A New Experience for Integration of Section and Model: A Case Report

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Abstract: Architectural education inherently requires continuity. The transformative power of the world, which people have experienced in the last 5 years with crises such as pandemics and earthquakes, has changed and forced the form, style and tools of this continuity. Architectural design education, which was shaped on the axis of a studio culture, had to cope with the ruptures and transitions of a new phase. This case report aims to convey an experience that brought together the adaptation of face-to-face education of the students after the online education and the section-model practice that the studio tutors have experienced before. Since the study tries to repair the correlations between the continuity, ruptures and transitions of architectural design education, integration of section and model has been re-engaged in the studio. The study group consists of architecture students who switched to online education after the February 2023 earthquakes and started face-to-face education again in the fall semester of 2023/2024. As a result, well-thought models, few experiments on the models and quick transfers to digital programs were revealed as three main tendencies in the studio. In conclusion, the adaptation of the student on the axis of continuity and to reinforce the design productivity, design problem-solving skills and the habit of doing design research tried to provide.

Keywords: Architectural Studio, Design, Model, Section.

1.Introduction

This study was prepared to convey the new versions of the reflections marked by the article, "Integration of Section and Model: Reflections from a Studio Practice" published in the Journal of Design Studio. In other words, new reflections of experience, observations and investigations in this paper are based on previous experience, coded as 'from section-model to space'. Although the first article published in 2020 was designed as a pedagogical approach proposal to eliminate the disconnection between basic design and upper-level architectural project studios, to ensure the continuity of experimentation, and to increase the potential for discovery, this second article includes the cross-sectional spatial cycles of a process that starts with mass dynamism in the congested and problematic urban fabric using the same pedagogical approach. For this purpose, the study emphasizes the section-model experience, which is a combination of section and model. This approach also means disseminating model practices as a design tool to the architectural design studio, which has become digitalized and almost completely moving away from the model, and re-questioning alternative presentations of the

practice of thinking in the third dimension through the model.

2. Pedagogical Set-up: Preparation and Justification

The project group consists of students who took the Mim2001 Architectural Project III course in the fall semester of 2023-2024 at Sivas Cumhuriyet University, Department of Architecture. The special feature of this group is that it consists of students who started their architectural education with basic design last year, but experienced their first architectural studios online due to the February earthquakes. This is a serious problem in terms of the architectural studio experience and has had side effects and consequences similar to the COVID-19 pandemic in terms of the continuity of architectural education. First-grade students were in a face-to-face environment and suddenly found themselves in an online environment. Students have had to move away from the existing design environment in which they touch, see, transform concretely and watch what is transformed, and which additionally includes control and intervention. This, unfortunately, has brought along breaks, ruptures, adaptation difficulties and coldness similar to many problems we have experienced in the process of returning to face-to-face education after the pandemic. Moreover, the fact that the project group consists of first-grade students who have just started their architectural education has made the situation even more complicated.

From architectural design studio and architectural education perspectives, although most of the publications and shared experiences produced during and after the pandemic welcome online education as a new pedagogical formation, the publications and experiences that convey the problems encountered in the design studio after the transition to face-to-face education after the pandemic are limited. The advantages, disadvantages, limitations and opportunities of online education have been examined by many studies. For example, Yorgancıoğlu (2020) states the elimination of the physical studio environment as the main change in distance education due to the pandemic, underlining that the tools previously used as presentation and simulation tools have turned into pedagogical tools under the 'new normal' conditions, and that the state of isolation makes it difficult to provide the necessary discipline and concentration in the direct learning process. For example, Baloğlu and Sezgin (2021) indicate that critiques, juries and individual work rituals in design studios are activities that make up time-space routines and that one of the main outputs of the loss of the physical design studio is the change in time-space routines. In contrast to these studies, Ozorhon and Lekesiz (2021), in their studies that focuses on the remote architectural design studio experience and exploring the problems and potentials of this experience, consider the ability to access all online resources from any place and time as an important development in terms of flexible learning. In the study, which explored the perceptions and possible barriers of design students towards online design education in a traditional face-to-face learning environment, Fleischmann (2020) determined that the most important advantage of online education is flexibility in terms of time, and the most important disadvantage is the lack of instant feedback and social interaction during the problem-solving process and group work. Fleischmann (2020) found that students prefer to ask questions directly in the studio, like to receive feedback from their educators and peers, like to see direct hands-on solutions, and feel that face-to-face interaction helps them learn. Dreamson (2020), on the other hand, proposes meta-connective pedagogy for online design education, stating that the workshop model for design studios is often romanticized; accordingly, through the meta-connective process, pedagogical values are not only translated into connectivity, but also reconstruct successive learning processes. In this new learning environment, hands-on design activities and design experiments are structurally reconceptualized through various connection types and environments and are considered in a new context (Dreamson, 2020).

While the above-mentioned studies or studies that deal with the subject in a similar route try to comprehend the pedagogical permeability

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and ruptures between online education and architectural design education, studies analyzing the change of design tools and students' perceptual differences in online architectural design studios are also remarkable. For example, Özen Yavuz and Yıldırım (2012), in their study determining which design tool is used at which stage of the design process, found that students found traditional presentation techniques positive due to their high creativity value in the early stages of the design process, but found these techniques negative due to the inadequacy of performing more than one action. On the other hand, digital presentation techniques were found to be positive due to competencies such as changeability of these techniques, technical results and design process, and the creation of the design product quickly and easily (Özen Yavuz & Yıldırım, 2012). Ceylan et al. (2021), who examine the opinions of architecture students about design studios carried out with distance education during the pandemic process, are interesting in terms of revealing the perspectives of students in different classes of architectural education on online studios. Accordingly, while it was stated that first-grade students were more optimistic about online studios and fourth-grade students were more critical, it was also determined that online studios had benefits such as the use of alternative communication tools, the ability to watch recorded course content, and productivity under suddenly changing conditions, regardless of the studio level (Ceylan et al., 2021). The same study also revealed that first and second grade students were more positive than third and fourth grade students about making physical models (Ceylan et al., 2021). In summary, the opinions, potentials, problems and research results about the online design studio are diverse, and more in-depth research results can be revealed with a broader look at the widespread literature.

The project group that this article focuses on is a first-year architecture in terms of educational base, and they spent their first education period at school, which basically consists of basic design. First-grade students of the SCU Department of Architecture switched to online education before the formation of a sense of

belonging to the school of architecture could be completed, and this resulted in the fact that a studio culture was not formed/established in these students. This group, who took the basic design course face-to-face in the first semester of their education, received online education in the second semester, and then returned to school in the third semester of their education, that is, in the 2nd grade. The process is critical for both returning to school, creating a sense of belonging, and engaging in the studio culture. As stated by Yorgancıoğlu (2020), distance education has affected the role of 3D modeling, which is the most important tool of studio-based learning, and there has been a transition from physical models to digital models. This was also the case during the pandemic process and was also the case during the distance education process due to the February earthquakes in 2023. The change of design tools and/or the transition from the physical model to the digital environment does not only mean a change in the educational interface, but also the deterioration of the relationality between hand-eye-mind while creating the design thinking of the architecture student. Similarly, Güven et al. (2020) indicate that the level differences in students' mastery of 3D modeling programs in the computer environment eliminate random design decisions that can be achieved with models and transform the decision-making process with models into design-oriented solid models.

The studio group, which is discussed in the context of this study, has experienced different design processes and environments throughout distance education. Considering the level of the studio group, the students acquired the habit of making hand drawings and models for a semester in the basic design and Expression Presentation Techniques 1 course in the first semester of architectural education. Considering the design techniques, this short awareness of architectural education, the transition to the online studio and the break from school quickly led 2/3 of the 30 students in the studio group to 3D modeling tools in the computer environment. Since their levels of mastery of computer programs were different, some of the group spent most of their time

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learning modeling programs instead of solving design problems or doing design research, while the other part of the group, confident in their good knowledge of computer programs, used quick modeling methods that focused on the final product. The last 1/3 of the studio group either completed the period with hand drawing and physical modeling and never turned to computer modeling tools, or they transferred the design process, which they started with traditional methods at the beginning, to digital media as they developed their computer modeling skills over time. Such a process experienced by the studio group has caused concepts such as design productivity, design problem-solving skills and the habit of doing design research to be missed. To this end, the return to the model, a traditional design tool, has been the main concept of the studio group's third term.

3. Pedagogical Approach: A Return to the Integration of Section and Model

It should be noted that the main result of the article titled "Integration of Section and Model: Reflections from a Studio Practice" is that it directs the student to do more research, increases interaction in the studio, and reminds the basic design exercises (Tuztaşı & Koç, 2020). The pedagogical environment/approach, which is coded as 'from section-model to space', has led the architecture student to develop a certain design behavior through formal anxiety, while at the same time allowing the development of design strategies to ensure the tectonic integrity of the plan-section-facade relationship. Thus, this new learning environment increased the potential for experience and exploration and transformed the studio into a process-oriented environment. Since the main framework of the 'from section-model to space' approach consists of increasing the design knowledge from experience and activating the potential for discovery, the physical model, which directly provides the relationality between hand-eye-mind, was used as a design tool. The physical model is a kind of designing dough that we will call the section-model, and the main dynamic that shapes it is the phenomenon of unfinishedness and incompleteness. While the fictional function of

'section' stems from the fact that it is a design tool that ensures shaping an architectural production, the establishment of cross-sectional relations is the shortest way to analyze the three-dimensional formal composition, which appears as an unfinished mass assembly. Revealing the cross-sectional relations between structural-formal mechanisms and applying deformations and transformations on the mass constitute the learning process based on experience and discovery of creating an architectural relationship between the exposed components of the unfinished/incomplete physical model. Sensory-rational thoughts, abstract-concrete relations, and form-content definitions are other process stages that are shaped by the student's design skills and intuition.

The study by Özbaki et al. (2016), which was published before the pandemic and analyzed the relationship between the physical model and digital model and design productivity, revealed that factors such as topography and built environment are noticed at the beginning of the design process since there is a concrete object in front of the designer in the physical model environment; in addition, it was also determined that the designer started the design through different inputs in similar terrain and function features in the digital model environment. In other words, the physical model significantly changes and affects the design process and design productivity. Acar et al. (2021) indicate that the design process requires visualization, conceptualization, three-dimensional thinking, the ability to direct the design in the mind, and the ability to mentally represent and follow physical and mental activities. In this context, the variability in 'section-model' facilitates and enables this follow-up. In other words, since 'section-models' show how design thinking travels in the mind, the studio process in the fall semester of 2023-2024 aimed to ensure the adaptation of the Mim2001 Architectural Project III group to concepts such as closeness, design productivity, design problem-solving ability and the habit of doing design research, which they could not establish with the architectural studio in online education. For this purpose, the process

obtained from the previous section-model experience was introduced to the studio group and the outputs were shared. Unlike the previous experience, the process has been reduced to 2 stages and, in addition, precise definitions have been made regarding the location and function. Accordingly, the place of study was determined as Bankalar Street, which is the most congested texture of the city, and Park Streets, which opens to this artery, and the function was finalized as the Veterinary Clinic, Dental Clinic and Bank building in the first stage and the Music and Dance School in the second stage. Below, the process and result products are shared.

4. New Reflections from the Studio: Case Report

Architectural Project III studio group, which experimented with by updating its approach from 'from section-model to space', has realized a production below the expectations of the studio tutor in terms of creating a physical model. Dynamic relationships and the weakness of cross-sectional relations are common features of physical models. For this reason, all of the resulting products are complemented by compact mass organization. In all of the models, there is rigidity in the installation of the mass, and this is due to the separation of the slabs in the horizontal direction and the creation of height differences between the slabs in the vertical direction. In all of the models, especially the 'cross-sectional' relations were missed, overlooked, not sufficiently understood or internalized. As a result, the phenomenon of incompleteness, which should be in the mass composition, has been replaced by a tectonic integrity with clear boundaries. Design productivity and the habit of doing design research have been defeated by mass conformism, and the process has tended towards achieving a final product as soon as possible. Therefore, the ability to solve design problems has been reduced to spatial-functional searches. While the fact that the function has

been given in advance may be effective to some extent, another factor may also be the tendency to model quickly, obtain a model quickly and go to the result gained during the distance education.

It seems that the main element that enabled the studio process was not the section-model experience, but rather the excitement of intervening in a cramped and distorted urban fabric in a problematic urban area. During the project process, 'from section-model to space' approach has turned into a starting point that has not been sufficiently internalized as one of the ways to increase mass dynamism in the city. What differentiates compact mass organizations from other existing structural solutions of the city is the formal organization's search for a coherent and holistic relationship between interior and exterior. However, the dynamism of the architectonic content has been lost in the fragment of spatial solutions, regardless of function. In the first and second stages of solving design problems consisting of Veterinary Clinic, Dental Clinic, Bank building or Music and Dance School, common design behaviors were exhibited. Accordingly, one of the common design behaviors is the establishment of equivalent surface relationships in the horizontal and vertical directions in the compact mass organization. This design behavior resulted in the complete closure of the facade and the stagnation of the architectonic order between interior and exterior (Figure 1). In the example presented in Figure 1, the section-model experience of Student 1 is presented. Faced with a new experience in face-to-face education, Student 1 tends mostly to study with digital mediums instead of physical models. Student 1's reluctance to make physical models and his desire to quickly switch to the digital model limited his design productivity, and the return to school remained only a change of his physical environment for Student 1.

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Figure 1: An example of the result products that emerge by establishing equivalent surface relationships in the section-model (Student 1).

Another common design behavior is shaped by the effort and concern to deform the compact mass organization. For example, Student 2 tried to achieve a formal equilibrium by using different horizontal surfaces in different elevation planes in mass organization. There are three design behaviors in this that deform the compact mass. The first is the elevation of the main mass by detaching it from the ground, while the second is the formal and dimensional variability of the floor openings in the horizontal direction. The third is the shell that surrounds the formal organization in the interior. Although this shell looks like a sheath that was put on the mass later, this search of Student 2 is important in terms of showing her design productivity and enthusiasm to work on the model, unlike Student 1. Although there is a lot of completion in the model, after the distance education process, Student 2 has presented a profile that is more inclined to make the design process efficient and experiment instead of being result-oriented. On the other hand, although the mass, which functions as a bank building, offers rational relations in terms of spatial analysis, some impermeable surfaces between the interior layout and the shell surrounding the outer wall of the mass are challenging in terms of integration between interior and exterior. Another challenging element in terms of mass organization is the problem of size. This is due to the novice and the habit of doing little experimentation brought about by starting to work again with the model when returning to school after distance education (Figure 2).

Another example of an effort to deform the compact mass organization can be given from Student 3. Although Student 3 basically managed the project process with a rigid attitude similar to Student 1, Student 3 increased the mass dynamism through the functional variability in interior solutions in her project, which she analyzed as a Dental Clinic. The mass, which resembles a prism of rectangles divided into two, has eliminated the mass massifism by means of non-equivalent divisions. In the horizontal direction, floors at different elevations and in different formal arrangements are connected to each other by bridges and uninterrupted circulation areas.
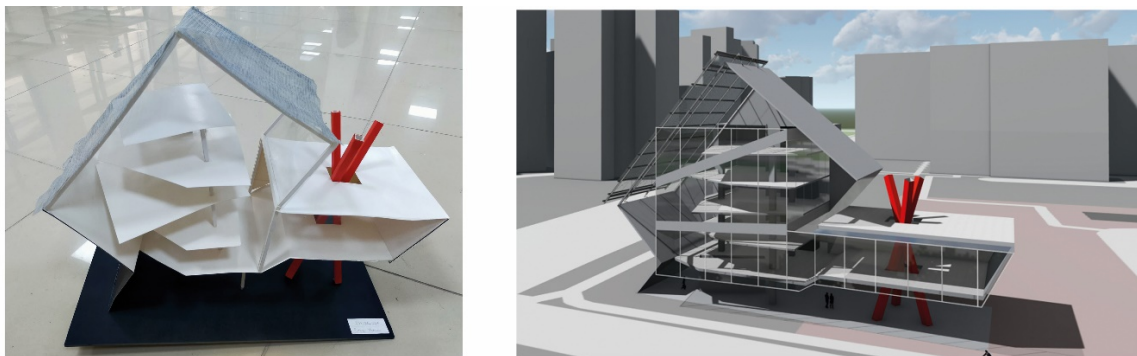

Figure 2: An effort to deform the compact mass organization in the section-model (Student 2).

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Although the whole mass exhibits a rational inclusion, the absence of equivalent relations/elements in the architectonic order between the inner and outer has differentiated the mass. Student 3 continued the habit of producing quick solutions for the space, as in the distance education process, and on the other hand, she also looked for ways to improve her design productivity despite the exhaustion of the physical model. Instead of leaving the section-model experience to mass conformism, she tried to gain the habit of experimenting, but at the same time, she could not postpone the desire to reach the final product quickly. So much so that Student 3's performance in the second project process reduced the section-model experience to a physical model where massive mass relations are established. Student 3, in the School of Music and Dance project, realized the L-shaped mass by focusing on spatial analysis as in the first stage. The differences in the mass layout remained as formal definitions given to the functional solutions in the interior organization. Student 3 preferred to work on digital models instead of physical models. She paused her habit of reaching quick conclusions in the second stage, but instead of improving the design process or design thinking, she tended to increase her mastery of computer programs (Figure 3).
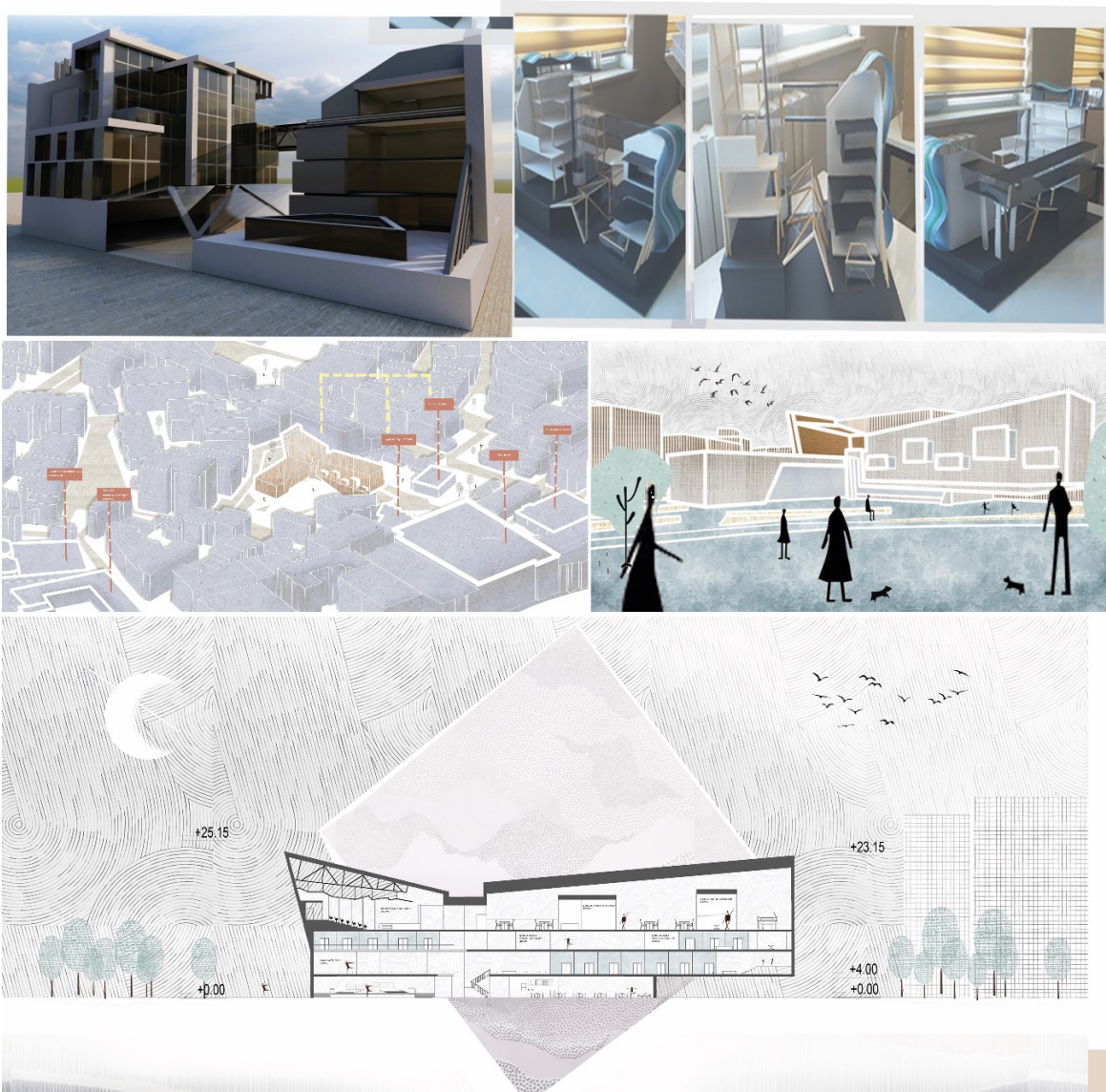

Figure 3: *An effort to deform the compact mass organization in the section-model (Student 3).*

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The final collaborative design behavior is the combination/gluing/snapping together of discrete formal elements in a composition that seeks balance. Student 4 exhibited an attitude similar to the design habit she experienced in distance education in her first project as a Veterinary Clinic. The desire to create architectonic integrity and compositional balance by bringing together discrete formal elements constitutes an internal-individual design idea for Student 4. Student 4, who was looking for ways to bring 3 different masses together in the housing project she experienced in distance education, designed by using independent, different formal elements and their different position relationships in the mass organization in the section-model experience back to school. The section-model obtained by Student 4 is open to new experiments in its state of incompleteness. This makes Student 4's physical model the closest to the section-model experience. Independent formal assemblies connected by spaces, walls, eaves and bridges are also present in Student 4's School of Music and Dance project. Influences such as detaching the main mass body from the ground, formal elements with independent and different dimensional relationships, eaves and massive wall surfaces have become characteristic design elements that Student 4 acquired in her section-model experience. Accordingly, Student 4's School of Music and Dance project was shaped by an effect that came out of the section-model experience. Therefore, it is necessary to look for this in the individual characteristics of Student 4 and in components such as perception skills in the design process, openness to innovation, flexibility in design ability and inner sincerity (Figure 4).
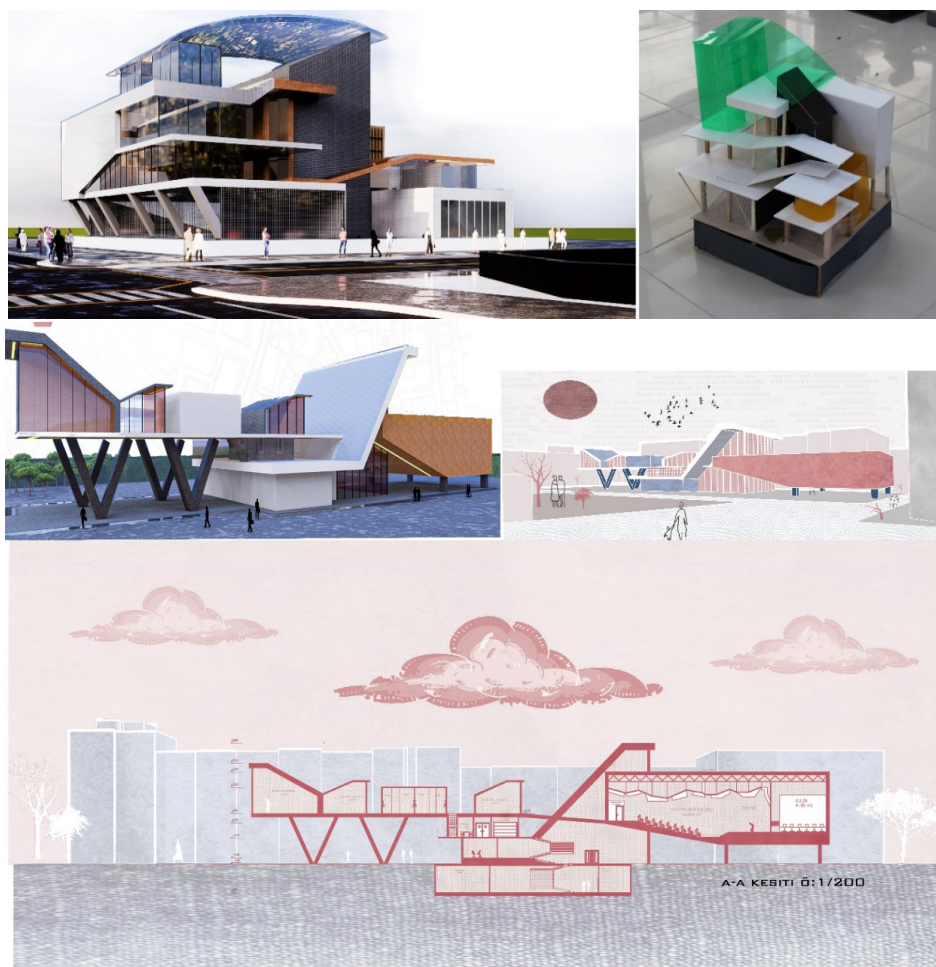

Figure 4: *Compositions seeking balance of discrete formal elements in section-model (Student 4).*

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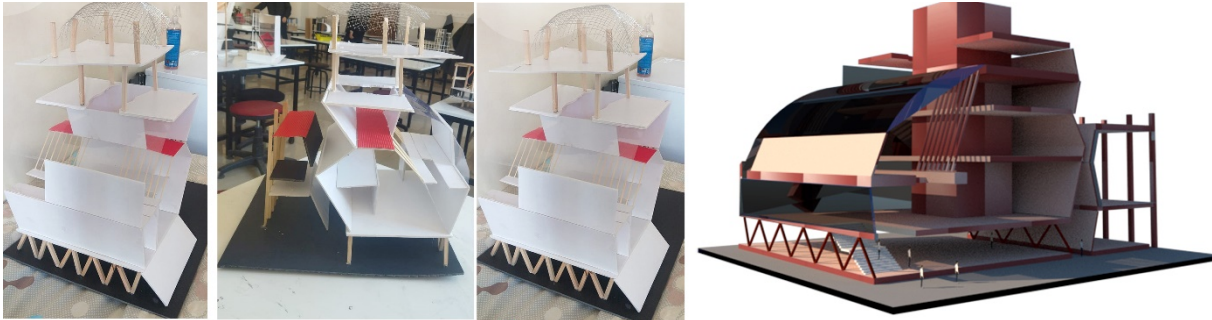Koc, P., Tuztasi, U., (2024), A New Experience for Integration of Section and Model: A Case Report,

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Figure 5: An example of inconsistent experiments in section-model (Student 5).

In addition to these three common design behaviors exemplified above, there have also been some inconsistent experiments in the studio process. For example, Student 5, although she used discrete formal elements in the mass composition, was weak in her search for balance and had a section-model experience that could not integrate the tectonic content. The cross-sectional relations and the incompleteness effect that emerged in the section-model have resulted in the unfinished fiction, poor spatial definitions and deformation in tectonic integrity as a reflection of the individual projecting process (Figure 5).

In addition, several other physical models have emerged in terms of being defined as section-model (Figure 6). However, these remained
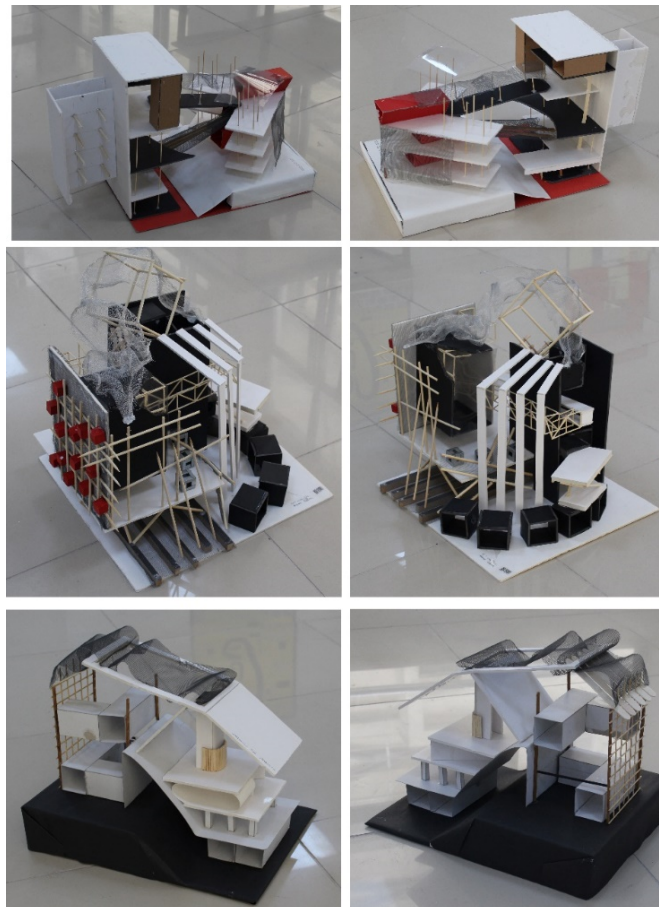

Figure 6: Examples of architectonic integrity and spatial solution in the section-model.

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examples that did not achieve sufficient architectonic integrity and spatial resolution. The most important factor in this is the coldness and adaptation difficulties of physically leaving the studio when returning to school after distance education. The most important reason for the lack of experimentation and the lack of development of the section-model is the reluctance to work with the physical model.

5. Discussion and Conclusion

The distance education and face-to-face education process are examined from many perspectives through architectural design studios, and experiences gained in the process continue to be shared. In most of the studies, students' evaluations have been revealed through questionnaires. In this study, an evaluation of the process has been made through the studio tutor's follow-up of the process, observations and dialogue with the students. In other words, instead of the subjective expressions of the students, how the students coped with the studio process after the transition to face-to-face education was evaluated. For this purpose, the way students work with the physical model and their approach to working with the model were observed by the students who moved away from the digital screen and returned to the plural and interactive environment of the architectural design studio. Three main outcomes of the process have emerged. First, the projects that were thought about with the model and more experiments were made on the model were shaped by stronger effects. On the other hand, projects that made few experiments without spending enough time on the model and were quickly transferred to digital programs resulted in weaker or monotonous orientations. However, the most important and final result of the process is individual approaches to the architectural design process, whether in face-to-face education or in distance education. The high level of individual awareness can be attributed to the opportunities that the studio environment brings face-to-face, the cooperation with the tutor, and the opportunities for discussion among the students in the experimental methodology. On the other hand, in terms of this research, a retrospective comparison setup by re-experiencing the third-dimensional transfers of studio practice developed with cross-sectional models in future studios will be interesting in terms of its results. Another parameter is that the mental findings accumulated by the results of the transition to the studio after the online education cycle are updated and handled in a more comprehensive studio practice, and even these inquiries are experienced in the upper semesters when spatial reinforcements and structural solutions are further reinforced. Accordingly, it is also a practice of how far the model-based perception of the cross-sectional conceptions of this result is taken or comprehended. Because the third dimensional understanding acquired in the basic design studio course has commonalities in terms of the design practice cycle in the transition from section-model to space understanding. However, it cannot be ignored that the student cannot transfer the knowledge-based formulations that feed the tectonic content that he will take in the building and building materials course in the upper grades to the design result in the second year. Consequently, this transfer has examined the variability of design intuitions of a group of students who took a break from face-to-face education with online education. In addition to the third dimensional understanding of the design results section-models, the students also discussed the level or continuity of their infrastructure in the basic design course. The problematic area of the experimental practice, which aims to strengthen the relationship between spatial and tectonic context in the architectural studio course, for the student group is the relations between digital presentation techniques and models.

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