ITU A|Z • Vol 21 No 2 • July 2024 • 259-271

Environment's effect on user behaviour in campus public spaces

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Received: August 2023 • Final Acceptance: February 2024

Abstract
Campus life has a significant impact on pupils. An individual's environment should be imbued with social sustainability characteristics and practices. Social sustainability includes human actions in relation to the built and natural environments. A more profound comprehension of the interactions between humans and their environment would help us identify the demands that must be met without sacrificing the other person's well-being. The primary goal of the research is to understand user sitting behavior in a setting using Integral Theory. The approach utilized for determining the quality of the setting is Observer Based Environment Assessments (OBEA). The environment chosen is the campus pathways of NIT Tiruchirappalli; user sitting behaviour has been mapped; user perception is being acquired through surveys; and activities in the environment are differentiated by integral theory. The study makes three precise predictions about observed sitting behavior in the specific setting. The survey examined the setting's quality in relation to user perception and suggested that there is a direct correlation between the setting's quality and the activity along the pathways. The integral theory emphasizes the factors that guarantee activity in a specific location. The paper explains how responding to the user's demands would foster a sense of ownership in the setting while positively affecting the surroundings.

Keywords
Campus public spaces, Integral theory, OBEA, Setting, Sitting behavior.

doi: 10.58278/0.2024.54

1. Introduction

Institutional routes are essential components of institutional design. They are prominent, functional, and aesthetically pleasing, reflecting the institute's image. They have a significant impact on people's perceptions of the institute. The several design elements, such as vegetation, environmental compatibility, aesthetic character, terrain change, etc., will enhance the sense of place. This feeling of location enables the individual to engage in certain activities, such as sitting, walking, riding, etc., that have varying degrees of closeness with the surroundings. The way a person behaves in a particular environment is highly complicated; many disciplines, each with its unique requirements, must be recognized. We need a theory that explains precise observations that illustrate person-environment interactions and helps us forecast the sequence and significance of those observations. During these observations, we often see spontaneous behavioral exchanges. A defined technique is needed to analyze these patterns and establish the facts since these behaviors follow a pattern. Studying all the behaviors will be tasking and not practical, which is why going with sitting behavior in the setting which showed a spectrum of postures and affinity with plausible user-environment interaction.

This research intends to analyze and link user sitting behavior in campus public places by adapting Isidor Chein's (1954) psychological theory known as "geo-behavioral environment" an integrated framework consisting of five major aspects. In terms of design aspects, what are the key features of a setting that impact the user's sitting behavior? In campus public places, what is the user's purpose, time spent, preference, and orientation? Do these user characteristics have an impact on how users sit in a particular setting or area?

The procedure used here is observer-based environmental assessments (OBEAs) which employ the perceptual abilities of humans to judge the quality (or other characteristics) of settings and measure the quality of the environment as it is experienced. The OBEA helps in acquiring required data and maintaining an order to the observations by reducing the data to fit it into respective domains, which in turn helps in finalizing the findings and conclusions, user sitting behavior is mapped based on the observations, and a survey is conducted among the architecture students of National Institute of Technology (NIT) Tiruchirappalli to understand the user perception of the setting, Because architecture students pass through the study area regularly, their chances of engaging with the environment are quite great.

2. Literature review

The study of walkways has lately attracted the interest of several scholars in the fields of public health and urban architecture (Cervero & Duncan, 2003; Frank et al, 2004; Ewing et al,2006; Handy et al, 2002; Handy et al, 2005; Heath et al, 2006). Research on the influence of pathways on the frequency of walking, pedestrian volume, walk score, and assessing attributes of walkability was given importance (Carr et al, 2011; Ewing et al, 2013; Frank et al, 2005; Kerr et al, 2007; Lee et al, 2013; Maghelal & Capp, 2011). Some research (Hillier et al, 2010; Carr et al, 2011; Frank et al, 2010), connected pedestrian behavior with visual and metric distances while frequently neglecting the significance of visual connection. Correlating visual and physical connectedness to improve pedestrian volume on sidewalks is another area of research that is gaining traction these days as a result of the involvement of spatial configuration theories and associated software in the field (Hajrasouliha & yin, 2015). There are many quantitative and qualitative ways to measure walkability (Ewing et al, 2013), but Observer-based environmental Assessment (OBEA) can be used to assess the quality of a context in terms of the social, aesthetic, preferential, and satisfaction aspects of environmental change (Zube et al, 1982; Daniel, 1976; Anderson et al, 1976; Christensen & Carp, 1987; Creswell & Creswell, 2009). Aside from these, extensive research is being conducted on people's behavior, design forms, and determinants that influence

people's perception, of seating in campus public spaces, notable among them being (De Rivera, 1986; Barker, 1968; Salama, 2008; Ding & Guaralda, 2011; Yeh & Huang, 2015). Similarly, Swetha & Meenatchi Sundaram (2019) attempted to conduct multidisciplinary research in university public spaces by utilizing an assessment matrix to identify active areas and the potential for active spaces on campus.

The literature evaluation provides three key insights into how the investigation should proceed; First, regarding the experience of Institutional pathways by Dober (2000), second the Integral framework, which describes the geo-behavioral environment proposed by Isidor Chein (1954); and third, the methodology used to measure the quality of the environment through OBEAs Zube (1984).

"People who move through the campus as many as a dozen times per day deserve to have a functional, convenient, safe, beautiful, and uplifting design experience as they travel from place to place on campus walks, casually or on a schedule" as quoted beautifully by Dober (2000). In the end, campus designs that embody the local culture, address the complex realities of student life, and deftly combine the more general requirements of site location and topography with minute, beautiful details are what may be expected. The interpretation of institutional pathways varies in terms of dimensions like size, length, depth, and cross-section, the material selection, surface treatment, visual ambiance, physical forms like open walks across lawns, tree-lined promenades, and walks that enter or leave a building as part of a continuous pedestrian network. These pathways are also used for differentiating and defining the physical and visual boundaries, the network system that successfully divides institutions. (Dober, 1963). distinguished six types based on variety, amplitude, and simplicity in design treatment: the picturesque, the traditional, the dominant spine, the composite, the symbolic, and the contemporary. A traditional pathway has shade trees that line the paths and the bounding perimeter street in a predictable order; lawns and trees are the iconic interior landscape, with simplicity in design treatment. Paths may carry symbolic and metaphorical significance.

Chein's integral theory is applied to understand the geo-behavioral environment / person-environment relations. The following components make up Isidor Chein's (1954) integral framework:

- Instigators: Environmental cues that cause specific behaviors
- Goal objects and noxients: are situations that can satiate wants or cause discomfort or pain.
- Supports & Constraints: Elements of the physical environment that either make our actions easier (like lights, benches, and roads) or harder (like fences, chains, and blocks).
- Directors: Environmental cues that direct our actions or point us in the right direction.
- Global Environment: environmental traits that apply to all environments.

The likelihood of comprehending a person's behavior in a given environment or setting is generally good if we understand that person's surroundings or setting in terms of Chein's five factors.

Observer-based environmental assessments are more useful when the purpose of the study is to measure quality in terms of the social, aesthetic, preferred, and satisfaction components of ecological change. Selecting which aspect of the environment to analyze, such as the satisfaction levels of an academic block, is arbitrary because it is presumed that different human observers will have vastly different opinions. However, the agreement among observers is startlingly high in many OBEAs (Christensen &Carp, 1987; Zube et al,1975); OBEA is a constantly growing standard that may potentially be used to evaluate structures. It is crucial for architecture that is specifically designed to meet the requirements of building occupants, where the observations of numerous people are used to guide those in control of the settings. OBEA may be tackled from at least four distinct perspectives (Zube, 1984; & Zube et al, 1982);

- The expert paradigm involves the evaluation of environmental quality

by qualified observers in related disciplines who examine a particular aspect of environmental quality that has been provided by the expert in the relevant topic.

- The Psychological Paradigm: This approach creates accurate and dependable indices known as Scenic beauty estimators (SBEs) by using traditional psychological techniques such as category evaluations, the paired-comparison method, and rank-ordering by observers. that hold that the scene, rather than the observer, possesses majority of the ability to foretell evaluations of settings. (Daniel, 1990)
- The cognitive paradigm emphasizes the processing of data gathered from the environment. It is assumed that observers compile a variety of setting characteristics into general judgments like satisfaction or preference. The cognitive and behavioural paradigms can be combined to form a single concept known as a behavioural paradigm.
- The Humanistic Paradigm: relies on the evaluation of an interested, sympathetic observer who frequently employs a phenomenological approach; humanistic OBEAs reflect this observer's social and aesthetic concerns.

However, the agreement among observers is remarkably high in many OBEAs. OBEAs serve at least five purposes.

- They can allow for comparisons between Technical Environment Assessments and OBEAs.
- They can aid in the development of physical measures of environmental quality.
- They can provide data and environmental quality trends from a human perspective.
- They can provide quality assessments along dimensions with particular human relevance.
- They can educate the staff of the assessed setting about its strengt and weaknesses.

3. Background and purpose of the study

The necessity to research the efficacy of a setting in terms of activity and user behavior is obvious; the study focuses on why the user likes a certain seating for sitting behavior in terms of design and why the activity is more in that area. In liaison with the aim of the study, the first challenge faced was selecting a campus. The chosen campus should support activities in terms of morphology and accessibility and the needs of a diverse user group. While choosing the study location, three factors were considered. The first was the presence of experiential design in the walkway, both aesthetically and behaviorally. Second, implementation of the same, and third, active user engagement in the places, therefore, the walkway of the main avenue of NIT, Tiruchirappalli campus is chosen as a case study to investigate user behavior. In a campus of 800 acres, an accessibility analysis was performed on the paths of the campus using Depth Map X software, using OBEA, six active areas were discovered and a research area was delimited by watching activities around the campus throughout the year. As shown in Figure 1 was selected. The study is conducted on one of the selected pathways, the stretch connecting the Orion building (A) and library (B). This pathway communicates various activities throughout the year, it is pedestrian-friendly, and user engagement with the university environment is strong when compared to highly accessible areas. It influences the user first and foremost, and they illustrate a traditional approach in designing the paths. The stretch AB is around 900 meters long. It can be walked at 3.2 to 4.7 km/hr. and cycled at 12-24 km/hr. The gradient is less than 1:15, with some undulation where the automotive, bicycle, and pedestrian paths intersect. There are speed breakers at intersections to regulate vehicle speed; vehicular traffic is limited to 30 km/hr. along this stretch. Automobiles are utilized mainly by officials, faculty, and services related to infrastructure and transportation. Students cannot use motorized vehicles on campus to limit carbon emissions. The study area stretch AB is further split into five areas depending on the activities and people that use the setting, Figure 2 gives a precise illustration of the pathway's aesthetic attractiveness, and information about the sitting activity throughout the year. The study attempts to find a situation

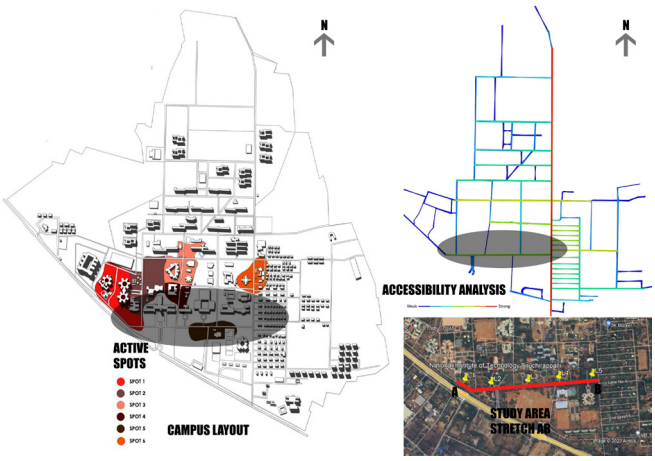

Figure 1. *Campus layout, accessibility map, stretch-AB.*

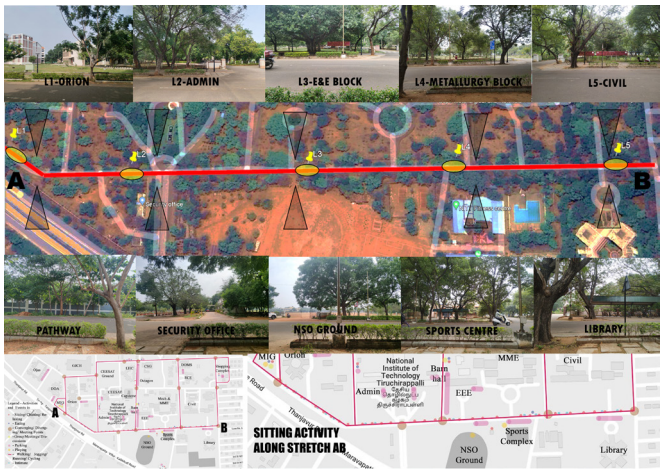

Figure 2. *Visual and activity map, stretch AB.*

in which visual user demands are met but not experientially (comfort). What effect would pathways have on user comfort if user needs were not met? What would happen to such a space? How successful would a change in the current configuration be in terms of user comfort?

4. Methods

Post accessibility analysis, activity mapping and identification of the potential study location the stretch AB, the quality of the study area with respect to design determinants and the attributes of a user's sitting behavioral experience were determined with the help of Integral theory, the user- environment relationship was studied with the help of OBEA and the user perception charted out using a questionnaire survey. Hypotheses related to user experience were formulated from the observations and were proved using the results obtained from the survey, which are explained in detail in the methodology mentioned below.

4.1 Hypotheses

Hypothesis 1 A user's location preference of a setting is determined by its design determinants and user demographics, i.e., the user's age, occupation, and the determinants of the environment are related to the choice of a specific location.

Hypothesis 2 The amount of time spent is related to the purpose of sitting and the user's preferential condition, i.e., when the purpose of sitting is relaxation and waiting, the amount of time spent is less, however when the aim of sitting is interaction and education, the amount of time spent on seated is longer.

Hypothesis 3 The purpose of the siting influences the orientation of the user and preferential state, i.e., for the purpose of relaxing user prefer to be alone, whereas for waiting, educational and interaction users prefer to be with friends, similarly users prefer to face the road while relaxing and waiting, and to face each other for educational and interaction purpose.

4.2. Methodology for the study area

This research was carried out in three steps as a workflow procedure, along the chosen study area stretch AB as illustrated in Figure 1 and Figure 2, beginning with the investigation of the influence of walkways on experience attributes. Under this process, Behavioral Observation with the help of Integral theory suggested by Isidor Chein,(Chein, 1954; Craik & Zube, 1976); made it easier to identify the elements of integral theory in walkways, i.e. Instigators (Environmental stimuli that trigger particular behaviors), Goal objects and Noxients (situations that can satisfy wants or cause pain or displeasure), Supports & Constraints (Physical Environment Elements such as Lights, Benches, Roads, or Restrictions such as Fences, Chains, and Blocks our Actions), Directors (Elements of the environment that direct us as to what to do or where to go) and Global

Environment (general features of an environment). The stretch is divided into five zones (starting point L1 In front of Orion, L2 In front of Admin block, L3 - E&E dept/NSO ground, L4-Near metallurgy dept/sports center and ending point L5 Near civil/library block) to identify the most active zone based on the theory.

Cognitive and humanistic paradigms in OBEA (Zube, 1984;,& Zube et al, 1982), were referred in the observation of the stretch AB for over a period of a year, the effects of natural events (seasons, temperature variations, vegetational changes like flowering and fruits etc.) and institutional events (sports, cultural events, conferences, academic like admission, convocation etc.) were charted down to clearly understand the user-setting relationship during a particular activity. This is followed by a questionnaire survey, which offers results on user comfort and any discontent felt by users on the pathways.

In the second step, the design is documented to understand the discontent felt, and information on standards to be maintained is acquired using Anthropometry and afterwards compared with on-site circumstances to see the variances. The third step involves in identifying the relation between user preference, design determinants and behavioral observation (De Rivera, 1986; Barker, 1968; Salama, 2008; Ding & Guaralda, 2011; Yeh & Huang, 2015).

4.2.1. Integral framework

Before applying the Integral framework it is very important to identify the timeline of user preference, hence post observation of the study area for over a year, the peak time period of usage was identified. İt is observed that the maximum number of users were found during the start of an academic year, this is the time period when the newly admitted students start exploring the campus spaces and the least preferred time were the hot summers. The observations were micro detailed during a weeks timeline in the september when the weather is pleasant and the campus experinces various extracuricular activities. During a week of observation in the research area from 6 am to 9 pm, users were counted, and it was found that 90% of them were students. Daily activities spotted along stretch AB included eating, waiting, interacting, playing, parking, strolling, jogging, reading, unwinding, cycling, sharing intimate moments, and meeting. Approximately 7 out of 10 randomly selected users were primarily engaged in all three activities: cycling, walking, and sitting. Photographs, videos, and behavior mapping were used to document the activities. A complete analysis of the user's sitting behavior in the specific context has been researched and explained in this paper. The seating capacity is 3 to 4 users on a comfortable range and 5 to 6 during events; the capacity of the entire stretch AB ranges from an average of 146 to a pleasant range of 292 on regular days, and the seating becomes overcrowded during occasions, and events. The sitting behavior is being researched based on occupancy and activity in each site. Figure 3 depicts the spaces used for walking, sitting, and cycling in the setting; the illustration makes an attempt to show how the pathways for walking and cycle track are demarcated by the use of various paving blocks. Figure 4 depicts the five elements of the Integral framework: Instigators, goal objects and noxients, directors, supports and constraints, and the global environment for sitting behavior.

Due to space constraints, the main road is generally utilized for cycling. It is 2.5 m wide, however the width fluctuates throughout the trail due to constraints and Noxients. It is frequently used by pedestrians during peak hours.

The walkway is 3m wide, allowing for plenty of walking space; the target objects fail on purpose because the planned design is not carried out adequately; and the width between the blocks is large (waste accumulates in-between spaces, making upkeep difficult), which is why the cycling track is used for walking. Filling it with soft pebbles or gravel might be a suitable design intervention to allow water drainage and make walking easier.

Figure 3. *Spaces for walking, sitting, and cycling.*

Figure 4. *Elements of integral framework-sitting behavior.*

4.2.2. Observer based environmental assessments - OBEA

OBEA aided in comprehending the relationship between the user's sitting behavior and his surroundings. It aids in determining how a user would react to his current circumstances. The observations were charted using this technique. This study charts the findings about the frequency of activity at the specific setting and how the supports are being used/underutilized. The location is observed based on sitting behavior according to their interactions with the surroundings. The user's observations were approached using the cognitive and behavioural paradigm, with the results reported in terms of the purpose of the behavior, preferential state, orientation, and time spent by the user in the specific location. These observations are considered when creating the survey questionnaire and while framing the hypotheses. The study is carried out by comparing the standards and user sitting behavior for specific components of the environment, and comments are made based on a cognitive & humanistic experiential perspective.

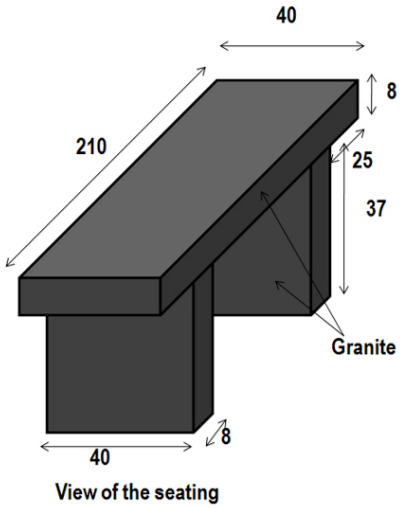

Figure 5. *Seating placed along the stretch AB.*

The seating placed along the stretch AB is documented and the data related to design, ergonomics, material, and texture, are noted down. Figure 5 shows an illustration of a typical seating which is being placed along the study area (Stretch AB). The seating dimensions are convenient; they allow for a variety of potential and likely behaviours in terms of practicality in sitting postures. Seating is utilised for a variety of functions, ranging from personal space to communal space. Granite, the material used for the seats, is fairly low maintenance and quite resistant to wear and strain.

From the observation based on the condition of the floor, the growth of grass/ shrubs near the seating, and potential vandalism, it is possible to identify which seating has been used more frequently and depending on the purpose/goal objects, the user's sitting position changes. In L5, The trees are filled with lot of birds post 6pm which makes the seating difficult to use because of the droppings, regular upkeep i.e., daily, otherwise the seating becomes underutilised. In such a situation the zone around the library becomes more environmentally friendly

to the birds and makes the setting more valuable to the natural habitat.

4.2.3 User preference survey

Amongst the diverse users the sample were narrowed down to the students from the department of architecture, NIT, Tiruchirappalli, based on proximity to the place of employment and cognitive grasp of the setting. The users frequent the stretch AB on a regular daily schedule, this leads to a sense of ownership among the user group which will be useful in determining the user-setting / person-environment relationship.

A questionnaire to gather data on user preference, was formulated addressing the variables i.e. user demographics, most preferred location, behavioral variables (activities, time, preference and orientation of the user) and design determinants (physical, psychological, operational & environmental). The questionnaire survey received 132 responses out of 228 users from the department on the campus, yielding a response rate of 57.8%. The adequacy of the questionnaire sample size was assessed using the software G*Power 3.1, which revealed that the sample size was optimal. The survey analysis attempted to discover the relationship between the purpose of the behavior, the user's preferential state and orientation, and the time spent in a specific location. The study also attempted to ascertain the relationship between location choice and design variables.

5. Findings

The findings and outcomes are charted/ given out according to the technique utilized; the five elements of the integral framework demonstrate the location's physical dimensions that influence sitting behavior. The observation-based environmental assessments show why, how, with whom, and how much time the user prefers to spend in a specific place. The survey analysis shows the relationship between location, design, and behavioral observations.

5.1. Integral framework

Table 1 depicts the five elements of an integral framework for sitting behavior. Where sitting behavior is understood and related to geo behavioral environment, material selection aids in sustainable design, the user convenience also goes hand in hand with such an approach. The user establishes the aim before they arrive at the setting; goal objects and directors allows them to select the best location and the noxients and constraints allow them to avoid location and seatings that cause discomfort. The stretch AB is divided into five zones out of which L2 and L5 are visited between 4 and 6 p.m. when these sites serve as nodes for transit and the users' aim is to wait. After 6 p.m., L5 is frequented by birds, whose droppings menace humans., L4 is frequented from 6 a.m. to 8 a.m. because of its proximity to the sports center, L1 is frequented after 6 p.m. because it transforms into a hub of interactive spaces, free of noxious substances, and L3 is active and preferred throughout the day because of its shading, accessibility, and visual openness to the NSO ground. The supports, directors, and global environment, enables them to utilize the setting for an extended period owing to the instigators (seating), which is convenient, easy to maintain, and adaptable. Seating is utilized for various functions, from personal to social. The user chooses his seating location based on the quality of the surrounding setting/environment, followed by its availability. When Noxients and Limitations predominate, the user's setting preference diminishes

Table 1. *Elements of integral framework for sitting behavior.*

S. No	Integral Framework	Sitting
1.	Goal Objects and Noxients	Purpose, Availability of seats & Neatness of the seats.
		Living organisms- (mosquito- after 5pm, bird droppings- after 6pm, snakes after 6pm, dogs throughout the day etc.)
2.	Supports and Constraints	Shading in certain areas, flexibility in orienting the sitting position as per needs and situations like direct glare, ease in accommodating a group of 4-5.
		lack of shading in certain places, direct glare, no back rest useful only for shorter periods of time, falling of leaves, twigs and even branches during harsh climates
3.	Instigators	Seating- [Granite slab (sustainable material) size- 210X40X45 cm]
4.	Directors	Visually identifiable
5.	Global Environment	Comfortable seats, easily maintained and sustainable.

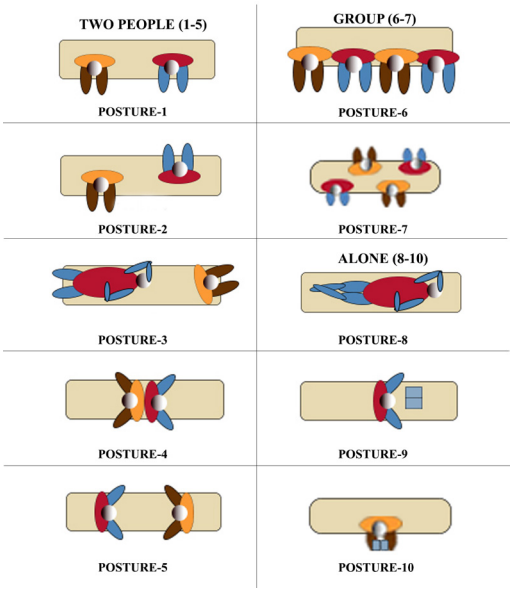

Figure 4. *Various postures of sitting behavior.*

dramatically, consistent with the Integral Framework observations.

After viewing and assessing the results, Hypothesis 1 was formed. A user's location preference of a setting is determined by its design determinants and user demographics, i.e., the user's age, occupation, and the design of the setting are all related to the choice of a given place.

5.2. Observer based environmental Assessments-OBEA

The Cognitive and Behavioural technique is utilized in OBEA to chart down the behavioural observations; A critical analysis compares the standards with the user's sitting behavior for specific areas of the setting.

Figure 6 illustrates various postures of an user, it depicts a vital analysis of the seating design and the numerous ways the seating is experienced and used. The documentation and evaluating of the seating predicts that the flexibility of the seating, allows an user to render themselves to various creative behavioral postures and person-person interactions becomes more friendly and casual. The number of postures will be reduced to half with the presence of constraints like a back rest or support and the interaction between the individuals become more formal. Postures 1 to 5 show intriguing interaction possibilities between two users, postures 6 and 7 show interaction between a group of users, and postures 8 to10 show how an individual user uses the sitting. This study reveals that user contentment has a major impact on sitting preference.

The four primary purposes of sitting behavior are relaxation, waiting, education, and interaction (e.g., talking on the phone or interacting with people). The direction (orientation) towards which the user sits depend on the purpose. The frequency of the usage and preferred time depends on the activity for which the seating is being used. The time spent on interaction and education is more significant than the time spent relaxing and waiting. Majority of the users prefer to wait with their friends for educational and social purposes, whereas they like to relax alone. The user faces the road when using the environment for a specific purpose, such as relaxing or waiting, and faces each other when performing educational or social functions. The observations and the percentage of users using the seating for sitting, with their behavioural observations based on the duration, preferential state, and orientation for each activity, are listed in table-2

The users sit in the preferred seating for a short time when they are relaxing or while waiting for someone and prefer to face the road for more visual clarity and very long time for educational or when interacting with another user by facing each other, they prefer sitting while waiting , discussion or interaction with friends, and would prefer to relax when they are alone.As a result of the observations made above, hypotheses 2 and 3 were developed.

Hypothesis 2: The amount of time spent is related to the purpose of sitting and the user's preferential condition, i.e., when the purpose of sitting is relaxation and waiting, the amount of time spent is less, but when the purpose of sitting is interaction and education, the amount of time spent sitting is longer.

Hypothesis 3: The purpose of the siting influences the user's orientation and preferential state, i.e., for the purpose of relaxing, users prefer to be alone, whereas for waiting, education-

al, and interaction purposes, users prefer to be with friends; similarly, users prefer to face the road while relaxing and waiting, and to face each other for educational and interaction purposes.

5.3. User preference survey analysis

The survey data is entered into SPSS 23, and bivariate analysis is undertaken to determine the relationship between the behaviors mentioned in the OBEA observations. Table 3 displays the Bivariate analysis results for N 132 (number of respondents).

The above results show that the relaxing time (RT) and the person with whom we are relaxing (RW) are correlated positively, and with whom we are interacting (IW) are correlated negatively, and waiting time (WT) and educational time (ET) have a negative correlation. As explained in Hypothesis 2, the purpose of sitting, the preferential state of the user, and the amount of time spent on the setting are correlated. Hence hypothesis 2 is accepted.

Similarly, time spent for educational purposes (ET) is positively related to the orientation of the user while interacting (IF) and waiting (WF), Orientation while Relaxing (RF), Educational (EF), and Interaction (IF) are positively correlated while waiting the preference (WW) and Orientation (WF) are positively related. Hence hypothesis 3 is also accepted.

Table 4 depicts the relationship between location preference, user demographics, and design variables. It shows that there is a correlation between user demographics and location, design and place of stay, As described in hypothesis 1, the user's age, user or occupation of the user, and design are positively associated. Hence hypothesis 1 is accepted.

6. Conclusion

The previous studies were largely focused on one subject, with little interdisciplinary research, therefore there is a clear need for more in-depth research. The research paper created a framework of analysis and observations to comprehend how the environment or setting affects user behaviour. The user's actions are merely a reaction to the environment they are exposed to.

Table 2. *User percentage with respect to behavioral observations.*

S. No	Behavioural observations	Relaxing %	Waiting %	Educational %	Interaction %
1.	Very short amount of time taken for	**26**	**40**	22.2	11.8
2.	Very long amount of time taken for	20.8	2	**29.2**	**48**
3.	Preferential state with friends	16.3	**24.3**	**22.7**	**36.7**
4.	Preferential state alone	**47.5**	29.3	18.7	0.5
5.	Orientation facing the road	**33.5**	**40.5**	10	16
6.	Orientation facing each other	5	9	**40.5**	**45.5**

Table 3. *Correlation between the various behavioral observation from user preference.*

	IF	EF	WF	RF	IW	EW	WW	RW	IT	ET	WT
Relaxing Time RT- Pearson correlation	.044	-.144	.070	.085	**-.244****	-.092	.047	**.232****	.155	-.025	-.108
Sig. (2-Tailed)	.623	.103	.430	.339	**.005**	.296	.598	**.008**	.079	.781	.220
Waiting Time WT- Pearson correlation	.016	.090	.028	.143	.155	.135	-.089	.158	.050	**-.192***	
Sig. (2-Tailed)	.859	.311	.753	.105	.078	.125	.315	.072	.574	**.028**	
Educational Time ET- Pearson correlation	**.232****	.050	**.234****	.131	-.076	.078	.087	-.063	.075		
Sig. (2-Tailed)	**.008**	.573	**.007**	.136	.391	.377	.328	.476	.394		
Interaction Time IT- Pearson correlation	.151	-.159	.009	.059	-.034	.030	.142	.161			
Sig. (2-Tailed)	.086	.070	.920	.508	.700	.735	.107	.067			
Relaxing with RW- Pearson correlation	-.046	-.094	-.039	.065	.118	.021	-.047				
Sig. (2-Tailed)	.607	.285	.663	.465	.181	.812	.592				
Waiting With WW- Pearson correlation	.157	.059	**.217***	-.040	-.095	.038					
Sig. (2-Tailed)	.074	.503	**.013**	.655	.284	.668					
Educational With EW- Pearson correlation	.038	.102	-.036	.054	-.042						
Sig. (2-Tailed)	.665	.249	.682	.544	.632						
Interaction With IW- Pearson correlation	.034	-.086	.042	-.080							
Sig. (2-Tailed)	.697	.329	.637	.363							
Relaxing Facing RF- Pearson correlation	.126	**.242****	.106								
Sig. (2-Tailed)	.155	**.006**	.232								
Waiting Facing WF- Pearson correlation	.121	-.026	****. Correlation is significant at the 0.01 level (2-tailed).**								
Sig. (2-Tailed)	.172	.771	***. Correlation is significant at the 0.05 level (2-tailed).**								
Educational Facing EF- Pearson correlation	**.213***										
Sig. (2-Tailed)	**.015**										

Table 4. *Correlation of location preference to user demographics & design determinants.*

	IF	EF	WF	RF	IW	EW	WW	RW	IT	ET	WT
Relaxing Time RT- Pearson correlation	.044	-.144	.070	.085	**-.244****	-.092	.047	**.232****	.155	-.025	-.108
Sig. (2-Tailed)	.623	.103	.430	.339	**.005**	.296	.598	**.008**	.079	.781	.220
Waiting Time WT- Pearson correlation	.016	.090	.028	.143	.155	.135	-.089	.158	.050	**-.192***	
Sig. (2-Tailed)	.859	.311	.753	.105	.078	.125	.315	.072	.574	**.028**	
Educational Time ET- Pearson correlation	**.232****	.050	**.234****	.131	-.076	.078	.087	-.063	.075		
Sig. (2-Tailed)	**.008**	.573	**.007**	.136	.391	.377	.328	.476	.394		
Interaction Time IT- Pearson correlation	.151	-.159	.009	.059	-.034	.030	.142	.161			
Sig. (2-Tailed)	.086	.070	.920	.508	.700	.735	.107	.067			
Relaxing with RW- Pearson correlation	-.046	-.094	-.039	.065	.118	.021	-.047				
Sig. (2-Tailed)	.607	.285	.663	.465	.181	.812	.592				
Waiting With WW- Pearson correlation	.157	.059	**.217***	-.040	-.095	.038					
Sig. (2-Tailed)	.074	.503	**.013**	.655	.284	.668					
Educational With EW- Pearson correlation	.038	.102	-.036	.054	-.042						
Sig. (2-Tailed)	.665	.249	.682	.544	.632						
Interaction With IW- Pearson correlation	.034	-.086	.042	-.080							
Sig. (2-Tailed)	.697	.329	.637	.363							
Relaxing Facing RF- Pearson correlation	.126	**.242****	.106								
Sig. (2-Tailed)	.155	**.006**	.232								
Waiting Facing WF- Pearson correlation	.121	-.026	****. Correlation is significant at the 0.01 level (2-tailed).**								
Sig. (2-Tailed)	.172	.771	***. Correlation is significant at the 0.05 level (2-tailed).**								
Educational Facing EF- Pearson correlation	**.213***										
Sig. (2-Tailed)	**.015**										

The methodologies used to perform the study were drawn from a variety of fields and disciplines, since the study sought to discover the relationship between person-environment, activity-setting, and user preference-design determinants (Rapoport, 1977; Madden & Love, 1982). The study discovered that college public areas should be physically accessible, as this

lets more users to connect to the places and keeps them active throughout the year. The integral theory (Chein, 1954; Craik & Zube, 1976; De Rivera,1986), addresses behavioral issues peculiar to a particular geographic area, such as what circumstances we can and cannot adapt physiologically to. Expressly, limits in all sitting instances can be physiologically accepted, but Noxients cannot be adopted since they induce discomfort in sitting cases; nonetheless, when given a choice, users pick the seating with the fewest restraints. The seating arrangements provide an answer to the topic of how the physical elements of a location influence our social behaviour. The user's cognitive behaviour enables them to generate a variety of innovative sitting postures in accordance with the flexibility and design of the seating. Each posture shows the purpose and activity for which the sitting is utilised; for example, if two users are facing each other, they are ready to open up a discussion, and their proximity indicates their level of comfort. If the area is active and frequently utilized, the individual using the seating is always aware of and prepared to share the space with another user based on the latter's comfort level; otherwise, the area will be personalized or vandalized. Familiarity with the surroundings (proximity to the workplace) is also crucial in selecting the seated placement. The reason the user favors a specific seating/location affects the user's orientation and with whom the space is shared; the user's introverted nature prevents them from spending more time with strangers. In addition to demographics, design determinants (physical, psychological, operational, and environmental) influence the user's preference for seating location. If the objective of sitting is relaxation, a person wants to sit away from the workplace, but if the purpose is educational, they prefer to sit close to the workplace. Therefore, there is a connection between a user's behavior, the factors that determine a sitting design, and their desire. To summarise, if the demands of a user are met in a plan, the user will establish a psychological sense of ownership over the environment. The research will have a broader scope if the behavior regarding activity and comfort intentions is thoroughly examined. A thorough analysis will find a realistic model for the location, guaranteeing that the activity meets user needs and satisfaction. The author attempts to integrate disciplines such as architecture, landscape, and behavioral psychology about user perception in this work. The evaluation model can be used to comprehend an existing setting and identify active and inactive places. In the case of new designs, the evaluation recommendations can be utilized to avoid mistakes and evolve from user viewpoints.

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