

A POST OCCUPANCY EVALUATION OF SHARED CIRCULATION SPACES OF THE FACULTY OF ARTS AND SCIENCES OF DOKUZ EYLUL UNIVERSITY

Rengin Zengel and Ilkim S. Kaya

Abstract

Determination of the occupancy-related problems in the relevant space and improvement of spatial conditions is important in terms of social and physical harmony. In order to increase the efficiency of occupancy upon programming in public buildings inhabited by large number of occupants, carrying out a POE, whereby the opinions of occupants who have actively participated are evaluated, is of utmost importance. It is conferred that spatial comfort conditions offered at educational buildings, where individuals are introduced to the society, influence students' social and physical integration, as a requirement of academic life. Being a developing country, the number of higher education institutions in Turkey has increased in recent years. Architectural projects of many of these institutions were completed in short periods of time without conducting the required research on social and physical integration of students, who are the actual occupants. As for this particular study, spatial comfort related conditions of educational buildings have been explored through shared common spaces such as main entrance hall, corridors and the courtyard by assessing over three objectives; determining user characteristics, space occupancy and user mood. In 2010 a study has been followed at the Faculty of Arts and Sciences of the Dokuz Eylül University, located at Kaynaklar Campus, which incorporates the largest covered space on its campus. Survey was held through questionnaire

on 226 freshman and junior students of the faculty students. Results have been shown in tables which were generated by the employment of the overall frequency breakdown method and then were converted into bar graphs.

Keywords

Post-occupancy evaluation; shared circulation spaces; orientation; internalization.

Introduction

Architecture as a field of environmental design has a substantial role in human social interaction, in designing and affording the physical environment. The implication of environment is a result of interaction between people and environment (Canter, 1983). Environmental psychology is a research field that provides a set of tools to designers for finding out the people-environment interactions, on which design and planning efforts can be built on (Betchtel et al., 1990; Sommer & Sommer 1997; Kuniavsky, 2003; Onur, 2009). The nature of the user-environment interaction is determined through a variety of studies performed with active user participation. The techniques which involve user participation

enable users to be aware of their surrounding environment and evaluate it more efficiently. By utilizing these techniques, it is possible to improve social awareness and attachment, especially in closed societies such as university campuses or neighborhood units (Onur, 2009). However, user-based studies and their influence on behavior in large scale planning can only be found out through field research (Betchtel et al, 1990; Kaplan & Kaplan, 1980). It is emphasized that the understanding of such complex systems requires multi dimensional field research which should cover multiple aspects. Cooperation of disciplines such as architecture, social sciences and planning provide for more efficient occupancy of localities (Way & Bordass, 2005). Therefore, it is necessary to use techniques which will identify environmental attributes that are in continuous change. The Post Occupancy Evaluation studies conducted in this field serve as a significant evaluation method that reveals positive and negative aspects of a relevant space (Preiser, Rabbincowitz & White, 1988). Determination of occupancy-related problems, increasing of occupancy efficiency, providing for information-based decision making through the appraisal of the opinions of the users who participate actively in the evaluation process are cited among the benefits of the POE method (Zimmerman & Martin, 2001). Through POE, successful and unsuccessful aspects of localities in line with occupant expectations and actions to be undertaken by occupants in such localities are evaluated from the occupants' points of view. (Baird, 2001) Thus, POE serves as a guide for revising existing localities, making them more efficient for their occupants, ensuring that subsequent arrangements are conducted with a higher level of efficiency. (Sanoff, 1994; 2000.) POE involves the issues of psychological comfort and satisfaction besides health, safety, functionality

and efficiency (Presier, 2001). The performance of a building is determined through its ability to meet the expectations of its occupants with respect to a functional and comfortable building (Nasar, 1988; Stanley, 2002). While Reizenstein briefly defines POE type studies as "testing of the designed environment in terms of its adequacy for the human being as an occupant", he also states that POE also encompasses the satisfaction felt in the shared spaces in public buildings. With this method, cooperative behavior or senses of privacy of occupants from various positions can be measured (Zimring & Reizenstein, 1980). As such, it is important that POE studies provide for criteria that can be made use of in the long term. Three different evaluation models exist within the post occupancy evaluation process: determinative, inquisitive and diagnostic. Diagnostic POE, which has been employed in this project, signifies the major weaknesses and strengths of the performance of the building. It generally involves interviews conducted with occupants and a rapid evaluation made by touring the building (Presier, 1988). The most widely used method in locality evaluations is on-site observation of occupants' behavior, interviews and questionnaires (Voordt & Wegen, 2005). Through these efforts, answers are sought to questions such as who occupies the building, how much concentration exists in various sections and which activities are performed (Zimring & Reizenstein, 1980). POE efforts were mainly implemented on public buildings between 1960s and 1980s. In this period, there are several POE projects examining technical, functional and occupant behaviors of especially educational buildings, implemented through support from various public organizations (Hawkins & Lilley, 1998).

The expectations of academic life that need to

be satisfied in educational buildings that possess an interspatial setup through conglomeration of various units, and measurement of those requirements via occupants are important aspects of POE. The criteria that determine spatial comfort in the occupancy of educational buildings are the most significant factors in terms of the performances of the student groups that form the occupants of the relevant space. In case of failure to adequately determine those criteria, students may develop social and physical integration difficulties towards those spaces. Within the field of higher education studies, social and physical integration is an important topic that affects student satisfaction. A variety of researchers has broadly studied the concept of integration in campus communities. The researches of Vincent Tinto (1988) on the theory of student departure guide the studies in this area. According to Tinto, on arrival into the institution, two key concepts impact persistence: academic and social integration. If students are not well integrated into the university environment, they are likely to withdraw. In testing Tinto's theory, many researchers focus on participatory actions of students as measures of integration, as well as perceptions of both social and academic experiences (Stoecker, et. al, 1988). About a student's subjective feelings of connectedness to the institution, Hurtado and Carter (1997) argue for an empirically distinct measure of integration. This measure is a psychological dimension of integration, called sense of belonging. According to them, the sense of belonging both measures a student's attachment to the campus community and his/her participation in particular activities. Hoffman, et. al (2002) examine the main conceptual dimensions of a sense of belonging instrument that considers student-to-peer and student-to-faculty psychological connections.

Regardless of how the sense of belonging is measured, various studies have found a connection with academic interactions. Hoffman, et. al (2002) state that 1st-year students (freshmen) involved with learning communities indicate a higher sense of belonging than their peers who enroll in general university courses. These students perceive higher levels of faculty support, peer support, and classroom comfort. They also view their faculty as being more empathetic and understanding. The unique closeness that is created in learning communities allows for a merging of both social and academic integration, which increases the sense of belonging. Thus, internalization which is important in terms of spatial comfort develops on the basis of the following: (1) Appearance of the space easy on the eye and adequate to the occupant on the context of its ratio scale values, (2) Increasing of shared time and thereby intensity of occupancy of the space depending on the quality of activities that take place therein, (3) The space becoming more easily perceptible and definable through being experienced in time. Failure to satisfy the above mentioned primal spatial criteria would cause a decrease in the students' occupancy performance of the relevant space, which would result in a negative impact on continuity and thereby the quality in terms of educational process.

Being a developing country, the number of higher education institutions in Turkey has increased in recent years. There are already 139 as of 2010, 45 of which being foundation universities and the remaining 94 being the state universities (YGM, 2010). In parallel with the universities that have been established, adequacy of spatial installations which is an important factor in terms of educational quality, started to be questioned.

As a result, the requirement for measuring the spatial comfort related conditions of today's educational buildings in terms of social and physical integration by the POE method has become apparent, for future evaluations. From this point of view, a field survey has been conducted at the heavily populated Faculty of Arts and Sciences, located in the Kaynaklar campus of the DEU in İzmir, the third largest metropolis of Turkey. The shared spaces of the main entrance hall, corridors inside the building blocks and the courtyard, which are situated at the junction point of several departments, classes and laboratories frequented by the 1533 students of the faculty has been examined over the buildings' spatial performance impact. It was determined during the observations conducted prior to this study that while shared circulation spaces provided for the required spatial magnitude, the complex falls short in offering criteria such as ease of orientation and socializing performance, targeted in multi-functional buildings. Thus, it was assumed that students are encountered with serious inconveniences in terms of developing a sense of belonging to their school, which relates to spatial comfort. In this context, the spatial comfort conditions expected to constitute place attachment at the Faculty of Arts and Sciences of DEU have been researched on the basis of three hypotheses.

Hypothesis 1: Students' sensitivity towards their spatial environment is a factor in terms of their internalization of academic life.

Hypothesis 2: The education building of the Faculty of Arts and Sciences of DEU fails to provide spatial comfort to students due to the problem of ratio scale of the 'main entrance hall', 'corridors inside the building' and 'the courtyard' located

inside the building.

Hypothesis 3: The shared spaces designed to serve as a socialization area besides being a venue for circulation cannot be employed for this purpose by at least half of the students.

User satisfaction for the shared spaces of the Faculty of Arts and Sciences of DEU has been explored through the above-mentioned hypotheses. Performance requirements that constitute the basis for user satisfaction have been associated with Post-Occupancy Evaluation and Environment and Behavior Studies and this study has been established on this basis.

Research Method

It can be stated that the main aim of this study is to achieve a general understanding of the sense of a place through various spatial performances in DEU Arts and Sciences Faculty building. The sense of a place can be defined in literature as one of the major meanings, which refer to the positive emotional bonds that develop between individuals and their environment or specific places (Altman & Stea 1992; Hidalgo & Hernandez, 2001). In this study, the "sense of a place" is taken as a perceptual dynamic which makes inhabitants possess the feeling of psychological comfort in a particular environment. In this context, close-ended questions that form the survey sheet used in the analysis of the shared spaces of the DEU Arts and Sciences Faculty building have been determined over three objectives, being 1) occupant characteristics, 2) spatial comfort, and 3) occupant mood, capitalizing on the studies conducted by Preiser et al. (1988) and Preiser & Vischer (2005). Firstly,

personal information (sex, educational status) of participants has been inquired (questions 1 and 2).

Before elaborating on the data regarding occupation of space, elements of the space have been associated with Christian Norberg-Schulz's (1980) concepts of 'static physical environment' (geography, climate, existing urban patterns), 'dynamic activities' (use of built form and its social impacts), and 'meanings' (functional, cultural, organizational and symbolic). Occupational intensities of the shared circulation spaces of the education building, determined as the main entrance hall, corridors inside the building and the courtyard have been evaluated. These intensity analyses were conducted in order to determine whether the shared spaces incorporate adequate spatial abundance (Question 3).

In the survey questions regarding mood, students' environmental cognition and orientation, social interaction and appropriation have been explored (Questions 4, 5, 6 and 7). Defined in literature as the process of interpreting the environment through classification and organization on the basis of a conceptual system, cognition is deemed as the primary condition of perception and orientation. For example, Norberg-Schulz (1980) states that there are two psychological functions concerning the spirit of a place and these are orientation and identification. Man can experience the environment as meaningful when he can orientate and identify himself within it. Orientation keeps people from getting lost in an environment, whereas identification allows people to develop deeper knowledge of a particular environment through an intense experience. Arthur & Passini (1992) speak of the

importance of identification of a zone in spatial perception and emphasizes that a zone with a strong character can support a spatial identity even if it is merely the 'sense of being somewhere'. Indicating that passageways also are significant elements constituting the inner configuration of buildings, they differentiate between the two sides of orientation communication as usage of the passageway and perception of the circulation system. O'Neill (1991) and Peponis et.al (1990), on the other hand, state that the complexity of the plan setup is the primary factor in orientation performance. Bronzaft & Dobrow (1984) maintain that simplicity and orderliness of floor plans assist individuals in learning the plan of a setting. Nevertheless, it is a common situation among occupants to get lost in similar surroundings difficult to discern. Passini (1980) speaks of the fact that lack of reference points for increasing 'readability' of identical corridors and decision points would increase negative impact on orientation. Therefore, environmental complexity to a certain extent is necessary. According to Wright et.al (1993), it is difficult to locate a given target point in most modern complexes where corridors on different floors and offices on different corridors are very similar to each other. Indicating that students' frequency of getting lost in floor plans which they regard as "simple" and more "readable" is less, Weisman (1981) maintains that this impact is observed in a similar manner on individuals whose familiarity with the buildings is high. In the light of these facts, the levels of impact on orientation of the space experiencing process, and the distinctive or similar physical properties of spaces have been explored. Opinions of occupant student groups with different periods of study have been compared. Through questions inquiring the levels of ease and

difficulty of giving directions for other units in the building to a visitor by making references to shared spaces, occupants' levels of satisfaction regarding accessibility to other units in the building (Question 4). With a question inquiring the favorite socialization venues of students, the level of perception of shared circulation spaces as socialization venues has been measured (Question 5).

Within the scope of a subsequent evaluation, students' positive emotional bonds towards the education building of the Faculty of Arts and Sciences of DEU has been explored on the basis of the time spent at the shared circulation spaces. There is a diversity of terms used for this meaning as well as diversity of theoretical approaches studied. There are similar terms such as 'community attachment' (Kasarda & Janowitz, 1974), 'place symbolism' (Rapoport, 1990), 'place preference' (R. Kaplan & S. Kaplan, 1989), 'place dependency' (Altman & Stea, 1992), and 'place identity' (Norberg-Schulz, 1980). However, the affective-physical bond between people and places makes 'place attachment' considerable and noticeable from others. There are a number of studies regarding place attachment that support the physical component of the space and its role in developing this sense. Hammit et al. (2004) suggest that by using physical and social dimensions of place attachment, such as place familiarity, place identity and place dependence, place bonds can be identified and measured systematically. Proshansky defines personal dimensions in place attachment as physical challenges of place elements and make a cognitional attachment with place (Proshansky & Kamino, 1983). On the other hand, Hidalgo & Hernandez

(2001) compare two dimensions of attachment in various contexts and arrive at the result that social attachment is greater than the physical one, but that the role of physical elements in placing this social relation should not be forgotten. In terms of its social and physical dimensions, place attachment is often discussed using a synonym term called satisfaction. In comparison to the term place attachment, satisfaction refers to a person with a positive or negative attitude towards environment and place attachment has a positive aspect in each place that appears (Altman & Stea, 1992; Sundstrom, 1996). Thus, citing positive and negative feedback for spaces on the basis of levels of satisfaction has been acknowledged as a tool in examining the concept of place attachment (Question 6). Lastly, image-meaning analyses for identified spaces have been conducted through ratings in the context of attributes such as coherence with the human scale, usefulness, spaciousness, warmth, light, reassurance capacity, dynamism, appeal and commodiousness (Question 7).

Environmental Settings

With a usage area of 0.40 acres located on the Kaynaklar campus, the Faculty of Arts and Sciences of DEU have the largest usage area among the 9 faculty buildings of the university. As the first building constructed in the Kaynaklar Campus, the faculty is similar to the other education buildings, being configured around open and closed courtyards. The faculty constructed with a symmetrical plan incorporates five building blocks. The dean's office and other administrative units are located in the building block that forms the main entrance body. The building block positioned in parallel to the ceremony area and the parking



Figure 1: Main Entrance of the faculty building (Source: Authors 2010).

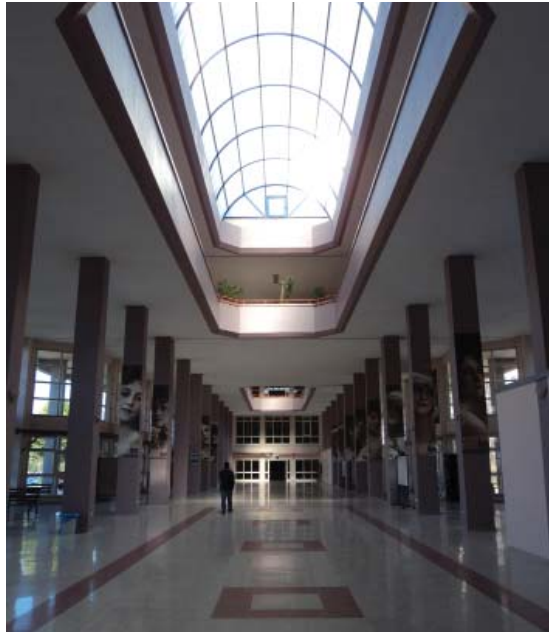


Figure 2: View from the main entrance hall (Source: Authors, 2010).



Figure 3: View from the Interior corridors-1 (Source: Authors, 2010).



Figure 4: View from the Interior corridors-2 (Source: Authors, 2010).

lot is a prestige area of 1386m², with dimensions of 63m X 22m. The main entrance building block getting daylight from the roof has a ground floor incorporating an entrance hall with a portico of 7.40 meters high, serving as the main transit axis for students and academic and administrative staff going to other parts of the units of the faculty building. The first floor incorporates a central corridor with administrative units on two sides. The main entrance hall located on

the ground floor of Building Block D acts as a passage area both to the education building blocks located on the lateral wings and to the conference hall through the courtyard.

The education building consists of eight units located on right and left wings, in the successive education building blocks (A and B) on the same axis, in the sciences and social sciences domains. The educational units



Figure 5: View from the Interior corridors-3 (Source: Authors, 2010).

consist of two main blocks serving the spatial needs of two sections on each floor. There blocks are arranged on three floors being the basement floor, ground floor and the first floor. Both education blocks are configured with classrooms, laboratories, bathrooms and faculty staff lounge positioned around a corridor each. The corridors extending across the blocks and receiving daylight from the roof are 12.20 meters in width, 64.70 meters in length and 3.30 meters in height. The corridors on both blocks are lighted through the two porticos of 4.60 meters by 15.80 meters, over the long axis.

In each educational space, classrooms open up to corridors through cul-de-sacs of 2.60 meters by 14.6 meters. There are tube tunnels extending from midpoint of the education blocks in the background to a conference hall with a capacity of 600. A courtyard of 52 meters by 44 meters is located in the central space confined with these units. The courtyard is used as an open foyer for the meeting hall (block C) serving also as a lobby. Because the education blocks are constructed on differing elevations due to the slopped characteristic of the terrain, the courtyard has been leveled within itself in



Figure 6: View from the Inner courtyard-1 (Source: Authors, 2010).



Figure 7: View from the Inner courtyard-2 (Source: Authors, 2010).

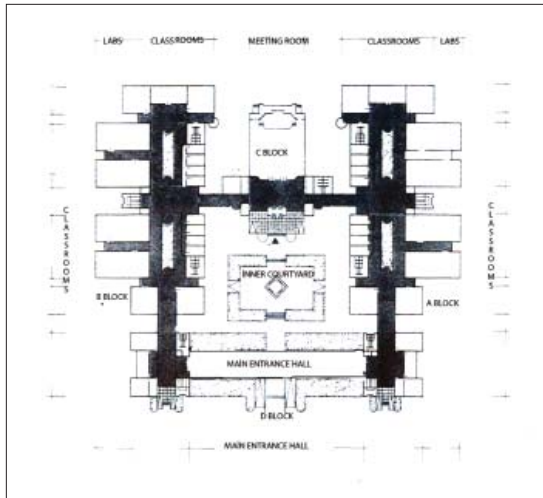


Figure 8: First floor plan of the faculty building (Source: Dokuz Eylül University, 2010, 2010).

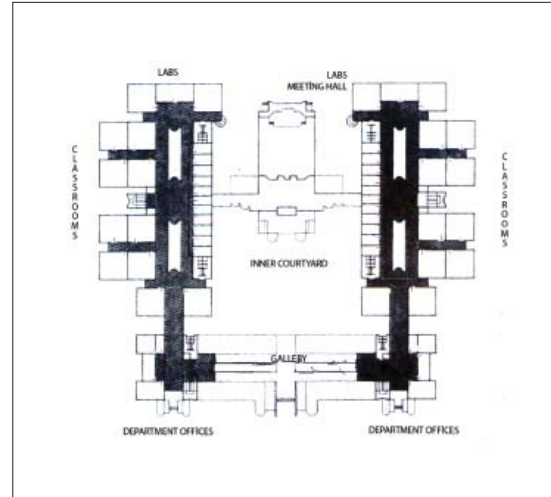


Figure 9: Second floor plan of the faculty building (Source: Dokuz Eylül University, 2010).

order to provide for entrance capability to the education blocks through the ground floor. The cafeteria of the Faculty of Arts and Sciences, located on the ground floor at the right wing of the symmetrical building, opens up to the interior corridor with a single door unilaterally. While it should ideally be the most important socialization venue of the education buildings and thereby be located near the center, the cafeteria is rather excluded from the circulation axes of students, restraining the socialization process.

Survey Participants

The framework for the survey has been formed with different student groups from the sciences and arts departments located on blocks A and B of the education building. The first five departments of the Faculty of Arts and Sciences

the numbers of students of which are higher compared to other departments have been included in the sampling plan. The departments included in this evaluation correspond to a 77% segment of the entire Faculty of Arts and Sciences students. The departments have been taken as strata, only freshmen and junior students from the selected departments have been interviewed. The aim in doing this was to explore the feedbacks concerning spatial comfort between the freshmen students who started to occupy the building only recently and therefore didn't have enough time to develop an adequate level of sense of belonging and junior students who have been occupying the building for long and therefore who have had enough time to develop a sense of belonging.

Analyses

According to the Stratified Random Sampling method, the number of students to be interviewed from each department is provided within the total. The below formula has been used for sample measurement.

$$n = \frac{Npq}{(N-1)B + p}$$

Ratios relevant to the populace has been assumed equal and accepted error rate has been determined as 0.05. The survey prepared was first conducted with a student group of 94 qualified to represent the target audience from the Faculty of Arts and Sciences of DEU and, as the Cronbach Alpha coefficient of the results obtained has been found as 0.87, the survey was acknowledged to be at an adequate reliability level. Subsequently, the same survey

was conducted with the determined sampling units and quite a high level of response has been achieved. Some of the respondents left certain questions unanswered and these surveys have not been included in evaluation. In the end, 249 individuals have been interviewed and 226 out of 249 were replied to in full. The response ratio can be given as 91%. The data required for this study have been collected in a period of two weeks through face to face interviews with students from different departments of the faculty. The survey was conducted during the week days, at various hours of the day, and took approximately 15 minutes to complete.

Survey Based Findings

The data obtained from a total of 226 interviewed individuals in this section were evaluated through frequency breakdown. Firstly, descriptive statistics of the interviewed students have been presented. 54% of the interviewed students were male and 46% were female (see table I and II).

Freshmen (51.7%) and junior (48.2%) students were interviewed within the scope of this study. Evaluations from questions three to 7 were made by using the five point likert scale (1 to 5) and converted into tables in the form of primarily numbers and ratios followed by summarizing of these tables with bar graphs. The bars were used horizontally in the graphs, and, on the horizontal axis, -0- represented indecision and ratings of 20 were used up to +100 on one side for positive responses and up to -100 on the other side for negative responses. An indecision axis has been formed vertically from point zero. The three spaces selected for the study (main entrance hall, interior corridors,

Sex	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1 (male)	122	54,	54	54
2 (female)	104	46	46	100,0
Total	226	100,0	100,0	

Table I: Distribution of interviewed students by sex.
(Source: Authors).

Grade	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 1	117	51,7	51,7	51,7
3	109	48,2	48,2	100,0
Total	226	100,0	100,0	

Table II: Distribution of interviewed students by grade
(Source: Authors).

inner courtyard) were positioned on the vertical axis of the graph with sub-evaluation criteria. Each criterion was passed on the graph first in line with the freshmen students' responses and then with juniors'. The ranges from the indecision axis towards (+) and (-) were evaluated.

Spatial Comfort Related Findings

Students' occupancy frequencies for the main entrance hall, interior corridors and inner courtyard of the Faculty of Arts and Sciences of DEU are provided in (see table III). Ratings pertaining to spatial occupancy preferences of freshmen students who have just started to use the building and of senior students who have been continuing their education here for a few years were compared. The responses of both freshmen and junior students concentrated on option 3. Response no. 3 is considered as indecision rating with 35.7% mean for freshmen and 35.1% for juniors. On the graph, this response group picked up rigorously within the +%20 and -%20 rating range on the indecision

axis has surpassed the ratio of 1/3 within the total, indicating that students fail to be aware of their spatial environment to a large extent. The material evaluations of approximately 2/3 of the participants who attempted at making an evaluation on the basis of space are as follows: Freshmen students selected the responses 'very good' and 'good' (options 4 and 5) at a ratio of 30.2%, while junior students who selected the response 'very good' for lengthy occupancy of the main entrance hall at a ratio as low as 1.9%. In terms of lengthy occupancy, junior students rated this space in the 60% percentile. As for brief occupancy, the evaluations of students from both grades are balanced. Looking at the graph all in all, occupancy for transit purposes linger on positive rating, while there is a tendency towards negative ratings for lengthy occupancy. As for occupancy of corridors, it is observed that freshmen students (13.7%), as well as junior students (13.2%), did not prefer interior corridors for lengthy occupancy, agreeing on the fact that corridors are not an appealing

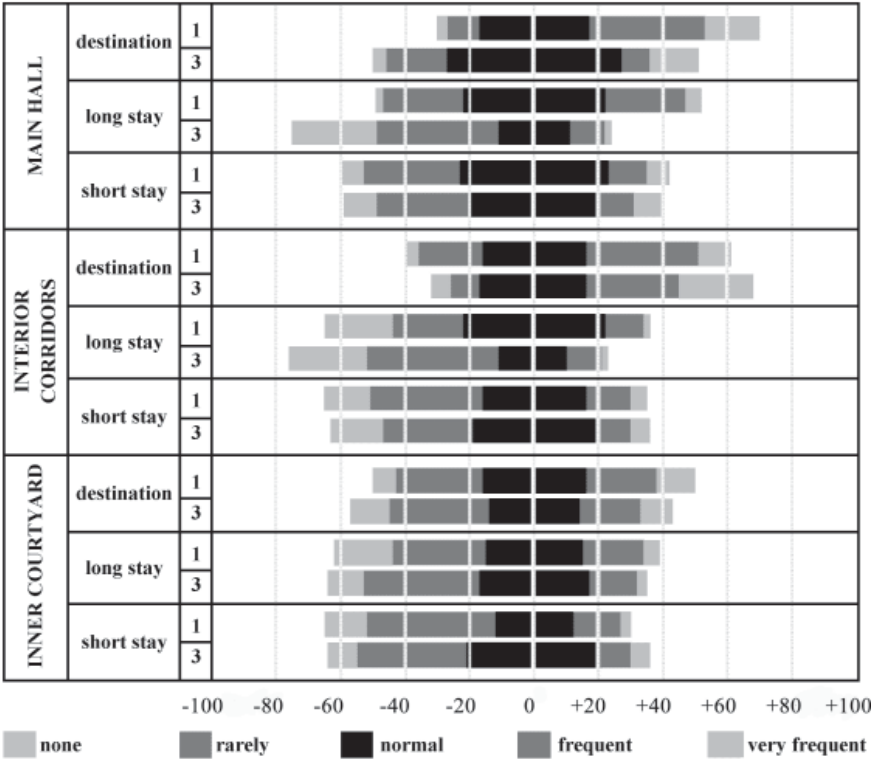


Table III: Occupancy intensity of shared spaces (Source: Authors).

space for students. Tendencies of the graph expressing the occupancy figures of corridors display similar motions with the main entrance hall in terms of percentiles of freshmen and junior students. Concerning the inner courtyard, almost 1/2 of the junior students did not display a positive approach with reference to occupancy periods. In terms of lengthy occupancy, also the freshmen evaluated this space negatively (46.8%). However, as observed on the graph, the ratings of the inner courtyard display a somewhat more balanced outlook as per the

indecision axis.

Indoor Orientation Related Findings

Spatial orientation is a factor that plays an important role in terms of the accessing process of individuals who are to occupy the relevant buildings for the first time. The following conclusions are obtained upon evaluation of the relevant spaces with reference to students' responses (see table IV). As in other questions, option 3 was selected approximately 1/3 of the students who took part in the survey. Students

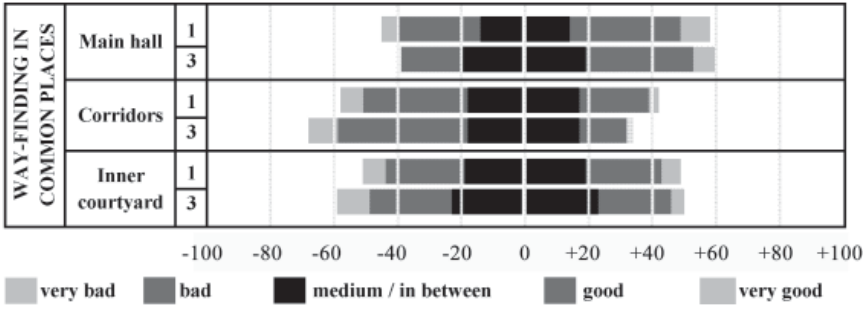


Table IV: Analysis of shared circulation spaces in terms of indoor orientation (Source: Authors).

did not state a precise response also in this connection and chose to select an indecisive response. Other opinions of the students who participated in the survey are as follows: Orientation through the main entrance hall has been rated positively by both freshmen and juniors (considerable figures of 41, 5% for freshmen and 41, 8% for juniors). On the graph, it is observed that ratings pertaining to this particular space are concentrated on the (+) side of the indecision axis and that there are no major differences between the two student groups. For the corridors, it is evaluated especially by students who have been occupying the building for a long time to be seriously problematic (juniors, 49, 1 %). The graph showed an inclination towards the negative ratings in terms of orientation in the corridors. For the inner courtyard, both groups of students provided nearly the same positive and negative responses. On the graph, there is a balanced distribution on the indecision axis. The responses of both groups of students in this connection turned out to be symmetrical, within the (+40%) and (-40%) percentiles.

Findings regarding indoor socialization spaces.

Approximately 1/3 of the responses concerning the spaces comprised in the study are concentrated on the indecision column. However, the only differentiation pertaining to this column is the consistency of junior students in their occupancy of the canteen as a socialization venue. The ratio here has displayed a significant difference with (10.4%). Occupancy periods have revealed that students selected the canteen as their meeting venue for socialization purposes (see table V). It has been observed that the main entrance hall was preferred to a greater extent by freshmen compared to juniors as a socialization venue whereas juniors who have previous spatial experience prefer occupying corridors for socialization purposes. There is striking mobility on the indecision axis of the graph in terms of the evaluations relevant to this question. With reference to the main entrance, while mobility of freshmen goes past (+60%), juniors reached (-%60). On the other hand, with reference to the interior corridors, preferences of student groups displayed shifts in completely the opposite direction. As for the inner courtyard, shifts similar to those for the main entrance were observed.

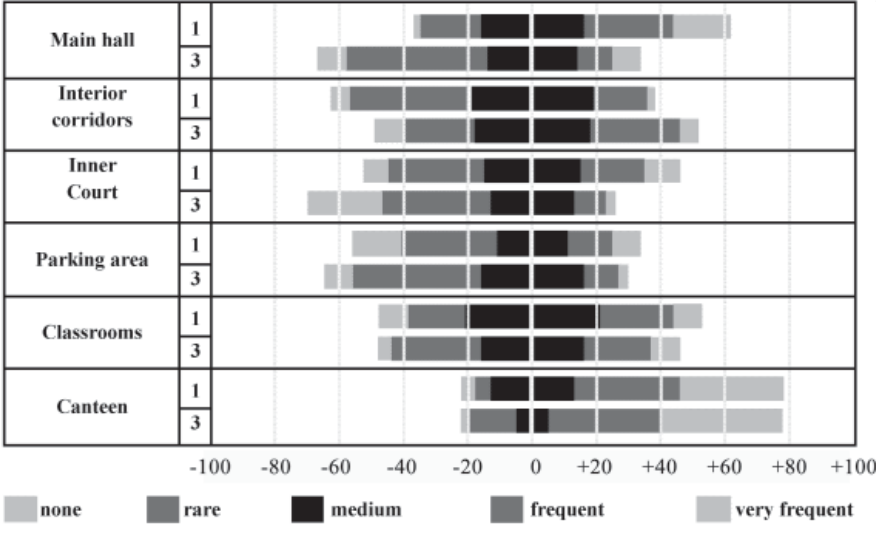


Table V: Spatial preferences of students on the context of social relations (Source: Authors).

The most important indicator in this graph was narrowing of the indecision borders in terms of evaluations for the canteen, revealing the more consistent positive evaluations of both student groups.

Findings regarding place attachment on the basis of shared circulation spaces

Looking at place attachment ratings, it was observed that freshmen do not occupy the inner courtyard extensively and that they do not feel attached to this space as of yet. Though, as seen also on this table, majority of the students (40.3%) ticked option 3 on the survey form (indecision section). This can again be evaluated as indecision or their indifference towards the relevant space. Inexistence of place attachment may indicate parallelism

with concentration on option 3. As the main entrance hall is occupied more extensively by freshmen, their place of attachment for this space is more compared to juniors (see table VI). Both main entrance and interior corridors have developed in parallel to building experience, resulting in weakening of place attachment. In general, ratios of those with indecisive place attachment for both student groups are high. Graphic evaluation of the responses for this question has shown that their distribution on both sides of the indecision axis is quite balanced. The fact that majority of the students concentrating between +40% and -40% illustrate the above ratio figures visually. The very small emphasis on place attachment is evident in the limited areas where the responses “none” or “very little” are concentrated.

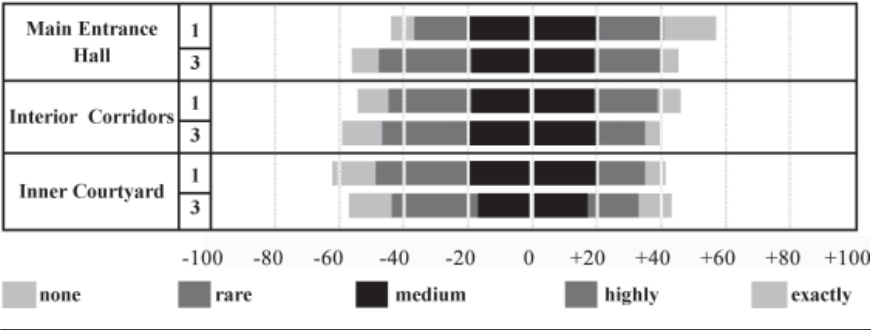


Table VI: Evaluation of place attachment on the basis of shared circulation places (Source: Authors).

Evaluation of Shared Spaces on the Basis of Designations

It was observed upon evaluation of the three spaces within the scope of the study on the context of selected designations that majority of responses coincide on option 3. In other words, students' opinions concerning spaces are not clear. Striking preferences among freshmen and juniors in terms of space occupancy/preference determined on (see table III) have revealed qualities supportive of the evaluation of the relevant spaces in (see tables VII-VIII-IX) in line with designations. The junior students from among the 2/3 who turned out to be decisive in the group of subjects rated the designations of scale, functionality, warmth, attractiveness and comfort with reference to the main entrance positively at striking ratios as low as 1.9%.The freshmen, on the other hand, have rated these spaces which they haven't experienced sufficiently as of yet between positive and indecisive (see table VII). On the graph, the differences between ratings among juniors and freshmen on the indecision axis have become evident. Juniors were more

consistent in terms of the designations included in this question. While ratings of freshmen went passed +60% in terms of tangible concepts such as the human scale, functionality and comfort, juniors' ratings went further down from -60%. A striking aspect about the graph is the fact that both groups' ratings reached +80% in terms of wideness. In the evaluations concerning the main entrance, juniors provided considerably negative ratings with reference to warmth and attractiveness of this space compared to freshmen. Freshmen tend to occupy this space more extensively and they haven't yet experienced the process of perceiving and analyzing this venue to full extent. Attractiveness has been rated negatively by both groups in the graph, concentrating on the left hand side of the indecision axis and even extending down to -80% as far as juniors are concerned.

There aren't major differences in the ratings of both groups in terms of compatibility with the human scale with reference to corridors (see table VIII). Freshmen displayed indecisiveness by selecting option 3 regarding the issues of spaciousness, attractiveness, and comfort and

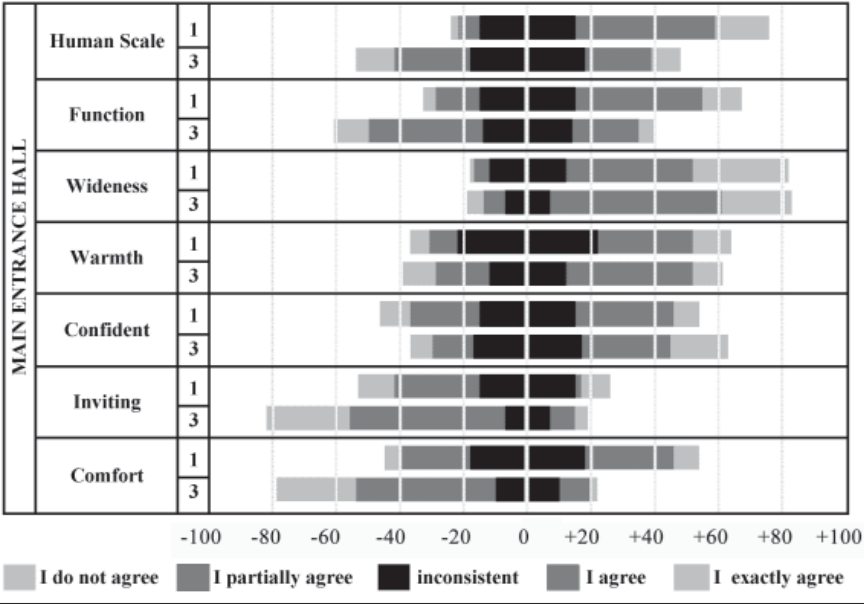


Table VII: Evaluation of shared spaces on the basis of designations: Main Entrance Hall (Source: Authors).

place attachment at high ratios (exceeding 50%). On the graph, this fact is observed as a section extending over a little on both sides of the indecision axis exceeding the ratings of +20% and -20%. Although rating the corridors more positively in terms of physical properties, juniors also revealed that they do not feel any place attachment towards these spaces through their negative ratings doing down to -60%. The extra mobility in this graph reveals very different evaluations regarding corridors. The two groups of students provided dynamic responses to this question. There aren't many aspects they agree upon.

Freshmen's ratings concentrating on the indecision axis indicate that this group is

not fully aware of the interior spaces and circulation thereof, thereby hesitant as to how to experience them. For inner courtyard ;(see table IX) approximately 1/3 of the ratings for the inner courtyard again concentrate on the indecision point. Freshmen perceive this space as more functional, more attractive and more spacious, compared to juniors. Nevertheless, the most significant difference pertaining to occupancy of the inner courtyard arises with respect to its functionality. On the graph, while freshmen's evaluations reach +60%, those of juniors go down to -60%. While juniors emphasize the fact that the inner courtyard is not attractive (40.6% + 20.8%), it is also expressed that it is compatible with the human scale (21.7% + 20.8%). Approximately 2/3 of freshmen's ratings

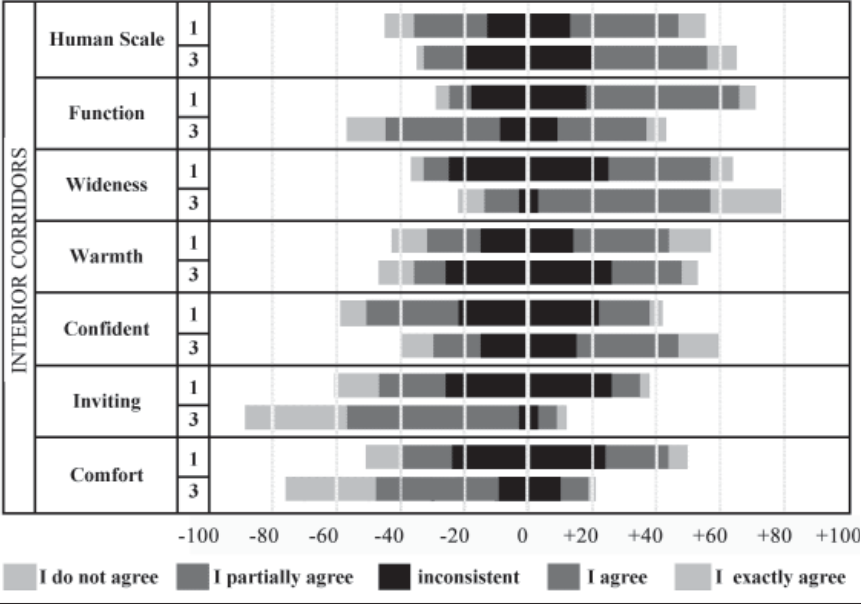


Table VIII: Evaluation of shared spaces on the basis of designations: Corridors (Source: Authors).

for this venue concentrate on the right side of the indecision axis (+), indicating an inclination from indecision to positive evaluation. As a result of the evaluation made on the context of selected designations, it has been observed that junior students' ratings for all three spaces included in the study concentrate on negative responses. This difference in opinion originates from students' experiences at the relevant spaces through the years.

Discussion and Conclusion

In this study, shared circulation spaces of the Faculty of Arts and Sciences of DEU have been examined on the basis of functional, technical and behavioral performance variables, and

architectural programming related inferences were made from the data obtained. In buildings serving the function of education, shared spaces need to be planned in a balanced and practicable manner in order to improve social interaction to take place there in. As a result of the evaluation conducted, it can be said that the circulation spaces of the Faculty of Arts and Sciences of DEU have certain design problems. First of all, it has been observed that the interior corridors and the main entrance hall are occupied mainly for transit purposes. It can easily be said that social interaction is unsatisfactory at all three of these spaces which are spacious enough, as it is not preferred by freshmen and junior students for long periods of time. Freshmen students occupy the main

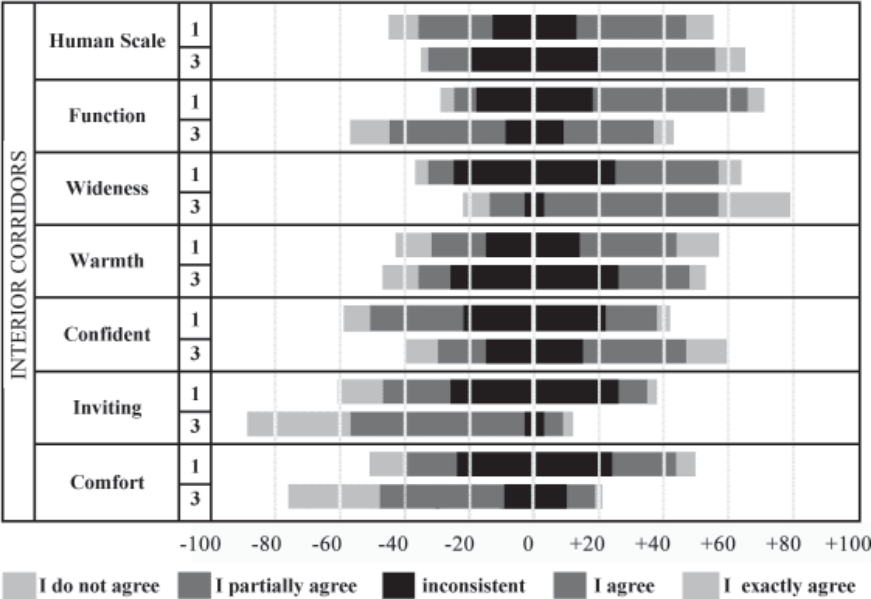


Table IX: Evaluation of shared spaces on the basis of designations: Inner Courtyard (Source: Authors).

entrance hall for socialization purposes. In the building, the canteen and then the classrooms are occupied intensively for socialization. As a solution to the monotonous spatial composition developed in the interior corridors and the main entrance hall, with galleries constituting no more than a vast free space, the required niche activity spaces have to be formed in order for students to perceive these spaces as a significant part of academic life.

O'Neill (1991) states that, as individuals' experiences in a given space increase, the topological information signifying the connections between spaces prior to perception of the distance and direction

originate. At the Faculty of Arts and Sciences of DEU, both freshmen and juniors experienced difficulty in giving directions especially for the corridors. The fact that especially junior students have a significant problem with the corridors and their failure to form a topological data related therewith originates from their monotonous configuration. Although Abu-Obeid (1998) indicates that organized, symmetrical, continuous and flat floor plans are easier to recollect and that they facilitate the formation of a mind map, architectural monotony which causes repetitious environments is another factor which makes orientation difficult. Spatial monotony seems to be the cause for labyrinths and disorientation of individuals.

According to the analyses conducted, this has been justified at the Faculty of Arts and Sciences of DEU. As Passini (1980) indicates, as well, occupants' orientation problems can be minimized by strengthening the representations of similar spaces in complex buildings through descriptive elements, geometrical forms, modal installations, and light, color and reference points. In this complex with a symmetrical plan setup, identical corridors and reference points can be made explicit with different colors and materials so as to increase their readability and decrease their negative influence on orientation.

With respect to education buildings, occupant satisfaction may differ by students' education statuses. Within the scope of evaluation of the shared spaces of the Faculty of Arts and Sciences of DEU on the basis of designations, freshmen students provided positive feedback to all designations except for attractiveness for the main entrance hall. The junior students, on the other hand, rated the venue positively only in terms of physical properties such as spaciousness and comfort and provided negative ratings for designations referring to psychological spatial satisfaction. Interior corridors have been evaluated as inviting and comfortable by freshmen, juniors provided negative feedback to this space in terms especially of functionality and attractiveness. As for the inner courtyard, the freshmen provided positive feedback to almost all designation except for attractiveness; whereas, juniors rated this space negatively especially in terms of functionality, comfort and attractiveness. All in all, freshmen students may internalize the building unintentionally, feeling obliged to feel attachment there within their adaption process, without discerning the

problematic aspects of the spaces, although their spatial experience is limited. It can easily be said that freshmen live through less problems compared to juniors due to their optimistic viewpoints deriving from their process of adaptation to the building and the new system. Any difficulties encountered by students are considered to originate from design-related problems, which are reflected upon the relevant spaces as failure to be occupied as socialization venues and failure to be internalized. A striking phenomenon concerning the study was the fact that students' evaluations on the shared spaces assessed concentrated on the impartial section at a ratio of approximately 30% overall. This result was obtained due to their failure to internalize this building or their indifference towards it, which brings to mind the necessity to place an emphasis on students' participation in addition to observations and research upon planning and designing of education buildings. This study was conducted only with students from among the occupants of the building. Academic personnel, workers and visitors are also the frequent users of the shared circulation spaces. Therefore future studies should target evaluation of these spaces from the viewpoints of these other occupants, in order to arrive at more rational decisions with respect to design-related rehabilitations to be realized there in.

References

- Abu-Obeid, N. (1998). Abstract and Sceneographic Imagery: Effect of Environmental Form on Wayfinding. *Journal of Environmental Psychology*, 18(2), 159-173.
- Altman, I. & Setha, L. (Eds) (1992). *Place attachment. Human behavior and environment: Advances in theory and research*. Vol. 12. New York: Plenum Press.

- Arthur, P. & Passini, R. (1992). *Wayfinding: People, Signs and Architecture*. New York: McGraw-Hill.
- Baird, G. (2001). Forum: Post-occupancy evaluation and Probe. A New Zealand perspective. *Building Research and Information*, 29(6), 469-472.
- Betchtel, R. B., Marans, R.W. & Michelson, W. (1990) *Methods in Environment and Behavioural Research*. Florida: Van Nostrand Reinhold Company, Inc.
- Bronzaft, A. & Dobrow, S. (1984). Improving transit information. *Journal of Environmental Systems*, 13, 365-375.
- Canter, D. (1983). The purposive evaluation of places: A facet approach. *Environment and Behavior*, 15, 659-698.
- Hammits, W.E., Backlund, E.A., & Bixler, D.B. (2004). Place bonding for recreation places: conceptual and empirical development, *Leisure Studies*. 25 17-41.
- Hawkins, H.L. & Lilley, H.E. (1998). *Guide for School Facility Appraisal*. Scottsdale - AZ: Council for Educational Facility Planners, International.
- Hidalgo, M.C. & Hernandez, B. (2001). Place Attachment Conceptual and Empirical Questions, *Journal of Environmental Psychology*, 21, 273-281.
- Hoffman, M., Richmond, J., Morrow, J. & Salomone, K. (2002). Investigating sense of belonging in firstyear college students. *Journal of College Student Retention*, 4(3), 227-56.
- Hurtado, S. & Carter, D. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education*, 70, 324-345.
- Kaplan, R. & Kaplan, S. (1980). Citizen participation in the design and evaluation of a park. *Environment and Behavior*, 12(4), 494-507.
- Kaplan, R. & Kaplan, S. (1989). The experience of nature: A psychological perspective. Cambridge: Cambridge University Press.
- Kasarda, J. D. & Janowitz, M. (1974). Community attachment in mass society. *American Sociological Review*, 39, 328-339.
- Kuniavsky, M. (2003). *Observing the user experience, a practitioner's guide to user research*. San Francisco: Morgan Kaufmann Pub.
- Nasar, J.L. (1988). *Environmental Aesthetics: Theory, Methods and Applications*. Cambridge - Mass: MIT Press.
- Norberg-Schulz, C. (1980). *Genius Loci: Towards a Phenomenology of Architecture*. New York: Rizzoli International Pub.
- O' Neill, M. J. (1991). Effects of signage and floor plan configuration on wayfinding accuracy. *Environment and Behavior*, 23, 553-574.
- Onur, B. E. (2009). *A Participatory Approach to Improve Environmental Quality; A Case Study in a University Campus*, Proceedings at the International IAPS-CSBE & HOUSING Network.
- Passini, A. (1980). Wayfinding in complex buildings: an environmental analysis. *Man-Environment Systems*, 10, 31-40.
- Peponis, J., Zimring, C. & Choi, Y.K. (1990). Finding the building in wayfinding. *Environment and Behavior*, 22, 555-590.
- Preiser, W.F.E., Rabinowitz, H.Z., & White, E.T. (1988). *Post-Occupancy Evaluation*. New York: Van Nostrand Reinhold.
- Presier, W. F. E. (2001). Forum: Feedback, feed forward and control: post-occupancy evaluation to the rescue. *Building Research and Information*, 29 (6), 456-459.
- Preiser, W. & Vischer, J. (Ed) (2005). *Assessing Building Performance*. Oxford: Elsevier.

- Proshansky, H. M., Fabian, A. K. & Kaminoj, R. (1983). Place-identity: physical world socialization of the self. *Journal of Environmental Psychology*, 3, 57-83.
- Rapoport, A. (1990). Solutions in Search of a Problem: The International City Design Competition. *Places*, 6(2).
- Sanoff, H. (1994). *School Design*. New York: Van Nostrand Reinhold.
- Sanoff, H. (2000). *Community Participation Methods in Design and Planning*. New York: John Wiley and Sons.
- Sommer, R. & Sommer, B. (1997). *A practical guide to behavioral research, tools and techniques*. (4th edition), Oxford: Oxford University Press.
- Sundstrom, E., Bell, P.A., Busby, P.L. & Asmus, C. (1996). *Environmental Psychology 1989-1994. Annual review of Psychology*, 47, 485-512.
- Stanley, L. (2002). Preface of the book. *Learning from Our Buildings: A State of the Practice Summary of the Post Occupancy Evaluation*. Federal Facilities Council, Board on Infrastructure and the constructed Environment, National Research Council.
- Stoecker, J., Pascarella, E. T. & Wolfe, L. M. (1988). Persistence in higher education: A 9-year test of a theoretical model. *Journal of College Student Development*, 29, 196-209.
- Tinto, V. (1988). Stages of student departure: reflections on the longitudinal character of student leaving. *Journal of Higher Education*, 59(4), 438-455.
- Voordt, T. & Wegen, H. (2005). *Architecture In Use: An introduction to the programming, design and evaluation of building*. Burlington: Elsevier.
- Way, M. & Bordass, B. (2005). Making Feedback and post-occupancy evaluation routine 2: soft landings-involving design and building teams in improving performance. *Building Research and Information*, 33(4), 353-360.
- Weisman, J. (1981). Evaluating architectural legibility. *Environment and Behavior*, 13, 189-204.
- Wright, P., Lickorish, A. & Hull, A. J. (1993). Navigating in a hospital outpatients department: The merits of maps and wall signs. *Journal of Architectural and Planning Research*, 10(1), 76-89.
- Yükseköğretim Genel Müdürlüğü, (2010). yogm.meb.gov.tr/Yuksekogretim.
- Zimmerman, A. & Martin, M. (2001). Post Occupancy Evaluation: Benefits and Barriers. *Building Research and Information*, 29(1) 168-174.
- Zimring, C. & Reizenstein, J.E. (1980). Post-Occupancy Evaluation. *Environment and Behavior*, 12, 429-449.

Rengin Zengel

Born in 1968 in Izmir, Dr. Zengel graduated from Dokuz Eylul University (DEU), Faculty of Engineering & Architecture, Department of Architecture in 1990. She received her postgraduate degree in 1993, while completing her thesis entitled 'Analytic Approach for Out of Town Shopping Centers' (DEU Institute of Science, September 1993, Izmir). Then she completed her PhD degree (in 1998 after finishing her thesis entitled 'Evaluation of Campus Settlements with Regard to the Accessibility Criteria' (DEU Institute of Science, January 1998, Izmir). She is currently continuing her career as an assistant professor in Building Design Programme of DEU Faculty of Architecture, Department of Architecture since 2000. She is particularly interested in post-occupancy evaluations of multi-purpose buildings, public outdoor spaces, basic design education-creativity relations, and architecture-environment relations. She has various national and international articles published in the field of architecture. She can be contacted at rengin.zengel@deu.edu.tr

Dr. İlkim S. Kaya

Born in 1952 in Istanbul, Dr. Kaya started to architectural education at Middle East Technical University (METU) in Ankara and graduated from Ege University (EU), Faculty of Fine Arts, Architectural Department in 1977. She got her postgraduate degree in 1987(DEU Institute of Science, Izmir) and she got the PhD completing her thesis entitled 'The Effects of Socio – Cultural User Requirements on the Organization of Spaces for Elderly Residences', in 1994 (DEU Institute of Science, Izmir). She is currently continuing her career as an associate professor in Building Design Programme of DEU Faculty of Architecture, since 2006. She is particularly interested in such as social architecture keywords: 'elderly residences,' 'design for all,' 'migration and spaces,' and 'basic design education.' She has various national and international articles published in the field of architecture.