

Adaptive Reuse Evaluation in Work Environments

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Abstract

Offices are important in providing efficient and continuous product development in busy time conditions in daily life. The most important factor affecting productivity in the working environment is the ergonomic arrangement of the functional spaces. Since it directly affects the health, psychology, and work efficiency of the employee, it is necessary to create efficient and comfortable environments by arranging the physical conditions in the work areas according to ergonomic elements. Creating healthy working environments can be achieved with ergonomic design and ergonomic products. In light of all this, it is one of the most critical issues today to consider adaptive reuse in work environment design. Sustainability and continuity of indoor ecologies are essential for the world's ecosystem. Within the scope of the study, adaptive reuse in work environments will be emphasized, and the aim will be to present new suggestions with student studies by analyzing examples. In this study, it has been demonstrated that by utilizing the information derived from re-functionality strategies and design criteria applied in shared offices, it is possible to create flexible office environments with features such as changeability, transformability, growth, adaptability, mobility, sustainability, and interactivity. These features contribute positively to working efficiency and performance, ensuring that office spaces remain relevant and functional as user needs evolve. Integrating such design principles fosters an environment that supports individual and collaborative work while responding to the dynamic nature of modern work practices.

Keywords: Interior Design, Office Design, Co-working Spaces, Adaptive Spaces, Sustainable Design

Çalışma Ortamlarında Uyarlanabilir Yeniden Kullanımın Değerlendirilmesi

Öz

Günlük yaşamda yoğun çalışma koşulları altında verimli ve sürekli ürün geliştirilmesi açısından ofisler önemli bir yere sahiptir. Çalışma ortamında verimliliği etkileyen en önemli faktör, alanların ergonomik düzenlenmesidir. Çalışanın sağlığını, psikolojisini ve iş verimliliğini doğrudan etkilediği için, çalışma alanlarındaki fiziksel koşulların ergonomik unsurlara göre düzenlenerek verimli ve konforlu ortamlar oluşturması gerekmektedir. Sağlıklı çalışma ortamlarının oluşturulması, ergonomik tasarım ve ergonomik ürünlerle mümkün olabilir. Tüm bunların ışığında, çalışma ortamı tasarımında uyarlanabilir yeniden kullanımı göz önünde bulundurmak günümüzün en kritik konularından biridir. Dünyanın ekosistemi için sürdürülebilirlik ve iç mekân ekolojilerinin devamlılığı hayati

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önem taşımaktadır. Bu çalışma kapsamında, çalışma ortamlarındaki uyarlanabilir yeniden işlevlendirme konusu ele alınarak örneklerin analiz edilmesi ve öğrenci çalışmalarıyla yeni önerilerin sunulması sağlanmıştır. Bu çalışmada, paylaşımlı ofislerde uygulanan yeniden işlevsellik stratejileri ve tasarım kriterlerinden elde edilen bilgiler kullanılarak, değişebilirlik, dönüştürülebilirlik, büyüme, uyarlanabilirlik, mobilite, sürdürülebilirlik ve etkileşim gibi özelliklere sahip esnek ofis ortamları yaratmanın mümkün olduğu gösterilmiştir. Bu özellikler, çalışma verimliliğine ve performansına olumlu katkıda bulunarak, ofis alanlarının kullanıcı ihtiyaçları değiştikçe alakalı ve işlevsel kalmasını sağlamaktadır. Bu tür tasarım ilkelerinin entegrasyonu, modern çalışma uygulamalarının dinamik doğasına yanıt verirken hem bireysel hem de işbirlikçi çalışmayı destekleyen bir ortamı teşvik etmektedir.

Anahtar Kelimeler: İç Mekân Tasarımı, Ofis Tasarımı, Ortak Çalışma Alanları, Uyarlanabilir Mekânlar, Sürdürülebilir Tasarım

1. Introduction

In the globalizing world, especially in western countries, after the industrial revolution, the economic system and the spread of capitalism, which is a mode of production, and this new mode of production, building types such as office, office, industry, which we encounter as one of the dominant building types, where the production area produces itself, are emerging.

Considering today's living conditions, our life generally passes between two types of structures. A working person spends an average of 8 hours a day in the work area, in a single building and sometimes in a single place or room, and the rest of his time mainly in the residential unit. While the time spent in the residence unit may vary according to the social life of the person, the time spent in the work area may vary only to the extent permitted by the regulations and rules.

Today's conditions not only make it a necessity to earn money, but also offer a lifestyle for earning and spending. This situation necessitates a person to establish and live a work-oriented life. The construction of this order is strengthened by the formation of the working structures.

The spaces, which are shaped by the social, economic and cultural structure of the society and the period in which they are located, are in a constant and variable relationship with the social structure that gives them functionality. Due to this dynamic relationship, the usage patterns of the spaces are also differentiated, reconstructed and defined over time in accordance with the wishes and characteristics of the new users. Offices, which are the spaces that regulate the functioning of business life and the complex structure of the working world, have also been differentiated throughout history within this change and have been redesigned in accordance with the requirements (Toprak, 2014, s. 29).

In today's global economy, many sectors are moving towards an increasingly complex, unpredictable and dynamic information environment. This situation has led to the emergence of a new paradigm in the use of office space for businesses, and the need for an office that offers flexibility in terms of working times and spaces has come to the fore. Developments in information and technology, the increase in the number of self-employed, changes in the labor market have affected the use of office spaces (Green, 2014, s. 55). Depending on these developments, expectations from office spaces have

also changed, and a new office type called "multi-tenant offices" has emerged over time (Ozturk and Korkmaz, 2018, s. 74).

Interior planning has an important place in shared offices as in all areas. Shared offices are planned in accordance with the use of the user. Shared offices must keep up with ever-changing user demands. The working areas of changing users also change. In this regard, flexibility comes to the fore. It should meet user requests and requirements, furniture and equipment elements should adapt to flexibility. If it is thought that the biggest change in work culture is from physical strength to brain power, it is seen that the necessity of full-time work and regular work disappears and brings flexibility to the fore. Technology and portable information support independence. Shared offices have come to the forefront for working anywhere, meeting and teamwork (Kaya, 2022, s. 10).

Although the demands for the use of shared offices are becoming more and more widespread, it can be said that the subject has not been adequately addressed academically (Merkel, 2015, s. 128). In Turkey, studies on this subject are limited. In this study, student studies on shared office design were analyzed in the context of adaptive systems criteria, and it was aimed to be a guide in shared office interior design. This study aims to examine student projects in the context of shared office design and evaluate them according to adaptive systems criteria. The study's primary purpose is to contribute to academic studies on shared office interior design and to guide the design process. In particular, how the adaptive systems approach can be applied in shared office design is discussed, and the effects of these criteria on interior design are detailed. In this context, the findings obtained from the analysis of student projects will shed light on future studies and contribute to eliminating deficiencies in this area.

2. Office Design and Co-working Offices Principles

It is associated with the function, definition and development of offices. Office buildings, which were affected by important events in history, and with the emergence of private banks and insurance in the 16th century, an expert working group emerged, and in the 19th century, the concept of working and living began to separate from each other. By the 1920s, functionality was at the forefront and measures were taken to address different areas related to the building envelope. After the half of the 1900s, this functionality reached its peak. In the 19th century, the main function of large offices was training, as they provided the necessary training to their employees due to the lack of educational facilities. Today, when the philosophy of new office spaces is the concept of 'work wherever you want, when you want', dining areas, resting etc. are added to office buildings. added to it, making it a more complex group of structures. In addition, the concepts of sustainability, effective conservation of energy, green buildings and ecology in office design and the design understanding of today and even the future dominate (Ozdamar, 2017, s. 80).

Office spaces have undergone changes throughout history and have served different areas. Due to the advancement of technology and the increase in business branches today, the operation, volume and organizational diversity of office spaces have been made (Noraslı & Kose Dogan, 2019, s. 2). Working culture, technological developments, employee profiles have revealed the requirements for changes in the use of spaces. Space setups are examined under the headings of 'Cell Regular Offices, Group Regular Offices, Free Regular Offices and Mixed Regular Offices'. According to Firdevs Aydın, Cell offices generally have square or rectangular plans and are closed to circulation from the outside. It is known as the oldest office space. It is gathered around the main circulation area and it is seen that closed office spaces do not have much flexibility in

terms of number of employees, space size and furniture layout, and have high privacy (Kaya, 2022, s. 9).

One of the working spaces that respond to new working approaches is coworking spaces. Shared office spaces can be defined as work spaces designed to offer people from different disciplines and work branches the opportunity to carry out their individual work in a shared environment (Gandini, 2015, s. 195). In shared office spaces, there are office or desk rental options within the periods preferred by the users, and technical and spatial infrastructure services are offered to support the works to be produced in these spaces.

In addition to the spatial and technical opportunities for work offered by shared office spaces, it is also important to provide spaces for social interaction between users (Gandini, 2015, s. 200).

It can be said that the global economic crises experienced after the 2000s were also effective in the emergence and spread of the use of shared offices. After the worldwide economic crises, more and more people started to abandon the traditional idea of workplace and the tendency of individual business development increased. With the crisis period, sharing economies gained importance, and it became preferable to reduce economic costs by sharing the resources that define working conditions, spatial and technical infrastructure opportunities. On the other hand, with the economic crisis, entrepreneurship and innovation have gained importance in working life, and the tendency to support individual capital, which is formed with knowledge, talent and experience, with social capital developed through social relations and to transform it into new business areas has increased (Gandini, 2015, s. 201). On the other hand, the rapid rise of information and communication technologies (ICT) has affected the ways of doing business and has made working processes more mobile and independent from geographical and physical space (Fuzi, 2015, s. 464). With these developments, the need for employees to be together physically has decreased, and the conditions for doing business independently of the place have emerged with new equipment such as laptop computers (Ross, 2006, s. 148). Thus, employees are now able to produce work remotely but dependent on technology, in individual places such as homes or in other places, without being dependent on a single desk and place to do business (Fuzi, 2015, s. 463).

These conditions and business approaches have revealed new space needs over time. Working independently from a fixed workplace has caused the boundaries between private and professional lives to blur or disappear, and on the other hand, it has caused problems such as loss of motivation in employees (Moriset, 2014, s. 18). In working processes carried out in living spaces or places such as local cafes and libraries, it has been encountered that working efficiency decreases due to distraction-like reasons (Fuzi, 2015, s. 462). The rise of shared office workspaces was born with the search for a solution to the absence of a suitable workplace for this employee group (Merkel, 2015, s. 127).

The design of shared office spaces has become increasingly complex and multifaceted in line with the transformations in today's work environments. Laing and Bacevice's (2013, s. 42) study highlights that these spaces should be considered physical workplaces and environments that foster creative processes, enhance user interaction, and serve as social platforms. The design of flexible and dynamic spaces that encourage creativity aims to balance individual needs with interactions within the community, creating an environment that promotes collaboration.

In this context, flexibility and user-centered design in shared offices are not limited to physical spaces but also include the integration of digital technologies, enabling individuals to create shared values and experiences in virtual environments. The meaning-making capacity of these spaces is deepened through user participation in both physical and virtual realms (Ozturk and Korkmaz, 2018, s. 76). Therefore, design processes should address ergonomic and aesthetic concerns as well as social and cultural values.

Another important feature of shared offices is the arrangement of individual workspaces to meet the need for privacy and focus. This approach ensures continuous openness and interaction within the space while allowing users to control their areas. Thus, the primary goal of the design is to provide users with a functional and meaningful experience that supports both individual and collective work.

In conclusion, shared offices are being redefined not just as places for work but as platforms that generate meaning and value among users, support work processes, and stimulate creative productivity. A holistic approach that considers physical and virtual environments is essential for successfully designing these transformative spaces.

3. Co-working Office Design Principles and Adaptive Spaces

In today's world of rapid changes, buildings and their interiors need to be able to change in order to keep up with the spirit of the time. For this reason, the designer should evaluate the future, possible future users, the problems they foresee and the results achieved in the projects they will design. Designers need to catch up with the times and their designs should be sustainable against changes. This is only possible if their designs and architectural ideas can and remain flexible.

All of the factors such as the capacity of a space to transform into a structure with a different function when used with its original function, its ability to easily adapt to the preferences of its users, all kinds of technological and social developments, and the ability to offer different plan alternatives within the same unit, all enable the flexibility of this space to be mentioned. Therefore, architectural flexibility can be defined as a design approach consisting of spatial and structural strategies that allow the building to meet the changes despite possible changes over time. Flexibility foresees the diversity of architectural units and the differentiability of the qualities of the units. In flexible design, units can adapt to changes over time and allow changeable spatial designs. The flexibility capacity of structures makes it possible to adapt to change. In this way, it allows the building to fulfill new functions.

Walter Gropius, in his discourses, stated to the designers that they should not consider the buildings as a monument or artifact, but should design them flexible enough to adapt to modern life and serve the change of daily conditions. In addition, Gropius, emphasizing the variability of life, brought up the changeable and transformable nature of buildings and spaces with this discourse (Forty, 2000, s. 163). Hertzberger, on the other hand, stated that it is not possible to meet the needs of all users with a single solution and therefore units that allow multi-purpose uses should be designed (Islamoglu and Usta, 2018, s. 678). According to Hertzberger, flexible editing can react to any possible change. Hertzberger expresses flexibility as polyvalence. Polyvalence is a format that allows different uses without the need to change itself. In this form, he states that flexibility will be possible by privatizing, differentiating and multi-purpose use of spaces according to functions (Hertzberger, 1991, s. 258).

Preferring flexibility in architectural design ensures that buildings can be used with a certain function in a certain time period and with another function in another time period. Flexibility is based on the highest level of adaptation of the design to the changing needs of the users. The principle of flexibility in office design is a critical factor for ensuring that spaces can easily adapt to changing user needs and work styles. Work environments are expected to have dynamic structures rather than static functions in today's business world. Flexibility refers to the ability of spaces to be transformable and rearrangeable both physically and functionally.

Physical flexibility involves designing movable, modular, or multifunctional office furniture. For example, instead of using fixed walls, meeting rooms can be divided by movable partitions, allowing these spaces to be rearranged for different group sizes as needed. Portable workstations or creating areas in open-plan offices tailored to different user requirements are also solutions that align with the principle of flexibility. Functional flexibility, however, refers to spaces that can accommodate multiple functions depending on the scenario. For instance, an office space may be used as a quiet area for individual work during the day but transformed into a communal space for group activities or social gatherings in the evening. This approach, particularly in shared office environments, helps maximize limited resources efficiently.

Flexible office design accommodates changing user needs and prepares organizations for future uncertainties. In today's rapidly evolving technological landscape, spaces must adapt. Furthermore, flexibility enhances employee satisfaction and productivity. The principle of flexibility in office design fosters sustainability and adaptability from both a functional and user experience perspective. This approach ensures that workplaces can swiftly respond to changing needs while creating a creative and productive environment.

The subject of re-functionalization strategies in the interior will be evaluated under two headings, namely the physical dimension and the social dimension (Table 1).

Table 1. Re-functionalization Strategies (Author(s), 2024)

Strategies in the Physical Dimension
Modularity
Neutral Areas
Different Plan Types
Adding/Removing
Mobility
Combinability / Divisibility
Multi-Purpose Use
Strategies in the Social Dimension
Freedom
User Participation
Personalization

The physical dimension refers to the visible concrete concepts that affect the building physically, while the social dimension refers to the goals and abstract concepts achieved by using the strategies in the physical dimension.

3.1. Strategies in the Physical Dimension

Seven physical strategies have been determined to ensure that the interior can be re-functionalized. These are as follows; modularity, neutral reinforcements, different plan types, adding / removing, mobility, combining / dividing and multi-purpose usage strategies (Kurnaz, 2021, s. 40).

Modularity: In architecture, modularity is defined as creating different units or spaces by changing the units that make up a space or the relationships between the sub-elements of these units. Modular design is a planning system that consists of one or several units of ready-made components of certain sizes. An example is that at the level of reinforcement, furniture consists of a combination of modules. The modularity strategy is a flexibility strategy planned at the design stage. This strategy makes it possible to make various changes such as additions and removals within the structure (McLaughlin, 2008, s. 117).

Neutral Areas: This strategy refers to imprecise, undefined reinforcements, equivalent to the word meaning. Rapoport states that the only solution that can meet technological changes and changing user needs is open-ended design (Rapoport, 2005, s. 20). An example can be given to the functionalization of non-functional parts of the accessories according to the user.

Different Plan Types: The different plan types of strategy aims to provide flexibility consisting of the diversity of the relations of parts or units with each other and to adapt to the changes that occur over time.

Adding/Removing: This strategy is the capacity of the reinforcement to be added/removed horizontally or vertically, depending on the design quality it has, in order to meet the changing needs over time. It is the ability to grow or shrink by adding or removing items in line with different user needs, without damaging the integrity of the space and equipment (Schneider and Till, 2008, s. 196). In this way, the new sections and reinforcements added can be used permanently or temporarily. Similarly, the removed parts can be designed to be added again after a while.

Mobility: The mobility strategy is defined as ensuring that the equipment can be changed according to the requirements, depending on the mobility feature (Islamoglu and Usta, 2018, s. 675). This strategy covers the changes that the users can make in the whole by moving the units in the space. The mobility strategy takes place without major differences in the structure of the elements. The mobility strategy has an understanding that opposes traditional, conventional and stable systems and designs that do not anticipate change. This strategy anticipates the changes that will occur according to technological developments and user needs and solves new technologies together with the mobility of the elements as a tool of an unstable, flexible architecture. For example, movable and foldable walls, sliding doors, etc. The division of the space or the complete disappearance of the movable elements can be shown. As another example, a technological board used in the classroom can be used in a way that can serve different purposes, thanks to its ability to rotate and move.

Combinability / Divisibility: The merging / dividing strategy means that the reinforcements that do not have the desired size can be combined into a larger reinforcement or that a larger reinforcement is divided into a larger number of reinforcements. It can be expressed as ensuring the change of the equipment used by combining or dividing it in different ways. As an example, if a table used in the space is not sufficient, it can be combined with a different table or replaced by dividing it.

Multi-Purpose Use: The multi-purpose usage strategy is defined by the fact that the equipment includes more than one function at the same time or has different functions in different time periods. With a multi-purpose flexibility strategy, it is possible to use a seminar hall as a dining hall at the same time. The space should be designed to provide the physical conditions required by both actions. For this reason, for a multi-purpose usage strategy, a space should be created by foreseeing two or more functions. At the reinforcement level, the use of a cabinet placed in the space as a border element in the space can be given as an example of multi-purpose use.

3.2. Strategies in the Social Dimension

Three social dimension strategies were determined within the scope of the study in order to ensure that the interior space can be re-functionalized. These are as follows; freedom, user engagement and personalization strategies.

Freedom: The concept of freedom is that designs can respond by adapting to different situations, needs and changes. However, from a different perspective, it can be considered as a liberating design criterion from planning to construction, from construction to use. The freedom strategy is important in terms of ensuring the active participation of the users in the space and behaving as the users want.

User Participation: The design strategy that provides user participation is the most functional and reasonable method to provide a mutually transparent environment between the space and the users. Users are the primary decision maker in the space since they have the authority to change and transform the existing space they are in. Thanks to this flexibility strategy, users are given the opportunity to make changes in the space. User participation is important because it gives priority to the user in buildings, cares about their identity and needs, and provides spatial diversity.

Personalization: Rapoport is what modern architecture should do; It states that it creates an open-ended framework and allows the user to complete, change and add his own meaning to this structure (Rapoport, 1967, as cited in Rapoport, 1974, s. 61). They consider the personalization strategy as an architectural method that does not have an oppressive effect on the user and will respond to the need for customization (Rabeneck et al., 1974, s. 700). Hertzberger, by aiming to give a feeling of incompleteness in the spaces thanks to the materials used in the buildings and the designed forms, proposes creating spaces that allow users to make changes and to personalize, allowing flexible use (Hertzberger, 1991, s. 128). Thanks to this flexibility strategy, users have the opportunity to organize the equipment and spaces they use according to their personal preferences.

Thanks to the information to be obtained from the re-functionality strategies and design criteria specified in this study, it will contribute to the design of flexible office environments that can change, transform, grow, adapt, mobile, sustainable and interactive that will positively affect work efficiency and performance.

4. Case Study: Co-working Office Designs with Adaptive Systems

In the context of office design and interior architecture relationship, the primary purpose of fieldwork is to integrate adaptive systems into the interior architecture studio. In this context, first of all, the criteria to be considered about office design were shared with the students, and then how adaptable systems could be integrated into the design and their articles were emphasized.

From the beginning of the design process, an experimental study process was followed for students to use adaptive systems in the context of sustainable design. In this context, the main idea for students was to provide the principle of flexibility in design.

The main principle of the co-working office design to be made in the given space has been determined as flexibility, adaptable spaces, and systems for each. The steps they followed within the scope of the study were script writing, concept creation, zoning studies-needs program, and 3D design. Co-working office spaces were evaluated according to the physical and social dimension criteria defined in the previous section.

4.1. Creating Co-Working Interior Office Space

Students were expected to produce alternative office designs within the scope of co-working office scenarios and conceptual contexts they created in light of all the theoretical data and application studies shared so far.

Considering the criteria in the context of the scenarios they created, the students made a list of needs and offered suggestions for solutions in the spatial context. The most flexible principle is tried to be provided in the outputs, modular furniture systems are used, and multi-purpose use is given priority.

Outputs to alternative shared office designs are as follows.

In Figure 1, Example A, modular working systems and flexibility of spaces have been the first design principle. The stepped working area can be converted into a seminar area when necessary. Modular desks can be combined and separated. The space is generally designed with adaptive systems. Outputs to alternative shared office designs are as follows.

In Figure 2, Example B, the kitchen area is designed as both a social and a working environment. The multi-purpose use principle was supported throughout the project. It is aimed that users can personalize the space and use it freely.

In Figure 3, Example C, it was observed that the customizable areas were given more space. The common area is suitable for multi-purpose use. It is designed to be used both as a work area, as an activity area, and as a social area when necessary.

In Figure 4, Example D, modular working systems are used, and customization is provided with designs that can be combined and separated. With the principle of flexibility, it has been tried to create a space where different plan types can be solved.

In Figure 5, Example E, different study areas were created. Meeting room tables are designed modular and can be separate working systems when necessary. The event area is designed for multi-purpose.

In Figure 6, Example F, different types of spaces are solved based on the principle of flexibility. The activity area has been designed to meet different needs. The focus of freedom is based on giving the users the chance to choose.



Figure 1. Proposal for the Interior Space of Co-Working Office Example A
(Author(s), 2024)



Figure 2. Proposal for the Interior Space of Co-Working Office Example B
(Author(s), 2024)



Figure 3. Proposal for the Interior Space of Co-Working Office Example C
(Author(s), 2024)



Figure 4. Proposal for the Interior Space of Co-Working Office Example D
(Author(s), 2024)



Figure 5. Proposal for the Interior Space of Co-Working Office Example E
(Author(s), 2024)



Figure 6. Proposal for the Interior Space of Co-Working Office Example F
(Author(s), 2024)

5. Discussion of Method

According to the comparative summary table (Table 2) of the designed projects, modularity has been seen as the most influential factor in the co-working office design. It has been deemed appropriate to use modular systems to provide flexibility in adaptable space design according to the given principles.

Table 2. Project Comparison Chart (Author(s), 2024)

Projects Flexibility Strategies		A	B	C	D	E	F
Physical	Modularity	■	■	■	□	■	■
	Neutral Areas	■	■	□	■	□	■
	Different Plan Types	■	■	□	□	■	■
	Adding Removing	■	■	□	□	□	■
	Mobility	■	■	□	□	□	■
	Combinability Divisibility	■	■	■	□	□	■
	Multi-Purpose Use	■	■	□	■	■	■
Social	Freedom	■	□	□	■	□	■
	User Participation	■	□	■	■	□	■
	Personalization	■	□	■	■	□	■
		■ Available □ Partially Available □ None					

In physical principles, simply providing modularity in design will not be sufficient for flexibility. Therefore, it has been seen that it is necessary to create neutral areas, to use different plan types together, and to define the features of adding and removing into designs. In addition, adding user participation and personalization, which are social principles in design, has made the space more adaptive.

Notably, all these features are generally used in the selected samples. It is noteworthy that the space designs that appear in the figures provide adaptive-changeable plan types. The findings from the tables and figures are summarized as follows:

Insufficiency of Modular Design Alone for Flexibility:

- **Modularity Alone is Inadequate:** While modular design can enhance a space's flexibility, relying solely on this principle is insufficient. Achieving flexibility in spaces requires the integration of additional design principles.
- **Systemic Integration:** Modular elements alone may not fully address spatial functionality and adaptability. For example, a modular desk system may be arranged in specific ways, but when different needs or requirements arise, this modular system alone may not meet those demands.

Creation of Neutral Areas and Use of Different Plan Types:

- **Neutral Areas:** To enhance flexibility, fixed-function spaces should be replaced with neutral (multi-functional) areas, allowing various activities to coexist. For

example, a meeting room can be transformed into a seminar area or a workspace accommodating individual and group work.

- **Combination of Different Plan Types:** Using various spatial layouts, such as open-plan offices, private workspaces, and hybrid configurations, enhances spatial flexibility. Combining these different layouts accommodates a wider range of user needs.

Features of Adding and Removing Elements:

- **Adaptable Designs:** Elements that can be added or removed, such as movable furniture, partition systems, or modular components, enable spaces to be flexible and responsive to changing requirements.
- **Dynamic Use:** The ability to rearrange spaces according to user needs ensures that space can continue to serve different functions over time.

User Participation and Personalization:

- **User Participation:** Involving users in the design process ensures that the space adapts to their needs, enhancing flexibility and functionality. User feedback allows for designs that better meet specific needs.
- **Personalization:** Allowing for individual and group customization, such as adjustable furniture or personalized workstations, enhances the adaptability of the space.
- **Social Principles:** Spaces designed to focus on user participation foster collaboration and engagement, improving individual and group productivity.

Observation of Selected Examples:

- **Flexibility and Changeability:** In the selected examples, it is observed that spatial layouts and design elements are implemented with a focus on adaptability. These spaces use changeable plan types and modular systems to accommodate evolving user needs.
- **Adaptive Change:** These designs emphasize not just fixed configurations but dynamic, flexible, and multifunctional structures that respond to changing demands.

These detailed explanations highlight that integrating various plan types and user participation is crucial for spatial designs to be user-centered and flexible, including modularity and neutral areas.

6. Conclusion

Ecological problems are among the issues that can negatively affect future generations in the long run. This problem, in which every study area is negatively affected, has been solved in line with the analyzes made with today's technology and as a result of the studies. There are produced with new solutions focused on the problem. After each new technique or study, new methods are developed by obtaining different information about

the subject. The use of new techniques in design and the adoption of new principles arise from this problem. Adopting sustainable and transformable principles that ensure greater user participation has also led to using adaptive systems.

Co-working offices as a working place have an essential place in terms of being an environment that provides efficient and continuous product development in the busy time conditions of daily life. While working action and working life are so important, office structures should be designed to meet all the functions of the users without any function gap. At the same time, it should be designed as flexible spaces for the user by providing the principles of flexibility in design. It has been observed that these principles contribute significantly to the design, and the use of adaptive systems creates more sustainable spaces.

In addition to modularity, achieving true flexibility in office design requires a holistic approach considering physical and functional adaptability. As mentioned earlier, neutral spaces allow for different configurations depending on the user's needs, facilitating easier transitions between work modes such as individual focus, collaboration, or group activities.

The use of diverse planning types—such as open-plan layouts, flexible workstations, and semi-enclosed spaces—contributes to the adaptability of an office environment. These layouts support various activities, from quiet individual work to dynamic team collaboration, enabling users to seamlessly switch between different working styles.

Moreover, integrating movable partitions, modular furniture, and reconfigurable elements enhances the design's capacity to evolve. This approach ensures that spaces can adapt to changes in organizational structure, technological advancements, or shifts in work practices.

User participation and personalization are also critical components in achieving adaptability. By involving users in the design process, spaces can be tailored to individual and group needs, leading to increased satisfaction and a stronger connection to the environment. Personalized workspaces empower users, fostering a sense of ownership and contributing to the overall flexibility of the design.

In summary, flexibility in office design goes beyond modularity and requires a combination of neutral spaces, adaptable planning types, and user-centric approaches. These elements collectively enhance the ability of office spaces to accommodate evolving work practices, fostering productivity, creativity, and user satisfaction.

In this study, it has been shown that thanks to the information to be obtained from the re-functionality strategies and design criteria specified in shared offices, flexible office environments with changeable, transformable, growing, adaptable, mobile, sustainable, and interactive features that will positively affect working efficiency and performance can be produced.

Author Contribution

The authors declare that they have contributed equally to the manuscript.

Conflict of Interest Statement

The authors of the study declare that there is no financial or other substantive conflict of interest that could influence the results or interpretations of this work.

Research and Publication Ethics Statement

This study was conducted in accordance with research and publication ethics, and did not require ethics committee approval.

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