. (2003). *Content analysis: An introduction to its methodology* (2 ed.). New York: Sage Publications.

Lang, J. (1987). *Creating architectural theory: The role of the behavioral sciences in environmental design*. New York: Van Nostrand Reinhold.

Laseau, P. (2000). *Graphic thinking for architects and designers* (3 ed.). New York: Wiley.

Lawson, B. (2005). *How designers think: The design process demystified* (4 ed.). Oxford: Oxford Press.

Littmann, W. (2000). Assault on the Ecole: Student campaigns against the Beaux Arts, 1925–1950. *Journal of Architectural Education*, 53(3), 159–166.

Madanovic, M. (2018). Persisting Beaux-Arts Practices in architectural education: History and theory teaching at the Auckland school of architecture, 1927–1969. *Interstices Auckland School Centenary Special Issues*, 9-24.

Marttila, T. (2018). *Platform of co-creation: Learning interprofessional design practice in creative sustainability*. Espoo, Finland: Aalto University.

Mugerauer, R. (1995). *Interpreting environments: Tradition, deconstruction, hermeneutics*. Texas: University of Texas.

Nichols, S., & Stich, S. P. (2003). *Mindreading: an integrated account of pretence, self-awareness, and understanding other minds*. London: Oxford University Press.

Niezabitowska, E. D. (2018). *Research methods and techniques in architecture*. New York: Routledge.

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

159

Norberg-Schulz, C. (2019). Genius loci: Towards a phenomenology of architecture (1979)., 8, 31. In *Historic Cities: Issues in Urban Conservation* (pp. 2-31). Los Angeles: The Getty Conservation Institute.

Pahl, G., Beitz, W., Feldhusen, J., & Grote, K.-H. (2007). *Engineering design: A systematic approach*. London: Springer-Verlag.

Pena, W. M., & Parshall, S. A. (2012). *Problem seeking : an architectural programming primer*. Hoboken, New Jersey: John Wiley & Sons, Inc.

Phillips, D. (1990). Subjectivity and objectivity: An objective inquiry. In E. W. Eisner, & A. Peshkin, *Qualitative inquiry in education: The continuing debate* (pp. 19-37). New York: Teachers College Press.

Popper, K. (1977). The logic of the social sciences. In T. W. Adorno, *The positivist dispute in German sociology* (pp. 78-104). London: Heinemann Educational Books Ltd.

Proudfoot, P. R. (2000). Structuralism, phenomenology and hermeneutics in architectural education. *International Journal of Architectural Theory*, 2, 1-17.

Regis, R. (2003). Sketchbook: Piazza di Spagna, Rome. In D. Watson, A. Plattus, & R. Shibley, *Time saver standards for urban design* (pp. 441-448). New York: Mc Grow Hill.

RIBA. (2014). *Architects and research-based knowledge: A literature review*. London: Royal Institute of British Architects.

Salkind, N. J. (2008). *Encyclopaedia of educational psychology*. London: SAGE Publications Ltd.

Schon, D. A. (1984). The architectural studio as an exemplar of education for reflection-in-action. *Journal of Architecture Education*, 38, 2-9.

Schon, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass Publishers.

Seamon, D. (2015). Hermeneutics and architecture: Buildings-in-themselves and interpretive trustworthiness. In B. Janz, *Hermeneutics, Space, and Place* (pp. 1-13). Springer.

Simon, H. A. (1973). The structure of ill structured problem. *Artificial Intelligence*, 4, 131-210.

Sperlregen, P. D. (2003). Making a visual survey. In D. Watson, A. Plattus, & R. Shibley, *Time saver standards for urban design* (pp. 431-440). New York: Mc Grow Hill.

Tafahomi, R. (2021a). Insight into a personalized procedure of design in concept generation by the students in architecture thesis projects. *Journal of Design Studio*, 3(1), 5-18. doi:10.46474/jds.910234

Tafahomi, R. (2021b). An attempt to fill the gap between the architectural studies and conceptualization in architectural thesis design studio. *Journal of Design Studio*, 3(2), 175-190. doi:10.46474/jds.1012778

Tafahomi, R. (2021c). Learning activities of the students in peer-jury practices in the architecture design studio. *AKSARA: Jurnal Ilmu Pendidikan Nonformal*, 7(3), 795-814. doi:10.37905/aksara.7.3.795-814

Tafahomi, R. (2021d). The behavioral patterns of the student in the *position of peer-jury in landscape design studio. EDUCATUM – Journal of Social Science*, 7(2), 57-65. doi:10.37134/ejoss.vol7.2.6.2021

Tafahomi, R. (2022a). Insight into research dilemma in design studios and relationships with the architecture curriculum. *Journal of Design Studio*, 4(1), 93-112. doi:10.46474/jds.1102633

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

160

Tafahomi, R. (2022b). Revitalization of cultural values in urban landscape through street tress design. *METU JAF*, 39(1), 215-236. doi:10.4305/METU.JFA.2022.1.10

Tafahomi, R., & Nadi, R. (2020). Derivation of a design solution for the conservation of a historical Payab in the redevelopment of Doloeei, Gonabad. *International Journal of Built Environment and Sustainability*, 7(1), 1-9. doi:10.11113/ijbes.v7.n1.407

Tafahomi, R., & Nadi, R. (2021a). Protection of natural wetlands through landscape design in Kigali city. *Rwanda Journal of Engineering, Science, Technology and Environment*, 4(1), 1-16. doi:10.4314/rjeste.v4i1.11

Tafahomi, R., & Nadi, R. (2021b). The transformative characteristics of public spaces in unplanned settlements. *A/Z ITU Journal of the Faculty of Architecture*, 18(2), 285-300. doi:10.5505/itujfa.2021.14892

Tafahomi, R., & Nadi, R. (2021c). The interpretation of graphical features applied to mapping SWOT by the architecture students in the design studio. *Journal of Design Studio*, 3(2), 205-221. doi:10.46474/jds.1019310

Taura, T., & Nagai, Y. (2013). *Concept generation for design creativity* (Vol. 8). London: Springer. doi:10.1007/978-1

Ullman, D. G. (1994). *The mechanical design process*. Boston: McGraw Hill.

White, E. T. (1975). *Concept sourcebook: a vocabulary architectural forms*. Tucson: Architectural Media Ltd.

White, E. T. (1983). *Site analysis: Diagramming information for architectural design*. Tallahassee, Florida: Architectural Media Ltd.

Xi, L., Yuan, Z., YunQui, B., & Chiang, F.-K. (2017). An investigation of university students' classroom seating choices. *Journal of Learning Spaces*, 6(3), 13-22.

Yang, Z., Becerik-Gerber, B., & Mino, L. (2013). A study on student perceptions of higher education classrooms: Impact of classroom attributes on student satisfaction and performance. *Building & Environment*, 70(15), 171-188.

Journal of Design Studio, v:4 n:2
Tafahomi, R., (2022), Developing a Design Framework to Methodize the Architecture Thesis Projects with Emphasis on Programming and Conceptualization Processes

161

Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

Ugur Tuztasi ⓘ
Cumhuriyet University, Faculty of Architecture, Fine Arts and Design, Sivas, Turkey (Corresponding author)
Pinar Koc ⓘ
Cumhuriyet University, Faculty of Architecture, Fine Arts and Design, Sivas, Turkey

Abstract: This study discusses the experience of a vertical studio implemented at SCU Department of Architecture. The goal of such an experiment is to open channels of interaction in the studio and activate peer learning. This vertical studio, which was carried out within the scope of the 2021-2022 academic year summer school, includes three different project groups from the second, third and fourth grades. Studio participants with different individual experiences were presented with a main theme focusing on 'corner' concept. To diversify contextual openings, four different definitions of 'corners' in urban space were developed, and students were free in terms of space selection, architectural program and other design dynamics. While producing projects in the studio around 'corner' comprehension, the studio process was observed in terms of activities such as interaction, dialog, collaboration and peer learning. As a result, it was determined that the understanding of dialog and collaborative work for discussing the main theme and/or design decisions has not yet been established, while at the same time it has been understood that vertical studio is a practice that eliminates class-level boundaries and makes the studio open and accessible.

Keywords: Architectural education, Corner parcel, Corner building, Design, Vertical studio.

1. Introduction

The backbone of architectural education in the world and in our country is architectural design studios. In many schools of architecture, studio culture is shaped by different factors, and the form of the educational format in particular transforms the studio into a 'new/unusual/strange' world for architecture students. Within architectural education, studio practices are organized as 'horizontal' and 'vertical' in terms of format. In horizontal systems, design studio is comprised of the students from the same year, with the same skills, knowledge and experiences while the vertical studio includes mixed-level students, with diverse skills, knowledge and experience (Smatanová et al., 2020). The practice widely used in architecture schools in our country is mostly horizontal studio and vertical studio can be applied in a limited way. The main difference between the horizontal and vertical studio is undoubtedly the coexistence of groups of students of different years and levels. This is an educational format that directly allows concepts such as interaction, dialog, collaboration and peer learning in the studio and transforms the design studio.

In Sivas Cumhuriyet University (SCU) Department of Architecture, which started architecture education with an additional quota in 2014, architectural design education is

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

163

widely carried out through horizontal studio setup. Increasingly, this has led to a result that reduces interaction and peer learning in the studio. The aim of this research is to develop a vertical studio setup in SCU Department of Architecture Architectural Design Studios and thus to increase the efficiency and practice diversity of design studios by incorporating concepts such as interaction, dialog, collaboration and peer learning into the studio. For this purpose, in the studio courses opened within the scope of the summer school in the 2021-2022 academic year, it was designed as a vertical studio and thus, a pre-trial phase was carried out for the vertical studio experience in SCU Department of Architecture. The groups of Architectural Project IV, Architectural Project VI and Architectural Project VIII who applied to the summer school were the first participants of the vertical studio. The method consists of creating new groups by blending students from different years and different levels and giving architectural design education to these groups through different contexts within the same conceptual framework. The main hypothesis of the research is based on the fact that the vertical studio will open the channels of peer learning and interaction, diversify the existing studio culture, and beyond these, produce an alternative pedagogical scenario in terms of architectural design education. In short, an experiment on vertical studio was carried out with the summer school experience at SCU Department of Architecture, which has been continuing education with horizontal studio setup since 2014.

2. Theoretical Framework: Studio Culture and Vertical Design Studio

As mentioned, the aim of the study is to perform a vertical studio experience in architectural design education and to measure peer learning and interaction in the studio in this experiment. In this context, the study is based on two main reasons, the first of which is related to the relational expansions of architectural design studios where architectural education is provided, while the second reason, in particular, is related to the more active architectural design studios of SCU Department of Architecture. More precisely, the first justification for the

study is that architectural design studios are mostly realized with horizontal studio setup, and this leads to a process that reduces/restricts the dialog, interaction and sharing between students over time. As a result, architectural design studios are shaped by a result-oriented trend rather than process-oriented. The result-oriented form of training not only leads to the monotony of the studio, but also pacifies the participation of studio actors, preventing actors from taking on different roles. Therefore, this situation turns into a cycle that not only affects the periodic studio practice, but also breaks the connection between different studios. In line with this justification, experiencing a vertical studio setup can be seen as an effective process to reframe architectural design studios and reveal the process-oriented aspects of architectural education. This correlation forms the basis of the second justification of the study, which is to bring mobility to the architectural design studios in SCU Department of Architecture. Although SCU Department of Architecture offers diversity in terms of conceptual content and actuality, the topics covered in design studios do not offer competence in terms of connections between different studios. To put it more clearly, it has been observed that the project topics in the studio cannot be internalized sufficiently by the students and that there are breaks in the design/planning processes. In light of these findings, it is aimed to bring together students of different years and levels through the vertical studio and to internalize the learning cycle by taking on different roles of studio participants through peer learning. The objectives that support the theoretical infrastructure of such a vertical studio experience through a summer school are listed below:

- To transform the means of discovery and understanding in the architectural design studio,
- To make the architectural design studio more resistant to different conditions,
- To place the design/planning concern in the student through design exercises,
- To make the architectural design studio process-oriented,
- To activate peer learning in the studio,

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel
164

- To improve dialog and sharing between studio actors by increasing interaction in the studio.

From the point of view of architectural design education and studio culture, these aims are generally designed to improve the studio environment. A study by McLaughlan and Chatterjee (2020) presented five strategies for improving studio learning, which in turn are as follows:

1. "A challenge was set up that explicitly positioned the role of the student within it,
2. A clear structure supported workflow and reflective practice,
3. Expectations around performance were clearly communicated but included flexibility for higher performing students,
4. A strong peer culture,
5. Expectations were kept high (McLaughlan & Chatterjee, 2020, p. 553)."

The above strategies presented with the aim of improving the studio environment and group success have been developed in accordance with the unpredictable position of architectural practice. On the other hand, the charter (UNESCO-UIA Charter for Architectural Education, Revised, 2017 Edition) created by UNESCO and UIA for architectural education is of universal value in terms of presenting both the objectives of architectural education and the conditions of an accredited architecture school. Accordingly, one of the objectives of architectural education is to develop the capacity of students to conceptualize, design, understand and realize the act of building within the context of architectural practice that balances the tensions between emotion, intellect and intuition and gives physical form to the needs of society and the individual (UNESCO-UIA, 2017). Architecture, at this point, is placed in a position closely related to designing a world of life. One of the conditions of a school accredited according to the same charter is that the individual project work carried out through direct dialog between the instructor/student forms the basis of the learning process; moreover, the continuous interaction between architectural learning and practice should be encouraged, and the design project must be a synthesis of acquired knowledge and accompanying skills (UNESCO-UIA, 2017). These two articles provide an opening that is directly related to the studios where architectural design education is given and make suggestions for managing the content and process of the training. However, the main point that is definitely pointed out by these two items is the environment in which the training is given, that is, the architectural design studios.

According to Çağlar and Sönmez (2009), the architectural design studio has four components: studio/workshop space, know-how, pedagogical/educational approach and methodological approach. Among these, the pedagogical approach and the methodological approach point out an environment based on activities such as content production and process management. As stated by Van Dooren et al. (2018), the studio plays a central role for architectural education, and the student learns by doing through the design exercises he or she has experienced. Although learning by doing is the primary core of design education, designing, managing, and executing the process in the studio also means coordinating the design process. This also leads to the formation of a distinct studio culture and, increasingly, allows this culture to be established. Researchers call this the epistemic culture of architecture, quoting from Kurath (2015) and Knorr Cetina (1999), and this phrase marks the medium in which design knowledge is produced; this environment, in which design knowledge is produced, includes skills and intuition, as well as forms of knowledge and orientation to non-linear working processes. Of course, this is not only an understanding of the horizontal and vertical construction of the studio, but also implies the existence of an environment that includes multi-component catalysts such as epistemic culture, method, tool and process and is shaped by more inclusive dynamics. In fact, horizontal and vertical studio fiction, at some point, refers to a situation closely linked to the management of the design process.

In the general literature, the design and/or design process is often defined as a cyclical process consisting of various intertwined steps

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

165

or connections. For example, according to Michels and Meeus (2013), designing in architecture is the intertwined state of generating ideas and making choices, and the most important aspect of designing is that appropriate interpretations are made before making choices. Similarly, designing is read as a series of interconnected steps, and the process is recognized as moving from vague ideas to specific definitions (Schaeverbeke & Heylighen, 2013). This cyclical and intertwined process forms an important part of the studio culture in which design knowledge is produced. Often characterized by an easily unexplained content, the design process embodies the basic determinant and dominating aspect of both learning by doing and studio culture. In this regard, Van Dooren et al. (2014) have established a set of concepts that can be called a kind of dictionary to make the design process understandable. This set, called "generic elements", is defined as a) Experimenting or exploring and deciding, b) Guiding theme or qualities, c) Domains, d) A frame of reference or library, e) Laboratory or (visual) language, which do not provide any recipe for the design process, nor do they provide a fixed sequence to follow step by step; on the contrary, "generic elements" are general qualities and are intertwined with each other (Van Dooren et al., 2014). These 'generic elements' that shape/manage/organize the design process mark the environment in which design knowledge is produced in terms of studio culture. Thus, it helps to solve issues such as what students need in the architectural design studio, as well as where they are blocked and/or how they should be directed in terms of the way they are educated.

On this axis, the idea of bringing mobility to architectural design studios or the concern to increase interaction between studios stands as a dominant starting point in SCU Department of Architecture. Instead of the current studio operation organized with a horizontal setup, a summer school on the vertical studio was experienced to open the points where the students were stuck and to overcome the interaction difficulties. Since the vertical studio promotes, encourages and advances an interrelated relationships between students of all years, the studio setup extends beyond the practical needs and, it enables to develop new learning settings (Giencke, 2021). On the other hand, the vertical studio, which was experienced for the first time in SCU Department of Architecture, is applied in other architecture schools either as an educational format or as an experimental method. For example, Çağlar and Uludağ (2006) share a vertical studio experience they realized at *Atelier One* in one of their works. Accordingly, the authors indicate that the students aim to develop their designs through concept formation; while the first stage includes the understanding of the architectural problem and the generation of ideas, the second stage focuses on the environmental characteristics of the project area (Çağlar & Uludağ, 2006). The process was completed by bringing together four different project groups consisting of 2nd, 3rd and 4th grades in the same design studio under a main theme, developing original programs related to the project area and jury. Although the study reported that sizes and intensities may vary between different project groups facing the same environmental problems; the authors emphasized that this studio is process-oriented and the importance of changing pedagogical practices (Çağlar & Uludağ, 2006).

In another study, Akalın and Sezal (2009) explained in detail the vertical design studio model applied in Gazi University Department of Architecture and then shared their *Atelier Two* experiences. *In Atelier Two,* a main theme was created and projects were identified that were more difficult for the upper classes, starting with the less complex one for the lower classes (Akalın & Sezal, 2009). The process consists of preparation, progress 1 phase, progress 2 phase and final phase; equivalent project groups with at least one second, third- and fourth-year student in each group are working on the field analysis and architecture program during the preparation phase. In the Progress 1 phase, students were encouraged to work with conceptual sketches and conceptual models simultaneously, and in the Progress 2 phase, drafts and concrete models related to the

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel
166

program were practiced. In the study, the authors indicated that since each project was given under a main theme, students in different years worked together in the classroom, ideas were shared and this was the best advantage of the vertical design studio (Akalın & Sezal, 2009).

Finally, a study that conveys the vertical studio experience in interior design education will be shared. Özbek et al. (2018) reported their vertical studio experiences similar to the above works. In the vertical studio, which brings together three different project groups, a process in which the design, existing building and spatial scale are the same, while in the studio, the design problem, space size and detail scale are planned according to the project groups. In the study where studio outputs were shared; vertical studio gains were transferred. Accordingly, in the study, it was stated that the fact that students in different periods shared the same studio strengthens the encounter and dialog between students; in addition, thanks to the rapid progress of experienced students, other students gained momentum and motivation. In addition, it was stated in the study that a common learning platform emerged among the students thanks to the project presentation of the upper-level students and the sharing of their computer software experiences with the lower-level students (Özbek et al., 2018). In addition to these national experiences, there are also some international practices of the vertical studio which implemented in the departments of architecture, interior design and graphic design. For example, Smatanová et al. (2020); Giencke (2021); Peterson and Tober (2014) revealed their experiences of the vertical studio. Mixed-level students, common theme, peer learning, collaboration and interaction were mainly emphasized in that studies. In short, the experiences gained with vertical studio practices mark a process that leads to an increase in activities such as sharing, interaction, collaboration and dialog in the studio. In this context, the experiences gained through the 2021-2022 summer school at SCU Department of Architecture are presented below.

3. Pedagogical Approach and Studio Setting/Setup

This vertical studio practice was carried out as a summer school practice opened at the end of the 2021-2022 academic year at SCU Department of Architecture. In this practice, there are 3 studio groups: Architectural Project IV, Architectural Project VI and Architectural Project VIII. Architectural Project IV group consists of 8 people, and all participants are students of architecture schools other than SCU. The Architectural Project VI group consists of 32 people and only 4 of the participants are students of architecture schools other than SCU. The Architectural Project VIII group, in which all participants were from SCU Department of Architecture, was carried out with 17 people. In addition, one of the purposes of the vertical studio experience in the summer school is the small number of students and the easy controllability of the process. In short, this summer school experience has been considered a kind of pre-trial phase for the vertical studio.

In the summer school of SCU Department of Architecture, vertical studio practice was experienced with two basic characteristics. The first characteristic of the vertical studio is the bringing together of different project groups and students of different levels. The second characteristic is the realization of design research that will enable different contexts to be defined within the same conceptual framework. Accordingly, the main concept that will frame the vertical studio is the conception of corner parcel and corner building. In the first lesson of the summer school, the subject and conceptual expansion were defined. Student groups of all architectural projects were brought together and visual presentations focusing on the 'corner' conception were realized. The presentations were conveyed by the studio coordinators, that is, the authors of this article, with the content of narrative/interpretation/analysis in a format appropriate to the theoretical course content of the studio practice, and this process corresponds to a time frame of approximately 8 hours. In summary, the concept of 'Corner' is the main theme of the vertical studio and accordingly, four 'corner' conceptions have been developed:

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel
167

1. The definition of 'corner' emphasizing the intersection of a street and/or road,
2. The definition of 'corner' that establishes a dialog with important historical buildings in urban space,
3. The definition of 'corner' that limits important spaces such as squares in urban space,
4. The definition of 'corner' that makes the whole parcel valuable due to its location.

In accordance with this approach, which describes the 'corner' conception, students were directed to field work. They have chosen a suitable area for any of the 'corner' conceptions described above in the city center of Sivas and/or in the immediate vicinity in the hinterland of the city center. Although each student acted in a free environment in terms of space selection, function, and other design dynamics, the only element that set limits on the vertical studio was the scale between the different project groups. More specifically, the student's individual experience and the level of the project group determined the design character and design behaviors. The method evolved from the point of view of the educator and the student to discover the competencies and weaknesses of the process. Thus, a pre-trial phase on the vertical studio was carried out in SCU Department of Architecture, and the relations between the project groups were resolved.

4. Findings and Discussion
As mentioned above, the vertical studio implemented as a pre-trial practice within the scope of the summer school is based on a conceptual design theme. For a design cycle that makes it easier to manage the way it is implemented, its method, tools and process, and to reframe the studio, when necessary, it is a conscious choice to have the subject matter in a comprehensible objective theme. The implementation of the training program in a short period of time such as 5 weeks in total is also an important input in the choice of theme. In this context, the 'corner' space problem, which is seen as a design problem that overlaps the urban scale and the single building scale as the main theme of the vertical design studio,

also includes a limiting spatial pattern. It should be noted at once that in terms of the process and outcome of the vertical studio, this has led to a position that partially affects the studio dynamics. The problem of 'corner' space through the studio was addressed by students of different years and different experience levels, and students completed the process by following similar design tactics in four different 'corner' concepts of their choice in urban space. The dynamic that changed between students and in the vertical studio process was the designs they developed in the scale and program appropriate to the level of the student in the different year. In the vertical studio, activities such as behavior in terms of design in terms of the path to the end product rather than the end product, individual experience, internalization of design concern, establishment of collaborative working culture, interaction, dialog and peer learning were followed. Below, the project outputs of the vertical studio are shared, and the learning outcomes on the experiences gained from the studio are discussed.

4.1. Projects produced within the scope of the definition of 'corner' emphasizing the intersection of a street and/or road
'Corner', which emphasizes the intersection of street and/or road, means a parcel where the roads directly intersect and offers an angled surface in terms of location. Due to the general belief that it is easy and comfortable to work in such 'corners' in urban space, projects have been developed on this 'corner' concept in the vertical studio. In this context, the project developed by a second-year student (Erdinç Koç) is on Atatürk Street, and the architectural program is shaped as a psychological counseling center. To emphasize the 'corner', the student made use of prismatic bodies in the design and their angled placement and dimensional alteration. The planimetric organization of mass is rationally arranged, and the 'corner' conception has not evolved into a strong spatial order that feeds the interior. But the 'corner' is clearly highlighted as the structural shell. (Figure 1).

Figure 1: The project produced by a second-grade student (Erdinç Koç).

A student from the third year (Cansel Şahin) chose a 'corner' parcel where Rahmi Günay Street and Mevlana Street intersect as the project area. The student worked on business center design as an architectural program. In this project, which offered a compact mass assembly, the 'corner' was shaped by summoning structural components that emphasize its presence. The 'corner' evolved into a design element that separated the compact mass assembly from each other and partially created space in the urban space (Figure 2).

A fourth-year student (Özge Köse), who worked on the same definition of 'corner', worked on Arap Şeyh Street, which cuts perpendicular to Atatürk Street. The 'corner' conception developed by the student was shaped through a highly introverted, compact and rational mass, while the interior layout of the project was organized with a planning detached from the 'corner' conception.

Functioned as a hotel, the project sought to alleviate its massive density with prismatic

Figure 2: The project produced by a third-grade student (Cansel Şahin).

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

169

Figure 3: The project produced by a fourth-grade student (Özge Köse).

bodies decreasing and increasing in height (Figure 3).

4.2. Projects produced within the scope of the definition of 'corner' that establishes a dialog with important historical buildings in urban space

The definition of 'corner', which establishes a dialog with important historical buildings in urban space, means a parcel that is located in the immediate vicinity of historical buildings due to their location and offers a direct or partial perspective to historical buildings. This definition includes small-scale historical buildings that are located not only in the context of monumental structures, but also between neighborhoods. In this context, the project developed by a second-year student (Oğuz Boran Kuzu) was realized on a 'corner' parcel in dialog with Alibaba Mosque. The chosen area is also close to the Aşık Veysel Monument, and these urban layers determined the architectural program. Accordingly, the project, which was designed as the Ashik' Center, is shaped by simple deformations of the prism of rectangles. In the project, both to emphasize the 'corner' and to provide a reference to the Alibaba Mosque, a cubic mass movement was created in the direction facing the Alibaba Mosque protruding from the main body (Figure 4).

Figure 4: The project produced by a second-grade student (Oguz Boran Kuzu).

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

170

The project, developed by a third-year student (Ceren Çabuk), was carried out on the parcel adjacent to the Zincirli Minaret Mosque. The project area, together with the mosque, offers a definition of a 'corner'. The mass shaping was carried out in accordance with the horizontal extension of the parcel bounded by the mosque. The mass, created by the strong deformation of a prism of rectangles, functioned as a hotel. In the project, the emphasis of the 'corner' and its dialog with the historical structure were provided through the splits in the main body, angled layout and connections (Figure 5).

Working on the same definition of 'corner', the fourth-year student (Emrullah Geçit) worked on a parcel located on Atatürk Street around important historical buildings such as Subaşıhan, Taşhan and Ziyabey Library. The project, which was designed as a business and life center, evaluated the existing commercial potential of the area as a design input. Designed in the form of a prism of rectangles that were formally rational and held the 'corner', the mass designed spaces such as courtyards to reference the historical buildings in its immediate vicinity and open areas with arches at ground level to meet the commercial potential of the area. The mass of transparent surfaces highlighted the 'corner' in the form of a strong horizontal extension through gradations in the main body (Figure 6).

Figure 5: The project produced by a third-grade student (Ceren Çabuk).
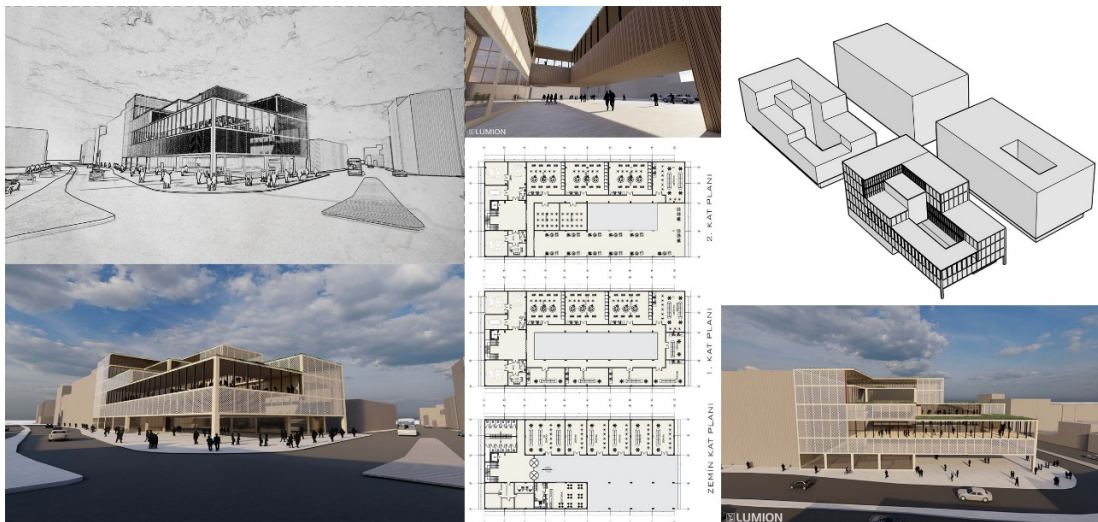
Figure 6: The project produced by a fourth-grade student (Emrullah Geçit).

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel
171

4.3. Produced within the scope of the definition of 'corner' that limits important spaces such as squares in urban space

The definition of 'corner', which limits important spaces such as squares in urban space, means that the parcel is opened directly to the square. This means working with a space in the urban space that has both circulation intensity, diversity in functional layers and public connotations. Such a field scale was not preferred by second graders. On the other hand, the project developed by a student from the third grade (Merve Demir) in this context was realized at Mevlana Junction. Due to both the opening of the field to a square and its topographic condition, the mass was completed directly with a formation that would emphasize the 'corner'. The mass formation, which heads towards the square and draws the boundary of the square, functioned as a student dormitory with a compact and introverted organization (Figure 7).

The project, developed by a fourth-year student (Saliha Mutlu), was designed as a work and life center in Mevlana Junction. The project was located in accordance with the topographic conditions in terms of its positioning and formal configuration. Mass formation was handled by a design behavior that limited the square, opened to the square and established permeable contacts with the square. The density of the structure was alleviated through gaps and passages, while the 'corner' emerged as a permeable public surface between the interior and exterior (Figure 8).

Figure 7: *The project produced by a third-grade student (Merve Demir).*
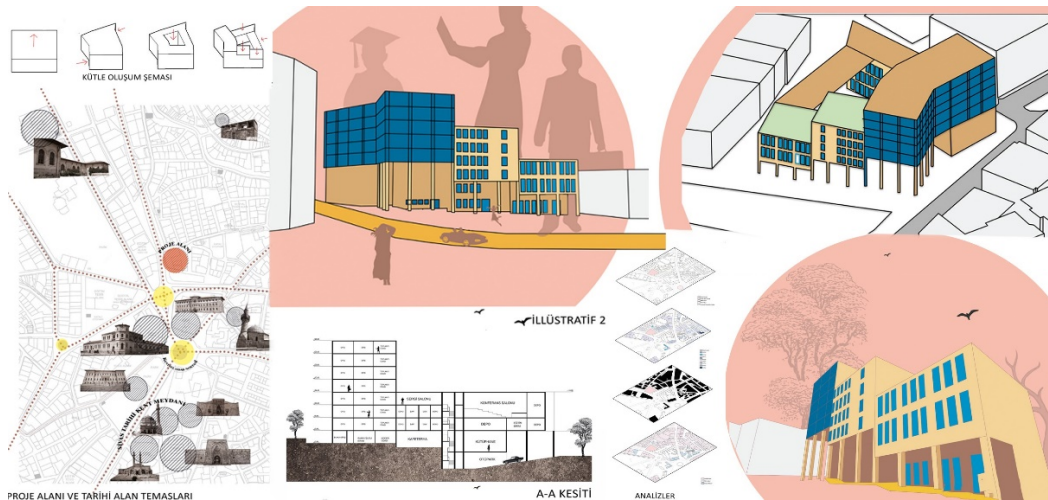
Figure 8: *The project produced by a fourth-grade student (Saliha Mutlu).*

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel
172

4.4. Produced within the scope of the definition of 'corner' that makes the whole parcel valuable due to its location.

The definition of 'corner', which makes the whole of the parcel valuable due to its location, means the parcel where the space is understood in the whole area without any structure adjacent to it, even if there is a building or building groups in its neighborhood. In this context, the project, developed by a second-year student (Ali Berat Arslan), was carried out in a longitudinal rectangular area between the building and the road in the urban space. The project, which functioned as a youth center, was created by integrating prisms of different sizes and shapes into each other through gaps, bridges and stairs. In the project, the emphasis on the 'corner' was provided by means of retaining and integral prismatic bodies (Figure 9).

The project, developed by a student from the third grade (Fazlı Yücel), was carried out in the area on Sait Paşa Street that is currently used as bus stops. The project, which functioned as a work and life center, was located on a longitudinal rectangular parcel. To emphasize the 'corner' in the project, a lower layer holding the ends of the parcel was studied. The lower layer, which revealed holistic structural relationships in the two corners of the parcel, was fragmented by gaps in the middle line and semi-open spaces and transitions were formed. In the mass order, the upper layer was shaped in accordance with the functional decomposition brought about by the architectural program. Although the mass created a wall effect when viewed from the street, the rhythmic movements of the building body, the gaps and the 'corner' lines balanced the massiveness (Figure 10).
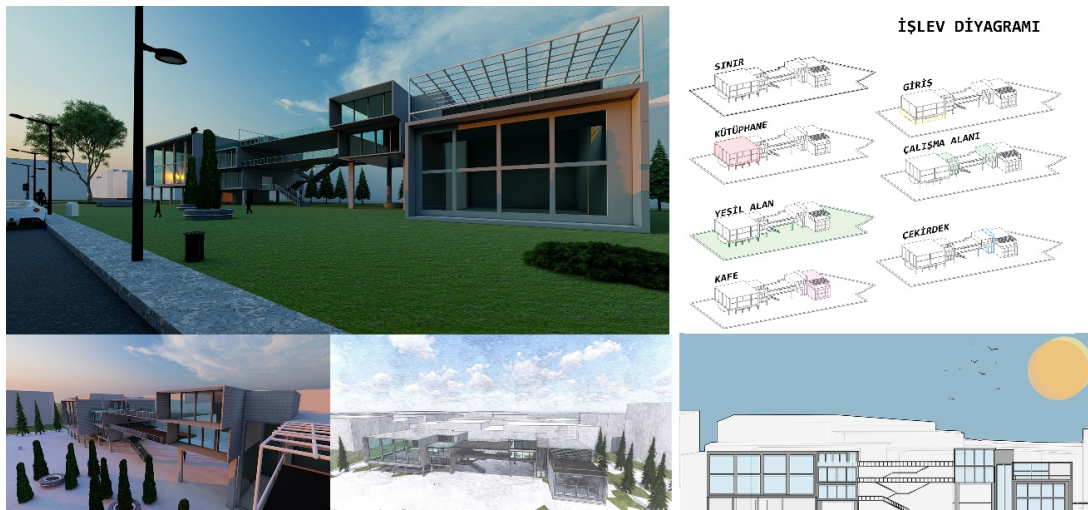
Figure 9: The project produced by a second-grade student (Ali Berat Arslan).
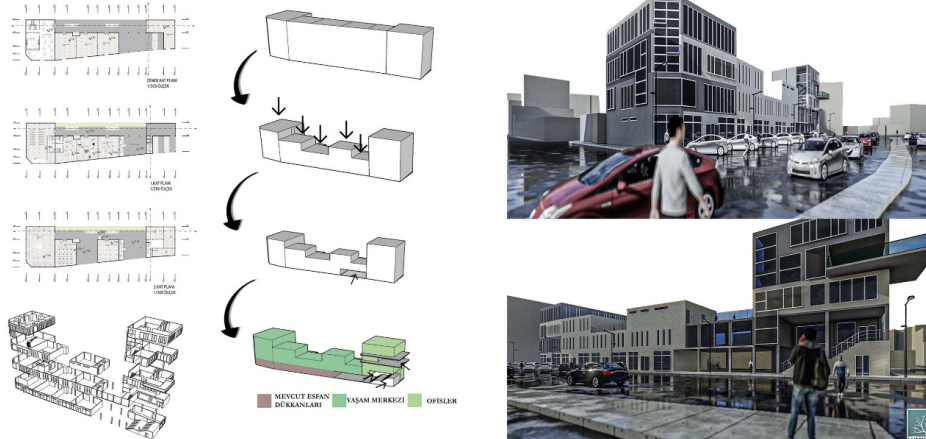
Figure 10: The project produced by a third-grade student (Fazli Yucel).

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel
173
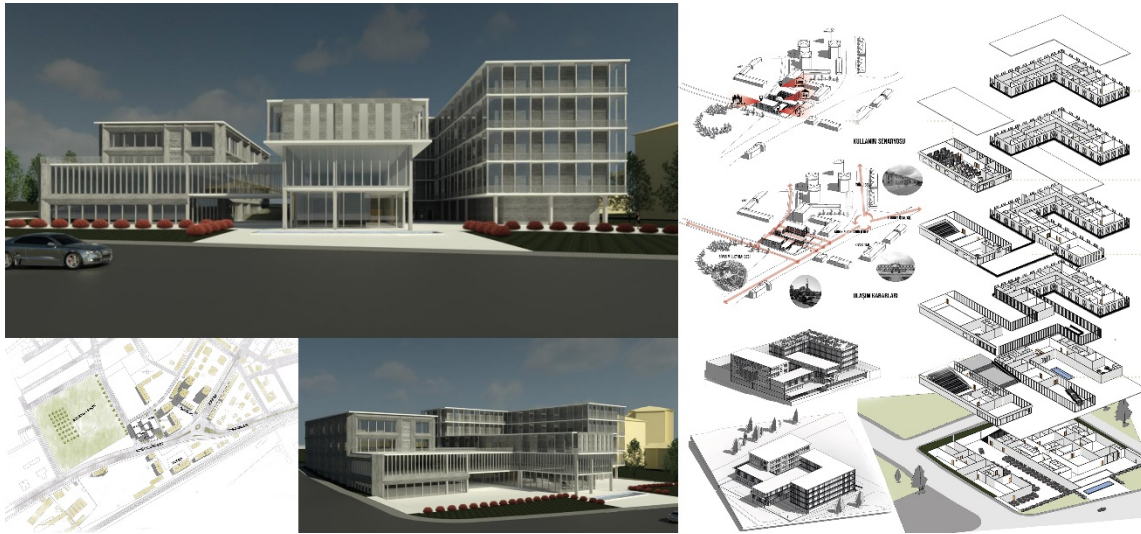
Figure 11: *The project produced by a fourth-grade student (Yasemin Yılmaz).*

The project, developed by a fourth-grader (Yasemin Yılmaz) working on the same definition of 'corner', was carried out on a parcel that met the three important arteries of the city. The layout of the square-shaped parcel was made to cover the entire parcel, thus creating a welcoming and space-complementary attitude for the 'corner' conception. Large prismatic bodies were superimposed at different angles, horizontal and perpendicular. In the mixed-function structure, which functioned as a hotel, fair and congress center, gaps were created between the masses, which led to the mass reaching the appearance of a multi-part structure (Figure 11).

4.5. A discussion on learning outcomes
According to Ismail & Soliman (2010, p. 205), some of the main positions for the instructor and the student in vertical studios are as follows:

This scheme provides observation methodology of this study. When considered these steps, a studio theme in this vertical studio was determined and project scales were defined that each level was responsible for. It was anticipated that students of different skill levels interacted and competed with each other in addition to form the peer-to-peer learning. In this sense, some student-centric evaluations and student experiences of the studio were provided by verbal interrogation. Firstly, the relationships between the traditional horizontal studio and vertical studio were asked. According to the students' experiences, any connections between the studios could not be set and, vertical studio was conceived as a new experience. Secondly, participation and interaction in the vertical studio were examined. It was understood that feedbacks, idea exchanges and interactions between the

"The instructor
- Introduces a studio theme and a multi-level project,
- Defines the sub-project component that each level is responsible for,
- Closely monitors cross-level progress to verify deliverables are handed over from seniors to juniors on time to begin their project.

The student
- Students of various developmental and skill levels interact and compete with one another,
- Form vertical groups with clear peer assignments,
- Each senior student has a junior apprentice,
- Each junior assists a senior."

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

174

students were weakly occurred. Thirdly, it was queried that in what ways vertical studio was contributed to the students' skills and knowledge. It was emerged that using computer software was the most participatory and advanced side of the studio rather than concept and technical issues. Namely, senior and junior students in the studio were mostly interacted with each other in terms of presentation techniques. Thus, peer-to-peer learning remained unsatisfactory. Finally, how the studio was conceived was investigated and, the most answers were pointed out that the studio was a conceptual one. Hereinafter, the process will be scrutinized in detail.

The projects developed within the scope of the first 'corner' definition were designed in different parcels in the urban space, with different programs, different scales and different densities. Although the level of the student in the semester to which they were in was decisive, understanding the design problem, thinking on the main theme and the characteristics of the parcel emerged in the student, independent of the semester but in connection with their individual experience and interest in the project. Although the projects developed within the scope of the second definition of 'corner' differed from each other in terms of area, scale and density, they included common design concerns in terms of reference to the historical structure and the emphasis on the 'corner'. In addition, in the samples selected from the third and fourth grades, it was observed that the projects were developed in accordance with the horizontal extension of the parcel. In the projects developed within the scope of the third 'corner' definition, it was determined that there was no scale differentiation in the samples produced by the third grade and fourth grade students; although structures with different functions were designed in the area, results close to each other emerged in terms of the intensity of the architectural program. This situation may be due to the fact that the projects have been worked in the same field, or the subject should be evaluated in terms of the individual experience and motivation of the student. Finally, the projects developed under the fourth

'corner' definition evolved from the small one in terms of program and scale to mixed-function and densely programmed structures. In the projects produced in this group, mass configurations that usually span the entire parcel were preferred to emphasize the 'corner' concept. In particular, the parcel end parts defining 'corner' lines were reinforced with retaining and massive elements, and the gaps were formed in the intermediate areas of the building mass. The projects produced by the second, third and fourth graders were carried out in accordance with the 'corner' concept, which is the main theme of the vertical studio, and with their diversified sub-contexts. The process was completed in close relation to the individual experiences and motivations of students at three different levels. In this context, although the interaction between the students was not directly reflected in the end products, non-hierarchical feedbacks emerged between the lower and upper classes in terms of the way they handle the 'corner' and other design behaviors.

5. Conclusion
The vertical design studio that is the subject of this study was practiced through a summer school opened at the end of the 2021-2022 school year. The aim of such an experiment is to conduct research on how to make architectural design studios more active in SCU Department of Architecture and how to integrate concepts such as interaction and peer learning into the studio. Thus, vertical studio practice can be considered as an experimental production in terms of creating solid foundations for continuous training stages that deepen according to the objectives to be directed after studio practices. In this field of experiment and practice was considered a pre-trial of the stage for the vertical studio. Thus, mastery of the way the system works as a whole and learning outcomes that will enable the process to be reframed in terms of competencies and weaknesses have been revealed. On the other hand, it was determined that more in-depth measurement methods should be developed in order to make the studio process-oriented, to activate peer learning, and to improve dialog, collaboration and sharing in the

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel
175

studio. To measure the dialog between students and to comprehend the interaction directions and methods, the process needs to be followed more strongly. With the above summer school experience, the creation of the design concern in line with the interaction between the students and the transformation of the means of discovery and understanding in the studio were achieved at a certain point. However, their follow-up could only be read through the end product. For example, it can be said that a significant common learning and sharing platform has emerged among students in terms of using computer software and presentation techniques. However, it has been determined that the understanding of discussing the main theme and/or establishing a dialog and collaborative work among students in similar areas and similar sub-contexts regarding design decisions and behaviors has not yet been established. In this sense, it has been observed that influences cannot be internalized and remain superficial. In summary, for the further implementation phases of the vertical studio, various measurement methods need to be developed and the process-oriented studio approach needs to be adopted/made adopted more strongly. The process of transforming the experienced studio practice and the predictions of the near future into educational practices is, of course, a separate subject of discussion. However, as a clearest result, it has been understood that vertical studio practice, determining a common main theme among students and blending students of different years is a practice that eliminates class-level boundaries in the studio and makes the studio open and accessible.

References:

Akalın, A. & Sezal, İ. (2009). The importance of conceptual and concrete modelling in architectural design education. *The International Journal of Art & Design Education, 28*(1), 14-24.

Çağlar, N. & Sönmez, M. (2009). Mimari tasarım eğitiminin düşündüren/tartıştıran durumları: Mimari tasarım stüdyosu ortamlarının güncellenmesi bağlamında bütünleşme/yeniden-bütünleşme yaklaşımları. In F. R. Ünver, Ç. Polatoğlu, S. M. Vural & H. Düzgün (Eds.), *Mimari Tasarım Eğitimi'09: "Bütünleşme" Symposium Communiques* (pp. 2-4). İstanbul: Yıldız Teknik Üniversitesi Mimarlık Fakültesi.

Çağlar, N. & Uludağ, Z. (2006). Architectural design education: Designing a library, public communication and information center in the manufacturing zone of central Eskişehir Turkey, a case study. *The International Journal of Art & Design Education, 25*(2), 231-240.

Giencke, A. (2021). Vertical Studio: Undergraduate Collaborative Advanced Learning and Teaching Methodology. *Cubic Journal, (4),* 100-107.

Ismail, A. M. & Soliman, M. H. (2010). Integrating multi-grade collaborative learning pedagogy into design studios. *ArchNet-IJAR: International Journal of Architectural Research, 4*(2/3), 201.

Knorr Cetina, K. (1999). *Epistemic Cultures: How the Sciences Make Knowledge.* Cambridge, MA: Harvard University Press.

Kurath, M. (2015). Architecture as a science: Boundary work and the demarcation of design knowledge from research. *Science & Technology Studies, 28*(3), 81-100.

McLaughlan, R. & Chatterjee, I. (2020). What works in the architecture studio? Five strategies for optimising student learning. *The International Journal of Art & Design Education, 39(*3), 550-564.

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

176

Michels, M. & Meeus, W. (2013). A sentiment for architecture. In E. De Vos, J. De Walsche, M. Michels & S. Verbruggen (Eds.), *Proceedings of the Conference on Theory by Design* (pp. 191-196). Belgium: The Faculty of Design Sciences, Artesis University College, Antwerp University Association.

Özbek, D. A., Eke, A. S. M., Yücesan, E. & Ozar, B. (2018). Vertical design studio experience in interior architecture education. *Online Journal of Art and Design, 6*(2), 159-175.

Peterson, M. & Tober, B. (2014). Institutionalizing the vertical studio: Curriculum, pedagogy, and the logistics of core classes with mixed-level students. *Connecting Dots: Research, Education + Practice* (pp. 138–144). Cincinnati, OH: University of Cincinnati.

Schaeverbeke, R. & Heylighen, A. (2013). Drawing and designing as a research approach to rethink teaching. In E. De Vos, J. De Walsche, M. Michels & S. Verbruggen (Eds.), *Proceedings of the Conference on Theory by Design* (pp. 159-166). Belgium: The Faculty of Design Sciences, Artesis University College, Antwerp University Association.

Smatanová, K., Gregor, P. & Šeligová, A. (2020). Pros and cons of the vertical and horizontal design studios in architects' education. *Global Journal of Engineering Education, 22*(3).

UNESCO-UIA. (2017). Charter for Architectural Education, Revised, 2017 Edition. Erişim Tarihi 10 Haziran 2022, https://www.uia-architectes.org/wp-content/uploads/2022/02/Architectural-Education Charter_2017_english.pdf

Van Dooren, E. J. G. C., Van Merriënboer, J., Boshuizen, H. P. A., Van Dorst, M. & Asselbergs, M. F. (2018). Architectural design education: in varietate unitas. *International Journal of Technology and Design Education, 28,* 431-449.

Van Dooren, E., Boshuizen, E., van Merriënboer, J., Asselbergs, T. & van Dorst, M. (2014). Making explicit in design education: Generic elements in the design process. *International Journal of Technology and Design Education, 24*, 53-71.

Journal of Design Studio, v:4 n:2
Tuztasi, U., Koc, P., (2022), Vertical Design Studio in Architectural Education: A Summer Practice on Corner Parcel

177

#eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method [1] [2]

Eneko Besa 🆔

IDarte, Basque School of Art and Higher School of Design, Vitoria-Gasteiz, Spain

Abstract: This paper is based on a report of the subject of Interior Projects Design Studio in the second-year course at IDarte.

Each exercise of the course is summarized by an image. The image is accompanied by a brief report including the approach, the conceptual support, the historical and philosophical references, as well as the pedagogical orientation and the strategy of the exercise.

The originality of this pedagogical method is based on offering the maximum freedom to the student in terms of personal creativity, while always working within a framework and within defined limits.

This framework is designed in such a way that, in itself, it offers a complete methodological palette through which students assimilate the content of a subject such as Projects that is so difficult to define and specify.

It does so in such a way that each exercise of this framework recreates the constitutive qualities of the architectural project: form, space, function, place, program, etc. In fact, each exercise is singled out based on some of these intrinsic qualities, enhancing the learning of these concepts, which most of the time would remain inaccessible. Thus, we stretch the conditions of each exercise to disparate and opposite extremes, to broaden the creative possibilities of the students (Santa-María, 2019:113; Viaplana, 2016:57).

The conclusion represents a tapestry in which each exercise forms a 'network' along with the rest. Hence the value of the framework of this paper, since it already constitutes what could be defined as 'the design of the design'.

Keywords: Pedagogy, Interior, Design studio, Projects, Methodology.

---

[1]This paper has been followed and completed from other point of view by this one:
Besa, E. (2022). DYNAMICS-AKTION- PEDAGOGICAL DYNAMICS PROPOSAL, USEFUL FOR DESIGN STUDIO TEACHING AND BEYOND. ShodhKosh: Journal of Visual and Performing Arts, 3(1), 349-377. DOI: https://doi.org/10.29121/shodhkosh.v3.i1.2022.118
This paper was published in Spanish:
BESA, E (2019). #eindakoa# (lo que hemos hecho) Un MÉTODO pedagógico del MÉTODO de Proyectos de Diseño de Interior, Valencia: Educación Artística Revista de investigación. DOI: https://doi.org/10.7203/eari.10.13763

[2] The translation into English of this paper has been revised by Robert Hextall, English Coaching Projects S Coop.

Journal of Design Studio, v:4 n:2
  Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

179

#eindakoa#

The summary/abstract of this article constitutes an introduction to it. We do not include it here again so as not to insistently repeat the texts. However, the abstract explains the premises of this document and specifically its particularity: it describes a pedagogical method of teaching Design Studio, defined through the report of a complete course.

Insisting on its peculiarity, it is also necessary to point out how at times the writing of this text takes a narrative aspect which affectionately describes the experience of a specific course (2015-2016). The text discourses through this narrative description believing that the paper does not lose its necessary investigative rigor. In fact, this narrative development is the framework in which the methodological and conceptual approach is inserted, in a way that the specific experience of that course acquires a paradigmatic character. As a complement to this narrative, it also includes the pedagogical objectives of each exercise. These are related to the general Learning Outcomes of the subject defined in the summary table in Annex 2.

In addition, the text seeks rigor and basis in the multiple bibliographic supports and in the references that accompanied the course. These sources belong to a large number of disciplines: music, cinema, sculpture, philosophy, drawing, graphic design, etc. From these references, the theoretical classes of the Studio offer the conceptual support that underlies each of the exercises. In this sense, one fundamental reference of the theoretical classes, also of the whole approach, is the thesis developed by the teacher. This thesis investigates the difficult question concerning design methodology (Besa, 2015, 2021).

Precisely, this endeavor tries to offer a methodological approach, a common thread, to a subject that has traditionally been exclusively based on workshop-type practice or design studio development. However, we try to find this ground not only by providing theoretical or historical references, but rather the intention is to unravel design method. We make explicit the disciplinary tools that are necessary to undertake the difficult task of devising and creating an interior design.

Once this clarification has been made and without further ado, the text begins here, through the description of each of the exercises of the course.

Aula-studio

We start with the closest space: the classroom. Thus, we learn interior design from within.

Figure 1: *Aula - studio*

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

179

We imagine that our school becomes a seedbed for new companies for former students. Each student is offered a classroom so that they can condition it and install their own home-studio.

Phase 1: It is obligatory to carry out the distribution by forming volumes. It is not possible to design the partitions in a distributive way. Le Corbusier Composition Mode 3 is mandatory. Also, the following concepts: form/space, full/empty, figure/background, etc. (Caragonne, 1994). These conditions of the exercise break the innate tendency towards the most common and immediate distributive solution, and force the students to reconsider stereotypes and fixations.

Phase 2: Experimental and conceptual collage on the floor plan and the section of the classroom.

Phase 3: Collage of the collage. In this case it will be obligatory to carry out a distributive

project, not volumetric. Once we have broken the stereotype, in the third phase we try to return to it, but getting the most out of it.

Theoretical classes during this exercise are about the first chapter of the teacher's thesis (Besa, 2015:20-77; 2021:15-97) which is on the House in a Plum Grove by Kazuyo Sejima: Synthesis between a distribution/aggregation of volumes, between the whole and the parts, between the unity of the whole and the autonomy of each room. Introduction to the language of modernity: Le Corbusier, Mies, Wright, Kahn, etc., through the comparisons that this chapter makes with the House in a Plum Grove.

To warm up and to prepare the collage of the 2nd phase we use the 'tear-out' technique[3], for logjam moments: snappy, compulsive and unconscious tearing out images from magazines. We make a subsequent quasi-psychoanalytic interpretation which is not far

Table 1: Aula-Studio Objectives [4]

LO.1	Designing synthetically, starting by limited, known and immediate conditioning factors in the first exercise, which will increase progressively during the course, encouraging the ability to synthesize.
LO.2	Deepening the intrinsic chiasmus type relationship between subject and object (Merleau-Ponty 1964) ('tear-out' dynamic), present in all artistic activity (subject /object, symbolic/formal, etc.).
LO.2	Conceiving spatial projects with coherence, using tested conditions and models, extracted from historical and current references (Current references: SANAA, Sejima. Historical references: Wright, Le Corbusier, Mies, Kahn. See the theoretical support to this didactic unity described above)
LO.3	Assimilating historical and critical references, interpreting the disciplinary concepts related to composition and distribution via the experience of designing with them.
LO.3	Solving the same project from different approaches, contrasting the possibilities of each of the strategies and phases experienced, to learn how to escape conventionalism and stagnation in the creative process.
LO.5	Representing projects assuming disciplinary codes, starting the course with traditional manual drawing representation in this project.
	Timing: September 9th – October 5th

---

[3] The technique comes from the 'Ideas Course' tutored by Amanda Hopkins and Tony Clelford in July 2010 at Central Saint Martins.

[4] The numbers that classify the Learning Outcomes (LO) of each exercise are related to the summary of the Content Descriptors and the general Learning Outcomes defined in the table in Appendix 2.

Figure 2: *'The house of the Real Estate Crisis'⁵ = creating a crisis with your own home.*

off the self-interpretive method that is required in design processes.

Krisi dwelling
The house of the Real Estate Crisis'⁵ = creating a crisis with your own home.

We challenge our current way of thinking about the dwelling. To do this, we analysed each student's own home, their own lifelong home, compared to two mythical houses from the history of architecture.

A1 format. Students cannot write anything, it is mandatory to express themselves analytically only through drawing.

Students have to explain their houses and architects, ones that they choose, in a theoretical class. These are what we call project seminars, or architect seminars, every Monday during the first four-month period of the course.

Theoretical lectures during this exercise: The book 'Commentary on Drawings by 20 Current Architects' (Cortés and Moneo, 1976). In the first exercise we forced ourselves to 'jump through hoops', we were forced to learn a single disciplinary way of drawing. On the contrary, in this second exercise we realize how each architect has designed and created his/her own graphic expression. Thus, unlearning what has

Table 2: *Krisi-dweling Objectives*

LO.1 LO.3	Recreating and recasting our unconscious conditionings thanks to the contrast offered by certain recognized historical references.
LO.3	Conceptualizing ideas graphically, without the help of any text, delving into the representation of the conceptual and synthetic thinking which is inherent to any project.
LO.2	Recreating schematically this relationship: form / conceptual structure / functional diagram / image / meaning. (The last two to a lesser extent in this exercise).
LO.3	Deepening and extending historical understanding through drawn graphical analysis.
LO.5	Integrating the rules and disciplinary norms (in this case, norms of representation) in a creative and original way by means of a personal interpretative subjectivity that nevertheless differs from the extremes: subjective-relative/objective-scientific.
	Timing: October 5th – October 21st .

⁵ This refers to the financial crisis of 2008.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
181

Figure 3: *Moving - mobile*

been learned, we move towards the analytical drawing that will be necessary to carry out this exercise.

Moving mobile
Each student chooses a social situation he/she worries about: refugees, prostitution, poverty, corruption, etc.

In addition, students will choose a location that is meaningful to them.

Based on the place and social situation, based on the place and programme, students will develop an ephemeral habitable alternative:

shelter, habitable bicycle, cave, habitable storage room, habitable container, etc.

By ephemeral alternative we understand that students must think of alternatives for the construction of housing that are different from the traditional model.

Ephemeral, then, is not understood so much as something short-lived or unstable, but rather as something that transgresses fixation, stability, rigidity, immutability of traditional or conventional architecture.

Table 3: *Moving-mobile Objectives.*

LO.1	Exceeding ones own creative limit by means of conceiving a project based on a partial reduction of the conditioning factors, assimilating this strategy as a possible tactical phase of design.
LO.2 LO.4	Creating spatial imagery, symbolic and powerful, capable of projecting new social forms.
LO.4	Empathizing with extreme social situations, widening student's own origins, thus overcoming the recurrence of dominant stereotype.
LO.4	Projecting the ultra-type (future) as an extreme option that tries to overcome the mere stereotype.
LO.5	Instrumentalizing representation as a methodological tool, contrasting with the conceptual conceptions we already worked on during the course. In this case, we use modelling in its figurative sense, without resorting to drawing in the design process.
	Timing: 21st October – 11th November.

Figure 4: *Ametsetan*

Delivery: first, a file with the idea. Next, as a final delivery, a prototype model of 40x40x40cm max.

To carry out this exercise, we offer students multiple examples of habitable alternatives, interventions, exhibitions, examples of the work of architects such as Andrés Jaque, Santiago Cirugeda, etc. (Blasco 2017) (Cirugeda, 2018).

The previous year (during the 2014-2015 course), we proposed an alternative to the previous exercise ('moving mobile'), we did not go to the 'moving' future, but rather we went back to the most archetypal past.

Ametsetan

Ametsetan (= dreaming) proposed that students captured the home of their dreams.

First, we try to capture, through a drawing, a daydream suggested by the reading of 'The Poetics of Space' (Bachelard, 1965).

Next, we were inspired by a Zumthor lecture (2013) at RIBA, and we tried to express his 'phenomenology of presence' in a model.
The work led us to project without form, to project perceptually, to project the atmosphere, to project looking for the archetypal epitome, the type that goes beyond the mere stereotype.

Table 4: *Ametsetan Objectives.*

LO.1	Same as point LO.1 in the previous exercise.
LO.2	Creating projects phenomenologically (Zumthor 2013), overcoming formal/objective conceptions in favour of a spatial/conceptual intuition.
LO.3	Unravelling the contradiction that is inherent to all artistic creation, and to all design methods, with the intention of delving into the immeasurable depth that is inherent to every creative process.
LO.2	Exploring the poetic and symbolic depths of spatial creation, accessing the most personal intimacy, led by great poets of history.
LO.4	Recalling and remembering until evoking the (past) archetype as an extreme option that tries to overcome the mere stereotype.
LO.5	(the same consideration as in LO.5 in the previous exercise)
	Timing: analogous to the previous exercise, however this exercise was carried out during the 2014-2015 course.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

183
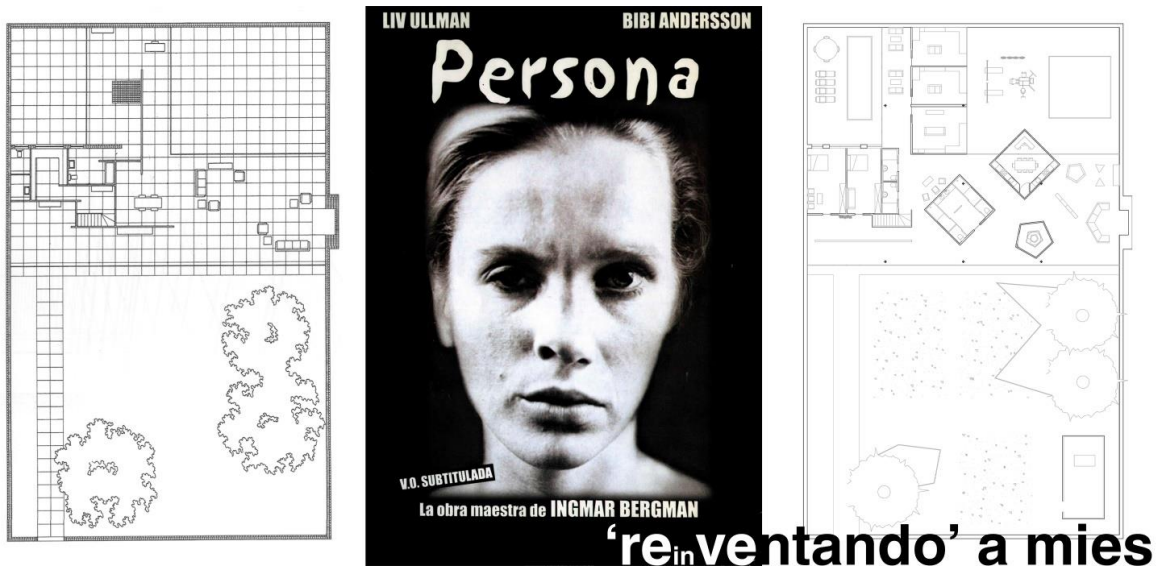
Figure 5: RE-inVENTING Mies/ REinVENTANDO a Mies
(reventando = detonating Mies / reinventando=reinterpreting Mies)

The theoretical classes deepened the methodological position of Zumthor. First, we began the exercise by unquestioningly assimilating his method, and next moved toward a more critical understanding that unravelled and deconstructed the ultimate concerns of his position. Is it possible to design without form or was this form in fact an apriorism? (Besa, 2015:240-305; 2021:323-407)

RE-inVENTING Mies/ REinVENTANDO a Mies
(reventando = detonating Mies / reinventando=reinterpreting Mies)

Each student makes a psychological description of a family unit: father, mother, uncle, son and two dogs, etc. Theoretical classes in this phase: Film 'Kiss Whoever You Want' (Blanc 2002), a promiscuous mess to 'warm up' and inspire a subversive ideation of family units.

Then, we make groups of two. The two families are forced to join together in one of the 'three courtyard houses' by Mies van der Rohe. If Mies' house has been considered as representative of the current solipsism of the Nietzschean Superman (Ábalos, 2000), we 'detonate' it by forcing two families to live together within it.

Table 5: Re-inventing Mies Objectives.

LO.1	Increasingly integrating a greater number of constraints, urging the resolution of a complex
LO.2	functional problem, while we confine the project to a single floor.
LO.4	Interpreting the programmatic needs of a hypothetical client simulated through the inescapable interaction with the group partner, as well as the inevitable integration of his/her programmatic proposal.
LO.4	Exploring the inherent conflict of any personal relationship (oneself, colleagues, group, client), with the intention of shaking up supposedly naive ideological assumptions and integrating the possibility that arises from said process.
LO.5	Assuming disciplinary codes when representing projects; moving towards CAD representation.
	Timing: November 11th – November 25th .

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
184
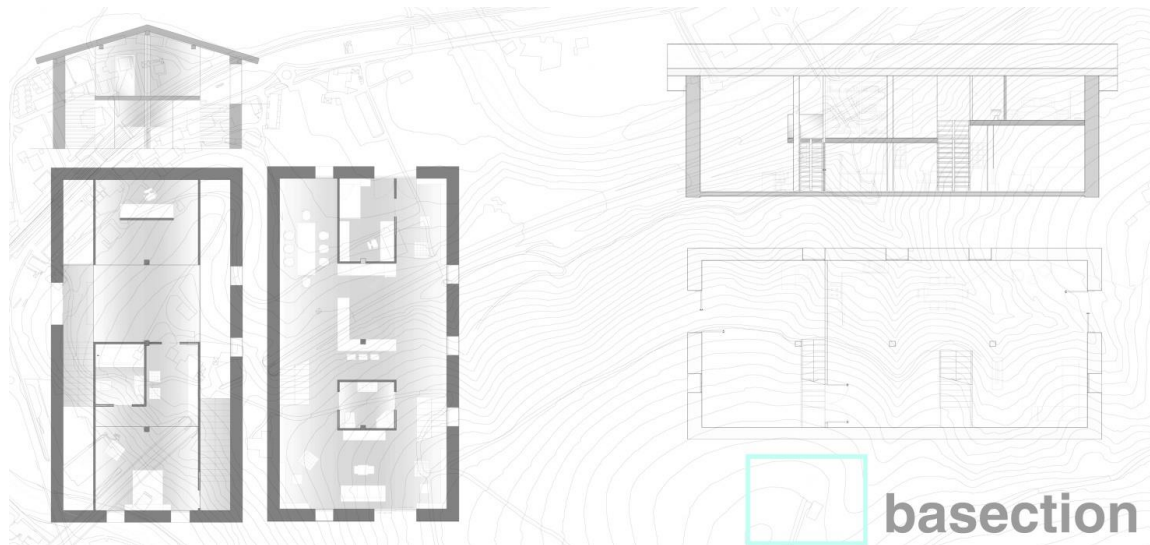
Figure 6: (bas- = Basque root which means forest, wild, natural, farmhouse, Basque, etc. + section)

Like the invented families, the two students have to 'live together' to do the work. A job that is precisely confined within a single floor space. Theoretical classes in this second phase: 'Persona', film by Ingmar Bergman (1966). A conflicting fusion-identification of Bibi Andersson and Liv Ullmann, a psychological interaction which is similar to the one that occurs in the processes of design group work or in work with clients, a process that otherwise is impossible to simulate in a design studio.

CAD drawing mandatory. We set a very tight deadline; we force the situation and lead the project towards certain failure. Failure is also required when learning. Students will need to compensate for this failure in the last exercise of the first part of the course, 'Basection'.

Basection
(bas- = Basque root which means forest, wild, natural, farmhouse, Basque, etc. + section)
(vasection has other connotations)

Table 6: Basection Objectives.

LO.1	Increasing the number of conditioning factors by expanding the spatial limits that confine our conception to mere flatness.
LO.1 LO.5	Conceiving projects in 3 dimensions to increase the spatial view of those projects through the combined plan/section/model work, avoiding for the moment the axonometric constructions and avoiding computer programmes that, in most situations, far from drawing us closer, distance us from the required projective introspection (Besa 2015:210-213; 2021:281-283).
LO.3	Exploring cyclical, divergent and convergent processes, typical of any creative process through disciplinary references (Fisac).
LO.3	Approaching projects divergently (through an initial analytical phase in which drawing is not allowed, compared to other projects in which it was not possible to write), with the intention of learning to integrate most of the conditions and determining factors of the project into the final convergent solution.
LO.4	Exploring the definition of the programme of the project (the briefing) via the identification of a possible client with the creative idiosyncrasy of the artistic world.
LO.5	Instrumentalizing representation as a methodological tool, completing the concepts we already worked on before this project. However in this case, we are moving towards a working model that is conditioned: this model has to be homogeneous and abstract, making it possible to conceive the project in its spatial essentiality.
	Timing: November 25th – January 16th .

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
185

Each student chooses a contemporary living artist and develops a programme for their family. (In later years, not only did we work with the personality of the artist, but we even started from the analysis of their spatial conceptions.)

We give students some plans of a Basque farmhouse (bas-herri), with a sloping roof and different levels. They have to design an artist's home and their studio. If the previous group work was confined to a single floor space and students were forced to understand each other while working on a single floor plan, in this exercise, on the contrary, it is necessary to think in section and visualize in 3D.

We carry out this exercise through a plant + section + 'txurrimaketa' (=shabby model). Both the 'txurrimaketa', or working model, and the final model must be made using a single material: cardboard. In this phase of the course, taking into account that this is one of the first models that students do in their studies, we acquire a certain abstract capacity by forcing it to be constructed in only one material.

The last project of Projects 1 course. A very disciplinary project. Delineation by CAD is mandatory. It must be perfect, neat and very delicate, to be able to move on to projects 2.

Theoretical classes: Coronation Church. Fisac, 'the method' of the discipline (Besa, 2007-2008).

Explanation of a 'check list' made from Fisac's questions 'what, when, where, etc.'. Beginning of the project: analytical memory, only written, using that check list model, drawing is forbidden.

Neighbourhood premises (local de barrio)
In groups of two, we start the second part of the subject, Projects 2, focused on commercial space.

Students choose a premises in their neighbourhood. A premises that they can measure and take photos of, etc. They are going to develop a commercial study of a small business, a sector that is in crisis.

The interaction with business owners –who are the ones who really know why their business works or not– seems to be one of the best methods to learn about commercial spaces.

Freehand drawing is mandatory. We use graphic and analytical codes.

Figure 7: Neighbourhood premises.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
186

Table 7: Neighbourhood Premises Objectives.

LO.3	Looking intuitively until we are able to unravel the substantial issues that underlie our daily lives.
LO.4	'Prospecting' and interviewing the context in a direct and open relationship that enhances sociability against the prevailing individualistic tendency.
LO.4	Investigating the most advanced, state-of-the-art creations with the intention of pushing our projects towards their maximum creative possibility (Ikusmer).
LO.5	Instrumentalizing representation as a methodological tool, using the graphic code as a condenser and communicator of concepts.
LO.5	Streamlining and releasing freehand representation.
	Timing: January 18th – February 2nd .

Later on in the course, they will have to take pictures of more commercial spaces, to display them in the Projects 2 seminars.

Taking photos that have to be displayed and explained forces analysis, we learn to identify things that are not seen at first sight.

Projects 2 seminars also include the explanation of IKUSMER's 'Trend files' (2008-2017), very interesting alternative trading trends.

Typographical ductus "Rotulación y ductus"
We develop a freehand typographical essay, with increasing speed, to find our own 'ductus'.

A basic tool to present the drafts and the preliminary projects that we are going to develop later.

We are looking to improve the agility of our hand.

Going over one's own lines is forbidden, contrived thickening too.

We support this work by giving basic notions of typography (Kane, 2012). In Interior Design Studies, we will never arrive at the same level of specialization of typography that is taught in Graphic Design, but at least, we need to have some notion.
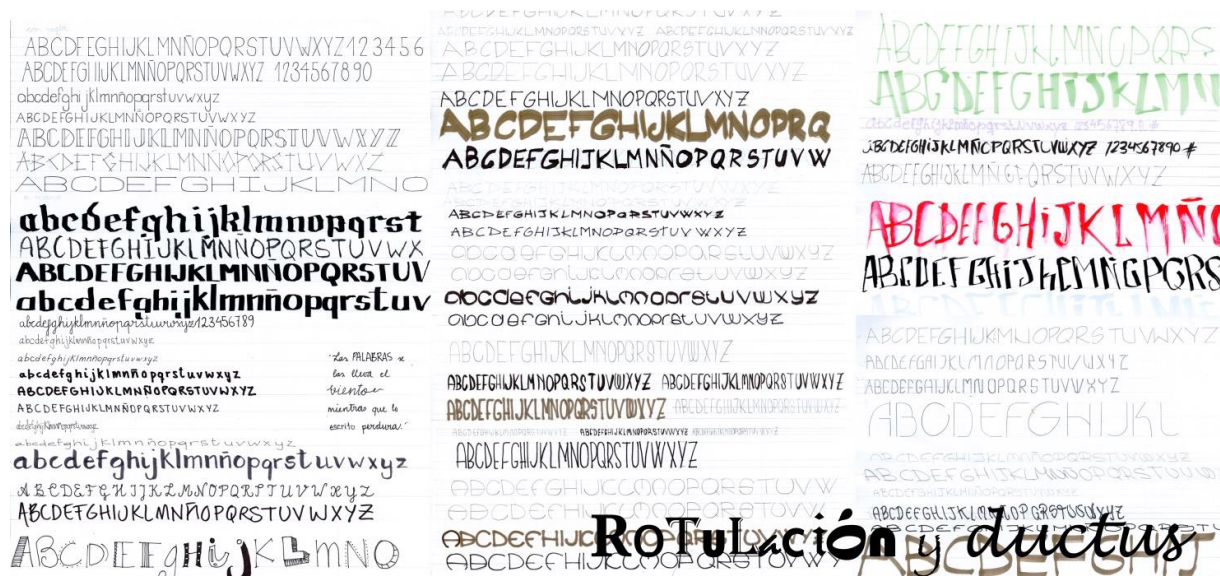
Figure 8: Typographical ductus.
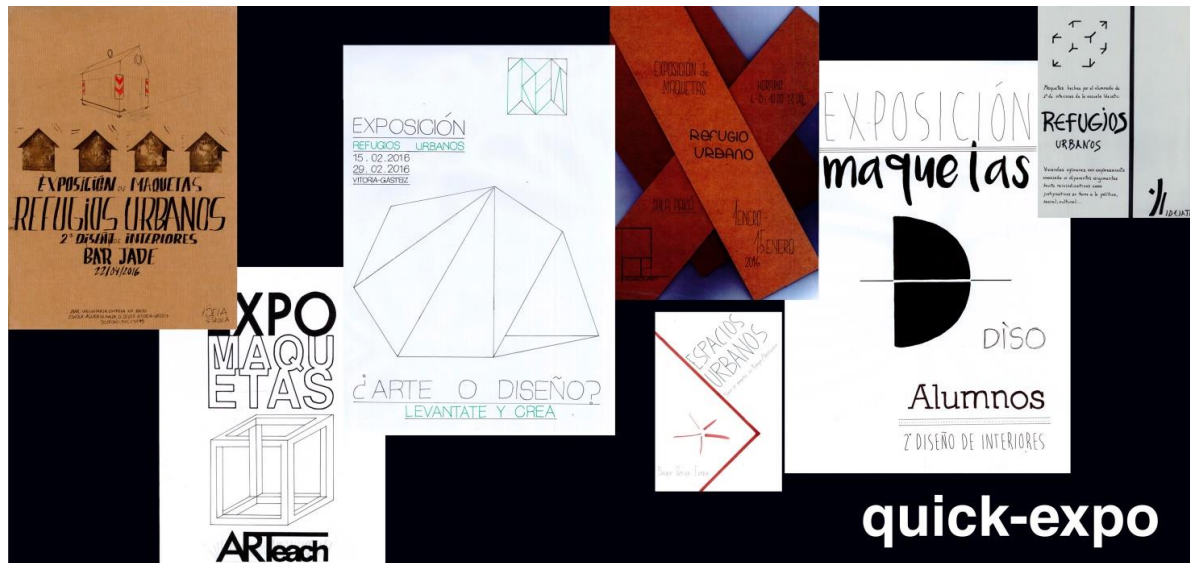
Figure 9: *Quick - expo*

We are daring and courageous so that our ignorance is not.

We try to know a bit of everything so as not to 'go around' thinking that we know everything.

Quick-expo
Completing the previous typographical work.

We assume that we are going to set up an exhibition of the 'moving mobile' models made in Projects 1, but we are missing the poster.

The typographical exercise developed our agility; by designing this poster we continue to gain speed.

Once we face this challenge, instead of just reproducing the logo of the school as it is, students are asked to think of a small graphic

image that would represent their conception of the school. (This work was done before the new name and the new corporate image of the school were developed: www.idarte.eus/)

During these weeks, in the theoretical classes we explain the concepts of the following book: 'Space, Identity and Company' (Colli and Perrone, 2003). The objective is to 'warm up' the following exercise. We explain a historical development, from the Werkbund to the most current manifestations of corporate events and happenings.

Getting ready for the next exercise we also provide examples from the book 'Architects on Stage' (Azara and Gurí, 2000).

Table 8: Typographical Ductus *and Quick-expo Objectives.*

LO.4	Overcoming disciplinary limits, transferring learned methodologies to other specialties, getting ready to establish future professional collaborations.
LO.5	Instrumentalizing representation as a methodological tool, streamlining the representative process, linking it to the unconscious movement of the hand with the intention of liberating it for the prospecting of new unexpected solutions.
LO.5	Liberating the drawing hand with the aim of being able to produce and represent projects that can be communicated in an agile way without weighing down the creative process.
	Timing: approximately 1 teaching week in the month of February.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
188
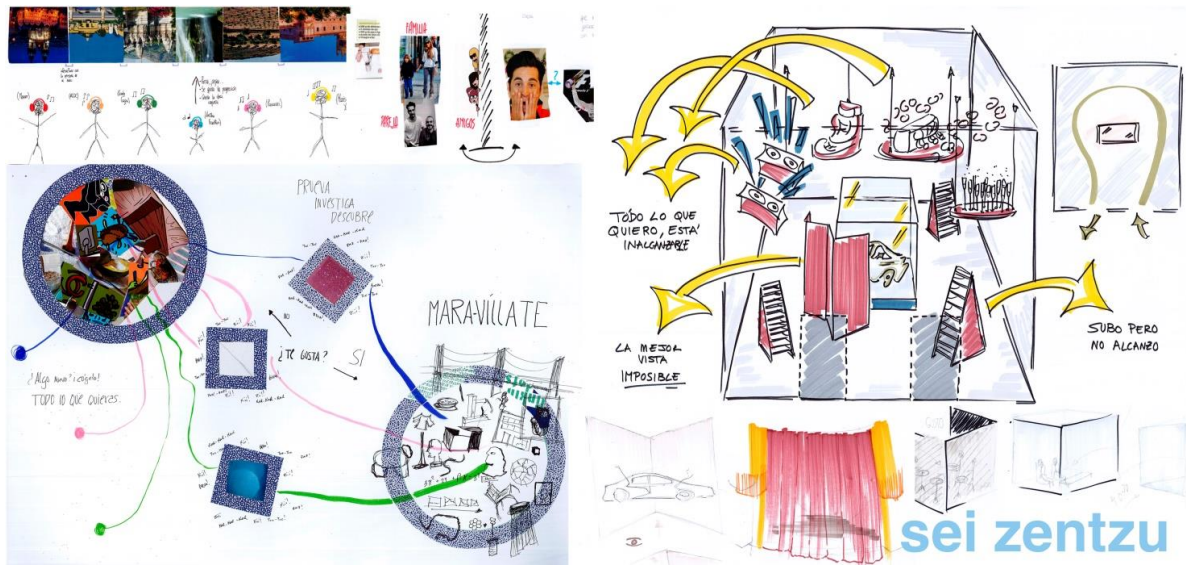
Figure 10: Sei sentzu

Sei-zentzu

Sei zentzu (six senses): taste, touch, sight, hearing, smell...

+

Seven deadly sins: lust, greed, anger, laziness, envy, pride, gluttony.

+

We propose a generic building, that is, we do not provide a place or a venue as such.

+

Students have to sell a luxury car, inspired by one of the sins, creating a moving experience, including necessarily the five (six) senses.[6]

=

Students have to create an experience, an event. It is not about creating a project, a decoration or a design. This time, and from now on, people – people and their action– will constitute our project (Kanes, 2009: 14).

The difficulty of projecting a credible action becomes manifest; and moreover, drawing and

Table 8: Sei Zentzu Objectives.

LO.3	Extrapolating one of the constituent elements of the project, experience, focusing exclusively on it as a methodological strategy to break the limits with which we tend to initially approach projects.
LO.4	Integrating user experience into projects, until one understands the user participation as a fundamental element of interior design.
LO.4	Experiencing in ones' own project the fundamental transversal educational values of the human experience.
LO.5	Representing what is un-representable, expanding traditional limits of project communication, pushing its presentation towards subjective and experiential issues of action.
	Timing: approximately one teaching week, in the month of February.

---

[6] The exercise of selling a car was experienced in the 'Event Design' course tutored by Merle Hensel and Gerogina Shorter in August 2010 at Central Saint Martins.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
189

Figure 11: *Anteprojecting*

expressing and making the action understandable with minimal textual reference.

Short project: two hour challenge.
We could not finish the project in a negative way, i.e. 'sinning'. Instead, trying to 'redeem' ourselves, we carry out a second complementary challenge, with a new theme: the 7 virtues.

As a more up-to-date and less 'retro' alternative, we present Baketik's IZAN proposal (Fernández, 2010): the maximizing of the dialogue, the maximizing of the empathy,

the learning of human limitation, conscience, love, etc.

How do we create a happening or an event that teaches these values in a real and experiential way?

Anteprojecting
We define an exercise with different commercial premises: named A, B, C, D, etc. Each with a problem to solve: narrow premises, premises with more than one level, premises in the middle of a park, premises divided by a commercial passage, premises on the top floor

Table 9: *Anteprojecting Objectives.*

LO.1	Going through a complex framework of disparate conditions in order to arrive at a spatial and
LO.2	a synthetic conception that provides an original solution to the stated problems.
LO.3	Collaborating crosswise by sharing and assimilating the methodological strategies and skills of peers of different levels.
LO.3	Taking on board criticism and self-criticism as something normal, integrating evaluation and co-evaluation as key elements in the project process.
LO.4	Elaborating a programmatic proposition in a reciprocal process: the programme evokes ideas that resolve the place, and vice versa, the place constitutes a limit that forces us to re-elaborate our preconception of the programme. (In this case, we maintain the same programme and we pass it around different types of premises)
LO.5	Instrumentalizing representation as a methodological tool, speeding up the representative process to unsuspected extremes with the intention of reaching what would be unexpected and impossible solutions in a conventional logical-rational process.
	Timing: approximately one teaching week, in the month of February.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

190

of a tower, old premises with an entrance shared with the access to other houses, among other examples.

We develop several two-hour challenges. First day we raffle the different types of premises among the students, assigning one type to each student. They have to design a boutique.

The next day each student corrects the design of a partner. They makes the correction that the teacher would make, marking the rubric and marking a copy of the work of the partner.

The following day the 'challenge' continues: each student reinterprets and redesigns the project that they corrected the day before.

The day after that, together with their partner, they make a group and they solve a new project in new premises.

Before this last step, we perform the following dynamic:
- Each student makes an A6 format booklet with several white sheets.
- Each student begins to solve the project in one of the premises.

- After 5 minutes, each student passes a picture of their work to the student next to them.
- Each time we pass the notebook we reduce the time: first 5 minutes, then 2 minutes… finally 1 minute.

Increasingly less and less time and, curiously, the less time we have, the better we do.

Theoretical classes prepare the next exercises: we work on the relationship between construction/projects and form/matter to prepare the 'txiringito' exercise.

Related to the form/matter relationship and reflecting on the constructive complexity, we return to the teacher's thesis, we explain the chapter on Scharoun and Gehry (Besa, 2015:78-97; 2021:101-129).

Eusko-logo
Eusko-logo = Basque logo / Esko-logo = the school's logo

Noting the results of the Quickexpo exercise, in which we developed posters and proposals for

Figure 12: Eusko-logo = Basque logo / Esko-logo = the school's logo

Table 10: Esko-logo Objectives.

LO.4	(the same LO.4 as in quick-expo).
LO.5	Versatilizing our ability to pick up new technologies of representation.
	Timing: March 4th – March 13th .
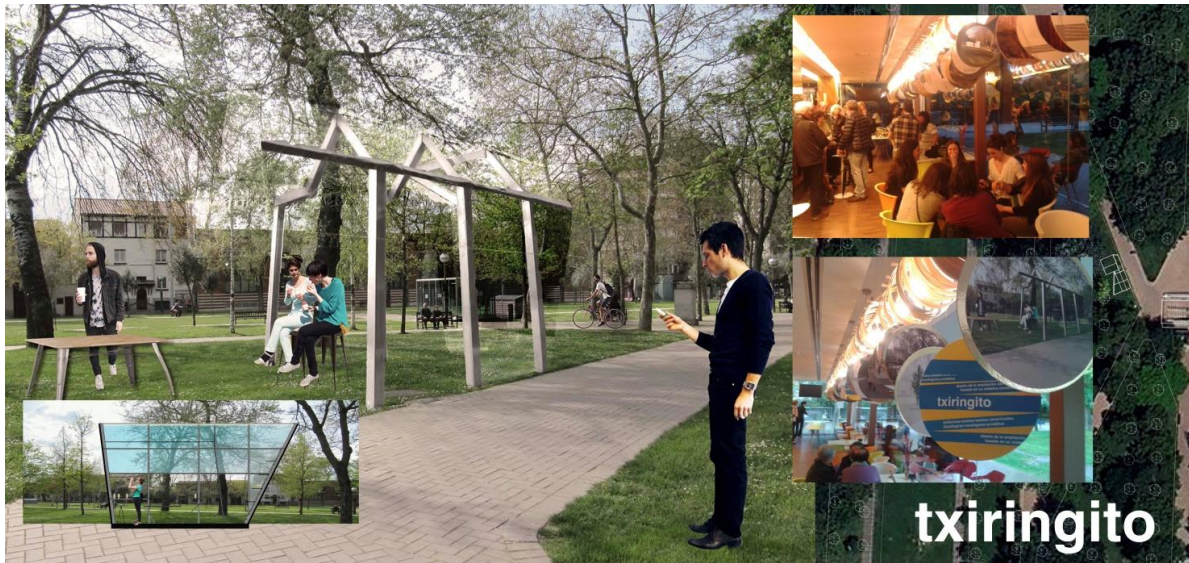
Figure 13: Txiringito

new names for our school, we decided to give the students the option of improving them by computer.

We let the students choose: the second part of the 'neighbourhood premises' or e(u)sko-logo.

Playing around with computer programmes that we do not know very well and getting out of our comfort zone.

Interior /graphic design? Organization of Workshop-hackathons?

Txiringito
We assign each student a construction product or system: plasterboard, wood, aluminium composite, phenolic panel, etc.[7]

In Judizmendi Park we carry out a summer expansion, a txiringito, of the Zabaltegi bar, managed by the institute for social integration IRSE. [8]

In that way, we work on the constructive relationship between form and matter, placing

ourselves in a specific site, with a strong symbolic-historical weight and, in our case, also social significance. Besides, and although we study interior design, we sensitize ourselves to the problems of an urban location: the positioning, the scale, the routes, access. We echo the 'Arrive, Cross, Stay' by Javier Carvajal ('llegar, cruzar, estar' quoted in: Espinosa, 2017).

Afterwards, we held an exhibition at the Zabaltegi[9] and its subsequent inauguration lunch.
The theoretical classes continue to delve into methodologies, we explain Siza, a very unique and singular example of our disciplinary wisdom. (Besa 2015:98-163; 2021:133-221)

The method of hats, by Edward De Bono (1986), is explained to learn how to think about a project from different methodological

---

[7] Exercises using different construction systems have been carried out in the school for years; specifically, José Ignacio García Román had carried out for years a Stand exercise using different commercial materials.
This paper also integrates the experience of other colleagues, such as that of Juan José Pariente, although,

due to its uniqueness, it is not possible to make an explicit reference.

[8] https://www.irsearaba.org/

[9] https://www.irsearaba.org/empresas-insercion.php?Idinserc=1
Naiara Alejo helped with the assembly of the exposition.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
192

Table 11: Txiringito Objectives.

LO.1 LO.2	Expanding the limits of interior design to the exterior, working on the function/meaning relationship in relation to basic issues such as architectural promenade, access, venue integration-assimilation, scale, etc.
LO.2	Integrating the function/form/meaning conjunction, in this case starting from the form/matter relationship, via the cooperation of both the Construction and the Projects subjects of the course (this cooperation has been carried out in subsequent courses).
LO.3	Transforming the constitutive ambiguity of every element into a strategic opportunity to achieve the coherent identity of opposites that initially were irreconcilable (Siza, in Besa 2015, 2021).
LO.3	Being able to extrapolate, be flexible with and use different design methods, in order to break deadlocks and stagnation in the project process.
LO.4	Collaborating with non-profit entities thus enabling an integration of transversal values and the participation of the school in society.
LO.5	Communicating one's own project directly, allowing different levels of access to it: idea/detail, professional/non-professional approach.
	Timing: March 13th – May 5th .

positions, in a diversified way. This is also useful for the next exercise.

Ekain[10] accompanies us during this exercise due to his Master's of Education teaching practices. He makes his contribution to the theoretical classes with his class about 'contingent operations'.

Ayunta-chunta

The students from the 3rd year construction course had collaborated with the Vitoria-Gasteiz City Council Senior Centres,[11] suggesting ideas for the Zaramaga centre. We continued with and completed the collaboration, orienting our work towards more

Figure 14: Ayunta-chunta

The third year construction course was tutored by Naraia Goenaga and Aritz Gómez. Later, the exhibition was organized with the help of Uzuri Berraondo.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
193

Table 12: *Ayunta-chunta Objectives.*

LO.3 LO.4	Interpreting the program as a method, the social potential as a project tool. (Besa 2015:222-231; 2021:297-308).
LO.1 LO.4	Orienting the conditions of the project, in this case social conditions, towards experimental positions.
LO.4	Collaborating with public entities, integrating transversal values and thus participating in society.
LO.4	Interviewing a real client in a direct and open relationship, which enhances sociability against prevailing individualistic trends.
LO.5	Recreating the technique and tools of representation from the idea and originality of the solution of the project.
LO.5	Communicating and presenting projects orally.[12]
	Timing: May 5th – June 8th .

experimental positions. Then we held a common exhibition.

The challenge even leads us to spend a morning with the elderly users, sketching ideas based on their experiences.

Cultural exchanges between immigrants and the elderly and between children and the elderly, to solve demographic problems. Exchange of tasks to face the financial crisis. Self-management to break institutional paternalism. Autonomy against dependent filiation. Self-decorative workshops and DIY to encourage involvement in renovating the centre. Collaboration with artists to participate in art-performances which could transform the city.

These are some of the ideas that we thought of, always with total empathy and sensitivity towards the elderly. We have drawn close to their daily life, to their problems, to their dreams and disappointments, to their yearnings and desires.

The theory classes explain Koolhaas' strategies. Disregarding the subversive burden of the Dutch architect, we are interested in the social programmatic alternative of some of his proposals, as well as the communicative and populist content of his projects beyond his mainstream media interest. (Besa, 2015:164-239; 2021:225-319)

everything we have done
pencil outlines (aula-studio), cad outlines (basection, reventando a mies, txiringito)

floor plan project thinking (reventando a mies), section project thinking (basection)
projects designed emerging from the model (basection),
projects built via the model (txiringito),
projects defined only by the model (moving mobile)

figurative models (moving mobile), abstract models (basection), constructive models (txiringito)

analytical projects (krisi dweling, neighbourhood local), 'projective' projects (the rest)

projects in which nothing can be written (krisi dweling), analytical phases in which nothing can be drawn (basection)

projects without a written report (moving mobile), well worked out reports (basection, moving mobile, mies)

interior design projects (almost all), exterior design projects (txiringito, ayunta-chunta), graphic design projects (eskologo)

---

[12] The presentation was held later on, once the students had passed the course, along with the exhibition, in a public presentation in front of political authorities. We didn't had sufficient time to work on it. This is an aspect to integrate in the future.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

194

projects for 'elitists-artists' (basection), projects for ordinary people (ayunta-chunta)

projects in constrained sites (anteprojecting), projects without a site or in generic locations (sei zentzu)

purely disciplinary projects (basection, txiringito), experimental projects (moving mobile, ayuntachuta)

analytical techniques ('what, when, where' check list by Fisac), intuitive techniques (tear-out), techniques of methodological rigour (hats) convergent processes (Mies, Fisac method), divergent processes (collage aulastudio, ayunta-chunta: interview with the elderly)

projects designed emerging from photomontage (ayunta-chunta, aula-studio), photomontaged projects (txiringito)

projects without any written or oral explanation (sei zentzu), public speaking work (seminars)

oral presentations of conceptual and historical-theoretical rigour (Projects 1 seminars, about architects), presentations on the latest trends (Projects 2 seminars, 'trend files' by Ikusmer)

theoretical classes (all), theoretical classes on the construction/projects relation (txiringito) architectural theory classes (thesis), music classes (interspersed), cinema (reventando a mies), artistic movements, sculpture, painting, philosophy (all), theoretical classes about drawing (krisi dweling), about graphic design (esko-logo), about brand identity (commercial space, Projects 2), notes about typography (typographical ductus).

A1 format (krisi dweling), A2 format (mies), A3 format (ayunta-chunta, basection), A4 format (pre-deliveries), A6 format (anteprojecting), circular format (txiringito)

projects in groups (neighbourhood premises, mies), individual projects (the rest), rotating projects (anteprojecting)

long projects, 6 weeks (txiringito)

medium length projects, 3 weeks (various)
short projects, 1 week (eskologo)
very short projects, two hours (sei zentzu)
extremely short projects, 2 minutes (anteprojecting)

projects conditioned by the location(txiringito, basection),
projects without location (sei zentzu),

projects conditioned by the location-programme (ayunta-chunta),
projects conditioned by the programme (mies)

projects that design the programme (ayunta-chunta), projects with little programmatic charge (txiringito)

defined programme (aula-studio, anteprojecting), programme to develop (moving mobile, basection, mies)

variable programme (ibídem), variable location and programme (ayunta-chunta), variable location with fixed programme (anteprojecting)

Results and critical assessment:
Results are represented in the images that accompany the exercises. Although they have been collected with the intention of making the activities explicit, in turn, these images demonstrate why the result is interesting.

It is also significant that, on at least two occasions during the course, we obtained material with enough and sufficient quality to develop two public exhibitions of the work of practically all the students of the course.

However, what is important is not so much the merit that some chosen images deserve due to their visual power, but rather the large number of images and, what is more important, the variety of students that are represented thanks to these images. Thus, in the list of the images, a large number of the students participate, avoiding the undesired situation of compiling projects that are exclusively the work of one or two students.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

195

The diversity and variety of the result is also evident if we consider the distinctiveness of each one of the exercises and, more importantly, the substantive heterogeneity of the result achieved by each student. This avoids the typical Design Studio situation in which all the exercises seem similar in their solution, strategy and even in their form and style. In this case, the exercises respect an approach, a framework, some conditions and a common format that are all scrupulously accepted and demanded, while at the same time the variety and plural orientation of the solutions is clear.

However, this framework is not only meticulous in terms of its format, but rather the demands of each exercise have been designed in such a way that, just through their definition, they introduce students into the disciplinary method, while at the same time they enhance personal freedom, interest and creative subjectivity.

In this case, freedom at no time means taking liberties. The fact that we enhance the creative subjectivity of the student does not mean that we define it as a relativistic subjectivity. The creative subjectivity would be, in turn, enhanced by all the reading, artistic suggestions, films and so on; thus seeking to ignite interest and creative passion.

At no time do we intend students to master all the cultural references we offer them, that is not the aim of this course. As the content could be considered too high level, the intent is not so much to elevate ourselves but rather to plunge into the creative depths. In this sense there are no limits. Experience proves, year after year, how appealing from the deep awakens in turn depths, "Deep calls to deep at the roar of your waterfalls" (Ps. 42).

Furthermore, this position that chooses to divide the exercises into sequences and short steps is correct. In this way, we avoid apathy and stagnation in design processes. In this second year, in which logically the students still do not have enough resources, they acquire them through different steps and stages that must be overcome. This strategy avoids those rushed deliveries caused by the dreaded end of project deadlines that upset the development of the course and the curriculum.

This strategy is enhanced by challenges and short exercises, such as those defined in Anteprojecting and Sei Zentzu, through which students acquire agility, immediacy and spontaneity in regards to the use and application of different tools and methodologies, as well as regarding the basic representation of preliminary projects.

However, and as a critical point, bearing in mind the future of the course, these short exercises must acquire more weight and a determining range in their evaluative consideration throughout the course. The reason being that the students will not be able to avoid the basic contents of the subject, that they will not be able to hide deficiencies that can be disguised based on extra dedication on their own or based on the insistent corrections with the teacher. These types of situations are more prone in longer exercises, even if they are designed in stages.

That is why we consider posing small challenges or evaluative exams as very appropriate, precisely because in these short-term challenges we compensate another of the critical issues explained below.

In this pedagogy, the students pass through the methodologies that are given by the framework that they take on board in each exercise. They complete this tour not without some difficulty, of course. However, and although we always explain the meaning and objectives of each proposal, it is inevitable that the student at times will exclusively guess in a semi-unconscious way the deepest, the most purely methodological part of all that is taught.

A further and more complex step will be for students to take on board and integrate these tools to the extent that they are able to choose them and discern a differentiated use in a broader and more specific approach. Something that supposedly corresponds to the higher courses or to the final project. But nevertheless,

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method
196

this fact can also be encouraged and intensified, as far as possible, in the second year.

References:

Abalos, I. (2000). *La buena vida.* Gustavo Gili.

Azara, P. y Gurí, C. (2000). *ARQUITECTOS A ESCENA. Escenografías y montajes de exposición en los 90.* Gustavo Gili.

Bachelard, G. (1957). *La poétique de l'espace,* Presses Universitaires de France.

Bachelard, G. (1965). *La poética del espacio* (E. Champourcin, Trad.). Fondo de Cultura Económica (Original work published 1957).

Bergman, I. (1966). *Person*, Sweden: AB Svensk Filmindustri.

https://www.youtube.com/watch?v=tZo0y6RiKlo

Besa, E. (2007). Miguel Fisac, una metodología proyectual. *Espacio, tiempo, forma. Serie VII, Historia del arte, 20-21,* 391-415.
doi: https://doi.org/10.5944/etfvii.20-21.2007.1478

Besa, E. (2015). *Arquitecto, obra y método. Análisis comparado de diferentes estrategias metodológicas singulares de la creación arquitectónica contemporánea.* Tesis doctoral, ETSAM UPM.
http://oa.upm.es/38053/
(Published as a book: Besa, E. (2021). *Arquitecto, obra y método: Kazuyo Sejima, Frank O. Gehry, Álvaro Siza, Rem Koolhaas, Peter Zumthor.* Diseño Editorial.)
(The conclusion and the index published in English: Besa Díaz, E. (2017). Architect, work and method. En IDA: Advanced Doctoral Research in Architecture (1º. 2017. Sevilla) (1157-1179), Sevilla: Universidad de Sevilla. https://idus.us.es/handle/11441/70078)

Besa, E. (2019). #eindakoa# (lo que hemos hecho) Un MÉTODO pedagógico del MÉTODO de Proyectos de Diseño de Interior. *EARI, Educación Artística Revista de Investigación*, 10, 33-63.
doi: https://doi.org/10.7203/eari.10.13763

Blanc, M. (direction and script, novel: Joseph Connolly) (2002). *Embrassez qui vous voudrez (Kiss whoever you want),* Francia-GB: UGC / Mercury Film Productions / Dan Films / Alia Film / France 2 Cinéma.
https://www.youtube.com/watch?v=o5TVGjiRAJI

Blasco Rodríguez, C. (2012). Efímeras: alternativas habitables. *Pasajes arquitectura y crítica,* 124, 14-19.
http://oa.upm.es/19017/

Caragonne, A. (1994). *The Texas Rangers. Notes from an Architectural Underground.* The MIT Press.

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

197

Cirugeda, S. (2009). *Camiones, contenedores, colectivos, Recetas Urbanas.* 03innova24h. http://www.recetasurbanas.net/v3/index.php/es/

Cirugeda, S., Attout, A. y Guzmán, K. (2018). *Recetas urbanas 2018.* MUSAC. Museo de Arte Contemporáneo de Castilla y León.

Colli, S. y Perrone, R. (2003). *Espacio-identidad-empresa*. Gustavo Gili.

Cortés, J. A. y Moneo, R. (1976). *Comentario sobre dibujos de 20 arquitectos actuales.* Escuela Técnica Superior de Barcelona. https://upcommons.upc.edu/handle/2117/90472

De Bono, E. (1986). *Six Thinking Hats.* Viking.

De Bono, E. (1988). *Seis sombreros para pensar* (M. Pandolfo, Trad.). Ediciones Juan Granica (Original work published 1986).

Espinosa García-Valdecasas, A. (2017). Proyectar desde el factor humano. El diálogo con el hombre de Javier Carvajal. *Palimpsesto, diciembre 2017, 17*, 5-7.
doi:
https://doi.org/10.5821/palimpsesto.17.5371

Fernandez, J. (2010). *Educar en ser persona.* Arantzazu Baketik Fundazioa.
(A document that compiles the IZAN proposal of Baketik foundation: http://www.baketik.org)

Ferrer, J. (2009). El proyecto arquitectónico como material de investigación. *A: Jornadas sobre Investigación en Arquitectura y Urbanismo.* "Terceras Jornadas sobre Investigación en Arquitectura y Urbanismo: libro de actas: 17,18 y 19 de junio 2009, Escuela T. S. de Arquitectura, Universidad Politécnica de Madrid". Universidad Politécnica de Madrid (UPM), 2009, 1-8.
URI: http://hdl.handle.net/2117/9552

Ikusmer. (2008-2017). *Trend Files,* Ikusmer, Observatorio del Comercio, Gobierno Vasco (Basque Trade Observatory). http://ikusmer.blog.euskadi.eus/ikusmer-trend-files/

Jones, C. (1970). Design Methods. *Seeds of human futures*. John Wiley & sons.

Jones, C. (1970). *Métodos de diseño* (M.L. López Sardá, Trad.). Gustavo Gili.

Kane, J. (2012). *Manual de tipografía.* Gustavo Gili.

Kanes Weisman, L. (2009). Educator, Activist, Politician. Leslie Kanes Weisman in conversation with Cristina Cerulli and Florian Kossak. *field: a free journal for architecture.* 3(1), 7-22.
Web: https://field-journal.org/portfolio-items/field-3-agency-and-the-praxis-of-activism/

Koolhaas, R. y Bruce, M. (1995). *S, M, L, XL,* The Monacelli Press.

Merleau-Ponty, M. (1964). *Le visible et l'invisible*. Editions Gallimard.

Martínez Santa-María, L. (2019). *Indeterminación ante la enseñanza de la arquitectura.* conarquitectura ediciones.

Norberg-Schulz, C. (2001). *Intenciones en arquitectura.* (J. Sainz Avia & F. González Fernández, Trad.). Gustavo Gili. (Obra original publicada en 1967)

Viaplana, A. (2016). *Proyecto docente.* Cátedra de Proyectos IV, 1988. Escola Tècnica superior d'arquitectura de Barcelona.

Zumthor, P. (2013). *Royal Gold Medal 2013 Lecture.* RIBA.
https://vimeo.com/60017470

Appendix 1: The images in this document include the work of Interior Design Projects second course students, of the 2015-2016 academic year at IDarte:

Alazne Alava. Irati Bideguren. Nerea Blazquez. Ane Espilla. Aitor Fresneda. Irati Galdeano. Ainara García. Izaskun Galdeano. Luis Lezcano. Laura López. Mónica Pérez. Ariadna Murguialday. Unai Oyarbide. Maitane Ucin. Iraia Urquia. Yolanda Zaragoza. Maia Zabalegui. Haira Rivero. Roberto Martinez De Alegria. Zuzen Saez. Leire Martinez De Musitu. Nerea Villaverde. Lara Zudaire. Daniela Rosenova. Claudia Santafe.

Also, one of the images includes work from the previous course (2014-2015):
Andrea Gonzalez. Ainhoa Ibaibarriaga. Goertti Burgoa. Yaiza Diaz. Yunes Ben-gkye. Maddi Florez. Elixabet Egaña. Laura Artolozaga. Bárbara Elezgaray. Karmele Agirre. Patricia Bedoya. Yasmín Estébanez. Eva Gómez Fuertes. Irati Aiartzaguena. David Vitores. Irati Mentxaka. Jone Pastor. Andrea Serrano. Gaizka Mosteiro. Leire Yeregui. Gervasio Ogea. Naiara Rosado. Lucia Rodriguez. Oiane Torreblanca. Andrea Martinez. Claudia Santafé. Estizen Marcaida. Cristina Rios.

Appendix 2
Table 1: competencies, learning outcomes, content, activities and assessment.

			LEARNING OUTCOMES		CONTENT DESCRIPTORS		ACHIEVEMENT CRITERIA + ASSESSMENT	ACTIVITIES
TRA.01 GEN.01 EDI.01 C.01 TRA.02 GEN.08 EDI.04 C.02 TRA.03 GEN.18 EDI.05 TRA.08　　　　EDI.07			LO.01 Conceiving, developing and planning projects and preliminary projects in accordance with technical, functional, aesthetic and communicative requirements and conditions, in order to develop a synthetic and integrative capacity that achieves coherent and unitary projects; within the disciplinary field of interior design, opening it up to other possible manifestations and areas.	not included in the legal decree D.01 D.02 D.01 D.02	The space understood as an integrating element of the disciplinary technical tools that solve the multiple conditions to which the project is subjected. Projects 1: Residential space, the concept of living and The Room. Pedagogical space. Projects 2: public space, commercial space, promotional space, events and communication.	CE.01 CE.02	The student solves projects according to the conditions determined in each exercise. Throughout the course, the student progresses towards the integration of all requirements and conditions: technical, functional, aesthetic and communicative.	Projects in which the difficulty of the conditioning factors and the mode of development vary alternately: place / program / presentation format / completion time / various conditioning factors. Successive advances until a project which is integrative of all aspects (Norberg-Schulz, 2001:143).
TRA.02 GEN.03 EDI.01 C.03 TRA.08 GEN.04 EDI.02 C.04 　　　　GEN.05 EDI.05 　　　　GEN.09 EDI.06			LO.02 In each project and exercise, recreating the relationship between formal language and symbolic language, integrating them into a specific functionality, with the aim of opening the design towards its total and artistic significant dimensions, while said design remains rooted in the function and use that characterize it.	not included in the legal decree	Compositional criteria and generators of the project: - spatial versus formal - conceptual versus objectual - general versus partial Relationship of the constituent elements of a project: form / conceptual structure / functional diagram / image / meaning. Coherent or allegedly incoherent relationship (Koolhaas 1995:227, interpreted in: Besa 2015:166-204; 2021:225-274).	CE.03 CE.04	The student adequately understands the relationship between meaning, function and form in the realization of projects, while he/she moves towards spatial and conceptual conceptions.	Projects with different approaches: exercises with difficulty with regards to functional resolution, compositional and/or organizational challenges, exercises demanding communication and image, significant symbolic challenges. Working with material, syntactic and structural conditions of architecture, at the same time, symbolic, connotative and formal issues (Besa, 2015:300; 2021:399).
TRA.01 GEN.08 EDI.04 C.05 TRA.02 GEN.18 EDI.09 C.10 TRA.03 GEN.19 TRA.08 GEN.21 TRA.13 TRA.14			LO.03 In each condition and situation, recreating and applying methodological procedures of ideation, and basic disciplinary criteria,	D.03 D.10	Alternative and simultaneous use of processes: - divergent / convergent - analytical / synthetic - conscious / unconscious - black / transparent box	CE.05 CE.10	The student learns the different methodological processes of the discipline and is capable of projecting its application towards any future creative requirement.	Each of the exercises is designed for the learning of a methodological process, in such a way that all the exercises generate a framework that provides a whole methodological

Codes (TRA/GEN/EDI)	C	LO	Description	D		CE		
			such as research strategy, innovation and critical and self-critical evaluation of processes, developments and results.		(Jones 1970) - rational / intuitive - instantaneous / dilated		The student adapts and is versatile towards different conditions and difficulties, turning them into a methodological tool and a creative opportunity.	palette. Through this palette students assimilate the content of a subject such as Interior Design Projects, in fact a subject that is extremely difficult to define and specify.
TRA.06 GEN.17 not included in the legal decree — not included in the legal decree TRA.07 GEN.18 TRA.08 GEN.19 TRA.09 GEN.21 TRA.10 TRA.13 TRA.14 TRA.15				D.05 D.08 D.09	Critical assessment as a method: the project process as a round trip, going over ideas, permanent self-evaluation and co-evaluation.	not included in the legal decree	The student develops, and also accepts, criticism and evaluation in self-critical processes, evaluative and co-evaluative activities.	Individual and group corrections and critique, public presentations. Individual and group work. Some dynamics, almost performative, that force oneself to participate experientially in the critique and in the experience of designing.
TRA.04 GEN.02 EDI.10	C.09			D.06	Representation (LO.5) as a methodological design tool.	CE.09	The student uses technological and communication resources, not only in the presentation, but also in the project process as a methodological tool.	Exercises that are conditioned in their representation system. Orienting representation towards its methodological potential to conceive a project.
GEN.08 EDI.11 GEN.19 GEN.20								
TRA.02 GEN.08 EDI.04	C.05			D.04 D.10	Projectual (projective) research. Project as research (Ferrer, 2009).	CE.05 CE.10	The student investigates generating his/her own unique methodology that solves the problems of each situation.	Exercises that require a research process just from their approach and conception.
TRA.08 GEN.18 EDI.05	C.10							
TRA.14 GEN.19								
TRA.02 GEN.08 EDI.12	C.10			D.10	Research of historical and contemporary references.	CE.10	The student investigates from a projective point of view, looking for the conceptual and methodological content of the subject.	Critical and methodological research of historical and contemporary projects with the intention of extracting and deducing their methodological approaches.
TRA.08 GEN.12 TRA.14 GEN.19								
TRA.07 GEN.05 EDI.10	C.08	LO.04	Generating, anticipating and planning new social and organizational models in accordance with social, economic, political, technological and environmental changes, in order to innovate and redesign use and function; as well as social inclusion and equality within human diversity, in a framework of environmentally sustainable well-being.	not included in the legal decree	Knowledge and development of sensitivity to the users of the design.	CE.08	The student knows the peculiarities of the receivers of the information and creates the design based on their user experience.	Analysis and prospection of commercial premises, interviews with shop owners and users, Empathy Map. Working with the project programme: developed by the student or previously defined by the teacher.
TRA.09 GEN.06 EDI.12 TRA.10 GEN.07 EDI.15 TRA.11 GEN.10 GEN.11 GEN.13 GEN.14 GEN.20								
TRA.07 GEN.06 EDI.10	C.07			not included in the legal decree	Design as a possibility and opportunity to recreate non-individualistic social relationships and promote social and environmental integration.	CE.07	The student enables equality and social inclusion within design projects.	Description and development of family units, later we use them to create the briefing together with a partner.
TRA.10 GEN.07 EDI.12 TRA.11 GEN.10 EDI.15 GEN.11 GEN.13 GEN.14 GEN.20								
TRA.02 GEN.16 EDI.15	C.06			not included in the legal decree	The method of convergence and synthesis (LO.01) as the search for the best and most sustainable solutions.	CE.06	The student solves projects incorporating environmental sustainability and human well-being. Also the evaluation criteria included in LO.01.	This course deals with environmental issues transversally, through integration and synthesis. Also through a transversal awareness that the reader will perceive in all the exercises. The course leaves bioclimatic questions for its
TRA.11 GEN.18								

		LO	D	Content Descriptors	CE	Achievement Criteria + Assessment Indicators	Standard Activities
							specific subject in the following year.
TRA.11 GEN.09 EDI.01 TRA.12 GEN.19 EDI.02 EDI.05 EDI.06	not included in the legal decree		not included in the legal decree	Going beyond the present and common stereotype using different alternatives in order to overcome mere conventionality: - memorize the archetype, past. - play with the stereotype, present. - project the ultra-type, future. (Besa 2015:290-291; 2021:386-387) Type and typology as an architectural alternative to the stereotype.	not included in the legal decree	The student learns to overcome the inherent tendency towards reduction, schematism and the already known dominant stereotype.	This course drives the exercises towards alternative and diverse extremes, in their approach as well as in their theoretical references, seeking to shake the preconceptions that block us.
TRA.09 GEN.10 EDI.09 TRA.10 GEN.13 EDI.12 TRA.11 GEN.17 TRA.12 GEN.19 TRA.15	not included in the legal decree		not included in the legal decree	Going beyond the activities that are linked in a univocal way to interior design, in search of alternatives that open the profession to other possible manifestations.	not included in the legal decree	The student projects the strategies learned towards creative and open thinking that exceeds the mere disciplinary limit.	Alternative exercises, collaborations with other entities outside the school. Development of projects that are solely and exclusively an event, an action.
TRA.02 GEN.02 EDI.10 C.08 TRA.04 GEN.11 EDI.11 C.09 GEN.20		LO.05	D.06	Representing through systems applied to the presentation and communication of projects: plan and section, axonometry, perspective, model, photomontage, story-board, videos (in parallel subjects). Presenting and communicating projects orally. Mastering the techniques and technology for the representation of projects: CAD, Ohotoshop, Illustrator, etc. (Sketchup is reserved for the moment when students learn to render as well, while we used it exceptionally as a tool for projects that need an axonometric representation, not for spatial projects, or interiors that need to be conceived from plan-section abstraction)	CE.08 CE.09	The student communicates design for it to be understood according to the receiving context of the information. The student integrates and discerns the representation and presentation systems and techniques for the complete definition and communication of the design, both for its understanding and acceptance.	The representation system: plan, section, axonometric representation, model, perspective. They are conditioned for each project of the course, not all projects are done or done in the same manner. This leads to the development of a large number of systems, formats and techniques throughout the course. Resolution time also becomes a methodological stimulus: from projects planned for 6 weeks, to two-hour challenges that can be reduced to two minutes.
					not included in the legal decree	The student uses the systems coherently with the project and design, integrating the disciplinary codes correctly. * The legal decree lacks this question of disciplinary codes.	

Note where row 3 LO column: "Representing and communicating projects and ideas in a manner appropriate to the behaviour of the receiver of the design process and their experience as a user, through the systems, techniques and technologies of the subject, as well as other extra-disciplinary alternatives."

Note 1: This table is modified with respect to the Spanish version (Besa, 2019).
This table has emerged from the official model of the school, which is vertical. In this case, the table transforms to a horizontal format that connects the Learning Outcomes (LO), the Content Descriptors, the Achievement Criteria + Assessment Indicators and the Standard Activities.
This table is made completing the model provided in the training sessions of the 2018-2019 academic year offered by Josu Ayerbe.

Note 2: The table links the definition of the Spanish legal decrees in force regarding:
Transversal Competencies (TRA), General Competencies (GEN), Specific Competencies of Interior Design (EDI), Competencies of the Subject (C) Content Descriptors of the Subject (D) and Subject Assessment Criteria (CE)
(according to the Royal Decree: Real Decreto 633/2010, de 14 de mayo, and the Decree: Decreto 238/2012, de 21 de noviembre)

Journal of Design Studio, v:4 n:2
Besa, E., (2022). #eindakoa (what we have done): A Pedagogical Method of Interior Design Studio Method

202

Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography

Pedro Leão Neto 🆔
Faculty of Architecture of the University of Porto (FAUP), Porto, Portugal

Abstract: This paper synthetizes theoretical aspects of photography related to architecture, city and territory, as well as the case studies coming from the research project Visual Spaces of Change, focusing on the use of photography to investigate the dynamics of architecture and urban change. The project proposed to engage researchers and artists from the fields of architecture, art and image in the creation of visual narratives that promote public debates and a new understanding on urban change.

The methodological framework adopted an integrative approach regarding Architecture, City and Territory integrating a series of open talks, public presentations and exhibitions of contemporary photography projects related to the subjects of Architecture, City and Territory during the years of 2019 and 2020 on several public spaces of Oporto City. A pedagogical experiment was also taken that builds up on previous research and had as base the several impressions from the students collected through quantitative and qualitative survey.

The potential of visual methods for communicating the identity and transformation of architectures and public spaces are made clear through the discussion of photography (including its uses, methods and approaches) as a valuable research tool and technique to disseminate architecture and public space problematics in contemporary cities. The paper presents the results of the qualitative survey made to the audience of four site-specific exhibitions comprehending visual narratives produced in the context of the research project, as well as the survey made to students of Architecture from third year (1ºcycle) in the Faculty of Architecture of University of Porto (FAUP).

Keywords: Visual spaces of change, Urban pathways, Architecture, Photography.

Photography in the field of architecture, city and territory

The uses of photography as a research instrument in the fields of architecture, city and territory follows the proposition that valid scientific insight in social and natural sciences can be acquired by observing, analysing, and theorizing its visual manifestations (Pauwels, 2010). From this perspective, the use of photography may contribute to the creation of a knowledge-enabling environment that allows a specific study of architectural forms and spatial realities, its transformations and

Journal of Design Studio, v:4 n:2
Neto, P. L., (2022). Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography

203

appropriations, rendering visible aspects of urban spaces where people socialize and interact which would be difficult to perceive without the use of images and photography.

The use of visual methods and tools in research may open the door to a deeper understanding and interpretation of social realities but visual culture continues to be controversial (Albrecht, 1991). Visual studies have been criticized for their insufficient methodological instruments of discourse analysis (Bal, 2002), and certain researchers even point out that an excessive emphasis on visualization and imagery can impoverish communication (Bourdakis, 1997). The discussion on the validity of visual evidence is particularly polemic when it comes to the analysis in the investigation of urban matters and the respective social fields (Schnettler, 2013). In fact, while the use of photography has massively penetrated the fields of architecture, city and territory, there is limited research on the use of visual data in the study of urban matters. This results in shortcomings on current research in visual studies, often facing severe criticism of disregarding methodological issues, including problems of unintended bias, lack of rigour and active misrepresentation (Rose, 2000).

The development of an informed and independent reasoning by a visual researcher and its expression through a photographic series implies the possibility to critically think the political, economic and social dimensions of the object being analysed. From this perspective, the selection of the appropriate methods and the pertinence of its uses according to the specificity of the problem is paramount for developing a visual communication strategy of the object being studied. As Banks argues, the capacity to correctly select and manipulate visual information, constitutes the unifying element for deciphering how people build the world around them, what they are doing, or what is happening to them in terms that are meaningful and offer enriching perspectives (Banks, 2007). An integrative approach towards communicating, exploring and perceiving architecture and public space transformation requires a number of theoretical and practical challenges, but it is not clear what might be the common level of abstractness of representation methods to be used or the level of complexity of the design issues to obtain an effective communication with the public, e.g., type and level of realism of representation to be used.

Therefore, the type of information that it is intended to communicate can and should explain the use of the different types of representation methods (Neto, 2003). Thus, photography can be combined with other materials and forms of visual expression, introducing an admittedly subjective view that uses the theme and subject matter of architecture and urban spaces to communicate something more than is common in architectural photographs. Through these interdisciplinary approaches, the articulation of photography with other analogue and digital supports of image may be explored, sometimes incorporating texts, personal stories, drawings and other images in addition to photographic images. The combined use of these resources addresses particularly useful aspects in the study of architectural objects and urban landscapes, providing the researcher with essential research tools and communication strategies as seen in the work of, e.g., Martino Stierli; Luca Galofaro; Klaus Bollinger, Florian Medicus and Kiesler Privatstiftung Wien; Eric Margolis and Luc

Journal of Design Studio, v:4 n:2
Neto, P. L., (2022). Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography
204

Pauwels; Theo Van Leeuwen and Carey Jewitt and Gillian Rose (Stierli, 2018).

A visual researcher can explore the potential of image in its broadest sense, encompassing photography as an object of thought and production of meaning with the possibility of creating fictional and symbolic worlds. Photography has the ability to move between reality and fiction, rendering visible innovative visions and introducing new links between realistic representations, fictional worlds and symbolic meanings. These features are identifiable in the work of several photographers, for example: Filip Dujardin´s work addressing the potential of digital manipulation of images to represent new spatial forms and architectures and creating new imaginary spaces (Gadanho, 2014); Bas Princen´s work rendering visible transformations of urban landscapes that have not yet occurred and altering notions of time (Princen, 2019); Paulo Catrica´s work on landscape and architecture that constitutes a synthesis and insightful perspective of a recent past, and present realities of hybrid city spaces (Teixeira, 2018); Paolo Rosselli´s and Philip Schaerer´s work creating exploratory and fictional images using specialized digital montage techniques (Rebelo, 2016; Bergera, 2016).

Also, in the sense given by Walter Benjamin when speaking of photography as a constructive and depositary object of cognitive forms, capable of establishing a connection between the real and the imaginary (Benjamin, 1983). Or remembering Susan Sontag when she mentions that all the photographs witness the relentless dissolution of time (Sontag, 1977), or, Roland Barthes who says that photography is unclassifiable because it is always invisible, we never see photography in itself but rather what it gives us to see

(Barthes, 1981). For example, the ephemeral character of memory, its apparent fragility and possibility of partial or total disappearance, as well as its complexity, is enough to think that the act of remembering always implies the recovery, from the preserved memory, of something which has already happened, and therefore, incorporates a diffuse temporal structure.

It is important to mention these less evident dimensions of memory related with space, where fictional or artistic expression assume significant relevance for understanding architecture as a comprehensive discipline and practice capable of integrating psychological domains. The city is understood as a living organism, a rich and multifaceted space defined by various experiences and architectural programs that result from the knowledge, beliefs, values and customs characterizing different social contexts. Through this process of memory and experience of space, the visual researcher and audience may find in photography appropriate tools to interact with the physical environment, developing relationships and creating connections with the surrounding space, turning anonymous spaces in meaningful places to which people are connected and that therefore, compete for the construction of their identities.

In addition, connections can be made between identity and place: meaningful spaces, with which there is a certain familiarity and/or a sense of being at home; and between identity, feeling of disorientation or anxiety, and that which is fragmentary and/or an experience of non-place. The photographic image communicates not only the perceptions gathered from these spaces but also

emotions, whether they are sympathies, inclinations, hatreds or other psychic sensations: the set of experiences that move from physical space to the psychic and emotional, transforming the images of photography in the medium through which we establish with these places, known or imagined, a certain understanding. The photographic image always has some influence on how the past is remembered and how memories are constructed in an uncontested way by the various images of past events or situations.

The weight and intentionality contained in the act of photographing proposes that photographic images can be instruments of representation and conception in the practice and discipline of architecture and urban thinking that demand a comprehensive understanding of visual culture, capable of integrating and giving meaning to its various dimensions (technical, social, economic, historical,

political and artistic). This means, among other things, to perceive the photographic image as an instrument of architectural thought beyond a constructive or technical representation and, therefore, a medium of conceptualization in the universe of architecture – the image is used as an instrument of design in architectural practice and theory.

It is relevant to refer the importance of photography being able of communicating the important and singular relationship that architecture can establish with the context in which it is inserted, the poetics of the ensemble, and the work itself (fig.1.), as well as being used to construct a narrative capable of transmitting a sense of sequence of spaces and direction of movement along the lines of what Le Corbusier termed as Promenade Architecturale (Samuel, 2010). In fact, reflecting on the importance of the path for understanding architecture, it is important to keep in mind that our
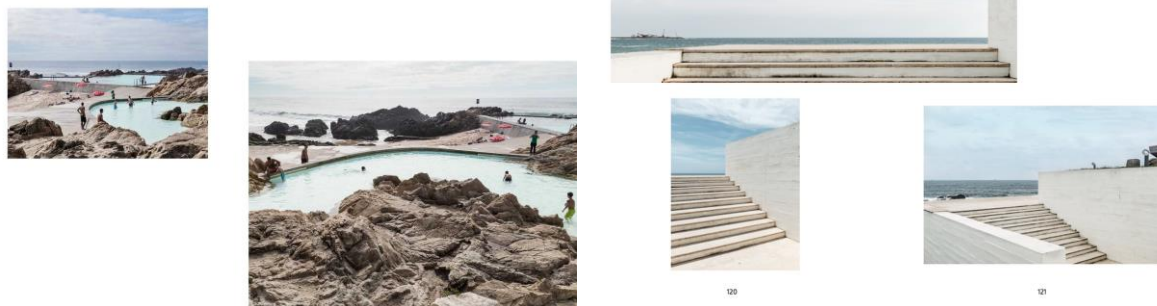
Figure 1: Left Images is a Diptych of Álvaro Siza´s Piscina das Marés (Marta Ferreira) and the Tryptic on the Right Side is a Sequence of Different Vistas When Walking Towards Álvaro Siza´s Boa Nova Restaurant (Helder Sousa), VSC Exhibition at FAUP 2020 (Source: VSC)

perception of space is linked in general to the direction of our path, which involves movement and displacement (Uluoglu, 2006; Pallasmaa, 2008). To summarize, it is important to create through photography visual narratives that might afford the opportunity to explore and communicate, via an architectural and fictional point of view, the real space and their experiences, telling us a story about the spaces through a journey composed of successive moments, ones that are quite close to a real experience. The weight and intentionality contained in the act of photographing proposes that photographic images can be instruments of representation and conception in the practice and discipline of architecture.

Methodology
The case studies of the Visual Spaces of Change (VSC) research project promoted a series of open talks, public presentations and exhibitions of contemporary photography projects related to the subjects of Architecture, City and Territory during the years of 2019 and beginning of 2021. These initiatives intended to broaden the discussion about how architecture transforms and is transformed by trends and ways of living, using as its subject of study Porto's Metropolitan Area.

The methodology developed in this pedagogical experiment builds up on previous research combining blended learning and e-learning with visual research methods and photographic techniques that enable students to manage the whole process of conception, development and implementation of photography projects in a collaborative learning environment. The use of these different components allowed to enhance the articulation of activities between teaching staff, researchers and students, enabling the exchange of knowledge and explore scientific and technological capabilities of each of the participants. The learning activities of the VSC project have been structured in two main technical and artistic components which enable the researchers to develop individual photographic projects inserted in a collective pedagogical strategy containing various communication tools, representation methods, visualization techniques, and involving multiple interaction levels and new ways for the researcher to understand and relate with various aspects of the public space.

The methodological framework has been designed with special attention to the multidisciplinary character of this project, complementing each other and putting in relation the various aspects covered within this integrative approach regarding Architecture, City and Territory. Within this general approach, the researchers involved in the VSC project developed empirical investigations in concrete case studies of selected urban spaces, confronting the present reality of specific places with documentary photographs and original photographs taken from chosen viewpoints of the study objects. Practical exercises of image manipulation and diachronic reconstitutions of certain landscapes organized in temporal layers, allowed to visualize changes in the configuration of public spaces – these diachronic reconstitutions were not only based in the research of historical records, but were also combined with other techniques of photo montage and the overlap of temporal sequences, among other techniques of image manipulation from existing urban spaces.

The identification of the VSC public spaces for this first case study were restricted to a set of Metro Stations located not so far apart

from each other – because of technical and administrative reasons. This first case study was complemented with the second case study, a major exhibition of those same Contemporary Photography projects that took place at FAUP using its outdoor and indoor spaces, in order to give force to some of the results obtained with the former case study and maximize its experimental potential. The collection and systematization of visual information about the selected places constitutes the working database of the research, which is an ongoing process organized in three main information blocks: cartography (maps and satellite images), photography (document and artistic registries of selected locations), and historiography (monographs and previous research). These elements have been used in order to characterize the main features of each photographic project, providing the means to create a

comprehensive analysis of the territory under study. The contextualization of the collected material focused on the evolution of architecture and public spaces and the modes of appropriation of the cultural and symbolic meaning of particular places. Informed by the material collected for each architecture selected in the data collection within the VSC project, empirical investigations in the field has been held in order to compare the present reality of each specific place, producing original current records of the same viewpoints found in the data collection surveyed. In this context, a set of critical visual narratives have been constructed about architecture, public space and their experiences, through the art and technique of photography, it was necessary to adopt a photography teaching strategy that integrated, from the outset technical and aesthetic aspects. This meant, first, to convey the idea that photography is a
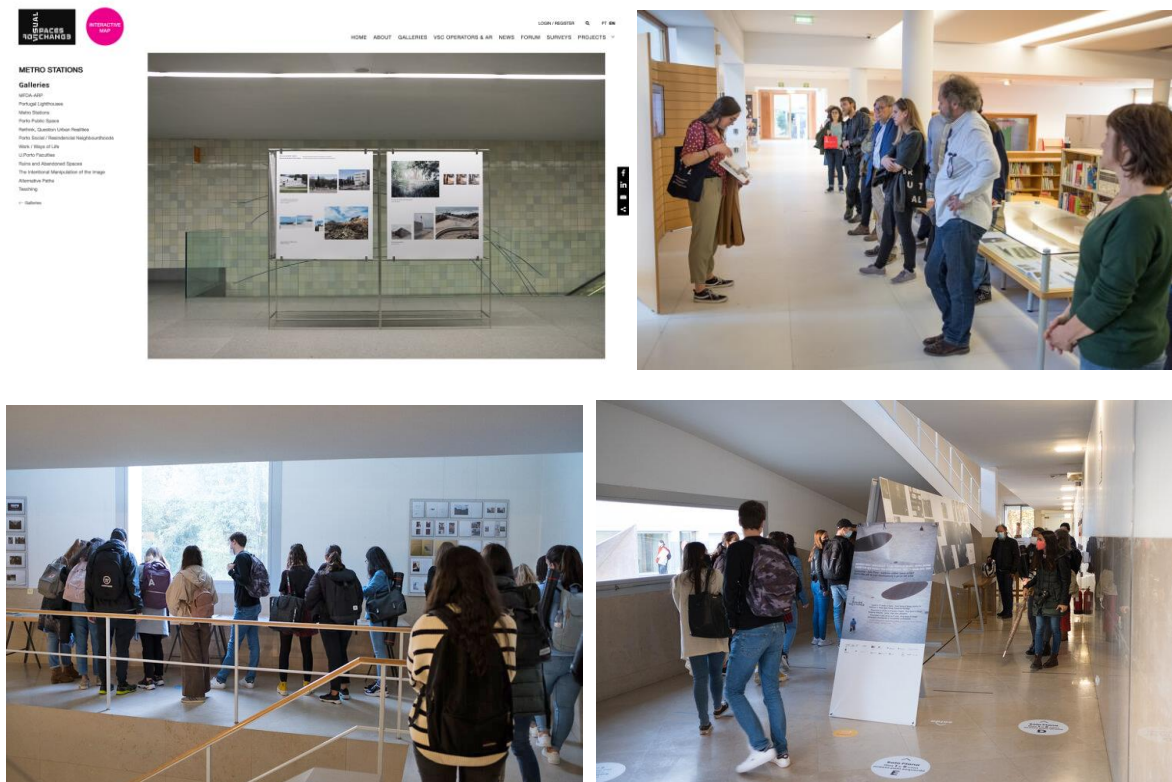
Figure 2: *These Images Starting From Top Left Clockwise Direction Display The Visual Spaces of Change Online Platform; Debate and Presentation That Occurred During Ci.CLO 2019; VSC Exhibition at FAUP 2020 (Source: VSC)*

unique form (art and technique) of visual language and as such is based on a specific visual grammar.

In both case studies, this research explored the universes of photography and editorial in two complementary strands: (i) The exhibition of Contemporary Photography Projects in several public spaces of collective use located in Porto's Metropolitan Area and (ii) an Exhibition of alternative publications for the dissemination of authors and photographic works with a particular focus on Architecture, City and Territory.

A total of seven photography projects were exhibited, plus one video project. The seven photographic projects are: Fendas Intemporais by Jiôn Kiim and Artur Leão; Clareira by Ana Miriam; Ode by Edu Silva; Piscina das Marés by Marta Ferreira; Contínuo by Sérgio Rolando; Casa de Chá da Boa Nova by Hélder Sousa; Momento. Perceção – Representação by Sofia F. Augusto. The exhibited video project is called Déjà Vu – Uma Lembrança do Presente, a work by Leonardo Motta Campos (AoLeo).

During the exhibitions, that took place between 2019 and the beginning of 2021, a series of public presentations of the projects with the presence of the authors was organized, in order to promote the debate about the multiple representations of the public space as well as its own process of change (Figure 2). The activities proposed in both case studies were oriented towards an understanding of the processes of interrelations between Architecture, Art and Image, identifying the points of articulation of the ethical and aesthetic dimensions of these universes.

The Questionnaires and Its Methodology
The questionnaires applied in the context of each exhibition held within the VSC project for both case studies adopted an on-site approach. It was explained to the respondents that the data provided would only serve for qualitative purposes in the specific context of the scope of the project Visual Spaces of Change, and subject privacy has been guaranteed. Surveys were made face-to-face and individually, and wherever possible the conversation has been recorded, making sure that the area where the surveys were conducted was sufficiently isolated from noises that would impede this recording. Three publicly announced exhibitions of contemporary photographic projects took place. In result of the interest in having the respondents' qualitative evaluation of the exhibition of photographic projects and the questionnaires, several open-ended questions were included in the questionnaires. To test both the exhibition of photographic projects and the content of the questionnaire before conducting the public presentations, some adjustments were made to the content of the questionnaire given to the public in order to facilitate the respondents' answers.

Results
The main results of the research were obtained through interviews and questionnaires used for collecting quantitative and qualitative information about respondents' perceptions towards specific public spaces of Porto's Metropolitan Area. A broad set of issues have been addressed, directing the questions to aspects related with spatial experiences and subjective perceptions of urban transformation. The key aspect addressed in the questionnaires in both case studies was the impact of each photographic project in individuals' perceptions

regarding the transformations of the physical spaces selected as objects of study within the VSC project, reflecting questions about the processes of change that occurred over time, driving the conversation towards individual memories of these places by the respondents.

We will not describe in this paper the results obtained in the first case study, which can be consulted in other publications19, but will refer to some of the most interesting results obtained with second case study of FAUP and compare these with former and draw some possible deductions.

For the second case study, a pedagogical experiment was taken that builds up on previous research combining blended learning and e-learning with visual research methods and photographic that enabled students to manage the whole process of conception, development and implementation of photography projects in a collaborative learning environment. The results from this case study had as base the several impressions from 34 students collected through quantitative and qualitative surveys.

A significant result of the questionnaires concerns the high percentage of students considering the exhibition of the photography series and visual narratives important for: (i) encouraging a site visit to the architectures and places being communicated, (ii) for stimulating critical thinking about the architectures and places being communicated, (iii) for modifying our perception for those spaces giving a new insight about the architectures and places being communicated (Figure 3).
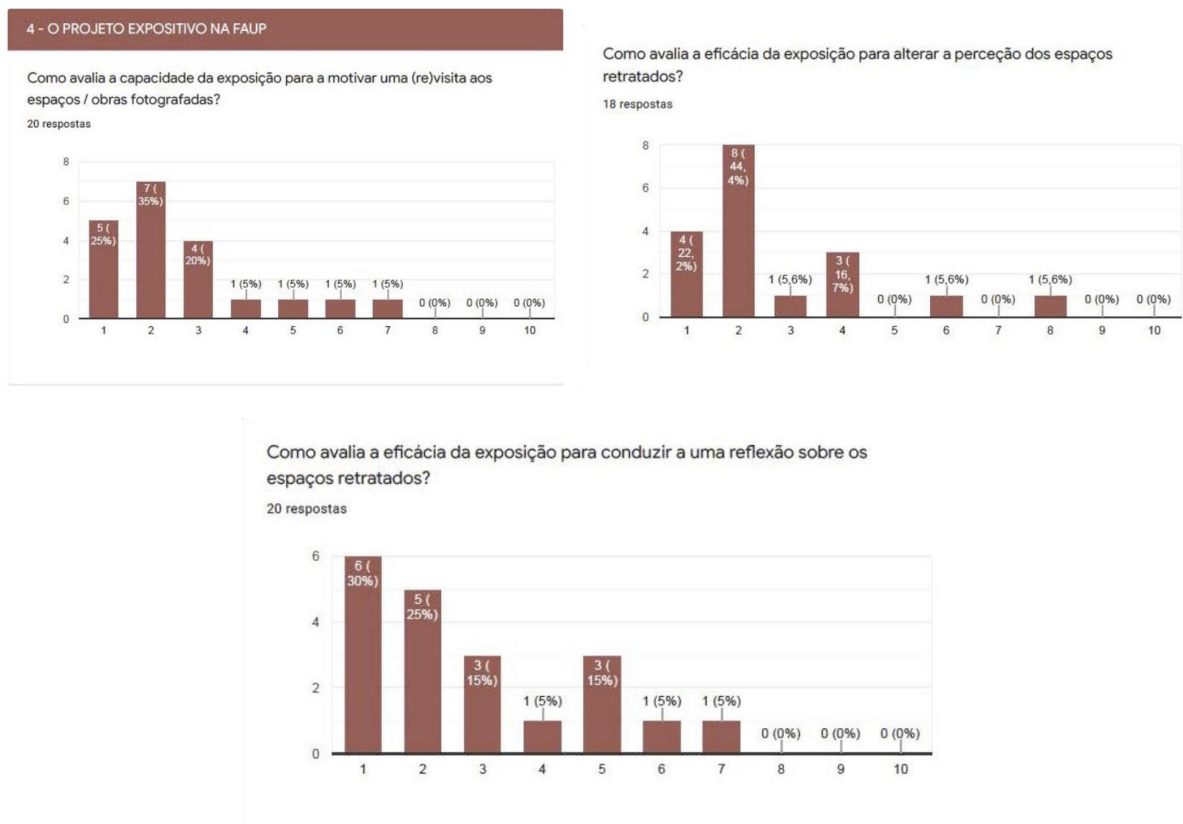

Figure 3: These Charts Starting from Top Left Clockwise Direction Display the Data Obtained from Questions (i), (ii) and (iii) (Source: VSC).
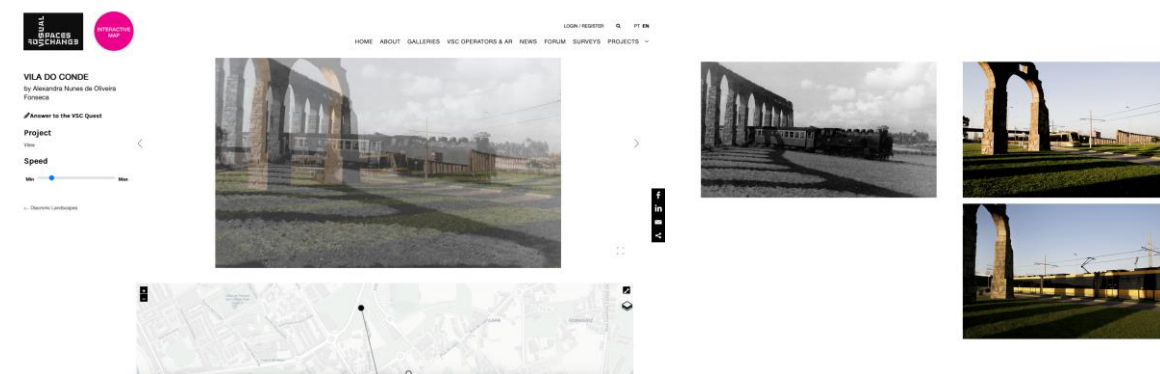
Figure 4: *These Images Starting From Left Display Open Space Presentation to Students and the Right image a Visit to Indoor Exhibition With Tables For Book Format and Videos, FAUP 2020 (Source: VSC)*

These results confirm the importance given to the same issues by the respondents of the 1st case study, just to make a case in point, namely issues as "To what extent your perception about the spaces portrayed has changed?" and "To what extent do you think this exhibition enriches the debate about architecture, public space and urban transformation?", where a large majority of the respondents recognized that the photographic projects had an impact on their perception about the architectures and places portrayed (Neto; Silva, 2019).

Also, based on the overall results of the queries of both first and second case studies, we can sustain that these initiatives were successful in promoting the debate on the current dynamics of use and appropriation of certain spaces in Porto's Metropolitan Area. This happened during the 1st case study exhibitions / debates and now with the students in this 2nd case study, which proved to be an important Agora to trigger the debate about the importance of architecture and public spaces, as well as to

reflect about the best ways to communicate and talk about these issues.

While it is not possible within the limits of this paper to present an exhaustive list with the contributions made by the respondents (students) its important, however, to mention their opinion on certain aspects related to visual strategies and ways of communicating architecture through a photography series. One aspect is the importance of the exhibition to integrate several supports (videprojection, panels with visual narratives and the photographic series and text about the architecture being communicated in book format and online gallery). Then, to have the curator or authors of the photographic series of the exhibition explaining the visual narratives and to have a space and time for open discussion and critical thinking about architecture and public space based on the exhibition (Figure 4). Finally, it is worth to mention that the different kinds of visualization of each photographic series offered by the VSC Galeries were considered very important for the

Figure 5: These Images Starting From Left Display the Diachronic Landscapes Gallery, FAUP 2020 (Source: VSC).

individuals' perceptions regarding the transformations of the physical spaces and the architecture being communicated, namely the most sophisticated Gallery called Diacronic Landscapes (Figure 5).

Being still difficult to clearly find a pattern regarding the opinions of the public in 1st case study and students in 2nd case study about the impact of the VSC project in the debate on architecture, public space and urban transformation, we can see that the positive opinions of the younger age groups of 1st case study are reinforced by the opinion of the students in this 2nd case study, namely a positive opinion about the extent to which the exhibited photographic projects enrich the debate and perception about architecture and public spaces and of how these are used by people.

Conclusion

The self-replicating potential of this open public and pedagogical experiment will allow to expand communication and interaction capacities between the public, students, researchers and institutions, namely opening academia to society and allowing the creation of synergies between them. It is expected that the VSC platform will potentiate interaction, feedback, and networking among the participants in a

pedagogical process designed to structure, represent and expose individual and/or collective interpretations of their social reality, stimulating the capacity of the public and academic community to understand and to critically think and act over its transformation. If and when the capabilities of this case study are used in its fullness, these may prove the potential of image for broadening horizons both for academic teaching, learning and research, making citizens in general as well as the academic community more conducive to the construction of new spaces of political discussion and social intervention.

The various photographic projects and site-specific exhibitions facilitated the access to its often- invisible problematics and language, creating localized forums for discussion of perceptions and memories of the city, while contributing to the dissemination of a language that will allow public participation in future discussion on the transformations of urban spaces. And, in doing so, addresses issues such as the need for correctly selecting and manipulate visual information, with the objective of allowing a richer and more comprehensive experience and understanding of architecture and public space.

These distinct photographic projects, with their visual narratives, contributed to enrich and inform the perception and memory of the spaces photographed, while creating "visual pathways" to intentionally interfere with the territory in a self-reflective representation of its own process of change. They give visibility to spatial and temporal aspects that are difficult to perceive without the purposeful use of photography and imagery, which reinforces the claim of photography as an object of thought and production of meaning for rendering visible transformations of architecture and urban landscapes and altering notions of time. The proximity between these visual narratives connected by the Metro do Porto, its stations and urban pathways suggest a network, an "Open Museum" in the metropolitan area, which extend their reach to collectively transform imaginings of the city.

The questionnaires addressed the impact of each photographic project in the perception of the physical space's transformation, its spatial experiences and subjective perceptions. The results indicate that a large majority of the respondents recognized that the photographic projects had an impact on their perception of the architectures and places portrayed in the exhibitions, and also on the role of the photographic projects in this process.

As a general conclusion, we have enough elements to confirm that the choice of the communication strategy adopted in both case studies for each photographic project should depend on a number of variables to be taken into account, namely the possibility of the authors to be present in live sessions explaining their visual narratives to the public and the use of different support and visual strategies. The research conducted so far confirms that the photographic projects developed by the researchers and students involved in the VSC project made a useful contribution to make the general public more conscious and to participate in problems of common concern regarding the transformation of concrete public spaces, engaging to the general public in specific issues. The present study certainly confirms this potential while exposing some shortcomings regarding its impacts on urban change. However, it is remarkable that the potential of bringing about real change in urban matters is significantly potentiated by making the research products of the VSC project available online, which will be happening in the near future with more force, allowing a more dynamic interaction between the locations where photographic projects are being developed, and the general public, as well as enabling to communicate diverse aspects of these spaces from various perspectives and disciplinary backgrounds.

Journal of Design Studio, v:4 n:2
Neto, P. L., (2022). Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography
213

References:

Albrecht, G., (1991). "ÈVom Kšnigsweg zum Marterpfad? Soziologische Frage-stellungen und Methoden der Filmanalyse", in Filmanalyse InterdisziplinŠr, edited by H. Korte, and W. Faulstich, 73Ð89. Gšttingen; Hunziker, P., Medien, Kommunikation und Gesellschaft. EinfŸhrung in die Soziologie der Massenkommunikation. Darmstadt, 1988;

Bal, M., (2002). Kulturanalyse. Frankfurt a. Main: Suhrkamp;

Banks, M., (2007). Using Visual Data in Qualitative Research. London: SAGE;

Barthes, R., (1981). Camera Lucida: Reflections on Photography, New York: Hill and Wang;

Bergera, I. (2016). On The Surface: Photography And Architecture, Crossing Borders Shifting Boundaries – interview Paollo Rosselli,   Scopio Network. Online 21/08/2020, https://www.scopionetwork.com/blog/2018/11/5/interview-paolo-rosselli

Benjamin, W., (1983) "The author as Producer", in M. Jenning (Ed.), Walter Benjamin: Special writings Vol. 2, 1927-1934, 768-782. Cambridge, MA: Harvard University Press;

Bollinger, K., Medicus, F. and Kiesler, P.W., (eds) (2015). Endless Kiesler. Birkhäuser, Edition;

Bourdakis, V., (1997). "Virtual reality: a communication tool for urban planning." CAAD-towards new design conventions : 45-59;

Denzin, N.K., "ÈReading FilmÑFilme und Videos als sozialwissen-schaftliches Erfahrungsmaterial", in Qualitative Forschung. Ein Handbuch, U. Flick, E. v. Kardoff, and I. Steinke (Eds), 416Ð428. Reinbek bei Hamburg, 2000;

Gadanho, P., (2014). Filip Dujardin: Fictions. Berlin: Hatje Cantz, 2014;

Koutamanis, A., Ongoing research project on architectural representation, (Delft: University of Technology), 1997. online at http://130.161.162.100/koutmanis/research/representation;

Loizos, P., (2000). "Video, Film and Photographs as Research Documents", in Martin W. Bauer & George Gaskell (Eds.), Qualitative researching with text, image and sound. A practical handbook, 93-107. London: Sage;

Margolis, E. and Pauwels,L. (2011). The SAGE Handbook of Visual Research Methods, London: SAGE;

Neto, P., (2003). "Design communication: Traditional representation methods and computervisualization", Visual Resources19, no. 3, 195–213;

Neto, P. ; Silva, E., (2019). "Visual Spaces Of Change: Metodologia de Estudo e Comunicação da Cidade e da Paisagem Urbana Através da Fotografia Documental e Artística de Arquitecturas, Cidades e Territórios". 3ª Conferência Internacional Ética, Política e Cultura. NOVA FCSH, Colégio Almada Negreiros, Lisboa, 2019. online at https://www.visualspacesofchange.arq.up.pt/vsc/wp-content/uploads/2021/07/I_3ConferenciaInternacionalEPC_BookofAbstracts.pdf

Journal of Design Studio, v:4 n:2
Neto, P. L., (2022). Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography

214

Pallasmaa, J., (2008). The Architecture of Image: Existential Space in Cinema. Helsinki: Rakennustieto Publishing;

Pauwels, L., (2010). "Visual Sociology Reframed: An Analytical Synthesis and Discussion of Visual Methods", in Social and Cultural Research: Sociological Methods & Research, 38, 545–581.

Princen, B., (2019). "Ringroad (Houston), 2005: The Construction of an Image". Sophia Journal, V.4 (1), pp 37-46;

Rebelo, C. (2016). On The Surface: Photography And Architecture, Crossing Borders Shifting Boundaries – interview Philipp Schaerer, Scopio Network. Online 21/08/2020, https://www.scopionetwork.com/blog/2018/11/5/entrevista-philipp-schaerer;

Rose, D., (2000). "Analysis of moving pictures", in Martin W. Bauer & George Gaskell (Eds.), Qualitative researching with text, image, and sound. A practical handbook, 246-262. London: Sage;

Rose, G., (2012) Visual Methodologies: An Introduction to Researching with Visual Materials. London: Sage;

Samuel, F. (2010). Le Corbusier and the Architectural Promenade. Basel: Birkhäuser;

Schnettler, B., (2013). "Notes on the history and development of visual research methods", InterDisciplines: Journal of History and Sociology, 4(1), 41–75, ;

Sontag, S., (1977). On Photography, New York: Penguin;

Stierli, M. (2015). Montage and the Metropolis. Yale University Press. Yale,

2018; Galofaro, L. An Atlas of Imagination. Amesterdam: IdeaBooks;

Teixeira, S. (2018). Interview Paulo Catrica. Scopio Network, Online 21/08/2020: https://www.scopionetwork.com/blog/2018/11/5/interview-paulo-catrica

Uluoglu, B., Ensici, A., Vatansever, A. (eds.), (2006). Design and Cinema: Form Follows Film, Cambridge Scholars Press;

Van Leeuwen, T. and Jewitt, C. (Eds) (2001). Handbook of Visual Analysis, London: Sage;

Van Leeuwen, T. and Jewitt, C. (Eds), (2001). Handbook of Visual Analysis, London: Sage;

Ventura, S., A ambiguidade da fotografia de arquitectura enquanto prática artística, 2019. Online 21/08/2020 http://www.jornalarquitectos.pt/pt/forum/cronicas/a-ambiguidade-da- fotografia-de-arquitectura-enquanto-pratica-artistica

Journal of Design Studio, v:4 n:2
Neto, P. L., (2022). Visual Spaces of Change: Self-reflection on Architecture and Urban Change Through Photography

215

Shaping Sustainability in Architectural Education: The Integrated Design as a Tool

Khansa Dhaouadi 🆔
LUCID Lab for User Cognition and Innovative Design, Faculty of Applied Science, University of Liège, Belgium
Pierre Leclercq 🆔
LUCID Lab for User Cognition and Innovative Design, Faculty of Applied Science, University of Liège, Belgium

Abstract: Climate change is bringing new challenges for architectural education and calls for a new paradigm in the way we teach architecture and urban design. Therefore, a shift has become crucial to enhance the implementation of sustainability within university programs.

This paper is, an experimental study taking place, in the first year of master's degree in civil engineering and architecture at the University of Liège, and within the context of an integrated design.

The interconnection between design studio and theoretical course on sustainability allows students to develop in-depth knowledge and understanding of sustainability issues by integrating the environmental quality of the building into their designs.

During this studio, and to respond to their architectural choices, several tools are applied within the design process to help students develop their building designs, such as interdisciplinary contributions. Our study is constituted of data collected via questionnaires and interviews as well as examining learning activities, teaching methods, students' outcomes, and their interactions with their instructors. The analysis reveals that sustainability and environmental quality criteria are developed in a holistic way of design thinking in coherence with all the functional, aesthetic, and technological aspects in the design process while respecting the specific contextual requirements…

The findings provide evidence that integrated design plays an important role in shaping sustainability in architectural education. This can be achieved through an interdisciplinary collaborative approach that calls for more involvement from students, and that puts into practice their theoretical bases within the design studio.

Keywords: Sustainability, Integrated design, Collaborative Learning, Teaching.

Introduction: The challenge of integrating sustainability in architectural education
When debating the challenges facing the environment, integrating sustainability in architectural education has become a crucial and urgent requirement.

According to Altomonte (2012), although it faces several pedagogical and professional barriers, the role of higher education as a means of introducing new generations of building practitioners to the principles and practices of sustainable environmental design is becoming highly significant.

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool
217

Morin (2004) considers that teaching sustainability issues allows apprehending the contemporary world in its complexity, by considering the interactions that exist between the environment, society, economy, and culture. For him, it is time to think about "educating for the planetary era".

Salama insists on the urgency to think about this paradigmatic shift, a new paradigm of reflection not only in the knowledge taught but also in the way of teaching and learning architecture.
It is, in a way, a transition toward a systemic pedagogy where teaching is treated as a whole and conceived as an integral part of a process (Salama, 2005).
Therefore, a paradigm shift in policies and pedagogical methodologies is needed to facilitate the transfer of knowledge between sustainable sciences and building applications, and to enhance the implementation of environmental sustainability criteria within the creative design process (Altomonte, Cadima, et al., 2012).

Many studies have been conducted to integrate sustainable development into education at undergraduate or graduate levels since sustainability is a concept that should become the focus and the aim of architectural education worldwide.

Different experiences introducing new teaching methods have emerged to bridge the gap between environmental-related building sciences and architectural design.
According to research conducted by the group of reflections on sustainability at the University of Montreal, the association University Leaders for a Sustainable Future states that since 1990, more than 300 universities have signed the Talloires Declaration, which commits them to the pursuit of a sustainable future. In Quebec and Canadian universities, the Sustainable Campus Project at the School of Architecture and the Faculty of Design is part of a movement to integrate the principles of sustainability into university activities, not to mention the "Greening the Diploma of Architecture in Canada" initiative that took place in 2002.

It is a national transdisciplinary academic forum that is the result of an initiative launched and then extended by colloquia in Quebec in 2004 and in Winnipeg in 2007 to identify the disciplinary transformation necessary to engage the academic community in the transdisciplinary process of the sustainable project.

In this context, the European academic project EDUCATE (Environmental Design in University Curricula and Architectural Training) aims to deconstruct the pedagogical barriers to the integration of environmental design and energy efficiency in university curricula and the practice of architecture.
Thus, it proposes the harmonization of educational systems, course structures, accreditation, and qualification prescriptions.

EDUCATE highlights an integrated pedagogical framework " for curriculum development featuring a roadmap for the integration of sustainable environmental design at the different levels and stages of architectural education and post-professional training… Multi/inter/transdisciplinary contributions to program innovation have been explored, together with the appraisal of applied and experiential learning techniques, new analytic visualization and simulation tools, and the analysis of advanced insights from educational research…" (Altomonte, Yannas, et al., 2012)
The integrated design process responds to this multi-disciplinary approach through a collaborative process, starting from the beginning of a project to provide integrated, optimized, innovative, and sustainable solutions to reduce cost, time, and complexity.

This paper proposes to analyze a similar integrated design approach that considers the implementation of sustainability within the whole design decision-making process. It will be based on collaborative work, and the contribution of different interdisciplinary experts, and it will lead to the concept of the integrated design process adapted to the pedagogical context.

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool

218

1. Method of the Study

1.1. Case study: Integrated design studio of master's program in civil engineering and architecture at the University of Liège.

Our observation is conducted in the four months of the first year of the master's program in civil engineering and architecture within the design studio at the University of Liège and its connection with the course on Sustainable Environmental Design.

In a context similar to an architectural design competition, 21 students are challenged to work together in several teams through a collaborative learning process.
They are called to design a contemporary building while respecting complex programmatic requirements, form, function, structural systems, technical constraints, spatial qualities, etc.…

It is an interdisciplinary collaboration between students in civil engineering architecture from the University of Liege and students in civil engineering construction from the Ecole des Mines d'Alès in France. Some of the projects developed at ULiège in the first semester will be pursued by the Ales students in the second semester.

Through this architectural design process, the design studio is related to the Sustainable Architecture and Urban Design (SAUD) course that combines theoretical teaching and practice. It consists in developing an architectural project following an integrated approach, and that combines architectural aspects and sustainability through the development of several environmental criteria in the design process. This course aims to provide students with the necessary skills to understand the principles of sustainable development, applied to architecture and urban design.

It includes the analysis of some existing methods and tools of sustainability assessment of buildings and neighborhoods and more specifically the High Environmental Quality initiative for building (HEQ).

Moreover, students benefit from the collaboration with several experts from different fields in architecture, building envelope and environmental quality, structure, fire safety, accessibility standards, fluids, and HVAC... to best respond to their architectural intentions and choices.
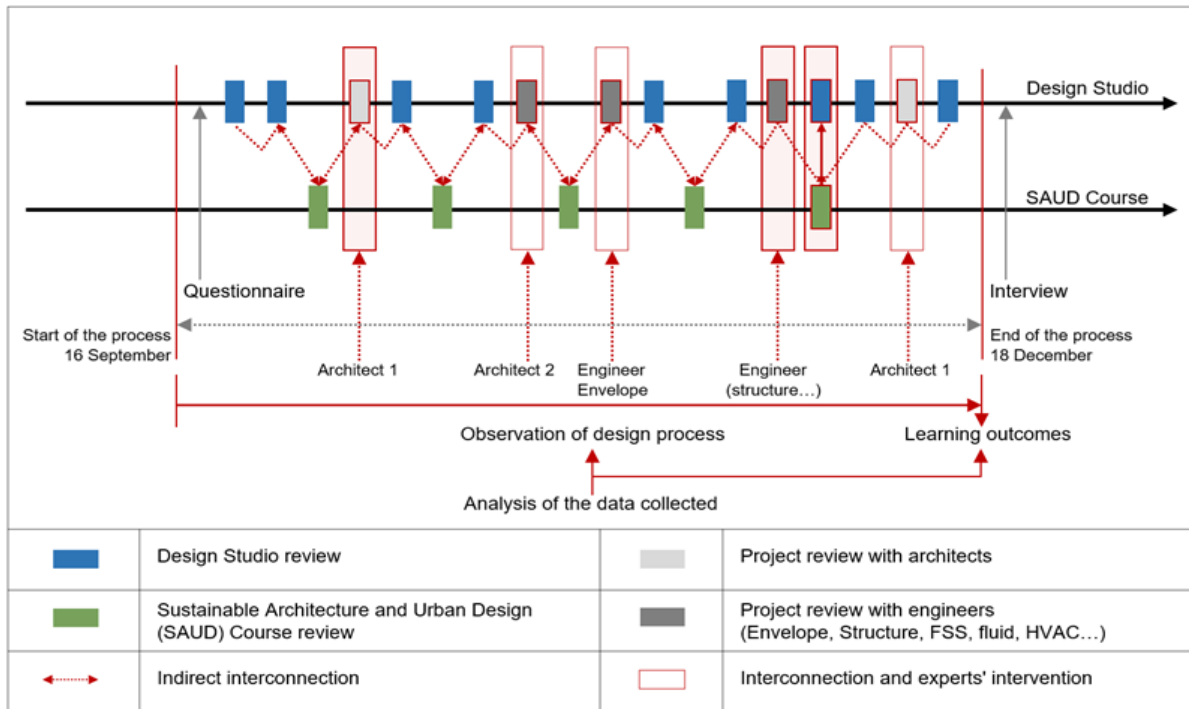
These contributions will lead us to the concept of the integrated design adapted to the pedagogical context; it is defined as an interdisciplinary conceptual approach based on collaborative work.

Figure 1: Students' meeting with their instructors and Architect.

Figure 2: Students' online meeting with Engineers.

Figure 3: *Observation scheme*

1.2. Observation of the Case study

Our exploratory study, as shown in Figure 3, consists of observing project reviews to identify how the environmental criteria were considered in the design process. Also, it is mostly meant to recognize students' capacity to develop projects that combine architectural aspects and environmental quality related to the context, program, and technical requirements.

Through the whole design process, the methodology involves examining the learning activities, teaching methods, and pedagogical strategies as well as the students' outcomes.

From 16 September (the start of the design process) to 18 December (jury and end of the process), the study lasts 14 weeks. Both the design studio and SAUD course take place simultaneously. The design studio has two instructors who share, during reviews of projects, discussions, and exchange ideas with different groups of students, each on Monday and Thursday mornings (8 hours a day). SAUD lectures are held each Tuesday afternoon before practice (4 hours per week).

Depending on how quickly the process evolves, experts from different fields review the design once or twice a month. For instance, the first expert intervention is with an architect to assist students in the preliminary design phase.

The methodology for understanding students' experiences also includes a data collection technique, a questionnaire, and an interview survey with different groups of students, instructors, and some experts. The questions are mostly focused on the curriculum and its role in promoting sustainability, the connection between the design studio and SAUD course, and the integrated design approach. Instead of a numerical value, the data collection method is considered qualitative.

Students are interested in answering the questionnaire, and the feedback shows a positive attitude towards the integrated design experience. The first question attempts to identify the focus of the current university curriculum on environmental issues. Most students agree that "... these statements are

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool
220

Table 1: Integration of the observed Design Studio and Course, depending on SOLO Classification

Understanding Level	Design Studio	Sustainable Architecture and Urban Design (SAUD) Course	
		Theory	Practice
Pre-structural Level Introduction of basic SD principals	Site analysis and understanding of the urban and architectural context	Introduction to Sustainable design knowledge	
		Case studies on sustainability assessment methods: HEQ approach Targets 1, 2, 4, 5, 6, 8	Understanding and integrating Target 1
Uni-structural Level Setting up connections of principals	Research phase of the architectural choice, Formal concept, structure Functional programming	Introducing theoretical basis:Targets 2, 5, 6	Integrating Targets 2, 5, 6 in design Project
Multi-structural Level Identifying how to apply principals	Mastery phase of the technical structural system and regulations	Introducing theoretical basis: Targets 4 and 8	Integrating Targets 4 and 8 in design Project
Relational Level Integrating and application	Sustainable design considering functional, aesthetic, structural and environmental aspects.	Deepening the integration of different HEQ Targets within the design project	
Extended abstract Generalization, Production	Final Project		

increasingly asking us to go beyond just choosing a material because we like it but to justify its environmental sustainability... In this project, we realized that making a choice that is thoughtful and that it would take us some time to decide will facilitate the steps that follow."

As an answer to a question about the interconnection between the design studio and SAUD course, a respondent comments that: "It was an enriching learning experience in terms of environmental quality. There was a completely different way of thinking about the design project. We had all the HEQ targets to reach, which we integrated entirely all along with the project and not just at the end of the process...".

A group of students also notes that "…It was quite easily integrated... we paid attention to how to establish ourselves about the city.
The interaction with the (SAUD) Course was more encouraging and I think it fed our project a lot (...). The site analysis phase (...) was the leading principle: a major part of our project was based on target 1".

Regarding the HEQ targets, respondents comment that " certainly, they are complex to manage, and they push the thinking further, but it was very exciting because the project is more viable than a classic architectural object... Not only do we get a beautiful architectural design, that functions with the environmental quality targets... and is beyond the bioclimatic design... but it is also an entire consideration of the use and origin of the materials".

1.3. Focus on the interconnection between the design studio and theoretical course
The SOLO classification (taxonomy of the Structure of the Observed Learning Outcomes), proposed by Biggs and Collis (1982), identifies five stages for students to reach a complex level of understanding, moving towards multi-structural, relational, and extended abstract knowledge levels.

Table 1 below presents an operational matrix where instructors' input in each module is mapped to expected levels of students' understanding:

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool
221

This taxonomy is explicitly used by Ozer and Turan (2015) to analyze the data obtained from the behavioral pattern of students as a result of their integrated system model. It is also mentioned before by Hamza and Horne (2007) in their study conducted at Northumbria University.

Architectural design studio forms a whole with theoretical courses as a holistic system. Kolb (1984) proposed a model of "learning by doing" in a cycle that connects practice and theory on the one hand and reflection and action on the other.
In our case study, we believe that "learning by doing" is exercised in this pedagogical experience.

As shown in figure 4, the articulation of the design studio and the theoretical course integrating sustainability criteria fosters experiential learning focused on student involvement and further encourages their creative critical thinking where knowledge is applied in the architectural design project.

2. Results
The outcomes of the applied method in the design studio are illustrated graphically in figure 5.
It shows the evolution of integration of the environmental quality targets(HEQ) alongside the architectural aspects through the design conceptual process.

The High Environmental Quality initiative for building (HEQ) is based on 14 targets divided into 4 themes: energy, environment, health, and comfort.
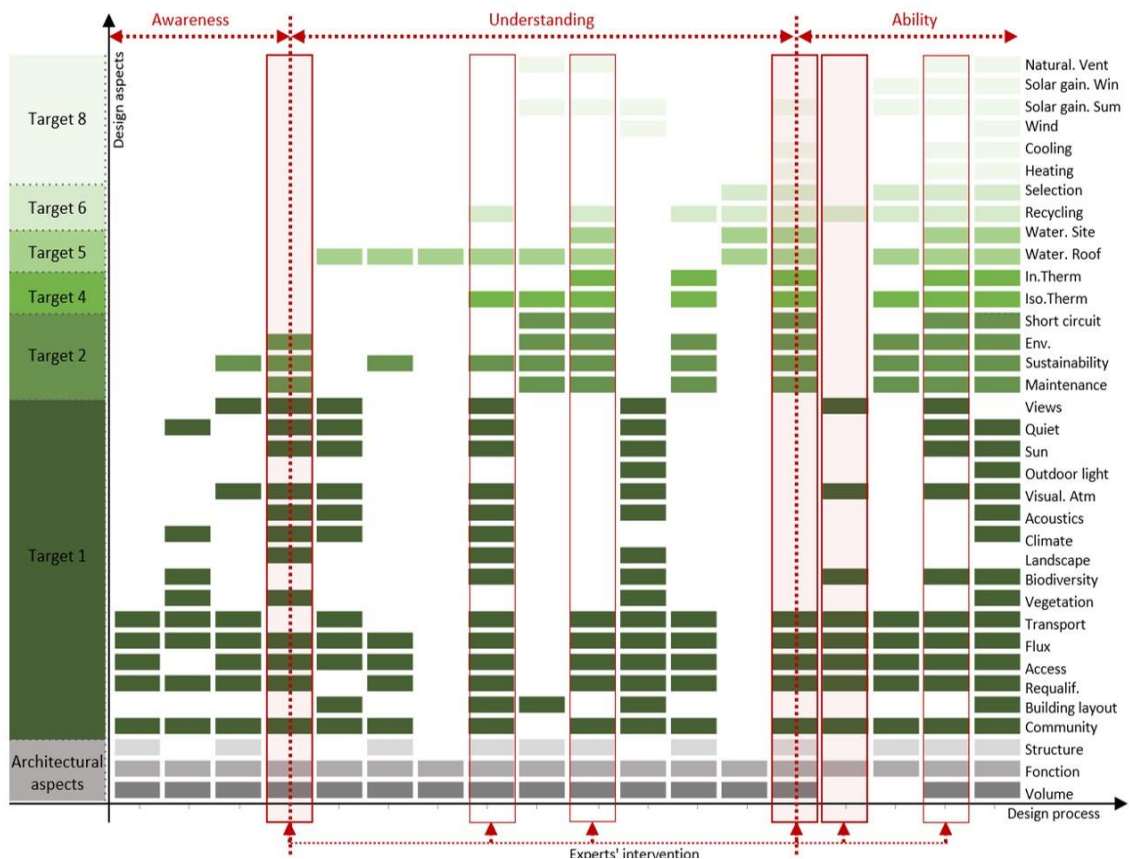Only 6 targets are considered in this project as follows :
- Target 1 entitled "Physical relationship of the buildings with their immediate environment",
- Target 2 incorporates an "Integrated choice of construction processes and products",
- Target 4 "Energy Management",
- Target 5 "Water Management",
- Target 6 "Waste Management",
- Target 8 incorporates " Hydrothermal comfort" with its various parameters.
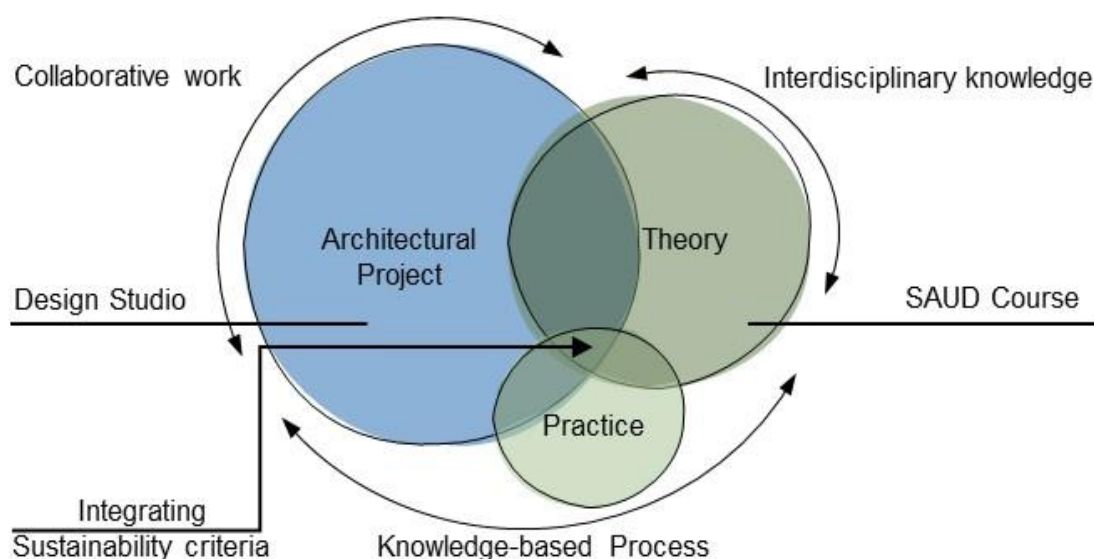
Figure 4: Modelization of the observed Integrated approach

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool

222

Figure 5*: Track of environmental quality criteria HEQ targets within the design process*

It can be seen that, from the early phases of the design process and following the analysis of the urban context, target 1, which addresses the relationship of the building with its immediate environment, is coherently present with the various functional, formal, structural, and technical aspects of the design.

This is the phase of initiation to environmental awareness, which deepens as it moves towards the understanding and finally the use of environmental knowledge in the architectural design process. Indeed, throughout the entire design process, the course and design studio create a direct connection between the different targets of environmental quality and their applications.

The intervention of different experts and the contribution of analytically debated knowledge further encourage creative critical thinking among the students.

As shown in Figure 5, with each of their interventions new HEQ targets are validated and the project is increasingly part of complex holistic systems approach, as in the case of target 4 (Energy management) and target 2 (Integrated Choice of Construction Products, Systems, and Processes) following the intervention of the building envelope and environmental quality expert. Also, in target 5 (Water management) and 8 (Hydrothermal comfort) following the intervention of engineers (structural, fire safety, accessibility standards, fluids, and HVAC).

In this pedagogical context, the architectural design is considered as a whole building design that leads us to the concept of "holism".
The Whole Building design requires an integrated process in which the design teams work together throughout the project phases to evaluate the design for cost, quality of life,

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool

223

future flexibility, efficiency, overall environmental impact, productivity, creativity, and how the occupants will be enlivened (Fathi, 2007). At the end of this integrated approach, students can propose a coherent solution that combines architectural aspects and environmental quality in a creative and critical manner.
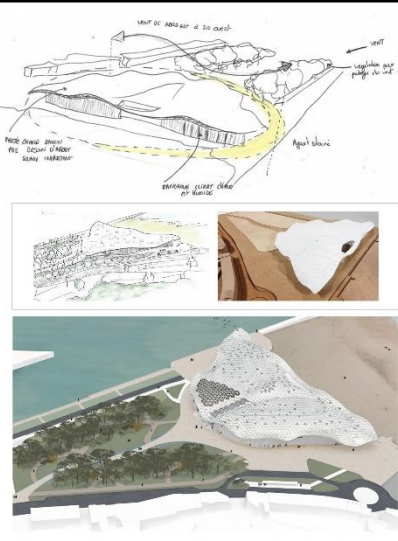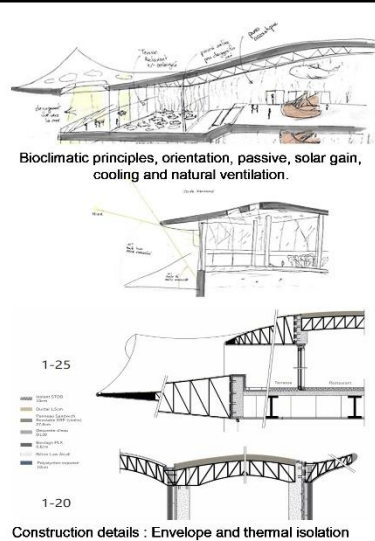
The students' outcomes provide different solutions to the sustainability issues in a holistic approach that aims, at the same time, to acquire awareness, understanding, and ability as shown in Table 2 :

Level 1, Environmental Awareness: since the preliminary design phase, students have used site analysis to define design solutions that can both optimize natural conditions and create spatial design challenges and opportunities.

Level 2, Understanding Environmental aspects: students used compositional aspects and volumetric design to propose an architectural language that can represent a design language for sustainability.

Level 3, Ability to Design Sustainable Building: students developed construction details that became essential for the overall design and architectural language definition and displaying technological solutions that could contribute to the technological sustainability of the project.

Table 2: *Sample of students' outcomes that show the design evolution and knowledge-based process.*

Design Process			
1	Observation of Students Outcomes (learning activities and teaching methods)		
	Preliminary design and sketches	Design development	Construction drawings
	Level 1 : Environmental awareness	**Level 2 :** Understanding environmental aspects	**Level 3 :** Ability to design sustainable building
	Site analysis defining environmental solutions.	Architectural concept, function and volume choices depending on environmental aspects.	Technological solutions deepening environmental aspects as different details show.

Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool

3. Discussion and Conclusion

Based on the analysis of the data collected during the observation, and on learning outcomes within the integrated design approach, our study demonstrates the ability of students to propose design alternatives that respect architectural aspects as well as the ability to develop sustainable projects.

Following a complex, holistic, and systemic process, this approach makes it possible to articulate the parameters of sustainability in coherence with the various aspects of the architectural project while ensuring its integration in its context, limiting its impact on the environment, and promoting the comfort of the occupants.

Through the connection between the theoretical course and the design studio, as well as the intervention of different experts, the students acquire and put into practice an interdisciplinary conceptual approach that favors collaboration and a more involving experiential learning, and which opts to encourage their critical vision.

SOLO taxonomy indicates that the design process and learning outcomes differ from one group of students to another due to the chosen strategy and the complexity of the project.
This complexity results basically from the interdisciplinarity in the pedagogical framework put in place, and the dual training of engineers-architects.

Indeed, the sustainable issue should neither be considered as a specialist field nor taught in a module of the academic program.
Rather, it should be an integral part of the curriculum and be considered as a source of inspiration for conceptual design.

In this context, learning is acquired in phases that integrate the necessary knowledge, understanding, and the necessary ability to promote in-depth learning for an integrated architectural pedagogy.

References:

Altomonte, S., Cadima, P., Yannas, S., Herde, A., Riemer, H., Cangelli, E., … Horvath, S. (2012). Educate ! Sustainable Environmental Design in Architectural Education and Practice. Retrieved from https://www.researchgate.net

Altomonte, S., Yannas, S., Herde, A., Riemer, A., Cangelli, E., Horvath, S., & LopezDeAsiain, M. (2012). Education For Sustainable Environmental Design. The EDUCATE Project. EDUCATE Press/University of Nottingham.

Fathi, A. (2007). Integrated Building Design Studio: A Cumulative Methodology to Accommodate and Apply Different Design Approaches in Architectural Education Stage. 3(2), 12. Retrieved from https://www.researchgate.net

Gulec Ozer, D., & Turan, B. (2015). Ecological Architectural Design Education Practices Via Case Studies. MEGARON / Yıldız Technical University, Faculty of Architecture E-Journal, 10. https://doi.org/10.5505/megaron.2015.20592

Hamza, N., & Horne, M. (2007). Educating the designer : An operational model for visualizing low-energy architecture. Building and Environment, 42, 3841-3847. https://doi.org/10.1016/j.buildenv.2006.11.003

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool

225

John B. Biggs and Kevin F. Collis. (1982). Evaluating the Quality of Learning. Academic Press.

Kolb, D. (1984). Experiential Learning : Experience As The Source Of Learning And Development. Journal of Business Ethics (Vol. 1).

Laberge, Y. (2004). Morin, E., Motta, R. et Ciurana, É.-R. (2003). Éduquer pour l'ère planétaire. La pensée complexe comme méthode d'apprentissage dans l'erreur et l'incertitude humaines. Paris: Balland. Revue des sciences de l'éducation.

Salama, A. M. (2005). A Process Oriented Design Pedagogy: KFUPM Sophomore Studio. Transactions, 2(2), 16-31. https://doi.org/10.11120/tran.2005.02020016

Journal of Design Studio, v:4 n:2
Dhaouadi, K., Leclercq, P., (2022). Shaping Sustainability in Architectural Education: The Integrated Design as a Tool
226

An Online Basic Design Studio Experience: From Point to Space

Mine Tuncok Sariberberoglu ⓘ
Faculty of Architecture, Bolu Abant İzzet Baysal University, Bolu, Turkey

Abstract: This article tries to set an example and explore the potential and limitations of the online learning environment for the first-year Basic Design Studio course based on abstract architectural design thinking. The course is constructed on a connected yet independent series of practices on basic design principles starting from the point to the void space. The course was divided into parts to achieve continuity in design thinking, and instructions and critics were given via distant online theoretic implications. The final course focused on improving students' design skills on a small-scale project. Within each practice, students could experience the abstract way of thinking of design to achieve complex parameters of design problems. Overall evaluation for each study depended on the necessities of the work and participation of the students. The paper sets an example of an online architectural studio format and discusses the advantages and shortcomings of online courses for first-year architectural education.

Keywords: Basic Design, Architectural Design Studio, Online Course

1. Introduction

Design education, which is intertwined with abstract concepts, has a complex and contradictory structure that is comprehensive by being difficult to define, classify and understand without being too obvious (Yürekli & Yürekli, 2004). In addition, design education based mostly on traditional teaching methods focuses on skill-based actions to increase students' creativity (Hodgkin, 1985; Onur & Zorlu, 2017). According to Schön (1985), architectural education is special and privileged because focusing on learning by doing. The studio is an environment that has a culture of experience in design thinking. Lawson (2005) takes design thinking as a practice of real-life problem solving, a skill that should be practiced and learned, not a knowledge that can be taught theoretically.

It is possible to express the constantly dynamic structure of architectural studios, which is fed by the culture of criticism, towards questioning, researching, discovering, and understanding or developing intuition as a common acceptance for studies on architectural education rather than pure design action (Kazaz & Demircan, 2022).

Design learning transforms the learner. In the first year, students develop an awareness of the context of knowledge and enable critical reflections on the validity of their assumptions (Temple, 2020). The design studios in architectural education, which exist with the experiences brought by the contact, are the spaces considered the essential experiences of the architecture students throughout their

Journal of Design Studio, v:4 n:2
Tuncok Sariberberoglu, M., (2022), An Online Basic Design Studio Experience: From Point to Space

227

education (Kılınç et al., 2021). From the first year to graduation, students encounter the design studio in different scale design problems to improve their creative and intellectual capacities. First-year is the most critical and complicated period for most architectural students, and they encounter a basic design course for building a foundation for design thinking. Basic Design is a discipline based on 19th-century studies with completely abstract and non-targeted studies (Sözen & Tanyeli, 1992). As a course, it includes adapting methods while attempting to reveal the students' creative thinking on design. Students improve a design language while solving form-space relationships with two and 3-dimensional compositions (Ertok Atmaca, 2014).

In basic design courses, similar methods have been used, which were implemented in The Ecole des Beaux-Art Architecture School first time (Uluoğlu, 1990), and continued with the Bauhaus Ecole, where the importance of the student-lecturer or master-apprentice relation started (Danacı, 2015). Teaching-learning methodology in basic design courses is primarily based on a discussion process that contains creativity, production of the ideas, and criticism on implementing designs (Maier, 1981). Abstraction, perception, and thought are the main requirements in this educational method for developing creative, innovative, participatory skills throughout architectural education and other professional practice.

The studio environment provides a social setting where students interact and learn from each other while architectural production happens. This social environment transforms the studio into a place where different interactions and encounters happen between the students and the instructors. Unlike the traditional classroom environment, architectural studio environments are physical learning settings that stand out where knowledge is produced, not transferred. Since the learning process in the studio is supported by active working in the environment, students need to adopt the studio and use it outside of class. In addition, the studio is a learning environment without an instructor, unlike the

traditional learning environment where students and teachers come together for learning-teaching purposes simultaneously, outside the determined 'class time' (Lueth, 2008).

With the outbreak of the COVID-19 pandemic, all aspects of life were significantly affected worldwide. As a result, educational institutions switched to distance learning while leaving the physical environment behind. Therefore, architectural studio culture has shifted to an online platform of interaction.

Buldan (2021) states that with the extension of distance education, crisis management in education has transformed into new methods of interaction to attract students' attention from the screen. This new unknown environment has required the re-construction of face-to-face studio knowledge in different contexts of learning and practicing. This transition affected the architectural students' motivation who had already met with the studio environment. However, on the other side, first-year architectural students had to meet the "concept of design thinking" for the first time in a virtual environment rather than in an actual studio environment. This situation has caused several outcomes in the adaptation of the creative processes. This article attempts to reveal the process of a first-year online experience and tries to set an example.

2. Basic Design Studio / Content, Method, and Program
According to Çınar and Çınar (2018), there are ten elements in basic design which are point, line, shape, direction, dimension, space, texture, movement, light-shadow, and color. They also state that point is accepted as one of the basic elements of visual expression and the simplest design element, which draws attention as a starting element. It emphasizes a location in space with no conceptual depth or thickness (Demir, 1993). The primary and essential element creates the form by being decentred, directionless, and static. When there is more than one point, the concept of direction appears, and its static state turns into dynamism, rhythm, or even chaos in different ways. The tense of togetherness each other reveals a necessary

relationship that is perceived as a whole (Işıngör & Aslıer, 1980).

When the point reaches linearity, the points are perceived as a whole. The line is entirely perceptual, which is explained as the movement of the point or the convergence of the points side by side with expressing the intersecting surfaces of objects, their cross-sections, and their boundaries (Seylan, 2004). According to Klee, a line is formed from the movement of the point. From a line, a surface is formed, and from a surface, a volume is formed (Gürer, 1992).

Points and lines turn into planes and surfaces. The shape is determined by the contour of these 2-dimensional subjects by their size and simplicity or complexity. Shapes' existence has regular or irregular boundaries. The form is the quality of an object or an entity in terms of its external shape. With a geometric expression, form is a combination shaped by the elements such as points and lines (Çınar & Çınar, 2018). Whether the design element is a line, shape, or figure, concrete ways that determine elements' selection, location, and arrangement according to a specific function and their relations are called design principles. In other words, quality in a design is realized by the interpretation of the form, which contains basic principles in design such as contrast, repetition, hierarchy, proximity, balance, and symmetry.

In basic design education, students are forced to improve their capacity for design thinking by using different design elements with different design principles to achieve originality and uniqueness. The main idea behind the basic design studio is the process of search, research, trial, and failure that takes place in the only possible way of learning architectural design. The experience of the design process leads them to produce alternative solutions and improve the design through criticism.

3. Methodology of the Online Course
On behalf of these theories, the course is structured around six main sections to build up an understanding of design studio culture even though it is held online. Before the pandemic, the course was held in 8 hours of studio time

which contained one-to-one critiques to group discussions around theoric background in the design process. Implementing studio education through an online course is divided into two different days, Monday and Thursday, in four hours. On the first day of the week, students were informed about concepts, inquiries, and explanations about the exercise they were expected to do. On the other day, evaluations and critics were made on the online platform. Approximately two days were given to students to create and exercise independently without observation and feedback from the lecturers.

The focus of this course was to build architectural design thinking on an online platform for fourteen weeks semester. The studio was held in the fall semester of 2020-21, starting from the point to the void space. The studies within the studio's scope were divided into short-term studies required in a limited/specific period and long-term studies that span several weeks and contain the project subject (Figure 1).

In the first part of the course, within the short-term studies, the students were introduced to points and lines in infinite space and shapes, which represent the main tools of design thinking via online meetings. Later, students were assigned to examine the design principles first on 2-dimensional black-white compositions and 3d bas-relief models of previous studies. And then, 3d structural compositions were expected from students to question the design parameters of basic principles. In the final long-term project, every student designed a fictional character and an environment based on the character's qualities to investigate the space void in proper scale and necessities.
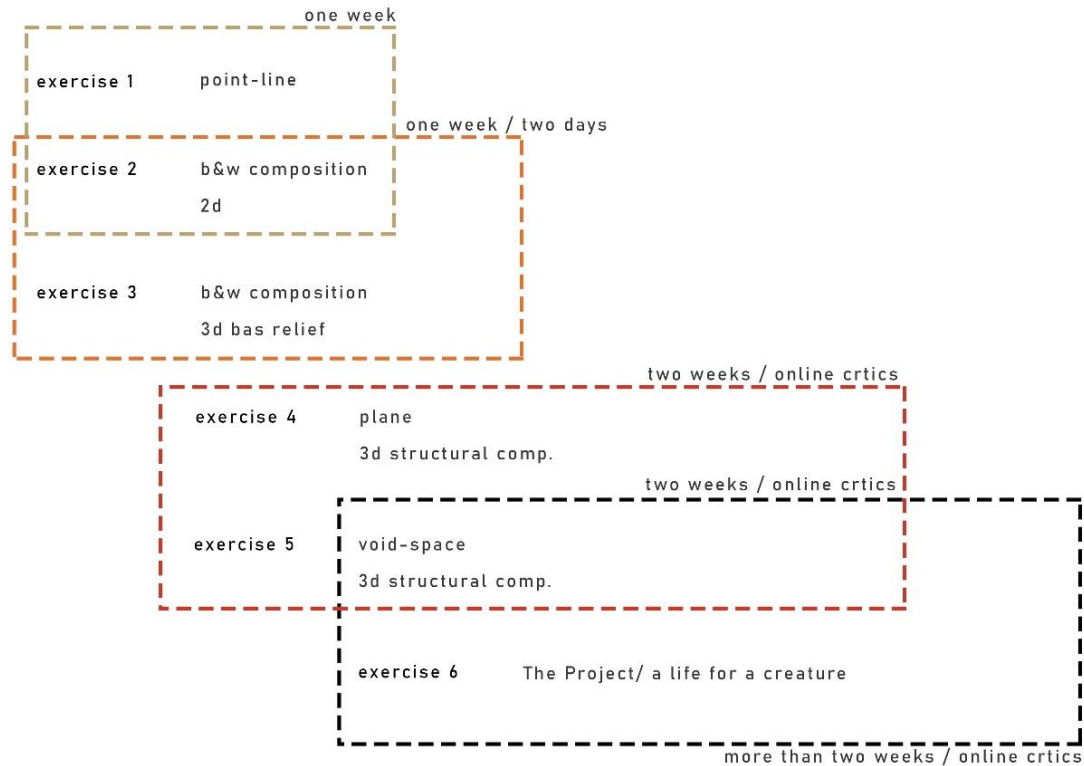
Journal of Design Studio, v:4 n:2
Tuncok Sariberberoglu, M., (2022), An Online Basic Design Studio Experience: From Point to Space

229

Figure 1: Program of the course

4. The Process

A meeting session was held in the first week. Later a short instruction was given about the 14 weeks of the term. In the following week, students were informed about the point and line design elements. After a theoretical lecture session, a specific exercise was given via instructions. First, students were asked to use 35x50 paper horizontally and divide the area into six even (5x5cm) squares by three rows.

Then, in the upper row, from left to right, it was asked to perform a freestyle exercise with different pencils, a 2-dimensional composition expression, and a perspective drawing containing only points. After that, they were asked to perform a re-composition of the exercise by subtraction on the lower row. Following that assignment, students were asked to perform the same exercise using only lines (Figure 2).
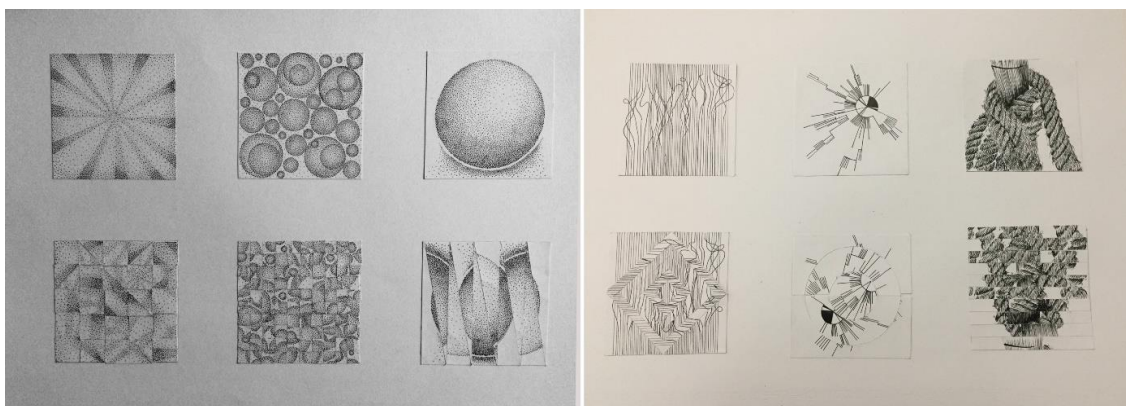

Figure 2: Exercise 1: Points and lines of infinite space; Ayça Özel, Fatma Yağız.

Journal of Design Studio, v:4 n:2
Tuncok Sariberberoglu, M., (2022), An Online Basic Design Studio Experience: From Point to Space

230

All assignments were submitted to a drive folder. Every submission was criticized on a shared screen according to the basic instructions, use of paper and pencils, drawing techniques and intentions, overall proportions of squares, and re-compositions. The limitation of this study was the lack of control over simple proportional mistakes made by students.

In the second part of the course, students were introduced to the basic design principles and gestalt theory. They were asked to perform black and white compositions on 35x50 canvas papers showing at least three principles with shapes and figures in a balanced composition (Figure 3). This study was challenging to comprehend the principles, yet students could overcome it in distant instructions.

In the third session, yet again based on at least three principles, students were asked to design 3d bas relief compositions in referring to a 2dimentional composition next to it on 35x50 canvas paper (Figure 4). The main intention of this study was to build an understanding of different shades of different design principles
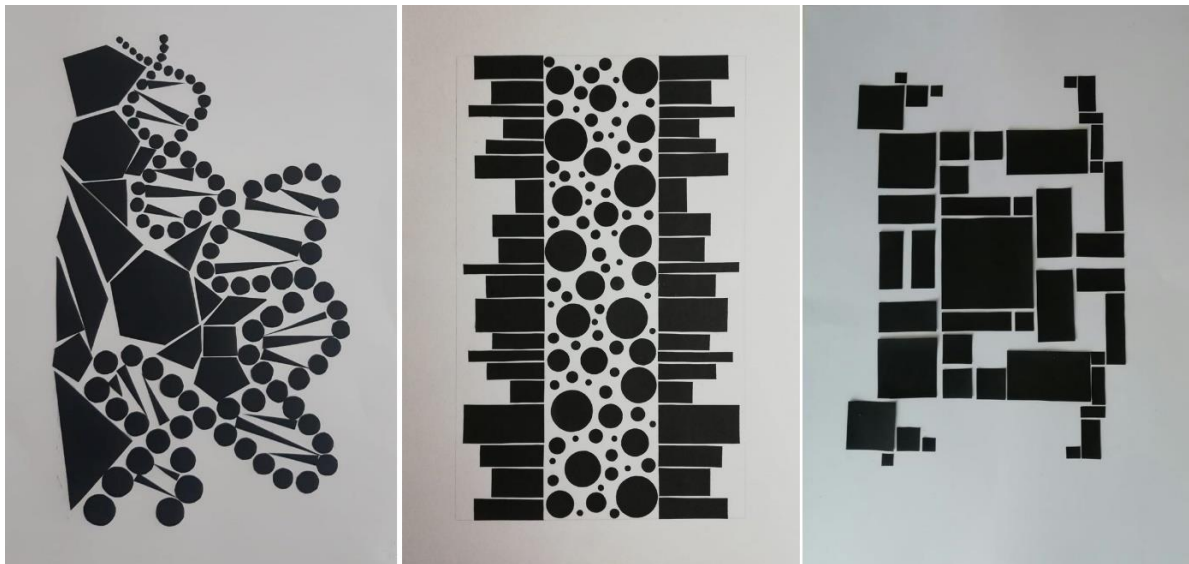
Figure 3: Exercise 2: Basic Design Principles (2d b&w compositions); Elanur Akdaş, Betül Şekar, Nigar Peri Polat.

Figure 4: Exercise 3: Basic Design Principles (3d bas relief compositions) Abdullah Taylan, Nigar Peri Polat.

and transfer it to a 3d environment. In this practice, students were confused about using different colors such as white, black, and grey, but after online criticism, most of them could manage to express their studies. The primary purpose of this study was to introduce students to the basic concepts of space, such as surface-volume, occupancy-space, and horizontal-vertical, and to develop their 2- and 3-dimensional thinking skills.

After these 2d and 3d bas relief exercises, students were asked to create modules of figures with the method of folding. Before the study, the students were given structural and basic information and various examples.
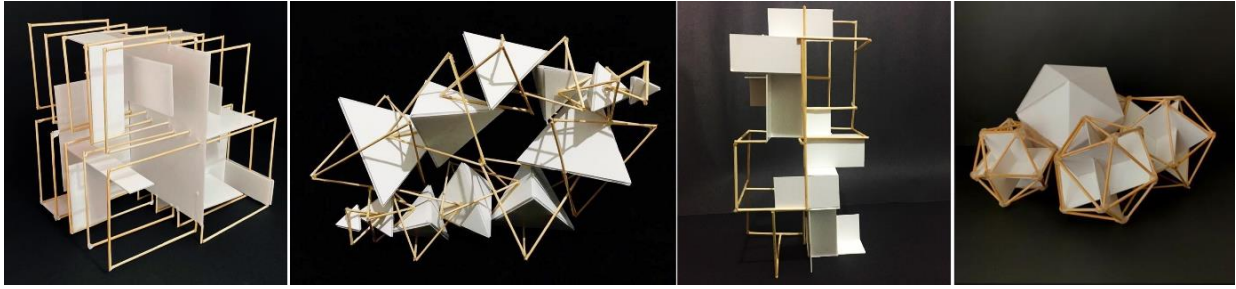
After creating the modules, it was asked to design a 3dimensional composition presenting at least three basic design principles (Figure 5). With this exercise, students were forced to consider the structure itself. The main question of this study was, "what do we need this design

to stand up on its own?". We talk about the meaning of structure, and in this process, basic design principles were examined in different mediums of design parameters. The main aim of this study was for the students to internalize the concepts and structural systems- the relationship between form, space, and structure to understand that the structural system is not independent of form and space. On the contrary, the structure is the determinant of the form, and the structure system is an essential component of the design process from the beginning. In addition, the space-creating potentials of the supporting structures were also included in the exploration process.

Later in that exercise, students were asked to think about what happens if we add another material like chopsticks to this system. Before the pandemic, we made students use strings to support the structure. However, due to the shortcomings of online interaction, we preferred to limit the material to only two and
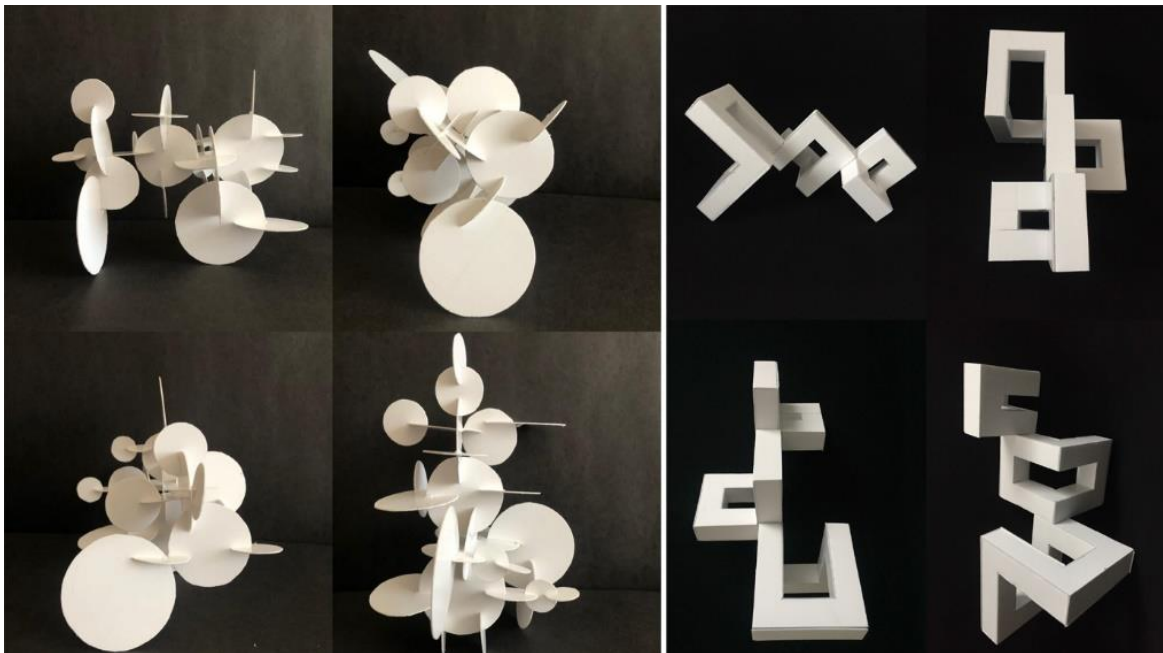
Figure 5: Exercise 4: Basic Design Principles (3d structural compositions) Emine Seçil Karakoç, Fatma Yağız

Journal of Design Studio, v:4 n:2
Tuncok Sariberberoglu, M., (2022), An Online Basic Design Studio Experience: From Point to Space

232

Figure 6: Exercise 5: Basic Design Principles (3d structural compositions) Arda Danışmazoğlu, Çağla Ateş, Şevval Yaman, Ceren Dilber

let students create a structure of two different materials (plane elements and line elements-wooden sticks) into one coherent system (Figure 6). In this study, students were asked to think about the concept of void. After several discussions, the link between void and space became the main relation to consider before the project.

The final project took at least six weeks to complete, and the concept of scale is discussed in the course. Students were asked to think about a creature that has a character of its own. The main questions for this study were; What is its name? Where does it live? What does it like to do on a regular day? Etc.

Along with the critics, students designed a structure for the creature they created. They had to consider its' habitat of living, its movements, habits, etc., and they prepared a poster to represent their project (Figure 7). The design process was developed through the critics. The students had to reproduce their models several times because they were working with a scenario for a particular creature upon online critics for every session. The material was

limited again to whiteboards and wooden sticks. The differentiation of the scenario brought the differentiation of both the design process and the final product. At the end of the study, students were asked to photograph their models and prepare a poster presentation, including technical drawings of their designs.

5. Discussion and Conclusion

Design education transitioning online from face-to-face has become a challenging scope for architectural education. After a semi-online term with the outbreak of the Covid19 pandemic, architectural courses had to re-build the outlines of the courses for the following semesters. On the other hand, some aspects of design education have not changed, which is the environment of learning itself. Basic design studios are the environments where students encounter abstract thinking and transform it into a concept of doing by learning with peers.

The course was designed to maintain unity from beginning to end for students to keep up with the process. Therefore, the main aim throughout the course was to establish strong relationships between students and the design thinking

Figure 7: Exercise 6: The Project Ahmet Yasin Yılmaz, Merve Dikmen, Mukaddes Demir

Journal of Design Studio, v:4 n:2
Tuncok Sariberberoglu, M., (2022), An Online Basic Design Studio Experience: From Point to Space

233

process from a physical distance. Unfortunately, this physical distance has become an obstacle to maintaining a peer learning environment. To overcome this, students were asked to speak for themselves in every online session and explain their designs, and give critics to other students on what they understand of other works.

On the other hand, every study was evaluated to question the subject's necessities and the works' originality with participation. Furthermore, every study had its own time according to the context, approximately a minimum of 2 weeks, besides the final project. Therefore, students were left alone during the design process, unlike the exercises that usually took place in one 8-hour studio time with direct face-to-face education interaction.

It is observed that students could keep up with the process and complete the term with a final project. However, along the process, it is seen that some of the students are not so excited to talk about their designs for online discussions and critics. It can be evaluated as a reason for one of the difficulties in comprehending the atmosphere of an actual studio on an online platform. It is also observed that students were mostly hesitant to take action for being alone during the design period. They constantly waited for approval on their decisions but were also very eager to criticize others. This action can be considered another indication of adaptation problems in an online environment and may be a reason for some to drop the course while most students gain confidence.

This course shows how architectural design skill is developed and articulated during online interaction and sets an example for generating the online environment's teaching methods and design pedagogies to overcome physical and social distance. As a result, it is possible to say that the interconnected structure of the course was successful through the students' final projects. Furthermore, it is seen that the structure of the given works, starting from the point and extending to the space, feeds each other conceptually. Finally, it has been determined that it allows students to experience

an objectively perceptible design process from abstract productions.

References:

Buldan, E. (2021). Situated Learning in Online Architectural Studio Education. *Journal of Design Studio*, 3(1), 59-70.

Çınar, K. & Çınar, S. (2018). *Temel Tasarım*. KTO Karatay Üniversitesi Yayınları, Konya.

Danacı, H. M. (2015). Creativity and knowledge in architectural education. *Procedia-Social and Behavioral Sciences*, 174, 1309-1312.

Demir, A. (1993). *Temel Plastik Sanatlar Eğitimi*. Eskişehir: Anadolu Üniversitesi Açık Öğretim Yayınları, Yayın No: 576.

Ertok Atmaca, A. (2014). *Temel Tasarım*. Ankara: Nobel Akademik Yayıncılık Eğitim Danışmanlık Tic. Ltd. Şti.

Gürer, L. (1992). *Temel Tasarım*. İstanbul Teknik Üniversitesi Yayınları.

Hodgkin, R. A. (1985). *Playing and Exploring: Education Through the Discovery of Order*. Methuen, London, p. 146.

Işıngör, M. E. E. & Aslıer, M. (1980). *Resim-1 Temel Sanat Eğitimi Resim Teknikleri Grafik Resim*. Ankara: M.E.B. Yayınları

Lawson, B. (2005). *How Designers Think: The Design Process Demystified*. Great Britain: Architectural Press, Elsevier.

Lueth, P. L. O. (2008). *The architectural design studio as a learning environment: a qualitative exploration of architecture design student*

Journal of Design Studio, v:4 n:2
Tuncok Sariberberoglu, M., (2022), An Online Basic Design Studio Experience: From Point to Space

234

learning experiences in design studios from first through fourth-year, Unpublished PhD Thesis, Iowa: Iowa State University.

Kazaz, E. & Demircan, B. (2022). Covid-19 Pandemisi Sürecinde Tarihi Kent Dokusunda Mimari Stüdyo Deneyimi; Atatürk Üniversitesi Mimari Proje Stüdyosu VII. *Kent Akademisi*, 15(1), 38-50.

Kılınç, C., Balçık, S., Karaoğlu, G. & Yamaçlı, R. (2021). Mimarlık Stüdyo Eğitiminde COVID-19 Süreci:'Temassız Deneyimler'. *Modular Journal*, 4(1), 62-70.

Maier, M. (1981). *Basic Principles of Design*, U.S: Van Nostrand Reinhold Inc.

Onur, D. & Zorlu, T. (2017). Tasarım Stüdyolarında Uygulanan Eğitim Metotları ve Yaratıcılık İlişkisi. *The Turkish Online Journal of Design Art and Communication*, 7(4), 542-555.

Schön, D., A. (1985). *The Design Studio. An Exploration of Its Traditions and Potentials*, London: Rıba Publication Ltd. p.89

Seylan, A. (2004). *Temel Tasarım*. Yem Yayın. İstanbul.

Sözen, M. & Tanyeli, U. (1992). *Sanat Kavram ve Terimleri Sözlüğü*, İstanbul: Remzi Kitabevi

Temple, S. (2020). The Threshold of Abstraction in Beginning Design Pedagogy. *Journal of Design Studio*, 2(2), 101-110.

Uluoğlu, B. (1990). *Mimari Tasarım Eğitimi: Tasarım Bilgisi Bağlamında Stüdyo Eleştirileri*. Unpublished PhD Thesis. İstanbul, İstanbul Teknik Üniversitesi.

Yürekli, İ. & Yürekli, H. (2004). Mimari Tasarım Eğitiminde Enformellik, *İTÜ Dergisi, Mimarlık Planlama Tasarım Dergisi*, Cilt 3, Sayı 1, 53-62.

Journal of Design Studio, v:4 n:2
Tuncok Sariberberoglu, M., (2022), An Online Basic Design Studio Experience: From Point to Space

235

Teaching Ergonomics in the Online Studio

Sudipti Biswas   ⓘD
Department of Architecture, Military Institute of Science and Technology (MIST), Dhaka, Bangladesh

Abstract: Human factors and ergonomics are very important considerations for the built environment. Usually, such issues are taught in the design studio courses in architecture education. Traditional design studio in architecture program follows the ideology of learning by doing. Design studio is more than a physical space, it is a culture with particular focus on one-to-one interaction and lateral learning. This learning program had to be suddenly switched to distant learning mode during the COVID-19 outbreak. Teaching human factors in design studio usually takes thorough exercise for both the instructors and learners, unsurprisingly in the online studio this exercise gets even more challenging. This article portrays the experience of such a challenging task and responses to the emergency situation of online learning. This article is based on participant observation and qualitative analysis of the observation protocols. The experiences can be useful for both designing human factors and distance learning in studio-based programs.

Keywords: Human factor, Ergonomics, Design studio, Online studio, Architecture education

Introduction

The Human Factors and Ergonomics Society considers ergonomics as the application of knowledge about people, their abilities, characteristics, and limitations to the design of equipment they use, environments in which they function, and jobs they perform (Human Factors and Ergonomics Society, n.d.). The International Ergonomics Association considers ergonomics as the scientific discipline concerned with the understanding of the interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human wellbeing and overall system performance (Internation Ergonomics Association, 2000). Naturally, ergonomics is an important consideration of the built environment (Attaianese, 2012, 2017; Attaianese & Duca, 2012; Biswas et al., 2021; Charytonowicz, n.d.; Costa et al., 2012; Eilouti, 2021; Garneau & Parkinson, 2016; Hendrick,

2008; Olguntürk & Demirkan, 2009). It is also vital for sustainable development because it contributes to the social and economic dimensions of sustainability (Radjiyev et al., 2015). However, ergonomic approach in the built environment is not well recognizes in the academia (Attaianese & Duca, 2012; Costa et al., 2012; Fross, 2014) with few exceptions in health care architecture (for example Codinhoto et al., 2009; Pinto et al., 2000; Rogers et al., 2013; Villeneuve, 2000; Yeoman & Ashmore, 2018). Accepting the scarcity of ergonomic approach, the necessity of integrating ergonomics into architecture is recognized by scholars (Attaianese, 2012, 2017; Attaianese & Duca, 2012; Garneau & Parkinson, 2016; Olguntürk & Demirkan, 2009).

Specifically, in the academic enclave, it is often considered that teaching ergonomics in design schools have proven success in improving performance, productivity, safety, and health in

the built environment (Attaianese, 2017; Attaianese & Duca, 2012; Garneau & Parkinson, 2016). In the formal education of architecture, ergonomics is usually taught either as separate lecture course and/or within the studio course. Design studio approach of teaching ergonomics is highly appreciated for its fruitful results in improving the ergonomic application in other disciplines also along with the architecture school (Biswas et al., 2021; Moody, 2011).

This article reports a design studio approach of teaching ergonomics in architecture during the COVID-19 pandemic. The pandemic situation has exerted heavy impact on architecture education, especially the design studios. Design studio is the heart of architecture education, it is not only the physical space where classes are conducted or students exercise, rather, it is a culture with particular focus on one-to-one interaction, critique and lateral learning that is carefully nourished (Abdullah et al., 2011; Datta, 2007; Hacihasanoglu, 2019; Vyas et al., 2013). Alternative of studio was beyond imagination, at least until the pandemic situation - which had turned a lot of incredible situations in the studio teaching into reality. Online design studio was, probably, never seen as a mode of studio teaching which had to be the reality for almost two years. This article presents a case report of how the critical issue of teaching ergonomics was conducted in a more challenging situation of online studio course at the Department of Architecture, Military Institute of Science and Technology (MIST), Bangladesh.

Teaching Ergonomics in Design Studio
Architecture education revolves around the design studios, the core of the program. Usually design studios follow an ancient philosophy of learning by doing, which was first introduced by the Ecole Nationale et Speciale des Beaux-Arts in Paris (Alagbe et al., 2017; Chafee, 1983). This ideology was modernized and then familiarized by the Bauhaus School, established by Walter Gropius in 1919 (Alagbe et al., 2017; Bailey, 2005). With necessary adaptations, still most of the architecture schools around the world follow this ideology and delineate design

studios for solving complex, open-ended problems (Belluigi, 2016; Kuhn, 2001; Ledewitz, 1985; Schön, 1987). Studios support the students to learn, adapt and apply design principles that would aid their competence in the professional field. Usually in the studio courses, ergonomics is taught through lectures and design exercise so that the students can apply the acquired knowledge in their design and thus carry forward the learning.

This article presents the studio exercise of teaching ergonomics at the Department of Architecture, MIST. The Department of Architecture, MIST, follows the conventional five-year-long academic program with ten successive design studio courses. The first two of them are introduction to design principles and the third one is the first studio that initiates architectural design process. Ergonomics is taught in this studio, which is ARCH 2101: Design Studio III. Ergonomics is a major component of this this studio. In addition, basic understanding of human activities in architectural space and analysis of function and program are the core components of this course. This article depicts the experiences of the ARCH 2101: Design Studio III in the Spring 2021 semester during the pandemic situation. It is based on participant observation of this studio course. The author was in lead of the studio and designed the studio course along with other two studio instructors. The course was designed with three projects, the first was a two staged study of anthropometry and human activities, second was a small kiosk intended to incorporate ergonomic considerations into design and the last was to design a single-family residence expected to incorporate all the course objectives delineated for this studio. This entire course was conducted online, and notes were taken each week to keep track of the studio progress. These notes were considered as observation protocols and analyzed qualitatively for this article.

The entire Spring 2021 semester was conducted during the lockdown situation. Therefore, online studio was the only way to conduct the course. Online mode of studio had been introduced in 2020 and by the time of the Spring

2021 semester, students and instructors had some orientation on the online studio. ZOOM and Google Classroom provided the online platform for the studios. All attempts were made to conduct the studio as close as possible like the regular studio course, it was not easy as it sounds.

From the three studio projects, this article illustrates only one which was solely dedicated to learning ergonomics and incorporating ergonomic considerations into architectural design. The project was designing a food kiosk considering ergonomic requirements for two particular persons to work in the kiosk. Before this project, a two staged study was conducted. The first stage was to understand the human body and anthropometric dimensions that are critical for space designing. Second stage was an elaborate study of human activities in space and spatial dimensions. These two exercises supported the basic understanding of the students for architectural design. This project was a group exercise, students formed groups of two members and each group had to design the kiosk considering the ergonomic requirements for that group members. The design had to be accommodated within space and it was required to design preparation, cooking, and serving of a particular type of food selected by the students. This setting of food selection and ergonomic requirements for two particular persons was purposefully designed, so that the students can internalize the concepts of anthropometric and ergonomic application, which is expected to nourish their understanding and design thinking process. Additionally, this offered a lot of variations in the design outcomes. This kiosk project was devoted to ergonomics only and it did not deal design issues like site, climate, environmental impact, structure etc. in detail. It only considered orientation for primary considerations of natural lighting, ventilation, rain, and glare.

The course was intended to familiarize ergonomics principles to the students as well as introduce understanding of built forms, functional arrangement, and context. The relevant course objectives (CO) include concept of ergonomics, understanding of human activities in architectural space, and analysis of function and program. Learning objectives (LO) relevant to ergonomics include
• Ability to understand and analyses human activities based on ergonomics
• Ability to determine space requirements based on ergonomics
• Ability to design object or space for specific function and ergonomics

Learning objectives (LO) and intended learning outcomes (ILO) for the kiosk project were set considering the fact that due to the pandemic situation and lockdown induced restrictions students would not be able to get hands on training and conduct field survey. The LOs were
• To learn the anthropometric and ergonomic dimensions to design a food kiosk in the local context.
• To develop an understanding of efficiency and optimization of working space.
• To apply the knowledge of ergonomics in designing the kiosk.

The ILOs expected that the students would be able to
• Determine the ergonomic requirements for an efficient and comfortable working space.
• Design space considering ergonomic requirements.
• Focus on the difference in standard and local requirements.
• Design customized furniture/space and relate with the optimum standard.

Learning of ergonomics starts with understanding the human body. In the project, the first task was to develop an understanding of what body dimensions are to be considered for the activities performed in the kiosk. Relevant postures and activities were selected based on architectural space standards mentioned in different reference books. The books consulted for this project are as follows.
1. Time-Saver Standards for Building Types (De Chiara & Callender, 1990)
2. Human Dimension and Interior Space (Panero & Zelnik, 1979)

3. Neufert Architects Data (Neufert & Neufert, 2012)

The next step was to develop a clear understanding of the human activities to be performed in the kiosk. Here, each of the groups selected a specific food to be served in the kiosk and studied the entire range of activities and function such as storage, preparation, serving, operation and maintenance as well as the required equipment/gadget for that particular food. The groups studied respective human activity and sequence, body dimension for the relevant posture, dimensions of the relevant furniture/fixture/appliance, the relationship between the human body and furniture/fixture/appliance, required clearance between the human body and furniture/fixture/appliance and/or wall surface, clearance required for the movement of the human body to perform the activity, etc. Students presented their study of ergonomic considerations and kiosk function through oral presentation and report. Glimpses of the study of anthropometric and ergonomic features and the kiosk function are shown in the following figures.
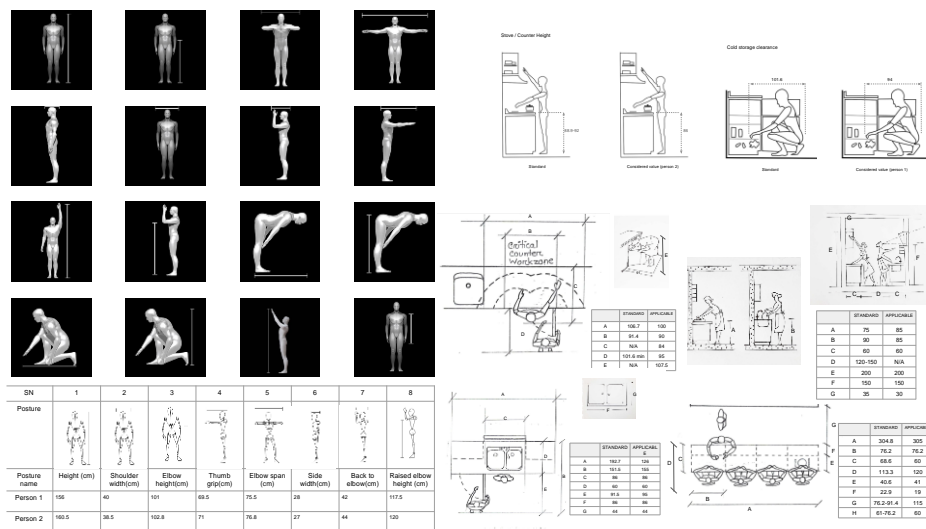
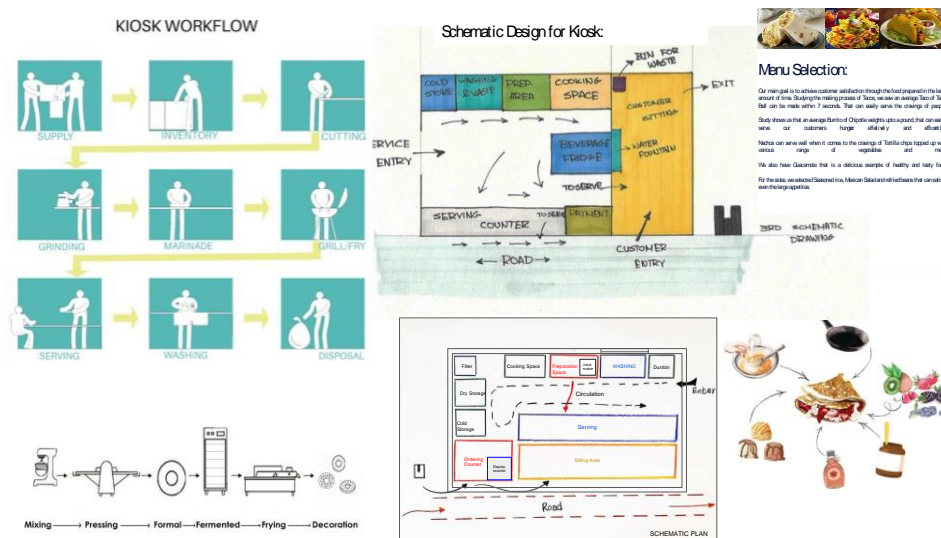
Figure 1: Study of ergonomics


Figure 2: Study of kiosk function

After the study, students designed the kiosk. The kiosk had to fulfil the following requirements.

- The design must be customized for the two group members in terms of ergonomic application.
- All necessary functions of food preparation, cooking, serving and storage must be accommodated.
- All the furniture/fixture must comply with the ergonomic considerations of the group members and accommodate the necessary equipment (for cooking, preparation, storage etc.) comfortably.
- Space must not be wasted, but the comfort of working/movement cannot be sacrificed.
- Basic climatic considerations should be accommodated such as natural lighting and ventilation, protection from glare and rain, etc.
- Customized and innovative design of furniture to save space and increase efficiency is highly appreciated.

Students developed their design gradually and presented several times before finalization. There were two critique sessions, the first one was informal and to support the students in design development while the final crit was formal and included external members from other studios of MIST and members from other schools who joined virtually. In the informal crit, each group presented their design followed by discussion. The discussion was open for other students to facilitate lateral learning. Finally, students submitted their designs in the form of presentation containing images of the models and drawings and live video of the models. It was recommended to make the roof operable in the model to increase the visibility of furniture/fixture arrangement. Some of the models and drawings are presented in the following figures. Model and drawings were prepared at 1:25 scale.
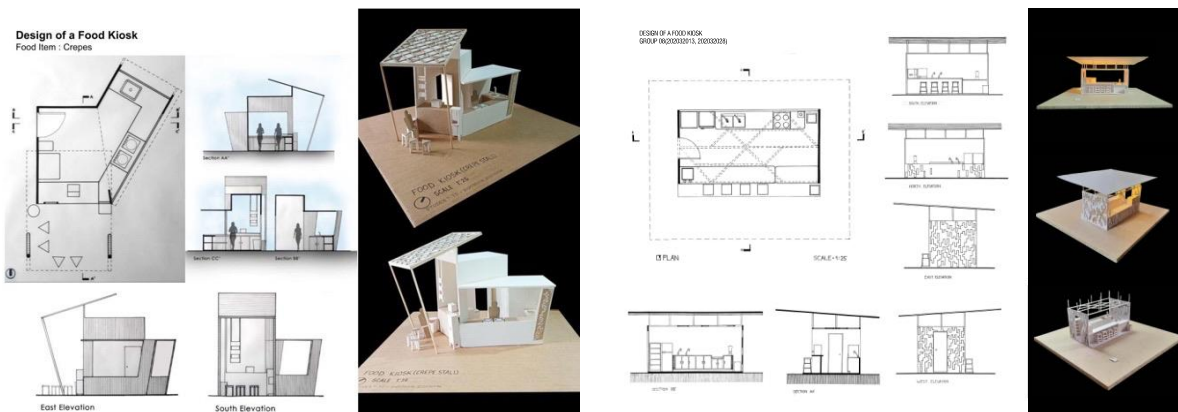
Figure 3: *(left) Crepes Kiosk by Kaniz Tahsin Masud and Mubassira Bin Jannah, (right) Kiosk for Raita & Pakora by Tasin Tasfia and Mehedi Hasan*
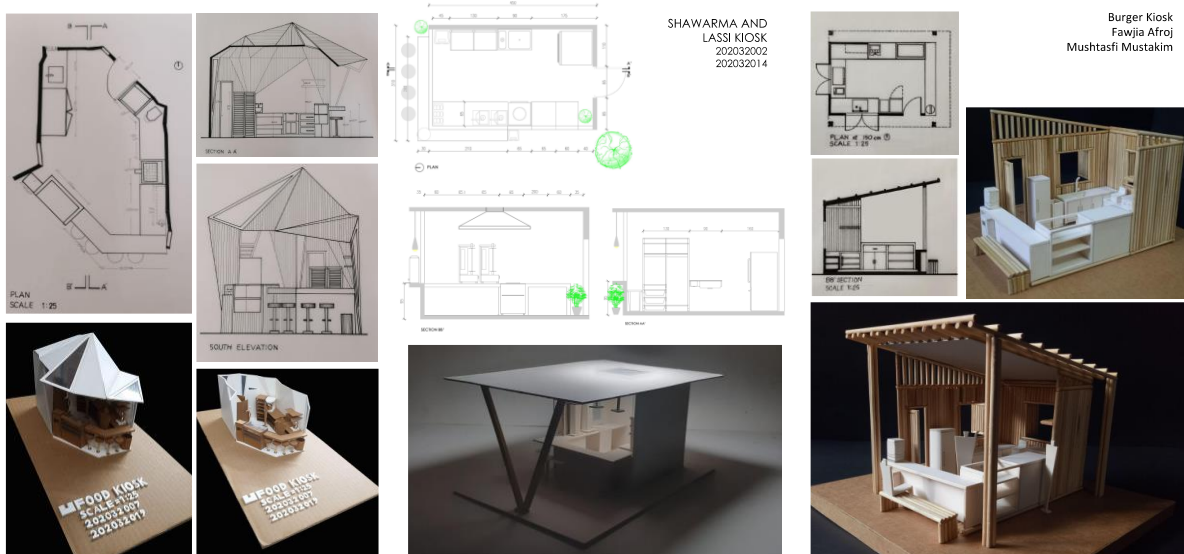
Figure 4: *(left) Doughnut Kiosk by Khawla Binte Khalid and Rifah Rezwana (middle) Kiosk for Shawarma & Lassi by Mohammad Munzurul Haque and Md. Munzurul Haque, (right) Burger Kiosk by Fawjia Afroj and Mushtasfi Mustakim*
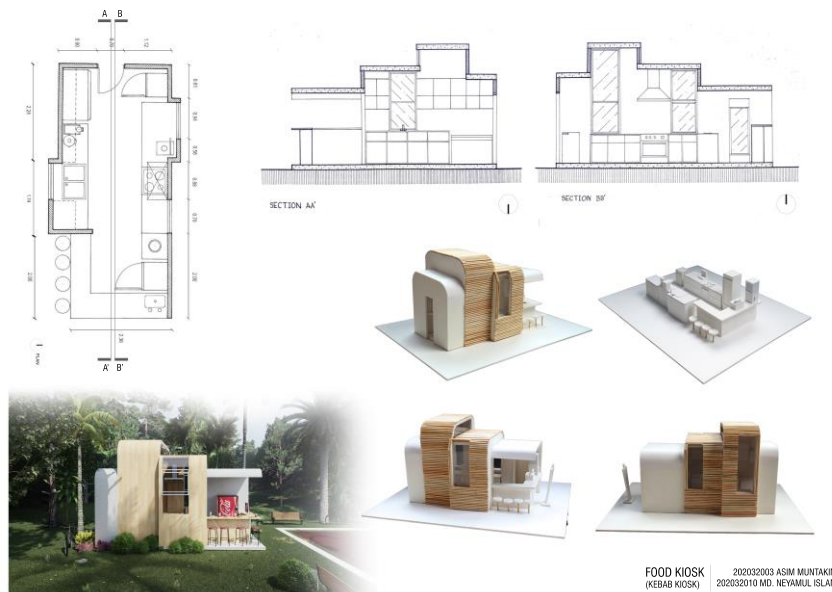
Figure 5: *Kebab Kiosk by Asim Muntakim and Neyamul Islam*

Discussion

The studio was conducted online, which was a major challenge even though the online studio was introduced in the previous semester and the students had some orientation. This course was the introductory studio for architectural design learning, and this food kiosk was the first space design project in the academic program. Naturally, they needed enough discussion and guidance for design development. In such initial stage, students usually need support to start a design project and then to proceed for development and achieve the requirements. This was quite a challenge for both the beginners and the studio instructors.

Studies mention that learning by doing ideology of design studio is sometimes difficult for the

students in the early stage (Al Maani et al., 2021). Quiet naturally, it was more demanding in the online platform. Teaching ergonomics usually requires rigorous exercise, discussion and demonstration in the studio (Biswas et al., 2021). These issues were difficult in the online platform. Demonstration of anthropometric and ergonomic consideration was critical. Usually, the instructors demonstrated different body postures in the ZOOM meetings through live video and then they asked the students to mimic them. Yet, students struggled, particularly to deal with scale in the initial design stage. It was difficult for most of them to perceive the dimension of a space required for a specific activity, for example, working with a kitchen sink. In such case, the instructors tried to show how it works with a dummy sink, made with whatever was available at hand (for example, a chair was converted into a sink with adjusting the height and putting some cardboard on the arm rest to get the required height). Then the students, whoever could avail, also tried to make similar dummy space, mimic the activity, measure the dummy, and make necessary changes in the dimension if required. This type of video demonstration was very helpful to develop understanding of scale and ergonomics, though demanding.

Usually, students presented their designs in the ZOOM meetings through PowerPoint presentations, sometimes they showed snapshots of designs. This mode of presentation made design discussion difficult, for both the instructors and students. Presenting a study was easier to handle with PowerPoint, but presenting a design was not. Scale, again, was a critical issue for preparing drawings and models. In a regular studio, usually such projects were exercised at 1:10 scale with hand drafting and mass model. This scale was not workable for presenting with PowerPoint or live video, and there was scarcity of stationary supplies like butter paper, styrofoam etc. Therefore, students were suggested to work on 1:25 scale that fits on a A4 paper and easy to transform into snapshot or PowerPoint presentation. They were suggested to work with drawings and mass models including all necessary furniture/fixture of the same scale

and always put a human figure in the mass model to perceive the space. This was convenient and useful.

From the instructors' side, additional hurdle was to provide feedback and design guidance on drawings and models. Students made study models and discussed with showing images from different sides and live video in the ZOOM meetings. For drawings, students shared the images of their manual drawings, and the instructors draw remarks on their drawings with the help of annotation or whiteboard option in the ZOOM. Students kept snapshots of the remarks and exercised accordingly. However, providing suggestions on the mass models was difficult, it had to be through video. The instructors made some comments to improve the model seeing it in the video and then the student made the adjustments immediately and showed the model again. The instructors struggled to provide design feedback to all the students in the assigned studio time, often the classes were longer and additional sessions had to be offered. The course was designed for 12 hours per week. However, the course required 15-16 hours per week and sometimes additional 1-2 hours were taken in the weekend. These extra hours were beneficial for the learners, especially those who took a slower pace to cope up.

Unlike the regular studio, students did not have the opportunity to work together, they had to work separately. So, they communicated through digital platform, they used the ZOOM dedicated for the studio. Besides, each group planned for communication, such as ZOOM meeting of their own, cell-phone conversation, WhatsApp, Viber, social media etc. They decided the postures, then took measurements and studied the convenient dimensions that suit them. They studied the kiosk function through literature and video study. For example, one group decided the product as kebab and fixed the selling quantity per day, then they studied kebab preparation procedure, serving, storage requirements, operation, maintenance procedure etc. They also studied the equipment and furniture that are required to prepare kebab. Usually in such case, students always studied

the function from real life examples, however due to the lockdown situation, the students had to rely on literature and videos available online. YouTube was the most popular source. Different food vlogging or recipe sites were also useful. Although hands on experience had to be compromised, but there was a bit of compensation with the variety of information. Following the function study, each group checked if there was any difference between the reference standards and their own measurements. Students designed the kiosk customized for themselves following their own measurement.

From the students' side, additional challenge was to prepare models and drawings due to the unavailability of stationary supplies. Usually in the second-year level, students have to prepare drawings and models manually, digital communication is not encouraged. Following the pragmatic situation, students were allowed to prepare drawing with pencils in case drafting tools were unavailable and make models with whatever was available to them. Therefore, students made mass models with materials at hand. Luckily, by 2021 a few stationary suppliers started home delivery and some students utilized this.

Online studio had been introduced in 2020 and this course was conducted in 2021. The students were in the second year, and they had completed more than half of their first-year education online. This was a difficult situation on one hand, while there was a bit of experience for both the students and the instructors on the other hand. Previous experience made it clear that a well-organized structure for the studio projects and making it clear to the students was helpful to achieve the learning outcomes. Along with the technical difficulties for studio exercise and communication, it was felt from the educators' perspective that the online studio had some social and emotional issues that were quite newfangled. The students were in the early stage, and they needed support through direct interaction and peer sustenance. The studio culture was malnourished in this regard, and the students suffered. Sometimes, there was helplessness and uncertainty, for everyone.

There were Covid-19 patients among the students and/or their family members which simply aggravated this emotional state. Lack of privacy of varying range was another issue. Nevertheless, there was constructive achievements as well, this situation enforced all to learn new digital tools, acquire new skills, explore different ways and stay structured. By the end of the project, the students' performance demonstrated that the LOs and ILOs were achieved considerably and there was not much to worry too much. Although, the goals were a bit compromised in the first place.

Since the outbreak of Covid 19, the entire education system experienced a radical shift. In the architecture education, it was critical, because the education program is heavily dependent on one-to-one interaction and lateral learning by its nature. The program had to adapt to the 'new normal' situation quickly. Challenges, prospects and way forwards of online studios are in the academic discussion in the recent time. Such studies have identified several challenges for studio courses from for the learners and educators. A major challenge for the learners in the early years of the program is the difficulty to cope with learning by doing mode of studios (Al Maani et al., 2021). Others include, technical difficulties and coping with the technology (Al Maani et al., 2021; Alnusairat et al., 2020; Ibrahim et al., 2021; Varma & Jafri, 2020), lack of direct interaction and feedback (Al Maani et al., 2021; Alnusairat et al., 2020), stress (Alnusairat et al., 2020), lack of privacy (Ibrahim et al., 2021) etc. Nevertheless, there are achievements like learning digital tools, online workshops, virtual presence of experts etc. (Ceylan et al., 2020; Milovanović et al., 2020). This studio experience is aligned with these studies.

In a nutshell, this studio demonstrated that despite the difficulties, it is possible to manage distance learning for studio-based programs with some considerations along with technical issues. They are summarized as follows.
• Probably, the most important consideration is the perspective, online studio cannot replicate conventional studio verbatim,

Journal of Design Studio, v:4 n:2
Biswas, S., (2022), Teaching Ergonomics in the Online Studio
244

therefore studio projects should be designed pragmatically.

- A clear structure of the studio project with due consideration of modality, criteria, outcomes etc. helps the students to stick to the project. It is equally important to explain the structure and the criteria to the students so that they know what, why and how to work on the studio project.
- For conducting the studio, at least 25% additional time should be considered.
- A separate arrangement for student interaction can benefit them.
- Specifically for teaching ergonomics, special demonstration arrangement for the instructors is required to make the students understand the foundation of space design.

Conclusion

Learning human factors and ergonomics is an essential component of architecture education. However, there is a research gap in the field of design studio pedagogy for teaching ergonomics. This article reports a design studio case of teaching-learning ergonomics during the Covid-19 pandemic. This demonstrates a structured approach of studio exercise that led the students to develop an understanding of ergonomic considerations and exercise of ergonomic application in a design project step by step. The online studio experience also portrays the endeavor to cope with the 'new normal' situation. With a clear structure of the project exercise, detail feedback to the students and additional efforts, online studios can manage the basic activities of a design studio. Online studio can be beneficial for enhancing digital competence and innovative thinking. However, the social and emotional dimensions of the studio culture are difficult to handle online. This studio case might be helpful for the pedagogical pursuit of integrating human factors in architecture education as well as considerations for distant studio learning.

References:
Abdullah, N. A. G., Beh, S. C., Tahir, M. M., Ani, A. C., & Tawil, N. M. (2011). Architecture design studio culture and learning spaces: A holistic approach to the design and planning of learning facilities. *Procedia-Social and Behavioral Sciences*, 15, 27–32.

Al Maani, D., Alnusairat, S., & Al-Jokhadar, A. (2021). Transforming learning for architecture: Online design studio as the new norm for crises adaptation under COVID-19. *Open House International*.

Alagbe, O., Aderonmu, P., Alagbe, T., Sonola, O., Olagunju, O., & Erebor, M. (2017). Students' Perception of Design Studio Jury in Schools of Architecture in Nigeria, *INTED2017 Proceedings*, 4542–4546. https://doi.org/10.21125/inted.2017.1072

Alnusairat, S., Al Maani, D., & Al-Jokhadar, A. (2020). Architecture students' satisfaction with and perceptions of online design studios during COVID-19 lockdown: The case of Jordan universities. *Archnet-IJAR: International Journal of Architectural Research*.

Attaianese, E. (2012). A broader consideration of human factor to enhance sustainable building design. *Work*, 41, 2155–2159. https://doi.org/10.3233/WOR-2012-1020-2155

Attaianese, E. (2017). Ergonomics of Built Environment i.e. How Environmental Design Can Improve Human Performance and Well—Being in a Framework of Sustainability. *Ergonomics International Journal*, s1. https://doi.org/10.23880/EOIJ-16000S

Attaianese, E., & Duca, G. (2012). Human factors and ergonomic principles in building design for life and work activities: An applied methodology. *Theoretical Issues in Ergonomics Science*, 13(2), 187–202.

https://doi.org/10.1080/1463922X.2010.504286

Bailey, R. O. (2005). The digital design coach enhancing design conversations in architectural education [PhD Thesis]. Open Access Te Herenga Waka-Victoria University of Wellington.

Belluigi, D. Z. (2016). Constructions of Roles in Studio Teaching and Learning. *International Journal of Art & Design Education*, 35(1), 21–35. https://doi.org/10.1111/jade.12042

Biswas, S., Kundu, G., & Imam, C. A. (2021). Learning Human Factors/Ergonomics (HFE) in Architectural Education: A Study of Studio Approach in Bangladesh. *Creative Space*, 9(1), 29–41. https://doi.org/10.15415/cs.2021.91003

Ceylan, S., Şahin, P., Seçmen, S., Somer, M. E., & Süher, K. H. (2020). An evaluation of online architectural design studios during COVID-19 outbreak. *Archnet-IJAR: International Journal of Architectural Research*.

Chafee, R. S. (1983). The teaching of architecture at the Ecole des Beaux-Arts and its influence in Britain and America. [PhD Thesis]. Courtauld Institute of Art (University of London).

Charytonowicz, J. (n.d.). Architecture and Ergonomics. 4.

Codinhoto, R., Tzortzopoulos, P., Kagioglou, M., Aouad, G., & Cooper, R. (2009). The impacts of the built environment on health outcomes. *Facilities*, 27(3/4), 138–151. https://doi.org/10.1108/02632770910933152

Costa, A. P. L., Campos, F., & Villarouco, V. (2012). Overview of ergonomics built environment. *Work*, 41, 4142–4148. https://doi.org/10.3233/WOR-2012-0710-4142

Datta, A. (2007). Gender and learning in the design studio. *Journal for Education in the Built Environment*, 2(2), 21–35.

De Chiara, J., & Callender, J. H. (1990). *Time Saver Standards for Building Types* (3rd ed.). McGraw-Hill.

Eilouti, B. (2021). A Framework for Integrating Ergonomics Into Architectural Design. Ergonomics in Design: *The Quarterly of Human Factors Applications*, 106480462098367. https://doi.org/10.1177/1064804620983672

Fross, K. (2014). Ergonomics in the Practice of Project Architect on Selected Examples. In M. Kurosu (Ed.), *Human-Computer Interaction. Theories, Methods, and Tools* (Vol. 8510, pp. 77–85). Springer International Publishing. https://doi.org/10.1007/978-3-319-07233-3_8

Garneau, C. J., & Parkinson, M. B. (2016). A survey of anthropometry and physical accommodation in ergonomics curricula. *Ergonomics*, 59(1), 143–154. https://doi.org/10.1080/00140139.2015.1052853

Hacihasanoglu, O. (2019). Architectural Design Studio Culture. *Journal of Design Studio*, 1(1), 5–15.

Hendrick, H. W. (2008). Applying ergonomics to systems: Some documented "lessons learned." *Applied Ergonomics*, 39(4), 418–426. https://doi.org/10.1016/j.apergo.2008.02.006

Human Factors and Ergonomics Society. (n.d.). What is Human Factors and Ergonomics. Retrieved October 31, 2022, from https://www.hfes.org/About-HFES/What-is-Human-Factors-and-Ergonomics

Ibrahim, A. F., Attia, A. S., Asma'M, B., & Ali, H. H. (2021). Evaluation of the online teaching of architectural design and basic design courses case study: College of Architecture at JUST, Jordan. *Ain Shams Engineering Journal*, 12(2), 2345–2353.

Internation Ergonomics Association. (2000). What Is Ergonomics (HFE)? https://iea.cc/what-is-ergonomics/

Kuhn, S. (2001). Learning from the Architecture Studio: Implications for Project-Based Pedagogy. 4.

Ledewitz, S. (1985). Models of Design in Studio Teaching. *Journal of Architectural Education*, 38(2), 2–8. https://doi.org/10.1080/10464883.1985.107583 54

Milovanović, A., Kostić, M., Zorić, A., \DJor\djević, A., Pešić, M., Bugarski, J., Todorović, D., Sokolović, N., & Josifovski, A. (2020). Transferring COVID-19 challenges into learning potentials: Online workshops in architectural education. *Sustainability*, 12(17), 7024.

Moody, L. (2011). A studio-based approach to teaching ergonomics and human factors. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 55(1), 545–549.

Neufert, E., & Neufert, P. (2012). *Neufert Architects' data*. John Wiley & Sons.

Olguntürk, N., & Demirkan, H. (2009). Ergonomics and Universal Design in Interior Architecture Education. *METU Journal of the Faculty of Architecture*, 26(2), 123–138. https://doi.org/10.4305/METU.JFA.2009.2.7

Panero, J., & Zelnik, M. (1979). *Human Dimension & interior Space: A Source Book of Design Reference Standards*. Watson-Guptill.

Pinto, M. R., Stefania De Medici, Van Sant, C., Alfredo Bianchi, Zlotnicki, A., & Napoli, C. (2000). Technical note. *Applied Ergonomics*, 31(3), 317–322. https://doi.org/10.1016/S0003-6870(99)00058-7

Radjiyev, A., Qiu, H., Xiong, S., & Nam, K. (2015). Ergonomics and sustainable development in the past two decades (1992–2011): Research trends and how ergonomics can contribute to sustainable development. *Applied Ergonomics*, 46, 67–75. https://doi.org/10.1016/j.apergo.2014.07.006

Rogers, B., Buckheit, K., & Ostendorf, J. (2013). Ergonomics and Nursing in Hospital Environments. *Workplace Health & Safety*, 61(10), 429–439. https://doi.org/10.1177/216507991306101003

Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass.

Springer, T. (n.d.). Ergonomics for Healthcare Environments. 39.

Varma, A., & Jafri, M. S. (2020). COVID-19 responsive teaching of undergraduate architecture programs in India: Learnings for post-pandemic education. *Archnet-IJAR: International Journal of Architectural Research*.

Villeneuve, J. (2000). The Contribution of Ergonomics to the Design of Hospital Architecture. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 44(26), 189–196. https://doi.org/10.1177/154193120004402615

Vyas, D., van der Veer, G., & Nijholt, A. (2013). Creative practices in the design studio culture: Collaboration and communication. *Cognition, Technology & Work*, 15(4), 415–443.

Yeoman, P., & Ashmore, N. (2018). Moving from pedagogical challenge to ergonomic challenge: Translating epistemology into the built environment for learning. *Australasian Journal of Educational Technology*, 34(6). https://doi.org/10.14742/ajet.4502

Journal of design studio