Global Journal of Design Art and Education
ISSN: 2301-2560

Volume 14, Issue 2, (2024) 89-105

www.gjae.eu

Different design models using cognitive techniques in converting home- office after the pandemic

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Suggested Citation:
Zengin, B., & Irey Arslan, K. (2024). Different design models using cognitive techniques in converting home-office after the pandemic. *Global Journal of Arts Education*. *14*(2), 89-105. https://doi.org/10.18844/gjae.v14i2.9578

Received from May 12, 2024; revised from July 15, 2024; accepted from August 20, 2024.

Selection and peer review under the responsibility of Prof. Dr.Ayse Cakir Ilhan, Ankara University, Turkey.

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iThenticate Similarity Rate: 8%

Abstract
The Covid-19, which has been under the influence of world, has caused great changes in the lifestyle of individuals. The quarantine period, implemented as part of measures taken due to the pandemic, has increased the time individuals spend in their residential units, causing notable shifts in the quality of spaces where most of the day is spent. New workspaces have been created for educational and work purposes within residential units, or existing spaces have been enhanced. The changes in the education and work methods of many individuals during the pandemic have necessitated the emergence of a new space within residences, posing a design problem. In this study, participants approach the solution to the problem from a cognitive perspective. The Six Thinking Hats cognitive technique, with six different colored hats representing six different user-designer profiles, is employed as a cognitive approach to the problem. These symbols, representing abstract concepts and characters, are utilized in the spatial design process, depicting the interactive transformation of design spaces into three-dimensional objects within the living space. The context used here could serve as a methodological proposal open to further development in the fields of design and education sciences.

Keywords: Covid-19 outbreak, living rooms, study room, six hats technique.

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1. INTRODUCTION

While the definition of the concept of housing has varied throughout history, there has been no significant update as a function throughout history. The definition of the concept of housing, in its most basic form, can be made as "the place where one or more people, house, residence." (Hasol, 2010, p. 277). From prehistoric times to the present, humanity has been in search of a place where they can feel safe, protected from environmental and physical factors, and continue their lives. This search first started for the purpose of protection and changed over time depending on the changing living conditions (Şahin and Şener, 2018). The concept of protection mentioned here; This can be explained by many factors such as protection from other living things, protection from the effects of climatic factors, protection from environmental hazards. Another factor that requirement to be protected people beings who have experienced many infectious and epidemic diseases such as plague, cholera, typhoid fever, dysentery, syphilis, malaria, tuberculosis, and smallpox in the historical process has been infectious and epidemic diseases (Billur and Billur, 2020).

One of them is the new type of coronavirus (Covid-19) disease, which emerged in Wuhan, China in the last months of 2019 and was defined as the "Global Epidemic" by the World Health Organization on March 11, 2020. To prevent the spread of the epidemic, which has a global impact, many cities/countries have implemented quarantine with various methods, workplaces, schools, and universities have been closed, and governments have decided to close many borders and roads. Most of the school, university, and workplace users, who were closed within the scope of the measures, have switched to the remote/home working method. Epidemics have created and continue to create many social and environmental changes in human life throughout history. One of these changes is that individuals start to work at home and receive/give education depending on the changing living conditions due to the epidemic. The remote/household working method, which has been widely used with the epidemic, has caused radical changes in housing units in terms of structure and created new spatial arrangements.

Hence, swiftly disseminate COVID-19 has compulsory population to expend most of their time at home to ward off the risk of viral spread (Allam and Jones 2020). The universal need to adapt promptly so as changes in lifestyle and to bear with strict safety measures. Recollection recent outbreaks of other condition, COVID-19 is another vivid reminder of the risk of unknowledge diseases upheaval (Ahlefeldt 2020) The experience of quarantine life due to the COVID-19 pandemic continues to convert the perception of the environment in different ways. Thick spaces will no longer be welcome in, as they increase virus transmission way. As such, to development social distancing, public spaces have been (and are still) discontinued worldwide. (Alter, 2020; Betsky, 2020)

Environmentally sustainable interior design (ESID) ESID designs healthy interiors for the environment and the environment, that is, livable with the environment, in designs that are common (Hayle 2015). According to Zarabi et al. (2021) COVID - 19 and healthy home preferences: an example of apartment residence invested. This way general livestyle change has emerged. Milovanic et al.(2020) examined Failure in the Architectural Crisis.: A Debate on the Value of Interior Design Over the COVID-19 Pandemic, also focused on the necessity of living indoors as the best way out of a crisis like COVID-19. This may be one of the reasons why he escaped to nature after some events after staying indoors for a long time. Tokazhanov (2020) How the COVID-19 Experience Is Transforming the

Sustainability Requirements of Residential Buildings researched in detail. Ahmad (2020) conducted the Interior Design Teaching Methodology During the Global COVID-19 Pandemic. At that time, the difficulties of practical education in design were investigated and the precautions were mentioned. Arslan and others (2021) proposed an emergency housing transformation plan in their study, utilizing theater/drama as a known method in psychotherapy, specifically the cognitive process known as the empty chair technique. This method was employed to reveal the emotional states of individuals staying at home during the pandemic.

Normally the interior design profession has concerned itself with a one-dimensional practice, to render aesthetical augmentation to interior space for a client (Cargo, 2013). Describe the conventional interior design as comparatively backward and conservative, only focusing on fashion, luxury design in a small space; an approach that ignores mental and physical health. Society is beginning to recognise the interconnectedness of buildings, people, and community in the creation of an environmentally responsible and patriotic lifestyle. As a result, they are seeking interiors that demonstrate environmentally responsible, sustainable design (Mazzarella et al., 2011; Cargo, 2013; Carolyn 2015). This interest in designed responsibility is what has sparked the context and need for alive and open-mid sustainable interior design (Jones, 2008).

Immediately responding to the commenced summon on pandemic effect on interior and architecture practice by taking a pedagogical angle and an educational perspective. Designed is a recent concept at experimental studies with online It was introduced as a response to the COVID-19 pandemic at the end of March 2020 (Ahmad et al., 2020).

Within the scope of the study, these new regulations to be made are considered as a design problem. The solution for the identified problem was reached by using a cognitive technique called the "six hat method".

Before developing medications for an epidemic, one solution is to go back to the physical and built environment to reduce its impact. Epidemics have transformed our built environment because of the fear of infection. Consequently, architecture and urbanism after the COVID-19 epidemic will never be the same. Although the current global epidemic poses a challenge at all levels in the built environment, it will take time to develop an antivirus-enabled paradigm to reduce the potential risks or stop the virus from spreading. Megahed et al. (2020) the antivirus-built environment looks like based on the lessons learned and the importance of designing a healthy and sustainable built environment. Many unanswered questions require further multidisciplinary studies. The working area, which will be solved in the standard housing unit, is integrated with the living area, and is designed as an interactive area.

1. 1. Cognitive Technique: Model with Six Hats

While designing, he exhausts the existing in the mind, combines it with perception and transfers it. In space design, thought; It is conveyed in a unique language of expression in a context where concepts and forms constantly interact with each other, and as a result, the user can experience by living. Space designers, on the other hand, present a series of concepts specific to their field, both with the externalizations they make throughout the process and the concrete spaces they realize.

At this point, two different conceptual axes can be mentioned regarding space design. One of these; It is the “rational axis” that includes objective concepts that are valid for all disciplines related to space design and can be described as the basic concepts of design. The other one can be considered as the "intuitive axis", which includes subjective concepts, triggering the creativity of the designer and giving the design its original character.

In order to behavior this interdisciplinary investigation that first aimed to identify points in both design and cognitive psychology information that are directly similar, accordingly production the awareness transferable. Throughout this initial purview, it was realized that in psychology it is common to refer to creativity in reference to the four main areas by which it is researched, namely the creative ‘process, the creative ‘product (output)’, the creative ‘person’ and the creative ‘environment’ In the domain of design, it would appear that driving categories design into broadly similar sections using the terms, the design ‘problem’, the design ‘method, the design ‘kind (production)’, the design ‘occupation and the design ‘organization/team/personnel’ (Howard et al., 2008).

According to Eastman (1970), the design process comprises two main components: the first involves identifying the problem, and the second entails producing a solution. In contrast, Bosundar, as cited by Runco (2007), divided the design process into three phases: problem finding, problem solving, and solution implementation. Similar results regarding the habits of creative individuals and their social interactions have been summarized by noting that "creative people are often unconventional, and sometimes downright eccentric or nonconformist." Nonconformity, as mentioned in the introduction, has two sides. The positive aspect involves the creation of novel and socially valued products through the ability to think "outside the box.

The problem is a stimulus in the design process and defining the problem is considered as an important step to access information that will guide the design. After the definition of the problem, access to the information that will guide the design is required to start the solution-oriented design process. Access to information that will lead the designer to the action of designing a solution can be obtained through the concept development process that occurs in the mind of the designer. The act of creation-design, which can also be described as a human necessity, reflex, or instinct, usually acts through a necessity, need and desire. When starting this design action, the designer must first find a starting point. At this stage, the designer sometimes uses more rational, objective, and concrete elements, and sometimes uses intuitive and abstract concepts (Bilir, 2013).

The starting point used for the design action used for the solution of the problem discussed in this study was obtained with a cognitive method known as the "six hat thinking technique".

Six thinking hats technique was first proposed by Edward De Bono in 1956 to develop creative and critical thinking in children. Bono emphasizes that most of the problems encountered in daily life do not have a single solution and argued that with this technique he developed, different solutions can be produced by looking at the problems from different angles. In this technique, he argues that the colors represented by the hats create some associations in people and that these associations are identified with some concepts and characters in the thinking phase of the person. (Bono, 2014: pp. 33-34). The conceptual connotations expressed by the hats are briefly stated below:

- **White Hat:** This hat represents impartiality, objectivity, clarity, and unquestionably accepted information. With this technique, it is objective and unbiased while developing ideas and concepts. The individual wearing a white hat act independently of intuition and emotions in the face of problems and uses numerical data, clear information, and proven facts in search of solutions (Bono, 2014; Göçmen, 2017).

- **Red Hat:** This color evokes anger and passion. The color of emotions is red and makes the emotions waiting to be revealed in the person visible (Bono, 2014). It is a way of thinking that is dominated by emotion, passion, intuition, and intuition. The individual wearing a red hat; while revealing emotions in the face of events and problems; they do not need to justify their ideas, causality, or base them on cause and effect. Because it starts from emotions and intuitions and it is difficult to find reasons for intuitions (Bono, 2014; Akkılıç, 2018; Orhan, 2012).

- **Black Hat:** Black color represents pessimism and negativity. The individual wearing a black hat; takes precautions by considering the negative aspects and dangers of the existing issue or problem; It highlights the wrong, faulty, and dysfunctional points on the subject and brings a critical and pessimistic perspective to the subject (Bono, 2014).

- **Yellow Hat:** Yellow, the color of the sun, represents being bright. In this aspect, it is associated with being positive, bright, optimistic, and constructive. It is a mindset that is the opposite of a black hat. While the black hat makes negative evaluations, the yellow hat highlights the positive and advantageous aspects of the subject. The individual wearing a yellow hat; thinks positively, evaluates opportunities, is optimistic, focuses on benefits and thinks constructively (Bono, 2014; Akkılıç, 2018).

- **Green Hat:** Green is the color of plants and nature. In this respect, it is the symbol of efficiency, productivity, and movement. The individual wearing a green hat; is creative, generates new ideas, offers suggestions and alternatives, and develops new perspectives. To produce new ideas, one must move away from the old one. With this aspect, it is also a dynamic way of thinking (Bono, 2014; Göçmen, 2017).

- **Blue Hat:** It is the representation of the color of the sky above everything. In this respect, it covers all colors. It represents calmness and control. This way of thinking; represents functional intelligence, synthesizes broad and diverse ideas, gives a universal perspective, provides management and control of the thought process, organizes the act of thinking, develops thought on this action, defines the issues to be considered, determines the focus, defines the problems, thinking that needs to be fulfilled identify their tasks. The individual wearing a blue hat; he is calm, reaches conclusions by analyzing events, is controlling, functional, inclusive (Bono, 2014; Can and Semerci, 2007; Orhan, 2012).

Purpose of the study

The aim of this study is to address significant changes in individuals' lifestyles due to the global impact of the Covid-19 pandemic and to examine how the quarantine process, implemented in response to pandemic conditions, has led to variations in users' residential units. The newly created spaces or the increased significance of existing spaces within residential units for educational and work purposes during the pandemic are treated as a design problem. To address this problem, the six

thinking hats technique is employed, with each colored hat representing individuals with different thinking styles. Specifically focusing on these individuals, the goal is to propose recommendations on how mood and personal characteristics influence the transformation of a room within the residence.

2. METHOD AND MATERIALS

The integrated placement of the working areas within the living spaces has brought different design requirements. Within the scope of the study, the design decision of the individuals who will design and use these areas has been handled with the cognitive design approach and the six-hat thinking technique has been applied in the transformation of the space. In the six-hat thinking technique, there are many concepts associated with hats. A concept map was created with these concepts and the relationship between the people wearing the hats and their relationship was analyzed. In the concept map, 6 users and 32 concepts representing hats were used. The relationship between concepts and users; were expressed as highly, moderately, and lowly correlated (Figure 1). The individuals mentioned as users in the study are also the people who design their workspaces.

Figure 1. Concept map in which concepts are associated with users representing hats in different colors according to the six-hat technique

	Functional	Rational	Active	Limited	Unlimited	Stable	Flexible	Passionate	Economic	Confortable	Objective	Recondite	Inter-function connectivity	Multifunctional	Area within area	Creative	Calm	Intimate	Extroverted	Introverted	Intriguing	Special units within the common area	Mobile	Free	Enthusiastic	Split areas by function	Authentic	Prolific	Reactive	Maximum use in minimum space	Intuitive	Sceptic
White Hat	••	•••		••		•			••		•••						•	•								••		••		••		
Red Hat			•••		••		••	•••		•			•			•••		•••	••		••			•••	•••		•••	••			•••	
Black Hat	•••	•••		••					••	••	•••			••	•					••		•								•••			•••
Yellow Hat	•••		••		•••		••					•				•		••	••		••		•	•••	•••		•••	•	•			
Green Hat	••		•••		•••		•••					•		••	••	•••			•••		•••		••	•••	•••		•••	•••	••		••	
Blue Hat		•••		•••		••					•••		•••				••		•	•							••		••		••		

••• Highly Correlated •• Moderately Correlated • Low Correlated

Within the scope of this study, an exemplary living space was created using AutoCAD and 3ds Max programs. This living area is in a standard residence; It measures 410 x 650 cm and has an area of

26.6 square meters. In the living area, living, dining and storage areas have been designed. The function diagram and three-dimensional visualizations of this space are given in Figure 2.

Figure 2. Function diagram and three-dimensional visualizations of the existing living space

Currently, there is no fiction about the working area in the living area. As a result of the changing living conditions with the pandemic process, the required work area will be solved within the existing area. Concepts obtained with the six-hat cognitive technique were assimilated in the mind and turned into three-dimensional concrete design objects. As a result, places with 6 different scenarios for 6 different users emerged.

3. RESULTS

User wearing white hat; highly associated with the concepts of being rational and objective; moderately related to concepts such as functionality, limitedness, being economical, dividing volume by function, being productive and making maximum use of minimum space; stasis, calmness and sincerity concepts were found to be low-level related.

The user who wears a white hat is a rational and objective thinker, as indicated in the concept map. This individual has constructed the living space by dividing the existing volume according to the functions. He tended to place the standard room measuring 410x650 centimeters in a grid system of 100 centimeters each, and changed these dimensions to 400x600 centimeters, considering the compatibility of the room sizes with this system. The fictional space created by this user is given in Figure 3.

Figure 3. Two- and three-dimensional visualizations of the fictional space created by wearing white hat

In this space, the sitting area, the working area, the dining area, and the circulation area are intertwined but separated from each other by abstract borders. The boundaries of these areas are determined to the extent allowed by the grid system. Being a rational-thinking individual, has a circular shaped coffee table with a rectangular one in his current standard living space.

On the other hand, the seating elements in the dining area have been replaced with sharper and clearer geometry. In addition, he thought that a single sitting element, whose location is not clear in the sitting area, created confusion in the space, and removed this element from the space. In order to create a suitable working environment in the work area, the element currently used for storage has been removed from the space, and a work desk and a work chair have been positioned instead. A functional product that meets many functions such as the work desk used in this area, open and closed storage units required for the user's work activities, lighting element, electrical connection, and note board has been preferred. In the selection of the office chair, the user preferred a flexible product with ergonomic dimensions, considering his body health and comfort.

User wearing a red hat; highly related concepts such as movement, passion, enthusiasm, creativity, sincerity, freedom, and intuition; moderately related to the concepts of limitlessness, extroversion, flexibility, and productivity; It was found to be low-level related to concepts such as being comfortable and making connections between functions.

The user wearing a red hat is a free, dynamic, and enthusiastic individual as indicated in the concept map. This individual has not undergone a radical change in the current standard space. The fictional space created by this individual is given in Figure 4.

Figure 4. Two- and three-dimensional visualizations of the fictional space created by wearing red hat

In this process, this individual acquired a table that can be moved and folded in order to carry out his work from home, and by using this element, he performed the action of working in different parts of the space. The main thing is that the area currently used as a storage area has been evaluated as a working area. In addition, this person, who has an active personality, has created different workspace alternatives for himself by carrying out his works from time to time on the coffee table or the dining table. Instead of acquiring a different product for the office chair, it has benefited from the seating elements used for the act of eating in the current situation.

User wearing black hat; highly related concepts such as functional, objective, rational, doubt and reaction; moderately related concepts such as being limited, economical and comfortable, multifunctional, introverted; It was found to be less related to concepts such as creating a space within a space and creating special units within a common space.

The user wearing a black hat is an objective, rational and suspicious individual, as indicated in the concept map. The fictional space created by this individual is given in Figure 5.

Figure 5. Two- and three-dimensional visualizations of the fictional space created by wearing black hat

This individual did not create radical structural changes in the space. It has analyzed the fields by separating the existing field according to their function classes. He tended to create space within space for the work area and separated this area from the sitting area with an unstable divider. In this area, a functional product that meets many functions such as open and closed storage units, lighting element, electrical connection, note board has been preferred. Unlike this person, the volume allocated for storage in the work area is more. The user, who attaches importance to the functions in the selection of the office chair, preferred a flexible product with ergonomic dimensions, considering his body health and comfort. As an objective and rational thinking individual, he favored the use of clear and rational geometries in the space, so he preferred a rectangular coffee table instead of a circular coffee table and replaced the seating elements used in the dining area with those with sharper and clearer lines. He analyzed the existing storage function in the study area in the unit where the television unit is located. This area, which is not used often, is completely closed with sliding doors, and is perceived as a deaf wall in the space. It is designed in such a way that it can be opened easily during use and fulfill its functions.

User wearing yellow hat; highly related to concepts such as functionality, limitlessness, freedom, enthusiasm, and originality; moderately related to concepts such as being active, flexible, sincere and extroverted, arousing curiosity; were found to be lowly related to concepts such as depth, creativity, mobility, productivity and responsiveness. The user wearing the yellow hat is a functional, free, positive, and original thinking individual, as indicated in the concept map. The fictional space created by this individual is given in Figure 6.

Figure 6. Two- and three-dimensional visualizations of the fictional space created by wearing yellow hat

This individual has a positive personality and wants to make the most of the daylight, which he knew would have a positive effect on his psychology and work efficiency during work. For this purpose, he acquired a movable and foldable work desk and positioned the work area in front of the window, which is the only opening through which natural light enters the space. While the daylight entering the space is sufficient for other users, has kept the curtains open to benefit more from this light. This individual preferred to use the equipment in the existing area for the sitting staff in the work area, where he has a conciliatory personality, as an approach to events. There have been no radical changes in terms of structural and equipment within the space. The functions have remained in their current state. The user wanted to restrict his access to the television in order not to be affected by negative events during this process and during work. For this purpose, the section where the television unit is located was covered with a sliding door system and left in the background.

User wearing green hat; highly associated with concepts such as movement, limitlessness, flexibility, being creative and extroverted, arousing curiosity, freedom, enthusiasm, originality and being productive; moderately related to concepts such as functionality, multifunctionality, creating space within space, mobility, responsiveness, and intuitiveness; It was found to be associated with the concept of depth at a low degree.

The user wearing a green hat is a free, enthusiastic, and active individual with an artistic personality, as indicated in the concept map. The fictional space created by this individual is given in Figure 7.

Figure 7. Two- and three-dimensional visualizations of the fictional space created by wearing green hat

Being a libertarian and dynamic individual, has greatly changed the existing space with its layout and equipment. While designing this space, his primary purpose was to create a private space for his personal activities and studies. The user, who is a very dynamic individual, wants to start the day alive and maintain his vitality during the day. For this purpose, he wanted the area he delimited to receive plenty of daylight and analyzed this area as a free space that he placed in front of the window opening. Currently, the sitting area on the right at the entrance to the room has been moved to the left area and the fittings in this area have been replaced with original fittings in amorphous form. A free space analysis was made for the dining area and a flexible design with a movable mechanism integrated with the television unit was used for the dining table. The seating elements in this area are foldable products and can be hung on the wall so that they do not take up space. Three-dimensional visualizations showing the open and closed states of the equipment in the dining area can be seen in Figure-13. Solving the functions of sitting, storage and eating in the left part of the room, the individual used the right part of the room as a free space. He shifted his working area to this area and preferred a folding and movable furniture for this. In addition, it has acquired an element that can work in a sitting position on the floor and has created a mobile and flexible working alternative by easily moving it to different parts of the room. He left the middle area in this section empty and evaluated it as an area where he could carry out his daily activities and carry out his studies.

User wearing blue hat; highly related concepts such as rationality, limitation, objectivity, and ability to link functions; moderately related to concepts such as stability, calmness, dividing volume by function, productivity, and maximum use of space in minimum space; On the other hand, concepts such as introversion and extroversion were found to be less related.

The user wearing a blue hat is an inclusive and rational individual who has boundaries, can think functionally and objectively, as indicated in the concept map. The fictional space created by this individual is given in Figure 8.

Figure 8. Two- and three-dimensional visualizations of the fictional space created by wearing blue hat

This person is the individual who creates minimal changes in the existing space. The changes he made in the space were to turn to rational forms for the coffee table and the seating elements in the dining area. With the thought that at the end of the process, he will continue to use the room as before, he did not turn to radical changes while creating a working area. For the table to be used in this area, a folding and movable table that meets the optimum needs and a movable seating element with ergonomic dimensions were preferred.

3. CONCLUSION AND DISCUSSION

Lifestyle has changed after the pandemic. Work areas have been moved to homes. The houses were used both as schools and as workplaces. The time spent at home has increased. Families tried to design the common areas in a different way. While trying to protect from the disease, new areas

were needed to spend time. In this study, six hats technique, one of the cognitive methods, was preferred to reflect the situations of different people. In this way, 6 different designs were obtained.

User wearing white hat; The individual with the power of analytical thinking has designed everything correctly and a more functional area has been created.

User wearing red hat; Since freedom is important here, a space that turns into a comfortable and active environment has been created.

User wearing black hat; It created a room within a room and closed itself because logic and doubts were mixed.

User wearing yellow hat; When functional and freedom come together, a more positive, bright and spacious space has been tried to be caught.

User wearing green hat; Art and movement go hand in hand. An area has been created where activities can be performed comfortably, if necessary, that can spend the whole day dynamically.

User wearing blue hat; Since the change was not preferred much, the place was designed with small touches without spoiling the general atmosphere.

As a result, an approach to spatial design was developed in the study using the Six Thinking Hats technique, and spatial solutions tailored to six different user profiles with distinct personality traits were proposed.

Spatial solutions designed for these diverse user profiles underscore the necessity for spaces to be flexible, functional, and customizable to meet the changing needs and living conditions of individuals. Furthermore, the Six Thinking Hats technique facilitated bringing together different thinking perspectives in the design process, enabling the generation of creative and varied design solutions. This method provides designers with an opportunity to enhance rich and versatile thinking skills by utilizing different color hats in the problem-solving process.

The study can be regarded as a step towards understanding the usability of cognitive techniques in spatial design and the impact of the Six Thinking Hats technique on spatial solutions. Such methodological approaches have the potential to enrich the design process and contribute to spaces more effectively meeting user needs.

In the study conducted by El-Husseiny (2021), the impact of the coronavirus pandemic on the architectural design process of residences was investigated. Both qualitative and quantitative research methods were employed. During a period in which multiple family members were working or attending education from home, flexible spatial solutions were achieved using furniture. The importance of paying attention to personal spaces and the concept of proxemics was emphasized in the stage of designing future homes. Additionally, solutions such as flexible home layouts and lightweight building materials that can be readjusted according to emergency needs were proposed to be implemented through new technologies.

The study conducted by Alhadedy and Gabr (2022) in Egypt aimed to identify the preferences of users who spent almost the entire day at home during the Covid-19 pandemic for healthier, safer, and more welfare living environments. The study concluded that natural light and ventilation are the

most crucial needs. Simultaneously, the need for a terrace, garden, or outdoor space with a beautiful view within the residence was identified. It was also expressed that, for a safer quarantine experience, there is a need for a closed bedroom with a private bathroom.

In the study conducted by Birer at al. (2021), an ethnometodological approach based on qualitative methods was followed. Within the scope of the research, spatial habits during the pandemic and daily spatial routines were examined by participants, reflecting their own experiences. The findings highlight the significant character of the room, which can transform into a single unit adaptable to changing needs. Users tend to create units within the room, defining their boundaries based on their actions. Thus, the room unit can become a more flexible and fluid space that varies according to actions.

In these and similar studies, emergency and on-site transformation practices within residential units have been deemed necessary and implemented by housing users during and after the pandemic. Many of the studies investigating this process are based on observations or results obtained from survey studies. Studies that combine pedagogical teaching methods with the design process are quite limited. In this context, this study not only proposes a method for design education but also holds significance by suggesting personalized spaces that emerge from different thinking styles.

4. RECOMMENDATION AND FUTURE DIRECTIONS

During the pandemic, everyone found themselves in the role of a designer for their living spaces. Everyone transformed their living spaces using their personal needs and individual characteristics. Analyzing individuals' moods and providing actions accordingly can be suggested. Additionally, the pedagogical method used in this study can be adopted as a working method in faculties and departments providing spatial design education. With this method, design processes that are distinct from each other can be conducted.

Our suggestion is for designers to consider not only physical arrangements but also the emotional and cognitive needs of users. Understanding user profiles is important to develop more effective and personalized solutions in the design process.

Additionally, it is crucial for home designs to focus on flexibility and versatility to cope with unusual situations such as pandemics. Homes should be designed to meet various needs, including work, education, and relaxation.

Lastly, engaging with users and obtaining feedback allows for continuous improvement in design. This feedback loop can assist in adapting home design to the evolving needs of users.

Conflict of Interest: There is no conflict of interest.

Ethical Approval: Ethical approval is not required.

Author Contributions: All authors have contributed equally to the research.

Funding: This research received no external funding.

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