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Research Article

Experiences on "Covid-19 pandemic" in urban design course education

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Abstract
Today, it is observed that the current architectural planning of public spaces, squares, streets, parks and buildings can disappear and change over time, as the Covid-19 pandemic is easily effective on people and settlements on a global and regional scale. The aim of the study, which takes these changes into consideration, is to open the solution suggestions to the discussion in the process of simultaneously exploring the grounded problems while sharing the experiences of the pandemic process within the education of urban design course students. A study was carried out that was interpreted with participant interaction. Current pandemic experiences were utilized within the process of stratifying the structured opinions. The constructivist grounded theory of qualitative research pattern forms the skeleton of this solution-seeking study. Considering the interview answers made with the students, it has been observed that they gave many answers, as well as suggestions for solutions, that the pandemic will experience changes, especially in urban and public spaces and residences. It is noteworthy that the city and the surrounding areas in which they live are uniform places that do not respond to the requests of the users during the pandemic process and that the students realize the inadequacies of these uniform spaces.

Keywords: Constructivist grounded theory, Covid-19 pandemic, Design

Extended Abstract

Introduction: The Covid-19 epidemic, which was predicted to start in Wuhan, China, in December 2019, was declared a pandemic on March 11, 2020, as a result of its spread to other countries within a few months (Arslan, 2020: 38-39). As Covid-19 rapidly spread worldwide and turned into a pandemic, many countries sought to reduce human usage in urban spaces such as business centers, educational structures, public transportation vehicles, parks and gardens, shopping malls, entertainment areas, cinema-theaters, concert halls, and public service buildings. These urban spaces were closed for the first time due to the pandemic restrictions. The reason for the closure of these places; is to cut people's contact with each other and to stop the spread of the virus (Sandford, 2020). As of 2020 and with the COVID-19 epidemic, the issue of how urban areas respond to change and adaptability to the epidemic has been emphasized more (UN-Habitat, 2020: 55-65). In the literature review, James (2020: 187-190) emphasizes that during the pandemic, the decreased usage of urban spaces has led to a reduction in interpersonal interactions. Kasinitz (2020: 489-495), highlighting the transformation of everyday life due to the pandemic, explains this transformation through redefined user-space relationships at different scales. According to O'Connor's (2020) study on urban space usage during the pandemic, it is observed that users have started utilizing doorways, sidewalks, and streets to increase daily activities, mainly for meeting essential needs instead of urban spaces. Studies have been conducted worldwide in the fields of design, planning, and public health to explore how urban spaces can be transformed while adhering to social distancing measures.

Purpose and scope: The aim of this study is to examine the positive and negative effects of urban spaces utilized by people to meet their physical, economic, social, etc. needs during the Covid-19 pandemic and to generate solutions based on urban spatial experiences for students taking urban design courses. For this purpose, an experience environment has been designed in the study regarding the discovery of the urban and spatial effects of the pandemic and the problem. This study describes the perspectives of architecture students who have received education in urban design, ranging from urban to architectural scale, and their efforts in foreseeing potential changes to be experienced in urban environments.

Method: The research process was supported by a qualitative research pattern, which is considered to produce the own sources of the study. Different users' different experiences and sharing of different opinions make the study more useful

for the study while also making the study more dynamic. First of all, the constructivist grounded theory was utilized in the research pattern to dominate the overall circumstances. The grounded theory aims to discover a theory that will explain the phenomenon investigated based on the data systematically observed and analyzed in social research (Glaser & Strauss, 1967: 237). In the study, the 3rd-grade students who received the urban design course in the Fall Semester of the 2020-2021 academic year were asked to answer the questions prepared to measure the relationship between pandemic-city and architecture at the end of the year. The questions answered are then reflected in the diagrams for making a visualization. Within this regard, the student interview was conducted within the framework of 5 main questions.

Findings and conclusion: Considering the interview answers made with the students, it has been observed that they gave many answers, as well as suggestions for solutions, that the pandemic will experience changes, especially in urban and public spaces and residences. It is noteworthy that the city and the surrounding areas in which they live are uniform places that do not respond to the requests of the users during the pandemic process and that the students realize the inadequacies of these uniform spaces. In the study, it is not aimed to create a clear result of a single sentence. The essence of this study is an understanding that seeks to reverse the urban and spatial effects of the pandemic and structure the problems that are assumed to be buried. Therefore, each answer given to each question of the study should be seen as the product of the study. This understanding is a personal preference that tries to be whole in itself, where the problem is explored and approached. The pandemic creates opportunities for architects, urban planners, landscape architects and urban designers to redesign cities. More; architecture and design disciplines will not only meet the requirements of the Covid-19 pandemic, but will also reveal the logic of predicting different scenarios that have not yet been dealt with and preparing designs accordingly.

Keywords: Constructivist grounded theory, Covid-19 pandemic, Design

INTRODUCTION

The Covid-19 outbreak, believed to have started in December 2019 in Wuhan, China, was declared a pandemic on March 11, 2020, after spreading to other countries within a few months (Arslan, 2020: 38-39). As Covid-19 rapidly spread worldwide and turned into a pandemic, many countries sought to reduce human usage in urban spaces such as business centers, educational structures, public transportation vehicles, parks and gardens, shopping malls, entertainment areas, cinema-theaters, concert halls, and public service buildings. As part of the pandemic restrictions, these urban spaces were initially closed. The reason for their closure was to cut off interpersonal contacts and halt the spread of the virus. During the early stages of the pandemic, it was ensured that half of the world's population stayed at home (Sandford, 2020).

During the periods of restrictions, people have preferred spending time in green areas rather than streets and squares. As stated in written and visual media sources, thousands of individuals, especially during hot weather, utilized green spaces, while many streets and squares that used to be the centers of activities remained silent and empty in different countries and cities (BBC, 2020). Throughout human history, urban spaces have provided opportunities for communities to come together, enjoy themselves, rest, and share mutual experiences (Özgen, 2014: 230). With the pandemic, restricting the use of these areas, either by necessity or choice, also weakens the urban space's role as a social interaction hub. One of the innovations that COVID-19 has brought to human life is the change in individual and societal behaviors. Social behaviors also directly influence urban space design. As of the year 2020 and in light of the COVID-19 pandemic, the issue of how urban spaces respond to change and their adaptability to the outbreak has been emphasized more (UN-Habitat, 2020: 55-65).

The changes after Covid-19 are expected not only in the physical characteristics of cities but also in human behaviors, transportation, work areas, park-garden usage, entertainment-shopping centers, and other urban spaces. The pandemic also necessitates planning to redesign urban areas to address future risks such as disasters, outbreaks, etc., and the development of different usage behavior patterns, which holds significant importance for all countries. Jacobs argues that problems will always exist, as long as people live in cities; however, they should actively participate in the search for solutions without passively submitting to these problems (Jacobs, 1989: 122). Adopting Jacobs' view and by concerning that the problems faced in cities can only be experienced by directly intervening in those problems and taking part in that problem, and solutions can be produced, a new perception is adopted. In light of this perception, an exploratory process has been initiated concerning which problems may be experienced within the current pandemic circumstances. This

process comprises the peculiar part of the study, and the mentioned search forms the study itself. Therefore, it is aimed that the study proceeds in its natural course without being compressed into obvious patterns, that the study is supported by the information connected to the answers to the questions during this progress, and that it expands its own network and produces its own solutions.

Literature

Although reaching definitive conclusions about the possible impacts and outcomes of the pandemic is challenging, the transformation of urban spaces affected by the pandemic has become a subject of discussion. The urban crisis that emerged during the Covid-19 global outbreak revealed the deficiencies in design, maintenance, repair, and management of cities and public spaces. Cities were caught unprepared for the global pandemic crisis in terms of fundamental principles in urban space production, such as accessibility, equality, balanced service and resource distribution, flexibility, and resilience. During this challenging period, both central and local authorities have issued warnings to raise awareness among people about their safety and have supported urban spaces through different regulations. The World Health Organization's publication titled *Strengthening Preparedness for Covid-19 in Cities and Urban Settings: Interim Guidance for Local Authorities* emphasizes the existence of four key areas that cities and other urban settlements' local authorities should focus on to prevent the spread of Covid-19 and be prepared for potential outbreaks. These areas are as follows: coordinated local plans for effective interventions against health risks and impacts, community engagement that promotes risk and crisis communication and compliance with measures, approaches and measures aligned with public health, and access to health services for Covid-19 and continuity of essential services (WHO, 2020: 7-10).

In the literature review, James (2020: 187-190) emphasizes that during the pandemic, the decreased usage of urban spaces has led to a reduction in interpersonal interactions. Kasinitz (2020: 489-495) highlighting the transformation of everyday life due to the pandemic, explains this transformation through redefined user-space relationships at different scales. According to O'Connor's (2020) study on urban space usage during the pandemic, it is observed that users have started utilizing doorways, sidewalks, and streets to increase daily activities, mainly for meeting essential needs instead of urban spaces. Studies have been conducted worldwide in the fields of design, planning, and public health to explore how urban spaces can be transformed while adhering to social distancing measures. In the project *Urban Sun* by Studio Roosegaarde, a circle composed of *UVC* light, which sterilizes viruses, was reflected onto urban spaces with the aim of sterilizing Covid-19 in those areas (Figure 1).

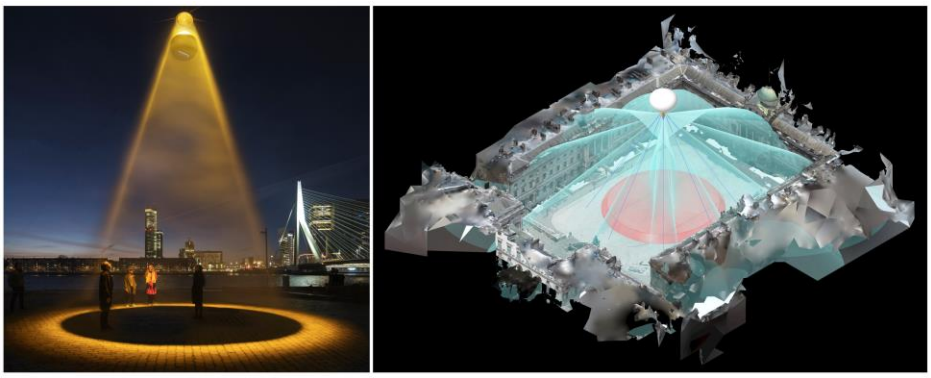

Figure 1. Urban sun project

The project *City of Tampa's Lift up Local Economic Recovery Plan* implemented in Tampa aimed to strengthen the urban space economically during the pandemic. Streets were closed to traffic to enable businesses to increase their outdoor capacities, and these areas were utilized for businesses to offer services in open-air settings and to enhance social interaction among people (Figure 2).

Figure 2. Tampa Economic Recovery Strategy

Together with the 7 teams identified in the Furnish project, rapid solutions to the spatial problems caused by the pandemic were generated for urban amenities through pilot installations in 5 European cities (Figure 3).

Figure 3. Furnish project implementation examples

Caret Studio, in order to reactivate urban spaces and promote social distancing as a temporary solution, designed the *StoDistante* installation in Piazza Giotto, a square in the town of Vicchio near Florence. The square's cobblestones are painted with 1.8 meter square grids. The grid system serves as visual representations of the social distancing rule, as designated by the Tuscan authorities (Figure 4).

Figure 4. Sto distante installation application

In the Czech Republic, an architectural firm named Hua Hua worked on a grid system that redefines urban spaces with a focus on dining. The *Gastro Safe Zone* initiative aims to transform city squares into safe and designated areas for outdoor dining. Each zone is bordered by a boundary element and furnished with urban furniture at its center (Figure 5).

Figure 5. Gastro safe zone project

An architecture firm located in Rotterdam has developed a design to promote safe and socially distanced local market shopping, which can be rapidly installed in squares. The firm's proposal suggests that existing large-scale food markets can be distributed to neighborhoods and smaller units within the neighborhood. The market system, named *Hyperlocal Micro Markets*, consists of 16 square grids. Each grid has one entrance, two exits, and two stalls-one for orders and the other for transactions. The design allows for easy installation in any town or city's public squares, enabling people to shop locally while adhering to social distancing rules (Figure 6) (Harrouk, 2020).

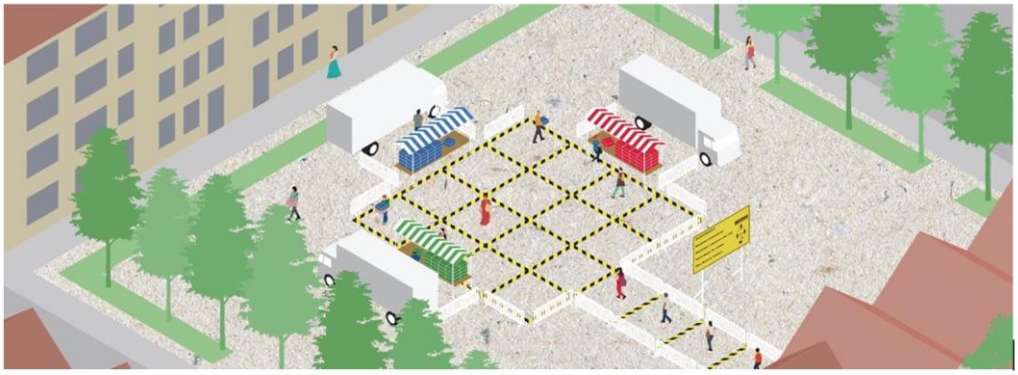

Figure 6. Hyperlocal micro markets

Urban spaces have been the elements of the built environment most affected by the pandemic. The above examples demonstrate various design and applications developed to ensure more comfortable and secure use of squares and urban areas. Urban spaces, where people used to gather and socialize, have transformed during the pandemic into places where individuals fear to be and spend less time. However, urban spaces are highly significant urban symbols for users and hold an important place in urban memory. In the post-pandemic period, urban spaces should be reorganized and reopened in an active manner, encouraging urban dwellers to socialize again and providing spaces that align with the new norms. The experiences gained during the pandemic can also lead to new alternatives in the use of urban spaces.

METHOD

Constructive grounded theory is a qualitative research methodology applied by Glaser and Strauss in their work titled *The Discovery of Grounded Theory* in 1967. What sets Configurational Grounded Theory apart from other qualitative research methods is its focus on theory generation (Corbin & Strauss, 2007). The type of theory developed through this approach is not formal but rather emergent. Examples of emergent theories include coping with and generating solutions for a natural disaster or an infectious disease outbreak. These emergent theories are specific and primarily address questions related to how something has changed over time or what solution proposals have been developed, in other words, questions related to the process. The theory

has its own procedures for conducting the research. The research process was supported by a qualitative research pattern, which is considered to produce the own sources of the study.

First of all, the constructivist grounded theory was utilized in the research pattern for dominating the overall circumstances. The constructivist grounded theory is based on the direct interaction between the participants in the study and the researcher (Çelik & Ekşi, 2015: 122). Charmaz (2000: 96) states that the available data are not related to reality and that the discovered reality goes through a more interactive process, and he adds that this case cannot be considered separately from the temporal, cultural, and structural context. Instead of trying to capture continuous realities and searching for definitions in actions, Charmaz places individuals' views, value judgments, feelings, inferences, and corresponding relations at the focus of the grounded theory (Charmaz, 2006: 98). Various coding processes generate the constructivist grounded theory.

The research was initiated with the question, "how can the issue of the Covid-19 Pandemic, which is considered a problem, be addressed". Within the framework determined by constructivist grounded theory, primarily, the conditions of the pandemic, the environment, and the spaces affected by them were tried to be closely recognized. In this regard, after a spatial examination extending from the Housing to the Cities, the issues that show a change accordingly, need a change, and where the space production will be carried out were analyzed; the problems regarding these were tried to be explored. As of the beginning of the study, the problems experienced with the pandemic and the interaction between them with the new solutions designed in response to it are emphasized. Therefore, even if the problems are in the forefront, it is considered that the fact that the interaction is continuously on the agenda over the course of the study emphasizes the activity of the research pattern. The experiences of the students in relation to the pandemic period were collected through open-ended questions. The first of the constructivist grounded theory patterns containing three stages is the initial coding. In the initial coding, the data are close to each other and intertwined.

Initial coding composes the first step and also the slippery ground of the study. Any problem or concept examined in this process can transform in the later stages of the study and go in another direction. The researcher may try to generate new categories and new concepts according to the situation with the codes originating from the new data. This situation emphasizes the transience of this coding process. After the first step taken with the initial coding, the experience of the urban and spatial effects of Covid-19 when needed is, in a sense, a collection of binding data that keeps the networks together, and consolidates them. With the interpretation of the findings of urban experience with the pandemic, which focuses on the concepts of *urban spaces* and *public spaces*, it was found appropriate to develop a category for *urban green spaces* and *streets*. The problematic designated on urban green spaces composes the core category of the study.

After this first step, the coding stage is the *focused coding* phase as per Charmaz's constructivist grounded theory. In this coding stage, the researcher chooses the most emphasized codes on the axis of the main problem in the direction of the views of the participants (Charmaz, 2006: 46). Focused coding is also a process that necessitates deciding which data of the initial coding contributes entirely to the category. In this step, the concepts and codes introduced, starting from the beginning, enter into a screening, and what is thought to be useless is left. The next step is taken in a focused manner. In the required points of the focused coding process, *educational structures*, and *housing structures* were experienced with the concepts of *working structures*; the new data obtained were involved in the analysis process with other data. After the setup made on the axis of the codes created with the answers given to questions, the focused coding phase has reached integrity in itself and has reached saturation in a theoretical manner. Theoretical saturation is described as a judgment stating that there is no need to collect more data in the existing circumstances (Bryant & Charmaz, 2007: 18).

Theoretical coding, which is the last step, is a stage in which data is filtered, analyzes are made, and coding emerges prominently. Charmaz describes theoretical coding as the coding phase in which category relations take place at the most abstract level (Bryant & Charmaz, 2007: 18). At the end of the theoretical coding, there is no concern of creating any theory (Figure 7).

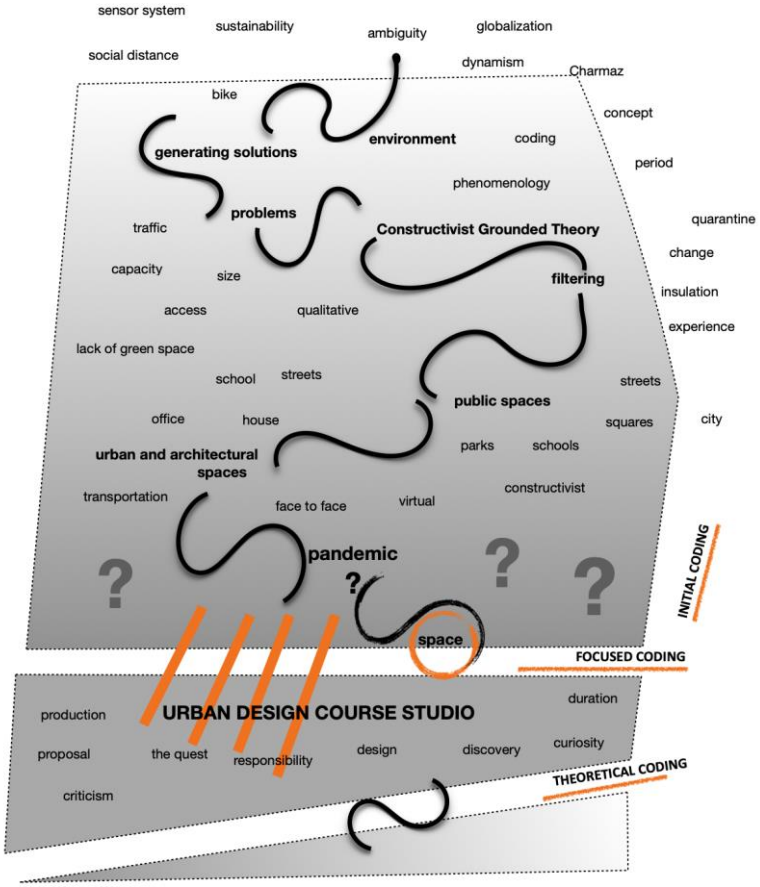

Figure 7. Flow diagram developed through the coding phases of the research

Details of the Study

In the study, the 3rd grade students who received the urban design course in the Fall Semester of the 2020-2021 academic year were asked to answer the questions prepared to measure the relationship between pandemic-city and architecture at the end of the year. The details of the study were conveyed through *to whom*, *what*, *how* questions, which are considered to facilitate the reading of the effects of the pandemic process.

To whom: The study was initiated with the participation of 76 Architecture third-grade students enrolled in the Urban Design course in the Fall Semester of the 2020-2021 Academic Year. The study was conducted with a group of 73 students.

What: The students were supposed to reflect the problems they experienced in cities and the urban strategies they would develop for these problems. In the process, the areas affected by the Covid-19 pandemic, cities, public spaces, streets, and buildings at the scale of buildings, educational spaces, working places and the ideas they will develop about whether there will be spatial changes in the further process, if there will be a change, how it will be are also covered in the research scope of the student.

How: During the course experience, different data collection methods were referred. Open-ended questions were prepared to obtain information regarding the relationship between students' course experiences and reading the effects of the pandemic process. The students were asked to answer questions about the effects of Covid-19 on the urban and architectural areas and the effects of Covid-19 in general. Within this regard, the student interview was conducted within the framework of 5 main questions (Figure 8).

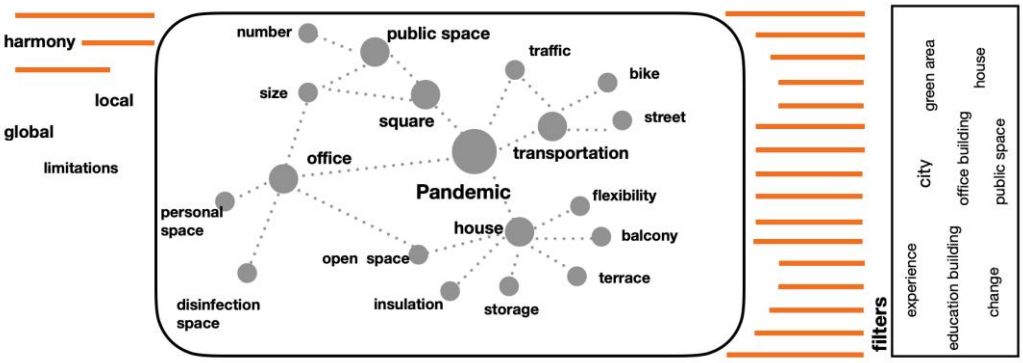

Figure 8. Covid-19 pandemic diagram

FINDINGS

Comments about the process can be summarized as follows.

Question 1: Is it possible to obtain similar social and urban benefits in the Covid-19 process today? Can this period be transformed into an opportunity for the future of our cities and urban spaces? (Table 1).

Table 1. Analysis of Question 1

Placing Data	Interpreting Findings and Developing Solutions
- The pandemic has made the people realize that public space is necessary. - Public spaces will now be designed with more care and attention. - Now, urban design is questioned and thought more. -Every crisis has opportunities when it is well managed. - It has been realized that public spaces are far from living spaces and are dysfunctional. - It was observed that green areas were insufficient. The difficulty of reaching green areas on foot was realized. - People have become aware of their areas of freedom. - The importance of pedestrian routes is understood. - Easy access to urban services has gained importance. - It has been observed that it is necessary to focus on outdoor activities more. - It was understood that it is essential to design open theater and concert areas suitable for social distancing. - Shopping malls, residences, skyscrapers, and supermarkets have lost their significance. - Changes observed in urban habits may lead to the formation of different city identities. - Social distance has been observed to have an effect from urban design to urban furniture. - Vehicle traffic has decreased in the cities. The environment has been less polluted.	- There is a possibility of turning a crisis situation into an opportunity. - Changes will be made in zoning laws. - The silhouettes of the cities will change. - Public spaces serving different functions and uses will be designed. - Pavilion design may be realized in public spaces. - The amount and surface area of green areas in the city may increase. - Car, public transportation, and similar applications may not be the preferred vehicles, particularly in short-distance transportation problems and many people may prefer walking and using bikes. - There will be an increase in semi-open and open space design. - Designing spaces where people can spend time in areas close to their homes on a neighborhood or street basis will decrease transportation and people will be able to let off stress and have fun. - The value to human health has increased. Design of healthy spaces will increase. - There will be an urban evolution. - The importance of squares has resurfaced. - A process will be realized to accelerate urban designs where concepts such as ecological sensitivity and sustainability are at the forefront. -People will make an individual and social contribution to the formation of more environmentalist, greener, and livable cities. - Our urban spaces should be increased in order to meet the desire of individuals to socialize. - Horizontal and detached construction will emerge instead of vertical construction. - The density of the cities may decrease and the density of the rural areas may increase.

In the analyses of Table 1, it has been observed that conducting urban planning and urban improvement projects during the pandemic can positively impact cities and urban spaces, offering opportunities to create designs that enhance livability and potentially turn the crisis into an opportunity. The significance of the natural environment has been recognized, and it is believed that sustainable designs can have a more prominent presence in cities. In terms of urban space designs, there is a realization of the importance of open and semi-open public spaces, leading to a potential inclination toward designing open and semi-open public spaces. Optimum comfort will be provided in terms of environmental conditions in public areas. Approaches such as *people-oriented spaces, pedestrian-friendly cities, calm cities, healthy cities* will have an impact on designs. Moreover, during the quarantine and curfew, people needed to see green spaces and to be socialized, and they realized the insufficiency of these areas in cities. At the end of the process, it was decided that the problem would generally bring urban benefits.

Question 2: Is it possible to turn our streets into more pedestrian and bicycle-friendly, walkable places in the medium and long term? (Table 2).

Table 2. Analysis of Question 2

Placing Data	Interpreting Findings and Developing Solutions
-The importance of transportation was realized. -During the pandemic period, the use of individual vehicles has increased. -It was realized that the sidewalks were not wide enough. -It was understood that bicycles and a clean means of transportation are essential. -It was observed that the streets were not only for transportation purposes but also for socializing and feeling the spirit of the city. -It has been observed that the transportation axles should be more human-oriented, more accessible, safer, and more livable. -It can transform into places where they will carry out their physical activities. -areas for pedestrian use have started to increase in city centers. - It was realized that activity and walking spaces for people on the streets were insufficient. -It was observed that there was a lack of playgrounds for children.	-There will be designs in which pedestrian use will become prominent in the design of cities and public spaces. -There will be an increase in the number of roads allocated to bicycles and there will be arrangements and improvements on present roads. The bicycle path will be integrated into the city's transportation system. -Designs in which pedestrian paths are wider and more comfortable to use will be made. - The above mentioned designs may contribute the formation of the spirit and identity of the streets and affect the city. -Carbon footprint in the world will decrease with the help of bicycle and pedestrian priority transportation systems. -Local governments may promote bicycle and pedestrian transportation. -Designs can be generated in order to make the streets attractive for pedestrians. -Some streets and avenues in the city should be turned into greenways which serve to pedestrians.

According to Table 3, the pandemic process has shown that the transportation infrastructure of cities need to be changed. Thus the vehicle traffic density might be decreased. Medium and long-term planning will be performed in order to design pedestrian and bicycle-friendly streets in cities. Vehicles are at the forefront in the setup of streets in today's cities. By developing clean transportation systems, public awareness should be raised for pedestrian-friendly and bicycle-friendly streets.

Question 3: How will the place of education, which is a public phenomenon, take a shape after the Covid-19 pandemic? (Table 3).

Table 3. Analysis of Question 3

Placing Data	Interpreting Findings and Developing Solutions
-It was observed that there will be a diversity of transformations both inside and outside the educational structures. -The pandemic compelled us to think the capacity of educational places. -It was observed that the plan setup of educational places should be changed.	-Educational structures have to be within walking distances. There may be an increase in the number of schools. -Schoolyards can expand even more as they gain great importance. -Primary spaces of the educational structure will change.

-It turned out that the education did not take place just in classrooms. -Living spaces can be arranged by considering socialization. -The quality of the educational places was questioned. -The need for presence of flexible space was observed. -The distance to schools located in cities was realized. - The significance of classrooms or working environments benefiting from natural ventilation and natural lighting was realized. -Open and semi-open spaces were needed in the educational spaces by taking into consideration the climatic conditions. -It was realized that there should be a class-open space, and semi-open space relationship. -The necessity of individual area design was observed in the educational spaces.	-Space designs will be intertwined with nature, allowing the experience of one-to-one students and supporting the urge to explore. - The forms of the structures will change. Instead of long massive masses, divided grouped building forms with connections to the outdoor area will be designed. -There will be improvements in class sizes. -Outdoor use will increase more in educational structures. -The rule of social distancing will be considered in the design of new educational spaces. -The design of semi-open gyms may become widespread. -Disinfection areas can be designed in schools. -In products like building materials and furnishings used in schools, the usage of nanotechnological materials that do not contain germs will rise.

According to Table 4, it was observed that the qualifications of the educational spaces will change. On human-space-nature connections, new educational facilities would reportedly be built. The forms and design decisions on educational structures will change, and instead of an introverted closed plan setup, grouped extroverted spaces will be designed. Open-semi-open-closed space setups in educational spaces will be generated. Technology will be utilized more.

Question 4: Will the Covid 19 pandemic require the rearrangement of housing structures? In that case, what changes will happen? (Table 4).

Table 4. Analysis of Question 4

Placing Data	**Interpreting Findings and Developing Solutions**
-It was observed that one of the main reasons for the spread of the virus was the housing. -The presence of houses built without considering user requirements was realized. -Negative aspects of uniformization in housing designs were experienced. - It was observed that the houses need to be redesigned. - It is seen that there is a need of a wider range of spaces in the houses. -The size of the workplaces and personal working areas were questioned. -People realized how small and insufficient their balconies were. -It was observed that the landscape was an important criterion in housing design. - It was experienced that kitchen dimensions and storage areas are insufficient. -The gardens have gained importance in the houses. -It was noticed that the areas in houses, where common time was spent could not be arranged according to social distancing. - It was observed that the need to organize a guest room should be reduced in housing planning. - The need for both natural light and ventilation, and fresh air increased in houses. - The needs of people quarantined in their houses have been revealed. -The importance of relations with nature has emerged in housing designs.	- There will be changes in housing designs. The houses will be more functional and arrangements will be made according to their size. - Demands for low-rise housing with balcony, terrace and garden will increase. - The desire to live in houses that do not consume but also produce can increase the demand in detached houses. - The desire to live in multi-storey residential buildings in urban centers will decrease. - Systems that provide sterilization at the entrances that are common areas in residential buildings will be constructed. - Natural ventilation will be used in the design of wet areas. - Clean and dirty separations will be arranged in the housing areas. - Flexible space understanding in houses will be achieved and space divisions can be realized by just moving the furnishings. -The number of rooms can be increased. - Energy protection will become prominent in housing designs. - There will be regulations in relation to noise control in the houses. - Green areas will be included more in housing designs. - Applications such as the French balcony may end.

According to Table 5, there will be changes in housing designs regarding the relationship with nature, plan setup, spatial relations, and material criteria utilized. Housing designs will contain flexible spaces, and spaces will cover more than one need. Technological systems such as smart home systems will be used in housing design. Individual special design will take place in houses.

Question 5: Will this process, which will also affect the working life, necessitate the rearrangement of the working spaces? In that case, what sort of future awaits us? (Table 5).

Table 5. Analysis of Question 5

Placing Data	**Interpreting Findings and Developing Solutions**
-There will be changes in the working life and working places. -It was observed that the size of common and personal working places should be questioned. - It turned out that the areas ventilated with artificial ventilation in offices are more prone to the transmission of the virus during the pandemic. The importance of both natural ventilation and lighting in offices was realized. - The desire to spend time in places related to nature was noticed during the breaks given in the working places. - Semi-open and open working space needs have arisen. - Deficiencies in collective working places were determined. - The lack of spaces per person in workplaces was experienced. -The concept of home office became more active during the pandemic process. - The need for an individual workspace arose. - The necessity of changing the plan setup of office buildings was seen. - The need for some workplaces has decreased.	- Working hours and systems will be rearranged. Flexible working hours can be utilized. - It can be seen that office structures are coming to an end in the near future, and there may be a transition to home-office order. - Innovative-smart office designs will be made in office structure design. - The design of the workstations will change. - Sensor-fitted and technological systems can become a priority in the design of working spaces. - Connections in working places will be formed with open and semi-open spaces. - The use of nanotechnological, easy-to-clean materials that do not contain bacteria will increase in products such as building materials and furniture used in workplaces. - Meeting rooms are not designed in offices, thus meetings can be permanently moved to virtual environment. - Work areas can be moved to parks. Work benches and urban furniture can be suggested. - Utilization of natural ventilation in office spaces will increase. - The use of terraces and balconies as semi-open spaces in offices may increase. - It is possible to switch from the open office plan editing system to the closed office plan editing system. - The possibility of meeting people can be reduced by making entrance and exit arrangements in the plan setups of the offices.

According to Table 6, participants emphasized the need to design spaces that could provide a solution to this question: *how can we work together in such a period*. Concepts such as working from home, partial work, and rotating work have gained importance in working life. Relationships between working places and nature will be established and the use of open space will increase. In the design of office buildings, flexible space designs will be made and individual workspaces will be constructed. Natural ventilation will be utilized effectively.

DISCUSSION

Considering the interviews made with students, it has been observed that they gave many answers, as well as suggestions for solutions, that the pandemic will experience changes, especially in urban and public spaces and residences. It is noteworthy that the city and the surrounding areas in which they live are uniform places that do not respond to the requests of users during the pandemic process, and that the students realize the inadequacies of these uniform spaces. These uniform spaces also drag the questioning about how the designs will be towards the beginning of the work and lead to problems that need to be overcome in terms of both education and environmental production (Figure 9).

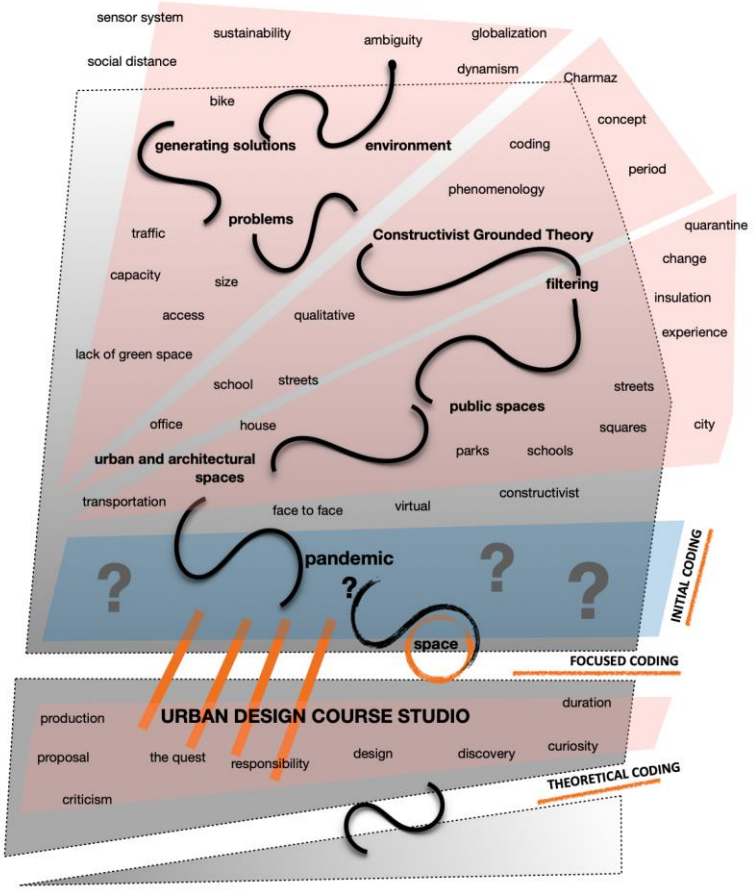

Figure 9. Stratified flowchart of the research process

The rapid spread and transformation of Covid-19 into a pandemic is an urbanization problem. Therefore, the future of cities, new lifestyles in urban areas, and urban space planning must be discussed. The necessity of prioritizing public health above all objectives in urban planning has been highlighted once again with this outbreak (Özüduru, 2020: 8). During this process, factors such as access to essential services, urban living and public health, creation of public spaces, climate change, and disaster and crisis management will significantly influence urban planning (Özüduru, 2020: 8). In terms of turning crises into opportunities, the Covid-19 pandemic has provided urban planners with a suitable opportunity to contemplate how to reorganize cities more ecologically and sustainably (NíChúláin & Davlashyan, 2021). At this point, numerous measures taken in urban spaces have given rise to innovative urban designs and highlighted the necessity to create new urban plans adaptable to any future condition.

As a result of urban-scale studies, it has been determined that the measures taken during the Covid-19 period have positive effects on the environment. In the studies conducted by Sharifi and Khavarian-Garmsir, it was observed that the reduction in people's outdoor activities during the Covid-19 period and the restrictions implemented by governments led to a decrease in nitrogen dioxide and carbon dioxide emissions, especially in megacities, resulting in positive effects on air pollution. Therefore, the need to increase green transportation options is emphasized to further facilitate environmental improvements due to the decrease in the use of transportation vehicles (Sharifi & Khavarian-Garmsir, 2020: 3). In today's world, numerous new planning concepts, such as compact city, superblocks, 15-minute city, car-free city, etc., are being introduced in many cities (Nieuwenhuijsen, 2020). In his statements, the Director of WRI Turkey Sustainable Cities, Cansız, emphasized that people are likely to shift from public transportation to individual transportation to keep a distance from each other. He highlighted the need for more investment and the development of bicycle lanes in our country, as it would be healthier for our people and cities (Cansız, 2020). The Mayor of Paris has

established the *corona cycleways* network and announced plans to create a 650 km bicycle network (Pozoukidou & Chatziyiannaki, 2021: 18; Erturan, 2020). In Italy, due to the pandemic, public transportation, which was not preferred, is now replaced by private vehicles, which could lead to traffic congestion. Therefore, officials have emphasized the need for the widespread use of bicycles and electric scooters. Additionally, the Mayor of Rome, Raggi, announced the addition of 35 km more to the city's existing 200 km of bicycle lanes (Pınar, 2020). Many major cities such as Milan, New York, Berlin, Rome, Barcelona, Seattle, and Toronto have started building new pop-up bicycle lanes to promote bicycle usage (Erturan, 2020).

Hasan Suver stated at the *After the COVID-19 Epidemic: Social Risks and Opportunities in Cities Conference* that environmental projects should be implemented. He emphasized the need for new buildings and cities that produce energy and strengthen infrastructures by redesigning all kinds of architecture against epidemics (TBB, 2020). Barbarossa (2020) aims to create streets, squares, parks, etc. for cities based on a green new order. It states that urban spaces should be redesigned, sustainable mobility plans should be implemented and neighborhood life should be encouraged. It is predicted that safe and accessible urban green space designs at the neighborhood scale will be standardized in the near future (Barbarossa, 2020: 7172). The pandemic creates opportunities for architects, urban planners, landscape architects and urban designers to redesign cities. More; architecture and design disciplines will not only meet the requirements of the Covid-19 pandemic, but will also reveal the logic of predicting different scenarios that have not yet been dealt with and preparing designs accordingly.

CONCLUSION

The age we live in requires the structuring of the learned knowledge. While the process of structuring brings the individual and his interactions to the fore, also the individual interpretation shows itself at this point. This age, where pure information transfer is not enough, is ready for the spread of individual interpretations. Depending on this view, the perspective on architecture and cities will also changes over time, this situation is reflected in architectural and urban design education and different components affect each other.

Within the scope of the research, the Covid-19 pandemic process is a tool on this path. It has been seen that mutual gains can be realized with the conscious inclusion of the power of the virtual environment in the pandemic process, which removes the borders and integrates the process. In the urban design course, how to benefit from the Covid-19 pandemic process and this environment should be experienced with many different possibilities. Thinking and interpreting the urban and spatial effects of the pandemic process, both conceptually and in terms of experiencing, should be seen as a step in the emergence of urban and spatial benefits of original processes. It is thought that the effects of the Covid-19 process on architecture and urban design can form the basis of a course in architecture or urban discipline that makes sense with students. With the increase of experiences related to the pandemic process, where different components can be included according to their place, an awareness will be formed in the acquisition of the courses of architecture and city planning departments. Experiencing the pandemic process is seen as a real return to essence for our cities and our architecture. This return is a recovery in which architecture and urban planning students can be involved in the process by questioning the pandemic. The conditions that can provide this environment, the course may change over time, and the individual in the environment may also change. The mentioned change should always be seen as a dynamic that can enrich the architectural and urban design. Therefore, the Covid-19 process essentially describes a recovery and, accordingly, an environment in which individual discovery can be achieved.

The study does not aim to create a clear result of a single sentence. The essence of this study is an understanding that seeks to reverse the urban and spatial effects of the pandemic and structure the problems that are assumed to be buried. Therefore, each answer given to each study question should be seen as the product of the study. This understanding is a personal preference that tries to be whole, where the problem is explored and approached. The work can create its meaning according to different readers. Therefore, the conclusion of each individual from the pandemic process will naturally be different. This difference is a component that allows a

natural structuring and an action-reaction relationship to be established individually. It is thought that the Covid-19 pandemic process, seen on an urban and spatial scale, can be carried to many large-scale problems from educational psychology to human psychology, from built environment production to spatial psychology and sociology. It should not be forgotten that; while this chaos, in which there are many unknowns, can change with the slightest touch, it includes all kinds of spaces, residences, educational buildings, workplaces, health facilities, entertainment venues, streets, squares, public spaces, urban spaces, in short, chaos in order for the change to take place.

Authors' Contributions

The author contributed 100% to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval is not required.

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