Sustainability in interior space organization of studio flats: Recommendations with examples of Northern Cyprus

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A R T I C L E   I N F O

A B S T R A C T

The concept of housing began with the existence of people in this world with the need for sanctuary to isolate themselves from the physical environment and from other living creatures, and starting with the most primitive, hand-made places, evolved to the present. Different life cultures and different social needs, in parallel with the process of human development, resulted in various types of housing. Of these types of housing, Studio Houses, which provide the basic living functions within minimum space–mostly in a single space, have become a much-preferred house type by individuals living alone, and by students in the present day living conditions. The aim of this study is to examine the standard type interior organizations of the studio houses constructed in large numbers for students in North Cyprus, which is a university country. The study also aims at presenting design criteria for alternative studio-type houses with different fittings and interior designs meeting the needs of students studying in different branches of universities, thus having different lifestyles. Hence, after a literature review on the concept of housing and the history of housing, interior designs of studio houses of North Cyprus were analyzed, and classification was made according to their interior designs. Interviews were carried out with university students using these studio houses, thus establishing the spatial arrangements and fittings they need and assessing them. Although there are various studies related to the interior design of studio houses, the fact that there is no scientific research towards alternative interior designs for the specific needs of a different group of university students makes this study important.

1. Introduction

Since their existence in the world, people felt the need for shelter to isolate themselves from the physical environmental conditions and to protect themselves from other creatures. Using natural shelters such as caves and tree holes, at later stages, they began forming spaces using the materials found in nature. As people moved into the permanent settlement state, the spaces built to meet the necessities of the family notion, formed the basis of housing.

The first constructions of housing began during 8000-5000 BC, in the Neolithic Period, and shelters were built with a circular plan, with a flat or hollow base, and covered with tree branches. The first samples of house planning appeared during the ancient Greek and Roman Empire periods. Natural, social, and cultural determinants were the affecting factors in shaping the designs during the planning process of houses.

During the development of human history, different life cultures, different family structures, and social needs brought about the types of housing. These can be grouped into three main categories; mobile houses, satellite towns (suburban dwellings), and studio houses. In North Cyprus, which has become a university country, an increase in the need for houses designed in minimum spaces has increased in parallel with the annually increasing number of students, especially during the last quarter of a century. Thus, the production of houses bringing about alternative solutions in this direction has become the primary preference of the construction sector. The housing type, produced mostly for higher education students in North

Cyprus, is the studio flat type, designed to meet the basic living necessities within minimum spaces. These houses are produced as single space types, encompassing the functions of cooking-eating, resting, sleeping, and cleaning up within the minimum space and fittings. Besides these single space types, which contain both day and night functions together, there are also houses with standard type planning that does not have interior designs to meet the personal life necessities, and serving both day and night functions with their fittings.

This study is authentic and important for establishing the fact that university students studying in different departments have different living necessities. Especially those studying in mainly applied science fields, have different needs and fittings, with different interior designs. Thus, this study aims to offer proposals for studio houses that have alternative interior designs to meet the needs of such students.

The aim of this study is to analyze the functional sufficiency of interior organizations of studio houses preferred by university students–which form an important population group in North Cyprus–to serve their lifestyles varied as a result of different fields in which they study, and make alternative interior design proposals.

Hence, the examination of samples of studio houses in all the districts of North Cyprus that have universities, classified for their interior designs, establishing the needs created by the different lifestyles of students studying in different fields, and opinions and proposals towards alternative interior designs in studio houses form the content of this research.

Qualitative and quantitative methods are used together in this research. Initially, information was gathered about the notion of housing, history of housing, factors affecting housing design, and types of houses, through literature review. After that, sample plans of studio houses, in which university students live in the districts of North Cyprus were gathered, the interior designs of these houses were examined, and their classifications based on differences and common characteristics were established. Information was also gathered about the various spaces and fittings needed by university students studying in applied sciences, through interviews. Studio houses with standard interior designs and the different interior characteristics needed by students were assessed, and proposals were presented towards studio houses that can be alternatives to the standard designs.

2. Methodology

This study comprises an analysis of interior organizations of Studio Houses in North Cyprus, mostly preferred by university students in North Cyprus. The study also presents proposals for the designs of alternative Studio Houses that have interior organizations and fittings needed by students studying in different branches.

Qualitative and quantitative research methods were both used in the study. A literature review was conducted for the definition of a house, and for information and visuals on the historical development of a house. The interior designs of Studio Houses used by university students in all the districts of North Cyprus were examined with sample plans. The spatial organizations and fittings of Studio Houses, much needed by students studying in different branches, were established through interviews and questionnaires with students.

Initially, the concept of the house was defined based on resources, and the historical development of the house from its appearance with human history to the present day was briefly summarized. After that, the factors affecting house design and interior space of houses were defined, and types of houses, showing changes in direction of changing needs of users were presented with their characteristics, were presented with visuals.

Studio Houses, in which university students in North Cyprus live, were analyzed through samples selected from each district; they were classified according to their designs, and differences in details were established. The classification was supported with sample plan schemas.

Functional needs of students studying in different branches, revealed through interviews and questionnaires carried out with university students, were evaluated with the Studio Houses having standard interior organizations, and unfavorable aspects were established. Based on these findings, recommendations were made for Studio House designs with alternative interior organizations to meet the needs of students studying in different branches.

3. Housing

Arising with the start of human history to meet the need for shelter and protection, the notion of housing began with the use of natural shelters, and later on, similar shelters were built using natural materials. Houses, in which families realized basic living functions of families, like cooking-eating, resting, sleeping, and cleaning, experienced different designs in accordance with the social level of families. The evolution of human development to the present day affected the functional organization of houses, the construction materials, and their place within the scale of cities.

The relationship among environmental factors, socio-economic factors, and cultural factors during the formation process of the house shows differences from society to society (Hesapçıoğlu, 2010). Besides being structured meeting vital needs, the house also has to possess comfort and aesthetic values as well. In addition, the house also carries an emotional meaning for bringing the family together (Yener, 2010).

3.1. History of housing

Beginning with the use of caves as shelters, the notion of housing went into a process of development with spatial formations built by men, as they started agricultural activities and thus moved into permanent settlements (Salihoğlu, 2006). With the discovery of fire, the earth was baked to produce bricks as construction materials; thus construction activities showed a development. It is known that the first construction of houses in the world began during 8000-5000 BC, in the Neolithic Age. Çatalhöyük archeological site in Anatolia (Bal, 2017) is an example of the first permanent settlements as seen in Fig. 1. The Ancient Greek and Roman Empire periods were the first periods during which people realized house constructions by planning. With the rich needing to have housing within cities, during the XV. Century in Western Europe, large scale houses, such as the palace, palazzo, villa, manor, and mansion were produced (Kumbasar, 2008). With industrialization increasing fast after the Industrial Revolution, migration from the countryside to cities increased, thus urbanization gained acceleration. Hence, the need for housing increased and collective housing and multistory housing types appeared. At present, houses with standard fittings such as electricity, air-conditioning, hot water, waste systems, continue their developments in line with the contemporary living conditions of people (Bal, 2017).

Fig. 1: Çatalhoyuk archaeological site

3.2. Factors affecting house planning

Although it is known that houses are shaped in accordance with their geographical characteristics, the cultures of users are the most important factor affecting house designing (Özkaynak, 2017). Cultural factors are seen in exterior design elements as well as interior designs. The basic factors affecting house design are, Natural Determiners, including geographical factors, Social Determiners of social factors, and Cultural Determiners related to user factors (Gür, 2000).

Climate, topography, environmental texture, and local materials form Natural Determiners, technical knowhow level of society, welfare level of society, and family-society relations form Social Determiners, and cultural values and norms, living style and behaviors, environment/space using norms, and the meaning and usage of the house form Cultural Determiners (Mumcu, 2009). Besides being a shelter for people, houses are constructions that determine the living styles of individuals and are affected by their living styles.

3.3. Interior space in houses

The concept of space begins with the universe, incorporating infinity, and extends to the smallest dimension in which we are. In other words, it is a three-dimensional element forming the living spaces of people. There is a concrete relationship between people and space through the house (Gür, 1996; Savaş, 2015). Interior space in a house is the place in which people shelter their bodies against the outdoors, at the same time being the place in which people establish a close relationship with themselves as it is a spiritual shelter. During the organization of the interior space of the house, the experiences of the individuals who will use the house, their expectations, and actions should be taken into consideration. Spaces in the house, related to each other, are important factors that affect the relationship among functions. The interior spaces of the house are divided into three, as living, sleeping, and common use sections (Kahya, 1993). Interior spaces in houses show differences depending on the needs of users, their social and cultural structures, and their living cultures.

4. House types

The concept of the house has undergone changes in the historical process and has shown development continuously. The needs and socio-economic level of its users have been the most important factor in the planning of the house (Deilmann et al., 1982). Family structures undergoing changes, and the new demands of contemporary living have resulted in changes and variations in the shaping of the house.

4.1. Mobile houses

A mobile house means a moving house that can be carried to another place. In the history of mankind, the tent, used in nomadic life, is known to be the first mobile shelter (Arseven, 1983). Houses turned into permanent constructions with a permanent settlement. However, the mobile house type, needed within the concentrated living conditions of the present day, appeared with optimum solutions embodied in the mobile caravans (Bal, 2017) in which the basic living functions are realized in the smallest spaces as shown in Fig. 2.

4.2. Satellite town and collective houses

Satellite towns are built outside a town, within reachable distances, with all the infrastructure, in

order to decrease the density in town centers (Hesapçıoğlu, 2010). Collective houses in satellite towns accommodate all the necessities related to life, such as education, health, shopping, entertainment, and sports (Hasol, 1993).

Fig. 2: Mobile housing/caravan

Appearing first in the United States of America, low-rise detached houses can be found together with multi-story apartments in collective housing estates. Collective houses, known as housing estates, or condominiums, are designed with security precautions, enclosed, and thus under control. Fig. 3 shows an example of collective houses of a satellite town from Turkey.

Fig. 3: Collective houses

4.3. Studio houses

The changing populations of cities and the lifestyles of people after the Industrial Revolution, also the economic problems after World War II, reduced the interior capacities of houses and increased their numbers through vertical planning in order to allow nuclear families to live in optimum spaces. Studio houses appearing as a result of these conditions are mostly designed as single space, or single bedroom, meeting the basic necessities of life (sitting, sleeping, cooking-eating, cleaning) in the smallest spaces as can be seen Fig. 4. According to the Public Houses Standards, establishing the standards for social housing, in 1964, the smallest house was set to be 63m^2 (Desagis, 2006). Small house description in the world is designed by laws to be between 30m^2 and 100m^2 (Bulhaz, 2014). At present, studio houses are preferred by individuals

living alone, families without children, and students, and the carrier-focused life in cities and a small number of children in families have become the sufficiency indicator for economical spaces. In studio houses, which are identified with the living culture of Japanese people, day and night functions are realized through fittings with few more functions, and this minimizes the use of space (Gölgedar, 2011).

Fig. 4: Studio housing ınterior design

5. Studio houses in North Cyprus

Studio houses for one or two people, found in all the districts of North Cyprus with universities and used by students as residences, are classified as follows depending on their differences in interior space organizations and fittings.

5.1. Single space studio houses

Having the same character in all the districts and highly preferred by university students, Single Space Studio Houses are the smallest among studios for their spatial sizes. Being economical in production and user expenses, only the Bathroom-W.C. spaces are bordered in these types. Day and night functions are organized together in a single space, thus achieving minimum limits in dimensions as shown in Fig. 5. Usually preferred by users as single person housing, interior space organization is realized with the minimum fittings based on functions.

Fig. 5: Single space studio house (Thumbnail Project, Nicosia)

5.2. Studio houses with multi-functional fittings

In the Studio Houses with Multi-Functional Fittings, all living functions are designed together in one single space organization, and only the cleaning

spaces are separated. The fittings used for sitting functions during the day are converted and used for sleeping functions at night. The fittings for eating also serve the function of studying at different times of the day. The fittings being used for multiple purposes enable the planning of the structure with minimum use of space. In addition, the minimum amount of fittings increase the production and usage economy of the houses Fig. 6 shows an example plan of the studio houses with multi-functional fittings.

Fig. 6: Studio house with multi-functional fitting (Terrace Park Project, Famagusta)

5.3. Partially divided studio houses

Another type examined in this study is the Partially Divided Studio House as shown in Fig. 7. In these houses, functions are either separated by partial dividers, or special spatial parts are designed for different functions. In these types, usually designed for one or two people, through partial chambers, realized either by structures or by fittings, day and night functions are separated. In addition, special spaces are assigned to these functions.

Fig. 7: Partially divided studio house (Sky City Project, Nicosia)

5.4. Studio houses with terraces/balconies

Studio house types with exterior spaces are the Studio Houses with Terraces/Balconies. Terraces/balconies increase usable space with the advantage of an exterior space of studio houses which are designed in limited spaces. Providing opportunities for functions such as sitting, studying, and eating, terraces, and balconies bring indoor and open-air alternatives for these functions as can be seen in Fig. 8. Suitable to the Mediterranean climate conditions of North Cyprus, these types are a preferred alternative for users. More expensive to produce, compared to other studio houses, types with Terraces/Balconies enable the user to benefit from the urban and environmental interaction possibilities sociologically and psychologically.

Fig. 8: Studio houses with terraces/balconies (Comfort Project, Kyrenia)

6. Evaluation and conclusion

After an examination of the interior designs of studio houses in which university students in North Cyprus live, and through interviews carried out with students in applied sciences departments, the evaluation of the interior organizations of studio houses based on needs is stated below:

- It was observed that the interior facilities of studio houses for the basic living functions such as sitting/resting, sleeping, cooking/eating, and cleaning, provide the minimum sufficiency.
- It was established that the study area and fittings are not adequate in studio houses for the documents, designs, drawings, three-dimensional modeling, and experiments that students studying in applied sciences.
- Storage capacities in studio houses, such as suitable study tables, cabinets, shelves, and drawers, especially needed by students studying in applied sciences, are inadequate.
- Lack of multi-functional fittings/furniture in most of the studio houses is a disadvantage in the interior design in minimum spaces.
- Separate sections for day and night functions are not designed in studio houses. All functions are organized together in a single space, and specific spaces for functions are not created.
- A lot of users cannot enjoy the advantages of exterior space facilities provided by studio houses with terraces/balconies, which are constructed in smaller numbers due to the production economy.

Based on the evaluation, studio houses, mostly preferred by university students in North Cyprus, have an interior organization designed in accordance with the functions of basic living necessities and are

constructed with standard type planning. The studio houses available at present do not meet the needs of students-especially of those with different lifestyles based on studying in applied sciences departments, such as specific spaces for day and night functions, multi-purpose fittings, study areas, and fittings, storage areas, and do not provide adequate living comfort to users.

In addition to these findings, the opinions of sources, which came out as a result of research related to interior organizations of studio houses, towards the functional problems of micro spaces for general users are described as follows:

- The use of transformable furniture of day and night functions in studio houses designed for minimum spaces not only increases functionality but also enables the widening of space (Kariptaş, 2019). Besides providing ease of movement, widening of space enables specific spatial divisions for different functions that can be needed. Logical solutions, making use of contemporary technologies, can increase storage capacity without loss of space. In addition, designing a loft by increasing the height of the studio house, can enable the separation of day and night functions with vertical division, and spatial usage can be increased to the optimum level (Belentepe and Kariptaş, 2019). The lifestyle of the user formed factors such as his/her family structure, work routine, the social structure should be an important criterion in the interior designs of studio houses, and flexible alternative solutions should be provided by using moveable furniture (Taşkesen, 2019).

As a conclusion of this study, recommendations towards the planning of studio houses for university students in North Cyprus, studying in various departments, with alternative interior organizations are as follows:

1. The sleeping sections of studio houses should be separated from spaces belonging to other functions using partial dividers, thus providing audio-visual isolation.
2. There should be sufficient spaces and work surfaces for design, drawing, three-dimensional modeling, and experiments, and for small group work related to applied science departments.
3. There should be adequate shelves, cabinets, and drawers for storing documents, equipment, and materials that are used for their studies.
4. Studying and cooking-eating spaces should have very close functional relation to meet the cooking-eating needs of students during long and flexible study hours.
5. Based on the fact that students have specific functions in their different lifestyles, the studio house should be approximately 40-45m^2 in size in order to solve the problem of essential spaces.

Studio houses designed with these qualities will provide alternative solutions to university students studying in applied sciences; at the same time increasing the functional quality of interior organizations of studio houses.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

Arseven CE (1983). Çamaşırhane: Sanat Ansiklopedis. Milli Eğitim Publisher, İstanul, Turkey.

Bal S (2017). Akıllı ev teknolojisinin yüksek konut yapılarında iç mekana etkileri. M.Sc. Thesis, Haliç University, Istanbul, Turkey.

Belentepe A and Kariptaş FS (2019). Mikro konutların iç mekan tasarımlarının incelenmesi. Haliç Üniversitesi Fen Bilimleri Dergisi, 2(2): 179-195. https://doi.org/10.46373/hafebid.603795

Bulhaz B (2014). Küçük konutlarda iç mekân analizi: Ankara'da iki konut örneği. M.Sc. Thesis, Atılım University, Ankara, Turkey.

Deilmann H, Bickenbach G, and Pfeiffer H (1982). Konut Grupları [Housing Groups, Zones d'Habitat]. Ayıntap Yayıncılık, Ankara, Turkey.

Desagis M (2006). Konut alanı-yaşam alanı ilişkisi açısından küçük konutlar. M.Sc. Thesis, Fen Bilimleri Enstitüsü, İstanbul Technical Üniversitesi, Istanbul, Turkey.

Gölgedar C (2011). Küçük konut mekanları kapsamında kısıtlı iç mekan tasarım ilkelerinin incelenmesi. M.Sc. Thesis, Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü, Ankara, Turkey.

Gür ŞÖ (1996). Mekan örgütlenmesi. Gür Publishing, Trabzon, Turkey.

Gür ŞÖ (2000). Doğu Karadeniz örneğinde konut kültürü. Yapı-Endüstri Merkezi publications, İstanbul, Turkey.

Hasol D (1993). Ansiklopedik mimarlık sözlüğü. Yapı-Endüstri Merkezi publications, İstanbul, Turkey.

Hesapçıoğlu B (2010). Toplu konutlarda kullanıcı ihtiyaçlarına bağlı planlama ve tasarımı etkileyen faktörler. M.Sc. Thesis, Trakya University, Edirne, Turkey.

Kahya M (1993). Endüstrileşmenin ve teknolojik gelişmelerin konut iç mekan düzenine etkileri. M.Sc. Thesis, Fen Bilimleri Enstitüsü, İstanbul Technical Üniversitesi, Istanbul, Turkey.

Kariptaş FS (2019). Mikro hacimlerde mobilya sistemleri. Haliç Üniversitesi Fen Bilimleri Dergisi, 2(1): 103-112.

Kumbasar SB (2008). Konut gelişiminde gelecek vizyonları. M.Sc. Thesis, Yıldız Technical University, İstanbul, Turkey.

Mumcu S (2009). Dünden bugüne değişen konut alanlarına kültürel çeşitliliğin etkileri, Ortaköy meydan ve çevre yerleşim örneği. M.Sc. Thesis, Trakya University, Edirne, Turkey.

Özkaynak M (2017). Stüdyo dairelerin gelişim süreci: Konya örneği. M.Sc. Thesis, Selçuk University, Konya, Turkey.

Salihoğlu T (2006). Kıbrıs adasında konut. Dörtrenk Printing Ltd., Lefkoşa, Cyprus.

Savaş B (2015). Rezidanş konut tipi iç mekân tasarımı ve kimlik kavramının değerlendirilmesi. M.Sc. Thesis, Hacettepe University, Ankara, Turkey.

Taşkesen MG (2019). Mobil konutlar ve iç mekân biçimlenişi. M.Sc. Thesis, Başkent Üniversitesi Sosyal Bilimler Enstitüsü, Ankara, Turkey.

Yener S (2010). Tüketim odaklı yaşam biçimlerinin günümüz konut proje temsilleri üzerinden okunması. M.Sc. Thesis, Fen Bilimleri Enstitüsü, Istanbul Technical University, Istanbul, Turkey.