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Design Students' Affordance-based Messages in an Undesigned Design Studio

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Abstract: In this study, as PhD candidates and teaching assistants working in the Interior Architecture Department of the Faculty of Architecture at Istanbul Technical University (ITU) we aimed to explore the interrelationship between the students' messages and the studio's affordances by using participant observation and photovoice methods in the classes we attended in the same physical space. We used the photographs taken by us during the studio courses as the central data set to explore the messages triggered by the studio affordances, which are formed based on the complex environments and relationships created by the limited physical facilities of our design studio, the high student quotas and the large project groups using the same physical space at different and even the exact times. Through collaborative commentary and reflective writing, we produced written and visual reports on the final themes at the conclusion of the analysis process. Finally, we concluded that the four main themes, namely, direct message, indirect message, transcendent message, and no message but action, guided us in exploring and explaining our studio's affordances.

Keywords: Interior design, Design studio, Affordance, Participant-observation, Photovoice.

1.Introduction

The studio's long tradition of diverse pedagogical practices, which officially began in 1819 at the Ecole des Beaux-Arts in France and later spread to European countries and North America, is considered an essential component – even the cornerstone – of design education (Demirbaş & Demirkan, 2007; Friedman, 2002; Goldschmidt et al., 2010; Kauppila, 2018; Ochsner, 2000). Designing and learning to design are two challenging tasks at the heart of the studio, and few students can complete the studio requirements without experiencing dilemmas. Sachs (1999) defines this situation as 'stuckness'. The complex nature of the social interactions in the studio (Sawyer, 2019), the difficulties experienced in constructing knowledge, and the influence of environmental factors become part of design education and studio life and culture. In fact, the learning and development that takes place means transitioning from one habitus to another as a struggle (Çil & Demirel-Özer, 2021).

Within this specific scope, we have opened discussions for relationships between design students and studio affordances. According to the affordance theory, which is based on the contextual and situational possibilities of the individual's relationship with the surroundings,

the environment offers actions and scenarios that are susceptible to change and transformation, as well as physically visible relationships (Costantini et al., 2010; Gibson, 1979/2014; Rands & Gansemer-Topf, 2020). Hence, when there are no objects or arrangements to meet the needs of individuals in spaces, this deficiency leads them to find solutions (Kim, 2021), in other words, to create new affordances. In the context of our research, the messages and other responses that students produce as a solution to their difficulties due to their inability to personalise their workspaces because of the technical and spatial constraints in the studio reveal new affordances in the studio.

As authors working in the same physical space and as stakeholders in design education in a complex and undesigned design studio, we were able to closely observe our students' actions and responses towards studio affordances. One of the authors worked in a foundation design studio consisting of Architecture, Interior Architecture, and Industrial Design students, professors, and research and teaching assistants. In the studio, the following were held on three half days, 12 hours in total per week: Project I course consisted of a total of 75 students and Visual Communication II: Visualization & Perspective course consisted of a total of 71 first-year students. The second author participated in the Interior Architecture Design Studio III course, which takes place in a second- and third-year (vertical studio) of interior architecture education, conducted over two half days, 8 hours in total per week. There were 22 second-year students and 4 third-year students in the class. The final author was involved in the Interior Architecture Project II course of the International Master of Interior Architectural Design (IMIAD), which mostly took place on one half-day, 4 hours in total per week in the studio. There was a total of 15 master's students in this international class (Figure 1).

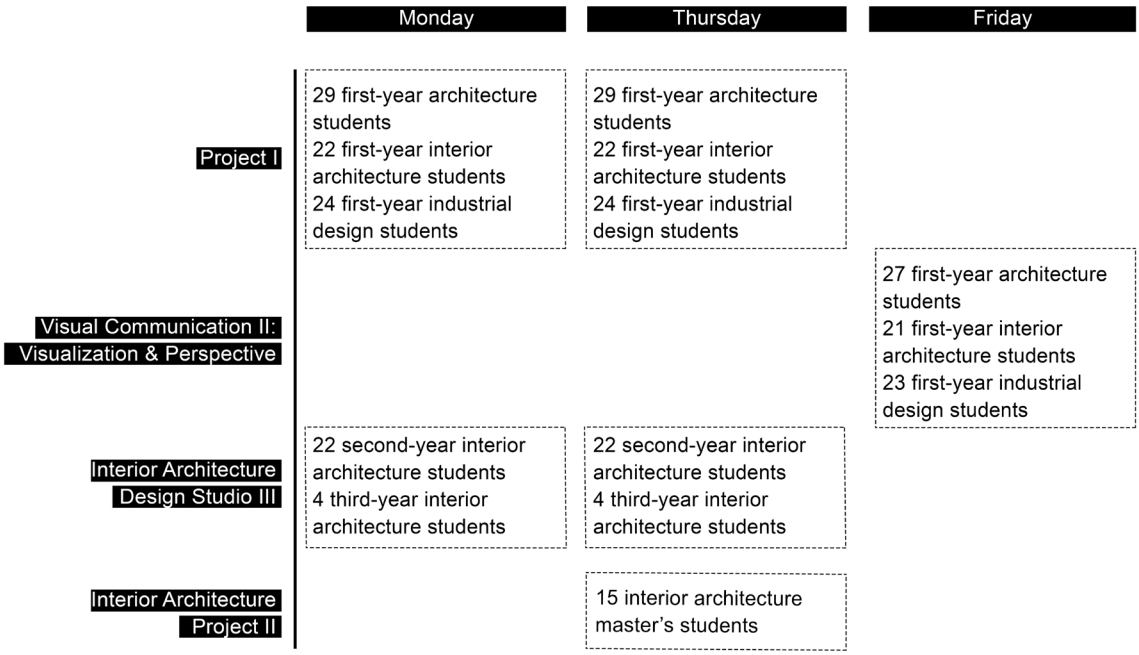

Figure 1: *Participants in the design studio*

Consequently, we had the opportunity to observe our studio in detail with a wide range of activities as it was utilised by students at various levels – first-year, second-third-year, and master's students. The diversity in student usage patterns allowed us to gain insights into the different ways and times in which the space was experienced. However, there was no significant difference between the various educational levels we observed in our design studio. In regard to the conditions, the primary objective of the study was to produce thick descriptions (Geertz, 1973) based on the ethnographic approach, which is defined as "a qualitative description of human social phenomena (Austerlitz, 2007 p. 171)", by documenting and interpreting the explicit and implicit relationship between the affordances in the design studio and the students from various years.

In line with the literature, we used the photovoice method that has become increasingly common over the years, which was designed to reach marginalised groups and serve as their voice. Even though it is not widely used in higher education research (Wass et al., 2020), this method was defined by Harrietha et al. (2023) as "an instructional tool" (p. 3) and "a longstanding pedagogical tool" (p. 4). As academics working in the same interior architecture department and as researchers employing this systematic methodology, we regularly met to discuss our data. At the conclusion of the 14-week academic term, we individually analysed our data, identified some preliminary themes, and then synthesised them through collaborative group discussion to arrive at our final themes, namely, direct message, indirect message, transcendent message, and no message but action, to comprehend and explain the affordances of the design studio through the students' messages.

This paper is constructed into five fundamental sections. Following the general framework of the study in the introduction, the theoretical foundation section provides a brief review of the literature on relationships between the design studio and the notion of affordance and photovoice, which was employed as a data-collection method through participant observation roles. Then, we delve into the case of the "undesigned design studio" while providing detailed information about it. The findings section presents the final themes derived from our observations, discussions, and syntheses. Finally, in the conclusion section, we discuss the results obtained from the application of the photovoice and our reflection on this method as the practitioners in an undesigned design studio and present future research directions (Figure 2).

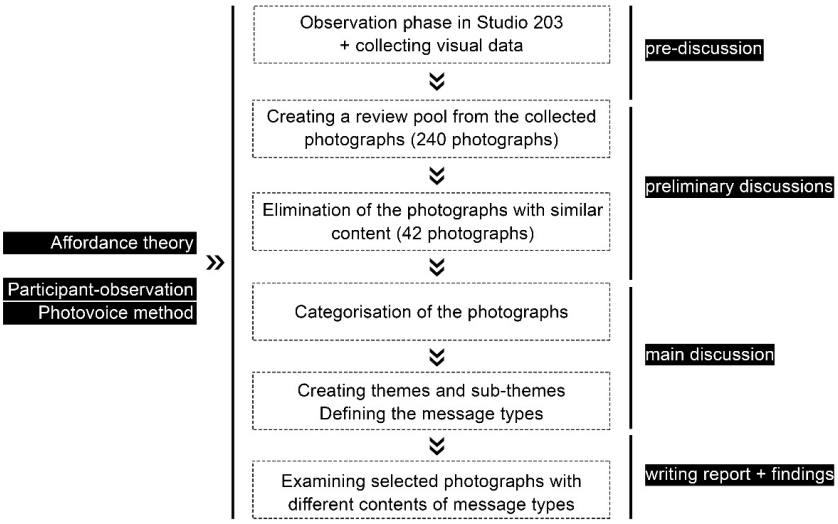

Figure 2: *Phases of the research study*

2.Theoretical Foundation: Design Studio and Affordance

Based on the notions of field theory and life space, the position of the learner in a learning space defines their reality so that knowledge is constructed not only by the cognitive functions of the individual but also by the influence of educational environments' physical and social components (Kolb & Kolb, 2005; 2009; Kolb, 2015). Given the impact of the physical characteristics of the academic environment on students' attitudes, behaviours, and learning, it is inevitable that spatial opportunities and constraints will reveal a variety of social and cognitive relationships in this context. Furthermore, physical learning environments become an integral part of the learning journey by allowing the emergence of mental and social environments that encourage students to collaborate and learn from one another (de Borba et al., 2020; Rands & Gansemer-Topf, 2017; Vyas et al., 2013).

Across the literature, the physical learning environment is evaluated in light of the affordance theory, which mainly defines/includes its qualitative characteristics (Rands & Gansemer-Topf, 2020). It is probably safe to say that the affordances of the environment are essentially everything, positive or negative, that is available to living organisms. The environment in question is the artificial environment created by human modification of the natural setting (Gibson, 1979/2014). In other words, it refers to the historical, economic, and social aspects resulting from the dialectical confrontation between nature and human beings (Freire, 1997/2007). In light of the fact that, as Freire (1970/2005b, p. 88) explains, "world and human beings do not exist apart from each other, they exist in constant interaction." Since people reflexively (Kim, 2021) and experientially (Norman, 1999) determine affordances in the built environment based on their needs and dispositions, affordances may not be visible and recognisable (Norman, 1999). Affordances are objective in the sense that they exist at some point independently of perception. Still, they are also subjective in the sense that they vary within the action boundaries of individuals, making it challenging to define this term as subjective or objective clearly and singularly (Osiurak et al., 2017). In addition, affordances are formed as a result of the reciprocal relationship between the body and environment, as the human body is an integral part of the environment, and the body and space are mutually constitutive. In this vein, affordance has multiplicity because it varies according to the circumstances and individuals (Atmodiwirjo, 2014; Kim, 2021).

Affordance theory has been utilised frequently in industrial design, user interface design, psychology, and language learning. On the other hand, despite affordance being a fundamental concept in architecture and interior design/architecture, its role in those research areas has been limited (Kim, 2021; Maier et al., 2009; Murray & Fujishima, 2013). Consequently, we noticed that the literature has been relatively silent regarding the design studio concerning the notion of affordance (Rands & Gansemer-Topf, 2020). Moreover, given that the studio will continue to be one of the pillars of design education in the future (Goldschmidt et al., 2010), we urge that more initiatives and efforts are required to investigate this kind of educational environment based on primarily doing (Schön, 1987) and commoning (Hamilton, 2018) within the context of affordance theory.

3.Method

Structured as a participatory research method by Wang and Burris (1994; 1997) and based on Paulo Freire's critical pedagogy, feminist theory, social and cognitive constructivist approach, and documentary photography, photovoice is based on documenting everyday situations related to the research topic with photographs and then sharing and discussing the findings (Hergenrather et al., 2009; Wang & Burris, 1997; Wang et al., 2000; Wass et al., 2020). The photovoice method is used to enable participants to reflect on their strengths and weaknesses within the community or society, to promote critical and open dialogue about personal and social issues through group discussions, and to reach out to policymakers to inform them about issues of concern, and thus,

contribute to policy-making process (Biber & Brandenburg, 2020; Fleming et al., 2009; Wang & Burris, 1997; Wang, 1999; Wang et al., 2000). Wang and Burris first employed photovoice to visually document the health and working conditions of rural Chinese women who lacked access to cameras. With this approach, the argument that they do not have the ability and capacity to use the camera was challenged, and participants played a core role in their research (Wang & Burris, 1994; 1997; Wang, 1999). In this respect, the photovoice approach has been characterised as "a community-based participatory research methodology (Catalani & Minkler, 2010, p. 424; Woolford et al., 2012, p. 231)," "an ethnographic method of inquiry (Fleming et al., 2009, p. 17)," "an innovative participatory action research (Wang, 1999, p. 185)," and "a method for self-expression of such marginalised voices (Wainwright, Bingham, and Sicwebu, 2017, p. 409)." Consequently, this method serves a purpose beyond merely creating a visual data set on a specific topic. It allows for the embodiment of emotions and experiences while also establishing a systematic environment for defining, presenting, and developing research questions and findings.

We collected data during the 14-week spring semester between March and June 2023 by mainly taking photographs, partially taking field notes, and sketching through participant-observer roles at different periods. This multiplicity, through three different observation experiences and tendencies, was rather fruitful in visually documenting the connections between different students using the same studio and the studio affordances to comprehend the fieldwork from various perspectives and backgrounds. We first categorised the visual data collected into a shared digital file based on the first four questions of the photovoice technique. The questions were: "What do you see here? What is really happening here? How does this relate to our lives? Why does this situation, concern, or strength exist? (Wang, 1999, p. 188)", known by the acronym SHOWeD. However, we did not include the question, "What can we do about it?" in our analysis because it is beyond the scope of this study, and we do not aim to make any design recommendations as a result of this study. In light of this methodological framework, we first created initial themes and sub-themes by performing reflective writing individually on the photographs. Then, we synthesised the themes, sub-themes, and reflective writings – primarily descriptive and narrative, partly critical – through discussion sessions in a democratic manner, in other words, peer dialogues. Consequently, we have made some findings regarding the affordances of the learning space, as well as the responses generated by the students in reaction to the situations that they have encountered in the focused design studio. The themes, sub-themes, and reflections that resulted from a combination of the observation outputs of the three authors provided a holistic and deep perspective of student messages regarding the affordances of the educational environment we focused on. Hence, we defined a range of affordance-based message types indicating conflicts, collaborations, unexpected and practical solutions, and usages in Studio 203.

3.1. Setting and Community: Studio 203 as an "Undesigned Design Studio"

This dedicated section of this study digs into a detailed account of the undesigned design studio case that we applied, drawing upon the literature on design studios and affordance discussed in the previous part. In addition, the utilisation of photovoice as a research method. To understand what we mean by an undesigned design studio, it is essential to provide context by introducing our Faculty of Architecture, historically named and known Taşkışla, at ITU] that contains five design departments: Architecture, Interior Architecture, Urban and Regional Planning, Landscape Architecture, and Industrial Design. The interscale permeability of the faculty ranges from the city scale to the product scale and from the bachelor's degree to the PhD. Although this multidisciplinary permeability encourages an efficient educational environment, several issues with the physical learning environment result from this circumstance.

Due to the spatial and technical capacity of our

faculty and the departments' high quotas, multiple courses need to be conducted simultaneously within the same studio, or another class uses the same physical space immediately afterwards. These usage scenarios lead to constant changes and arrangements throughout the day based on the specific requirements of those students. Nonetheless, this characteristic, catalysing communication among students from various disciplines, requires unexpected and hidden collaborations and interactions but partly negative correlations. Furthermore, the absence of individualised spaces provided by the university formally in the studio results in a nomadic student situation or triggers the design students to create their own area using direct and indirect messages.

Within the scope of this study, Studio 203, which we determined as a field for this research due to its dynamic function, serves as an exemplary case and space in which the formation of the various message types discussed can be observed, documented, analysed and finally, co-interpreted. This studio undergoes constant changes and adaptations throughout the day, allowing for the investigation of how message types evolve and differentiate based on specific needs. At this point, we defined the design studio as "undesigned" to emphasise its confused and disordered structure, which was not planned according to users' cognitive, social, and physical needs. From another perspective, these "undersigned" and "non-customisable" circumstances in the studio where design education is provided to students make the realm of the study compelling. Thus, these circumstances trigger the production and diversity of message types, so the undesigned design studio serves as the starting point for all messages. As a summary of all the information presented, the parameters that allow us to define Studio 203 as an "undesigned design studio" can be summarised as follows:

- Insufficient classroom capacity and large student population: The limited capacity of the classroom and large student groups result in changes in the spatial use and organisation of the studio to accommodate different activities and applications such as body performance, jury sessions, shared discussions, individual studies, and group crits.
- Lack of individual storage and private spaces: The absence of designated storage and private spaces within the studio prevents students from producing and personalising their own space. Under such circumstances, the students attempt to arrange or create their own space with unexpected approaches by using intangible and implicit borders.
- The lack of control over the natural light source in Studio 203: Due to the lack of curtains or means to regulate the light, students tend to position themselves in the studio based on the available light, which is further influenced by factors such as temperature, the presence of direct sunlight, or shade. In fact, there could be a discernible temperature difference between the two extremities of the studio, which is a narrow and long space and resembles a corridor.
- Acoustic problems: The design of Studio 203 (70.6m x 5.4m), with its high ceiling (7.3m) and the presence of numerous students and lecturers, poses challenges for audio communication within the studio. Due to the studio's lack of partitions, walls, and acoustic control panels, the voices of the studio groups attempting to conduct their course in 203 simultaneously interfere with one another, resulting in cacophony (Figure 3).
- Access to electricity: In studios where computer-based work is integral, the arrangement of power sockets along the horizontal walls encourages students to sit close to each other and in close proximity to the walls. The absence of a charging system for electronic devices such as laptops, tablets, and mobile phones, and space in which the students work with them compels

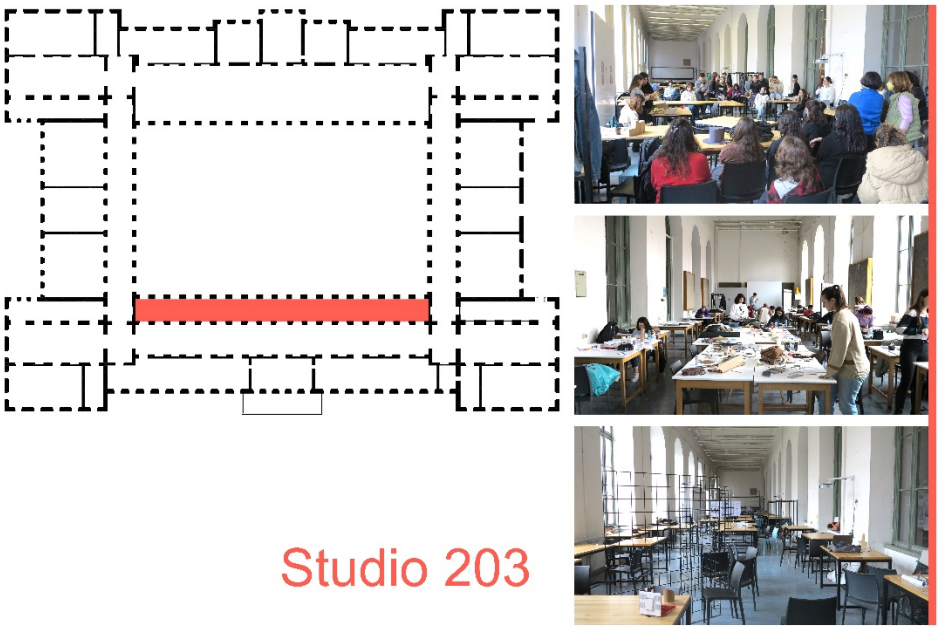

Figure 3: *Studio 203*

students to seek alternative solutions.

- Presence of cats: Unlike many architectural faculties, Taşkışla is a dwelling for an invaluable user group: cats. Some of these cats reside in and around the studios, adding funny, witty, and cheerful usage scenarios and relationships to the studio environment, as well as occasionally using certain feline instincts to differentiate in-studio usage.

4. Findings: Types of Messages in the Undesigned Design Studio

Considering the impact of the physical characteristics of the academic and educational environment on students' attitudes, behaviours, and learning, it is inevitable that the spatial possibilities and constraints within this context give rise to diverse social and cognitive relationships. In this regard, we have observed that the parameters we have listed contribute to a decrease in studio belonging, as students are unable to create their personal working spaces. As a consequence of this lack of belonging, we have identified the various forms of messaging that students typically engage in to protect their studio work or personalise their studio environment. As such, we have developed four main themes through our visual data analysis:

- Direct messages —which are clear and precise written and visual notes;
- Indirect messages —which students create by utilising the potential of the space to produce in response to their needs;
- Transcendent messages —which can be defined as a form of creative and artistic self-expression;
- No message but action —the combination of action and reflection.

Through these four themes, the undesigned design studio triggers a number of spatial conditions through which students express their ideas and necessities while providing different dimensions of communication and functioning as a basis of meaningful discourse and creative, implicit, and unwritten collaborations between classmates and even other classes without face-to-face interactions.

4.1. Direct Message: "Please Don't Touch"

> *Student: Someone moved my model carelessly to the back of the studio and placed their own model in my model's*

place. I then placed their model at the back of the classroom.

The need for different studio groups to use the same space at different times throughout the academic year and the lack of personal space and products in the faculty for the storage and private space needs of students force them to develop practical, rational, and implicit solutions. In addition, students frequently leave their models, posters, and materials in the studio, which is primarily due to the lack of personal storage space in their faculties and the difficulty of transporting them due to their large size and crowded public transportation. A number of students attempt to safeguard their projects by attaching written and visual notes on them to warn and inform other students and cleaning staff who work in the studio at different periods. The messages are placed on various materials such as cardboard, corrugated cardboard, foam board, styrofoam, and drawing paper, which they will use in/for their next class and next design stage. It attempts to keep it from being seen, taken, or damaged by others by placing it in inconspicuous placements away from typical usage of the classroom. As a result, the most common method they have developed for keeping their work secure in the studio is the use of written and visual messages. As researchers and teaching assistants working in the same studio at different times, we have noticed that "Please don't touch" is the most frequently communicated phrase (Figure 4).

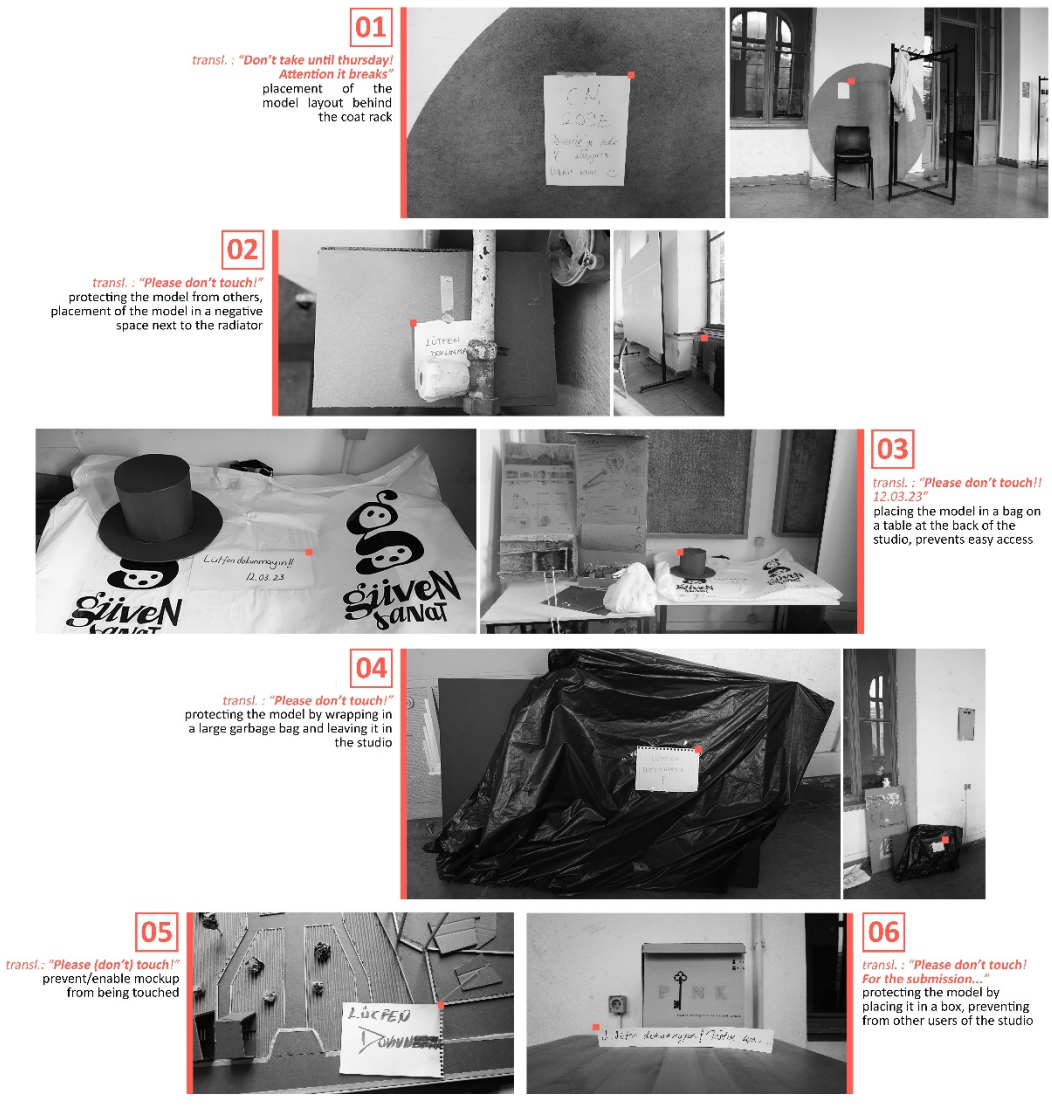

Figure 4: *Direct messages*

As Vygotsky (2012) argues about the nature of writing, the notes written by the students to convey to other stakeholders using the studio have a monologue structure. They are intended to warn and convey messages to them to influence their actions. Written language, which is used to document topics that are relatively foreign and distant from everyday life (Dewey, 2004), is the graphical embodiment of sounds, concepts, thoughts, ideas, and images – verbal in nature (Emig, 2020; McNamara & Allen, 2017). In addition, it should be as straightforward as possible in order to convey the message precisely (Vygotsky, 2012). Parallel to these perspectives, the students' direct messages in the design studio are succinct and striking.

4.2. Indirect Message: Storage within Intangible Borders

These types of implicitly meaningful in-class messages emerge to meet the students' needs in accordance with the study and life opportunities provided by the class. In contrast to direct messages, indirect messages lack written content and direct statements. Even if the meaning of the messages is clear to someone familiar with the studio, the messages may be meaningless or unnoticeable to an outsider. Indirect expression refers to the inferences and associations of thoughts in the mind. In other words, facts, objects, and relationships are transformed into mental representations based on the receivers' prior knowledge and background (Kuloğlu & Asasoğlu, 2010). In this context, we discovered that most of the students' indirect messages concerned the inviolability of the storage spaces they had designated. Since Studio 203 does not provide students with individualised study or storage spaces, students place their products and materials in unorthodox spaces. In this vein, indirect messages in Studio 203 are said to be based on "placement." At this point, it is possible to classify the students' indirect messages into three distinct placement spaces:

- Placing their works and materials under and mainly on the top part of the coat rack in the studio;
- Placing them on a higher surface than the general areas of use;
- Utilising the determined space, such as between the two walls and between the radiator and the wall, using them as a compartment for storage (Figure 5).

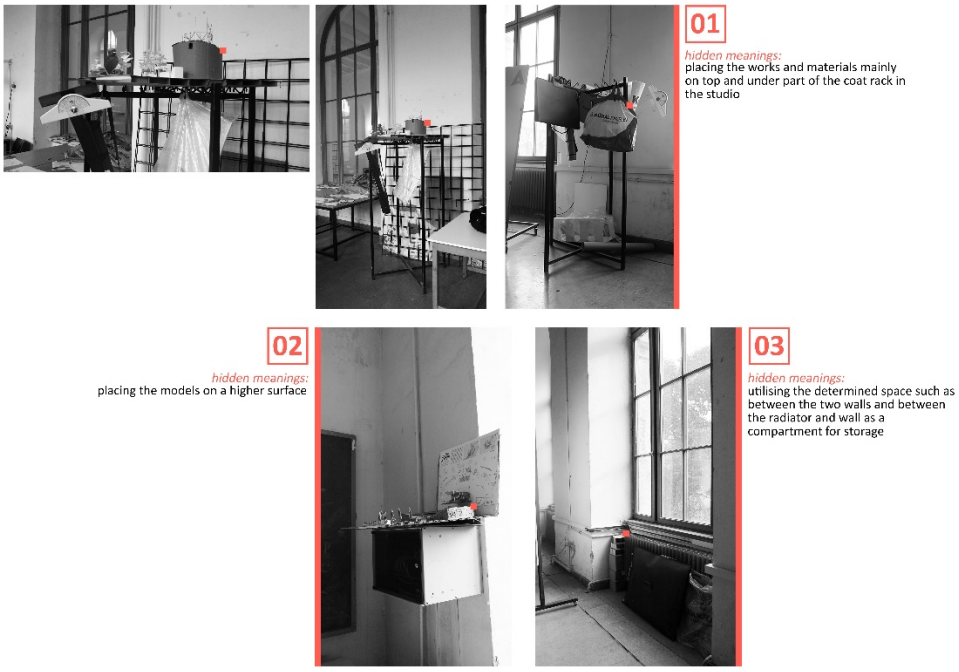

Figure 5: *Indirect messages*

Design students attempt to use and create studio spaces with perceptible but intangible boundaries for their needs, which are associated with personal working and storage spaces. Locating their materials and models in the mentioned spaces, making them untouchable, and these unwritten rules and storage usages/practices, which are implemented and accepted by the students, indicate that the model or material left behind is essential for future classes or juries and that the students did so intentionally. We noticed that the messages and emerging unwritten rules for protecting the students' work were generated non-verbally and informally by the students. This observation was based on the spaces' potential, the studio's complex physical conditions, and the learners' common respect and observance of these unwritten rules.

4.3. Transcendent Message: Self-expressions

We observed that the generation primarily comprised of learners aged 18 to 23, who tend to make the studio relatively more colourful and vivid. They view the design studio as an appropriate setting for their reflections and utilise it for this purpose, albeit not intensively. The notion of self-expression fits to frame the students' attitudes related to creativity and self-reflection in Studio 203. Self-expression, which can be defined as creative, artistic, and humorous production in our design studio, can be interpreted as an outcome of the student's desire to convey their discourse in the studio. The colourful expressions drawn and written on the studio wall could be considered an extracurricular form of expression and a subgenre of graffiti. In addition, the studio walls and several classroom objects have been manipulated and coloured, which may attain message quality and thus be converted into both implicit and explicit messages. However, they differ from direct and indirect messages in some sense due to their uniqueness and artistic quality because, beyond the transmission of discourse to stakeholders, the transcendent messages possess a unique and independent personality and embody the essence of the students who create the visual notes (Figure 6).

Learning and self-expression through artistic and creative acts (Dewey, 1980), which prioritise perceived qualities over expressed symbols (Van Den Akker, 2014), can create a new channel of communication by allowing students to think beyond the limitations of verbal language since, in Dewey's (1980, p. 118) words, "works of art, like words, are literally pregnant with meaning." Furthermore, Van Den Akker (2014, p. 756) associates the painting process with "existential-phenomenological experience in meditative

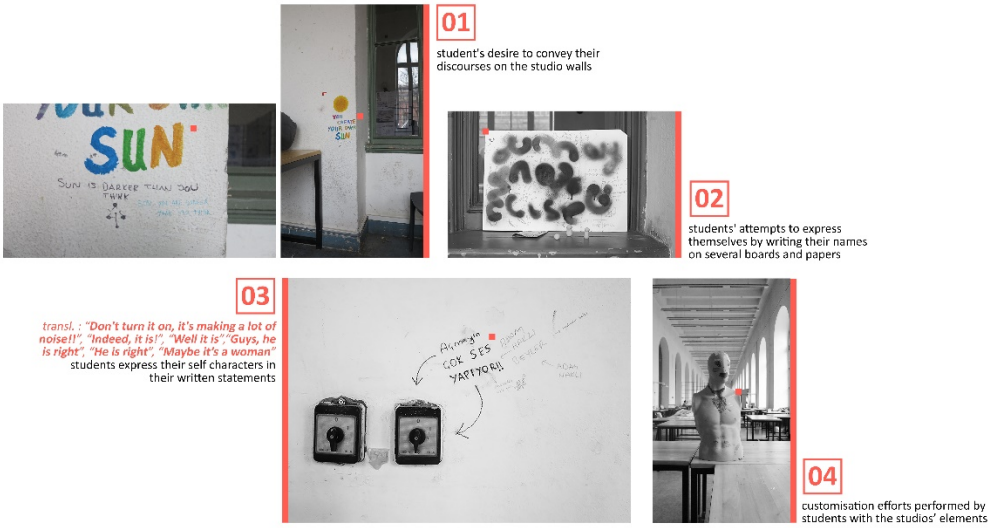

Figure 6: *Transcendent message: Self-expressions*

practice." Similarly, Pithouse (2011, p. 46) presents a radical discourse on the relationship between creative and artistic actions and the practitioner by stating, "making oneself visible through drawing." As a result, such self-reflective actions can strengthen students' communication skills as well as their social, political, and emotional perspectives (Van Den Akker, 2014), which are crucial for personal transformation (Mezirow, 1997). In this instance, we can argue that the transcendent messages that we have proposed serve as a mediator, i.e., as a means for practitioner students first to express themselves and then reach the receivers.

4.4. No Message but Action: Practical Reactions and Cats

This theme focuses on the physical capabilities and inadequacies of the studio, the student's immediate, practical, rational, and sometimes humorous solutions to the design space, and the role of cats in this ecosystem. It thus summarises the practical solutions and the role of cats, invaluable members, in the creation of affordances in Studio 203.

As in the other three headings, the faculty's limited space and technical constraints assume a crucial role in constructing the sub-theme: practical reaction. It emphasises action instead of creating a direct and indirect message to warn or inform other studio users. In this case, students behave proactively and develop inventive and logical solutions to their needs and problems, resulting in amusing situations. Examples include the use of a roll of cardboard as an angle adjuster to set the angle of the projection used during the presentations and the use of a chair as a solution to the incompatibility of electrical wiring and furniture positions in the studio. In addition, due to the lack of white backgrounds for taking photographs in the studio, students' efforts to create a temporary background are some of the solutions produced in response to the incompatibilities that arise in the scope of the design studio affordance and the intersection of humans, space, and products (Figure 7).

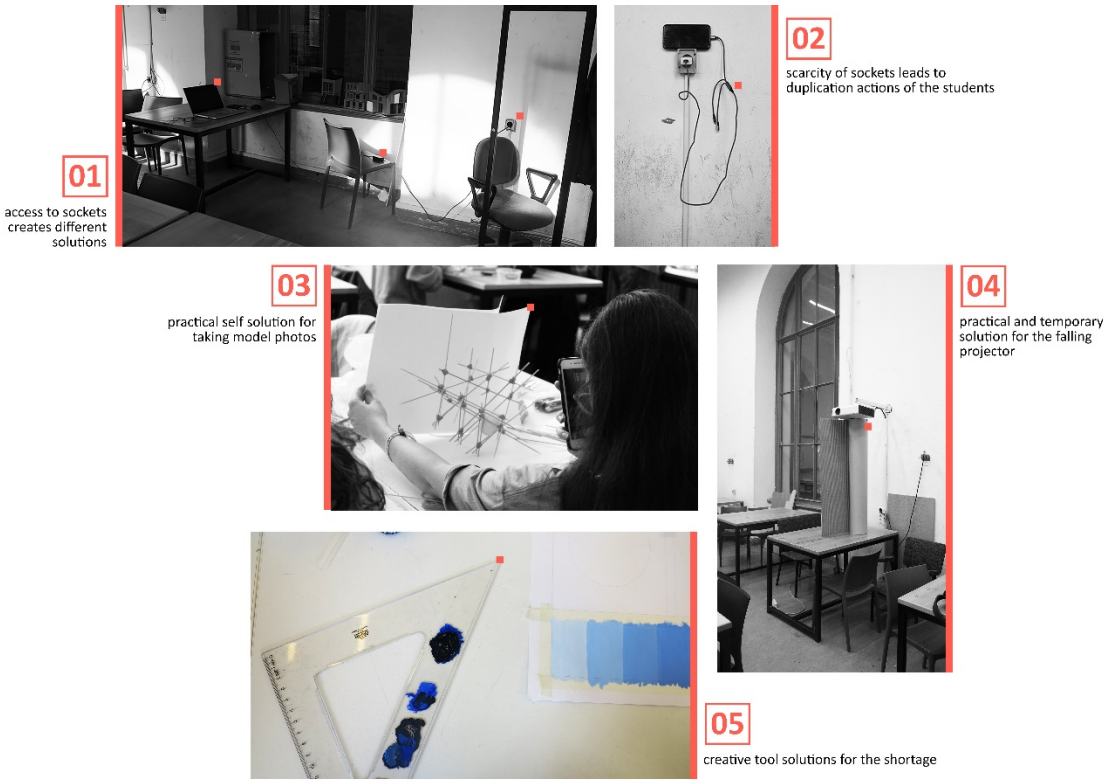

Figure 7: *Practical reactions*

Praxis, which is unique to humanity and consists of reflection and action, is a creative phenomenon that transforms people and their environment (Freire, 1970/2005b) because "men, unlike animals, are not only in the world but with the world (Freire, 1974/2005a, p. 3)." Humanity cannot, therefore, exist in a passive attitude, "but in word, in work, in action-reflection (Freire, 1970/2005b, p. 88)." On the basis of this assumption, all of the students' actions in the design studio can be interpreted as a reflection of human motivations to alter and transform the environment.

Another issue under this central theme is the relationship between the students and the dozens of cats who reside in our faculty, roaming the studios at will, sleeping and playing on or within students' models. In our educational milieu, cats are untouchable, cannot be judged or criticised for their actions, and have almost no concept of boundaries, even if they harm students' models and posters. Students have been observed leaving their studies or lectures to interact and play with the cats in our studio. From the smiles on the students' faces, we can assume that their interaction with the cats reduces their anxiety and stress levels. Consequently, cats become one of the critical parts of studio life and provide unexpected scenarios that enliven the learning environment. Regarding cats and spatial affordance, they use the models and materials to scratch/trim their nails and thus damage. At this point, there is not much that students can do other than put their models and materials out of the reach of cats. Therefore, the effect of cats cannot be ignored, especially in the formation of indirect messages (Figure 8).

5. Conclusion and Discussion

Within the scope of this study, carried out at the intersection of the design studio and the concept of affordance, we have reached two main conclusions based on the students' approaches and the studio's functioning. First, we found that affordances in the design studio make students active in producing and communicating messages. The fact that design education takes place in an undesigned studio

Figure 8: *Collage of the cats' manipulations*

environment, even against the primary function of the studio, makes students active makers and problem solvers against studio affordance. The conclusion we have reached based on the studio's functioning is related to the fact that the messages we have structured as direct, indirect, transcendent, and no message but action are developed against the studio's affordances or emerge as a result of the triggering of affordances. These implicitly or explicitly constructed messages provide spatial information about the functioning of the studio, but more importantly, the messages provide precise data for us to understand how the tangible and intangible functioning of the studio is perceived, interpreted and transformed by the students. We argue that through the uncovered messages, students construct a message network, both explicit and implicit, and that this network is a communicative and interactive part of the hidden curriculum.

Regarding the gains provided by the photovoice method, due to the scope of the research, the innovative application of the method and the roles we assumed, we, as researchers, experienced the affordances of the studio as much as the students did. In addition, our observations in the design studio through our written and predominantly visual data collection processes offered invaluable insights into understanding, internalising and communicating students' responses and solutions to studio affordances. In this way, we were able to access detailed and instant visual data by empathising with the students as stakeholders and users of the studio because, in the words of Dewey (1933, p. 252), "observation demands the mind to be alert, on the qui vive, searching and probing." Therefore, we agree with Wang et al. (2000) that this method can provide practitioners with a number of possible acquisitions, such as becoming aware of the environment, observing with curiosity, and imagining the world from someone else's point of view. As experienced researchers and teaching assistants, the participant-observer role and the photovoice method have contributed to our pedagogical perspective as trainee teachers by heightening our awareness and sensitivity to the educational environment we have been immersed in for years.

Regarding future research, this study was conducted within specific spatial and temporal boundaries. Hence, the findings on studio affordances could be diversified, developed, and expanded with additional field studies conducted in design studios in different countries, with students of various profiles and disciplines and with the cultural parameter's influence. Moreover, through the active participation of the students in both the data collection and evaluation phases, different details and relationships regarding the studio affordances and students' messages indicating their reactions could be explored.

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