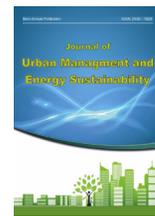


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## ORIGINAL RESEARCH PAPER

### Explaining the role of urban furniture on attendance with emphasis on the behavioral pattern of architecture students (Case Study: Open space of Islamic Azad University complex of Sari)

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#### ABSTRACT

Considering the role of academic spaces and their quality on the progress and efficiency of students, as well as providing a platform for increasing social interactions between them, the open spaces as a part of university complexes can be the basis for the active presence of students, participation in collective activities and the use of the capabilities of the environment. Nowadays, the lack of or inappropriate quality of the furniture has led to the non-optimal use of students and as a result, decreasing their attendance and the dynamics of open spaces in these collections. Therefore, this research aims to investigate the role of the characteristics and indicators of the furniture in the seating area on social interactions and their presence in the use of these elements in the open space. This research is based on descriptive-analytical research and two documentary methods and a questionnaire have been used to obtain information, and the obtained information has been analyzed and evaluated by SPSS software in the case of Islamic Azad University of Sari. The results show that the furniture is mostly used for sitting and talking with friends on the university campus, and the performance of the furniture is more satisfactory compared to its beauty and form. In addition, there is a relationship between social interactions and factors affecting attendance, and this means that increasing the number of social interactions will result in more attendance. In future research, the internal relationships of the investigated indicators and their results can be developed.

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## **1. Introduction**

In recent years, in the field of higher education, due to the reduction of students and the improvement of the quantitative conditions of university facilities regarding the number of students, it is thought that the time has come to pay more attention to the qualitative aspects of university spaces. In the evolution of university complexes, there has always been a combination of the closed and open spaces. As a result, the importance of examining university open spaces and their effect on various aspects of students' lives during their studies is not hidden from anyone. The contemporary man's need for empty and open spaces as a space free from tensions in a society and a safe space makes the analysis and new design of large urban complexes necessary (Riahifar, 2012). With the development of communication, sometimes people have to interact with two or more people from different cultures to answer some of their needs. For example, by knowing the social environment around them, students have better interaction with the people around them, and this increases their efficiency. The result of the architectural factor is known as an important element in increasing social interactions and human relationships. The university open space is a complex matrix of students' actions and also includes various concepts and meanings that the recognition, understanding, and analysis of these relationships can be of a great help in designing high-quality university open spaces to increase social interactions. Creating sociable public spaces as a place to increase social interactions between students in university spaces is one of the important goals that has been of great interest in recent decades. The use of public spaces, especially open public spaces, is a part of a student's life during his time at the university. University open spaces act as the meeting places for students (Ghel, 2008). The effective and continuous presence of students in the university open spaces requires the presence of appropriate physical accommodation and usable physical elements, which have a great capacity to respond to cultural, social, and Science students (Danshpour and Charchaian, 2006). What creates space is the relationship between the elements and factors that are located in a place. Students

are very thoughtful. Furniture is one of the most important factors influencing people's satisfaction in different types of social spaces. Today, many of the disturbances in the view of open spaces in different uses are caused by issues related to the furniture of those spaces, which as a result reduces the quality of these spaces and ultimately leads to a decrease in attendance in that place (Brandfari, 2013). The area of open complexes is very effective in the number of social interactions of people in that complex. This is the result of a research that was conducted in Taiwan in 2006, where the researcher, by examining three residential complexes, concluded that the type of the design of different areas of the area, such as play areas, resting and sitting areas, appropriate green spaces, has a tremendous effect on increasing them and it has had interactions with its inhabitants (Huang, 2006). Therefore, the university open spaces should respond to the needs and activities of students with diverse desires and tendencies. In this framework, social interactions are formed with other students of the same major in different years or with students of other majors. Social interactions in the university open space provide the possibility of rest and activities to exchange knowledge and information in the scientific, cultural, economic, social, etc., fields and increase their abilities and capabilities. According to the age range of students, who tend to talk and discuss a lot, furniture and living space become very important. This research aims to investigate the role of university outdoor furniture on the attendance rate of students in the university and analyze its effect on social interactions among students. Therefore, questions can be asked as follows: 1- What components in the university outdoor furniture lead to an increase in social interactions between students? 2- What are the connections between social interactions and the presence of students in the outdoor furniture of the university? 3- What is the relationship between the characteristics of the outdoor furniture of the university and the attendance rate of students? The current research is based on the hypothesis "It seems that the presence of furniture with suitable characteristics in the open space of the university can increase the attendance of students".

## 2. MATERIALS AND METHODS

### 2.1 Methodology

The research method in the field of literature and theoretical foundations of this research is descriptive-analytical. In the statistical survey and sampling with the tools of library and documentary studies and the distribution of questionnaires in the context of field studies at Sari Islamic Azad University, SPSS software was used for data analysis. The research questionnaire has been organized in such a way that it is effective in measuring the criteria of suitable furniture for the university open spaces to increase the attendance rate of students and also in the direction of answering the questions and hypotheses of the research. Based on the analysis of the obtained information and the thoughts of theorists in the studied areas, the mentioned research model is presented based on the related variables according to Figure 1.

### 2.2. Academic open space

University open public spaces are places where students and non-students can interact with each other without restrictions or with fewer restrictions than other spaces. Every element in the environment has more than its function, it also has imaginary capabilities, that is, in addition to efficiency, it has metaphysical ability and power that can be felt and understood visually (Gibson, 1979). Like a tree that, in addition to using its shadow and visual beauty, evokes emotions such as touching the foliage or climbing it, etc., or the grass bed, in addition to visual pleasure, invites the student to sit and study. As places for people's social interactions, open spaces help to increase the sense of self-confidence and then the sense of belonging and attachment to the place (Fargas, 2000). Public open spaces are a place for exchanging ideas and data and a place for the formation of

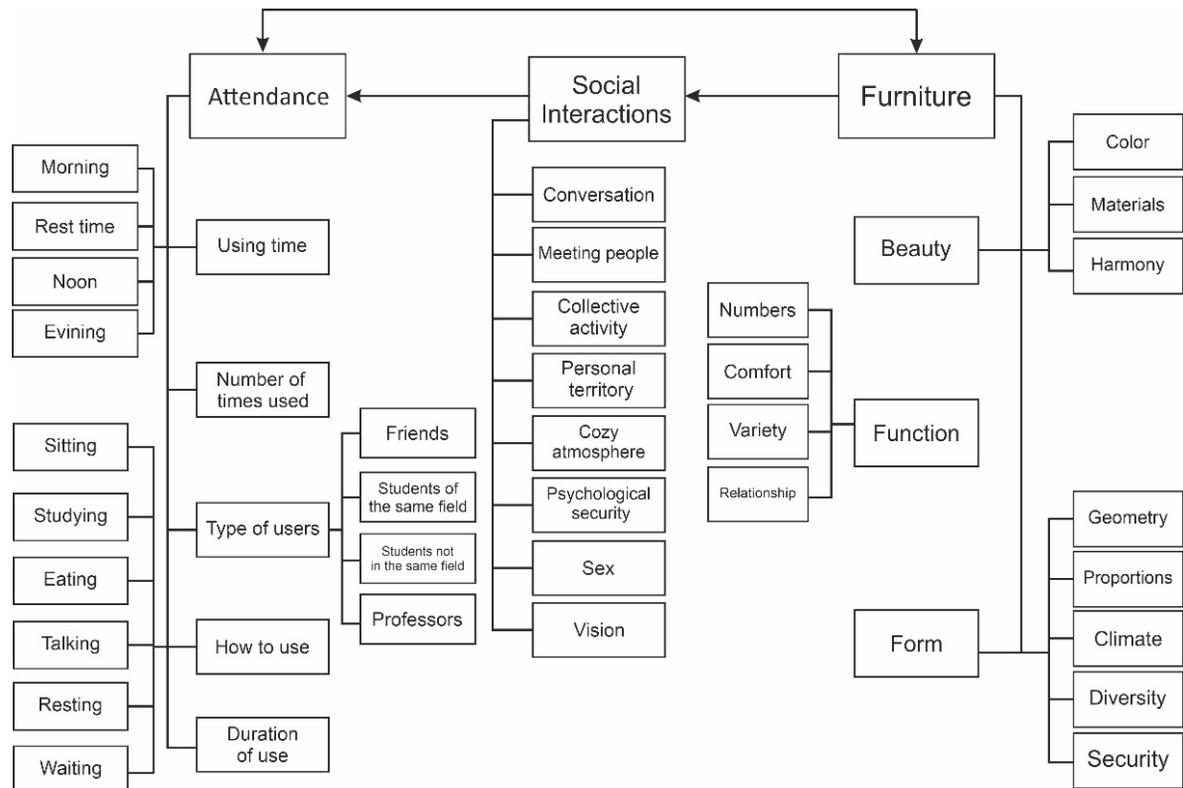


Figure 1: Components related to the three areas of furniture, social interaction, and presence

social groups. The main effective factors in the physical design of residential complexes can be discussed in three main scales: the first scale, the external connection of the complex with the surrounding environment, the second scale: the internal relationships of the complexes and the connections outside the complexes, and the third scale is the relationships and ratio of the internal spaces of the complexes, which is the second factor. It affects the interaction with the public open spaces in large complexes (Einifar, 2000).

This analysis also applies to the large university complexes with the open spaces. The physical design of university open space can be an important factor in the presence of students for different activities such as playing and exercising, resting, eating, walking, talking, etc. Public open spaces provide the possibility of decision-making and free choice of behaviors, movements, and subsequent discoveries for a significant number of people (Lynch, 1972). Of course, in the university open space, this issue leads to the production and advancement of more knowledge, and as a result, the desire to study in a university with a suitable open space is strengthened. In the public open spaces, there is a possibility that some social boundaries will change and unplanned encounters will happen and people will mix in a social environment (Behzadfar, 2006).

### *2.3. Urban Furniture*

The first meeting place is street, alley, square, and park furniture (Mortezaei, 2013). Furniture is a wide collection of devices, objects, devices, symbols, and elements such as sidewalks, fences, barricades, lamp post lighting, green space, health services, bus stop shelters, billboards, trash cans, pedestrian bridges, drinking fountains and flag bases. It includes benches, sports equipment, etc., in the open space (Maria Zaninn and et al., 2005). The furniture in each specialized open space has different appearances and the importance of each one depends on the type of use and the needs of the people in that space. Paying attention to outdoor furniture is not only an aesthetic approach to outdoor space but also increases the quality and satisfaction of its users. Outdoor furniture of any collection that has the appropriate quantity, quality, beauty, comfort,

and durability, that space can accept people in it and as a result, people prefer to attend to it more than at home (Zangiabadi and Tabrizi, 2013). The lack of a suitable university open space makes the collective feeling of local communities and emotional attachments to the place that is the university disappear among students (Huffman, 2006).

### *2.4. Location and Accessibility*

The principles of access are based on the minimum amount so that a more optimal level of space remains for design (Lynch, 2016). One of the existing definitions is how to reach a certain place from a certain distance in the least amount of time (Lotfi and Miandoab, 2018). As a result, the way of access and position of furniture in the open space is very important so that users can easily access the furniture in the shortest possible time. Easy access to these spaces has a great effect on the presence of people in the space, and this means that these spaces are receptive to people's social presence (Carr, 1982).

### *2.5. Green space and Pause*

Man has a direct and meaningful relationship with nature and it plays a great and vital role in man's access to the safety, sustenance, and comfort of nature. In many human-made spaces, attention to the natural environment has been considered from the point of view of beauty and visual delicacy. Of course, attention to a green space and the environment has been greatly expanded in newer perspectives, and other effects besides mere beauty are mentioned (Bell, 2003). Most designers and architects approach nature with the same point of view, which is to provide beauty. But a deeper attitude to nature along with understanding the environment directly to receive different meanings from it also includes the psychological and behavioral aspects resulting from interaction with the green space. It seems that in terms of visual beauty, environments that contain natural elements such as trees, bushes, flowers, etc., are more socially acceptable than those that do not use a green space. In the design of open spaces, in principle, the architect puts pedestrian and resting spaces first, because the presence of people and the communication

between them in the resting spaces increase social interactions. These spaces of pause and discourse cause the exchange of ideas, ideals, and thinking principles of people and as a result the cognitive and cognitive development of a society.

2.6. An element of identity

Identity is not among the characteristics of a phenomenon but is the product of the relationship between people and the desired phenomenon, and according to this standard, identity is a relative concept, one side of which is human and the other side is the environment (Ghasemi, 2006). To know the identity of a space, it is necessary to discover the constituent elements of the nature of that space. These components have two objective (physical) and mental (spiritual) aspects, each of which can be manifested through the natural or artificial, or human environment. In the field of natural factors, mountains, hills, etc., can be mentioned. In the field of artificial factors, he mentioned single buildings or special elements, etc. Human factors can be mentioned as language, local culture, beliefs, etc., (Behzadfar, 2006). In this research, the artifact dimension has been taken into consideration. One of the important factors in improving the quality of the environment is the sense of place, the mental perception of people about the environment. In this way, the person's sense of place is related to the physical space, so that the person's feeling and perception are involved with the environment and becomes homogeneous. The sense of place

causes a sense of comfort, pleasure, and emotional understanding of the environment, security, and access to identity, and as a result, it causes a better use of the environment, user satisfaction, a sense of belonging, and an increase in the desire to be more present in that space (Falahat, 2015).

2.7. Proportions

The relative similarity and analogy between the structure of the human body and architecture have always been of interest, both for aesthetic reasons and for other reasons. In the history of architecture, a lot of efforts have been made to humanize the architectural body (Von Mises, 2004). One of the most important places where proportions appear in architecture is its manifestation in the field of furniture, whose proportions are directly related to responding to human physical needs (Table1).

2.8. Social interactions

At first, we explain the social interactions and then we examine interactions as an intervening factor in the occurrence of attendance. The main feature of public space is the existence of interaction and the social relations in it. Social interaction is defined as a relationship between two or more people and it can be formed as a physical issue such as looking, conversation, and communication between people (Alimardani and et al, 2014). In other words, social interaction refers to a situation in which the effect of active behaviors on other passive behaviors can be

Table 1: The most important effective physical factors of furniture in creating sociability in the university open space

Physical factors Effective in creating a spirit of sociability in university outdoor furniture (Gehl,1987) (lang,1987) (carr,1992) (porta,2005) (white,1980)	Number of furniture for sitting or resting
	Form, geometry, harmony, proportion, and size of furniture
	The distance and location of furniture in comparison with other educational spaces
	Simple and easy access to furniture
	The beauty of the furniture, the presence of color, and the right material in the furniture
	The presence of green space in the area of furniture
	The degree of the coziness of the furniture and the sense of security
	The proximity of the furniture to the rest areas, such as fun functions such as play areas, fountains, elements, etc.
	An identity factor such as a special building or a special design of furniture or a special element

understood and identified. Therefore, social interactions in a deeper sense include the process by which the obvious behaviors, measured and thought intentions of people, and the influence of people on others are part of them (Kurniawati, 2012). According to Altman, the environment should have the most connection with the behavior of users and establish social interactions and promote people's sense of place (Altman, 1975: 255) (Alimardani, 2014: 11). The participation of people and the creation of social interactions, and making the space more humane increase vitality and enhance the sense of belonging to the place (Alimardani and et al, 2014). Social interaction, due to the formal, semantic, and functional interaction of humans with the environment, causes a pleasant feeling of space in people. The social interaction of people with each other and observing different activities, while fostering sociability grounds, also leads to human growth. One of the most important human needs is coexistence and social interaction with each other, and this has decreased significantly in today's modern world (Tabrizi et al, 2013).

### *2.9. Human social needs*

Maslow's hierarchy of human needs can be divided into three spectrums: biological and physiological needs, psychological needs, and social needs (Seif Elahi, 2008). According to the mentioned point of view, social needs are one of the most important needs of humanity to continue living. Human being sociable makes communication with and interaction with others considered as one of his main needs, and in these relationships, man realizes his abilities and builds his identity (T-Wood, 2019).

### *2.10. Human, environment, performance and social interaction*

Social interaction is considered a basic subject in social studies that can be established between people in different areas such as physical, visual, speech, and hearing, which itself requires the definition of appropriate events and actions and as a result, the role of people in space and groups and it is social networks. Among the effective factors in increasing social interaction in the public spaces, we can mention the sidewalk,

non-verbal communication, and the interaction of space and place (Mansoori and Jahanbakhsh, 2015). The existence of cozy and private spaces for people to meet and talk with each other and create spaces for group and individual skills to be effective in creating suitable spaces for social communication. Effective cases of social interactions that include a wide range of perceptual and conceptual components to physical and objective components: crowding and density, norms and social relations, beliefs and ethics, social classification, solitude, and physical location, etc. From Pakzad, another point of view, the factors that strengthen social interactions in the space include the gathering of people, the existence of cultural and artistic activities, the existence of stopping spaces, the existence of cozy spaces, the presence of natural elements and landscape (Faizipour and Asadpour, 2012).

### *2.11. The effect of the body on social interactions*

John Lang, an architect and a designer, has researched the field of social interaction patterns and environmental capabilities and believes that social interactions and people's attachment to social and built environments have a very subtle and deep connection (Lang, 2008). Architects can provide better conditions for meeting, seeing and hearing with various physical designs (Gehl, 1987). A physical position is needed to satisfy the need for people to communicate and be together (White, 1980). Social life in public arenas and spaces has a deep and meaningful relationship with the way people live in society, and creating spaces that can increase social interactions is one of the ethical responsibilities of designers. White believes that people express their opinions with their steps, that is, they move towards spaces where there is more comfort and security. For this purpose, design should be done with a complete understanding of the knowledge of the people and the spaces that are used. To create a lasting and eternal space where you can gather together and blend with the space and place, a center or support is needed. These spaces may be around fountains, artistic elements, or platforms around special buildings. These open spaces have a place to chat, learn, etc., which makes people who are not familiar with each other talk and discuss or

greet each other (Table.2) (Lennard and Lennard, 1998).

2.12. Availability (usability)

Humphrey Osmond defines sociability as the quality of space that brings people together (Osmond, 1957). A space where people gather together, spend time to get rid of the tensions of everyday life, and where social interactions and leisure time take place, and where people can be

present, find freedom of speech and expression, has a quality. It is where socialization happens (Sennett, 1974). When social interaction occurs between people in an environment, the category of sociability is raised among them. The two factors of the body and predicting and creating social events are among the categories that affect social interaction and the presence of people. To study social interactions in space, Hall has studied a concept such as a sociability, which in his study

Table 2: The most important features and characteristics of outdoor furniture design from the point of view of architects and experts

white,1980	<ul style="list-style-type: none"> <li>▪ Paying attention to the view and visual permeability of the furniture</li> <li>▪ The level of the furniture space with the street level</li> <li>▪ Suitable furniture for sitting, discussion and conversation</li> <li>▪ Mobile seats</li> <li>▪ Paying attention to the climate in the furniture</li> </ul>
Lang,1987	<ul style="list-style-type: none"> <li>▪ The proximity of furniture to service areas such as buffets and restaurants</li> <li>▪ The proximity of the furniture to the play area</li> <li>▪ Possibility of rest and comfort in the furniture</li> <li>▪ Staying and sitting spaces</li> <li>▪ Attention to personal privacy and individual independence</li> <li>▪ Suitable furniture for sitting, discussion and conversation</li> </ul>
Gehl,1987	<ul style="list-style-type: none"> <li>▪ Attractive facade design of furniture</li> <li>▪ Staying and sitting spaces</li> <li>▪ The proximity of furniture to service areas such as buffets and restaurants</li> <li>▪ Paying attention to the climate in the furniture</li> <li>▪ Suitable furniture for sitting, discussion and conversation</li> </ul>
Carr,1992	<ul style="list-style-type: none"> <li>▪ Creating a sense of belonging and identity through the special form of furniture</li> <li>▪ Proximity of the furniture to the play area</li> <li>▪ Paying attention to the climate in the furniture</li> <li>▪ Suitable furniture for sitting, discussion and conversation</li> <li>▪ Using natural elements and green spaces next to furniture</li> </ul>
Lennard, 2005	<ul style="list-style-type: none"> <li>▪ Paying attention to lighting in furniture</li> <li>▪ Beautiful and attractive facade design of furniture</li> <li>▪ Paying attention to easy access to furniture</li> <li>▪ Staying and sitting spaces</li> <li>▪ Paying attention to the climate in the furniture</li> <li>▪ Suitable furniture for sitting, discussion and conversation</li> <li>▪ Paying attention to the enclosure of furniture</li> <li>▪ Using natural elements and green spaces next to furniture</li> <li>▪ Paying attention to the view and visual permeability of the furniture</li> </ul>
Porta,2005	<ul style="list-style-type: none"> <li>▪ Paying attention to easy access to furniture</li> <li>▪ Using architectural elements in furniture such as porches and fences</li> <li>▪ Suitable furniture for sitting, discussion and conversation</li> <li>▪ Paying attention to the climate in the furniture</li> <li>▪ Paying attention to the view and visual permeability of the furniture</li> <li>▪ Using natural elements and green spaces next to furniture</li> </ul>

of the environment and the physical environment is divided into two categories: social avoidance and sociability. Sociable spaces encourage people to engage in collective interactions (Hall, 1982). Social interaction is formed through human activities in a certain body and over time, it becomes a mental thing in people. There is a close relationship between social interaction and people's attachment to built environments. One of the features of sociable spaces is the possibility of face-to-face communication and spaces for sitting and interacting within social distance (Lang, 2019). Social communication of people is formed according to their interests, expectations, norms, and certain roles in the environment. Paying attention to the human need for social activities such as communication with acquaintances, gatherings, walking, playing, recreation, sports, etc., leads to the formation of people's favorable mental image of space and its dynamics (Kashanijo, 2009). Social vitality includes creating suitable spaces for walking and living on foot along with places to linger, stop and gain experience. In addition to reducing crime, such an environment increases people's enjoyment and encourages social interactions. Among the important factors in social life is the memorableness of the space, creating a sense of belonging in the space, stimulating human senses in the space, adapting to the different activities of people, paying attention to the human scale, the existence of footpaths, creating suitable accesses, creating various entertainments, the existence of security. He pointed out the spaces of pause and stop, the existence of people at different times, the variety of uses (Farazmand and Sahizadeh, 2012).

The design of the space and the arrangement of the furniture in the form of face-to-face communication, along with the creation of spaces for people to meet each other, are the characteristics of sociable spaces. Gathering of different people and groups, spending free time and sleeping for their presence and freedom of speech and expression in the space. Collective life in public open spaces depends on the promotion of social interactions (Sennette, 1974:215). Social security has resulted in encouraging the increase of tolerance of different groups in the space,

and more social acceptance (Marcus & Francis, 1998). It is attracting different people and groups (Whyte, 1984) and creating an active and lively space. There are different views on creating a successful public space that can attract different people, including the views of Cooper Marcus, Jan Gehl, Alan Jacobs, Jane Jacobs, Donald Appleyard. Appleyard and so on. In total, the above attitudes in a summary of factors such as diversity of use, liveliness, visual beauty and maintenance and care of the space in a special way and other factors such as comfort and physical comfort, convenient and appropriate access, security, sitting and resting, proportions and legibility of the space and public. The availability of space is one of the most important factors affecting people's attendance and social interactions between them (Behzadfar and Tahmasabi, 2012). The process of sociability can be achieved by creating social communication and interaction between the users of any public space, and the ability to interact with others is of great importance (Kurniawati, 2012:477). In addition to the sociability of public open spaces, it promotes the spirit of solidarity, and individual growth for all people in different cultural, social and economic dimensions (Efroymsen et al., 2009). The users of these spaces enjoy the beauty. They experience such things as people walking, playing, people talking and resting tired people. There is no significant difference between the observers. All of them are part of the audience in that space. By designing the physical environment, it is possible to affect the number of accidents and the number of people who use the open space, and the time that behavior and activity take. In addition to the importance of the number of people and activities in the actions located in the space and the importance of the continuation of those actions, the duration of being in the space is also important for each person. It is not enough to have spaces that are used only for commuting and do not stop, there must be favorable conditions for roaming and lingering in the space. At this stage, the importance of artifact parts and the design of individual spaces and details and the smallest components are considered essential factors. These activities include sitting, standing, talking, seeing, and hearing, for each of which the physical environment must have specific conditions. It

provides for social interactions. These interactions create grounds for socialization and help in individual human growth. Public spaces make it possible for people to meet, if these spaces have fun activities for people, they will be attracted to them. As a result, if suitable facilities are available in all areas, such as furniture, the attendance rate will increase.

### 3. Materials and Methods

According to the case study of the research, the statistical population includes all the students of architecture at the Islamic Azad University, Sari branch, studying in the academic year 2016-2016, which numbered 285 people. The designed questionnaire consists of 45 questions, 3 of which include general information (gender, age, academic year) of the students, on a Likert scale with the options of very low, low, medium, high, and very high, respectively with points of 1 to 5 with content validity and its reliability was determined by Cronbach's alpha as 0.919, which indicates a high-reliability coefficient. Using the formula to determine the sample size for the estimation error  $d=0.02$  and significance level 0.05, the number of  $n=135$  people was selected by simple random method without placement and the questionnaire was distributed and collected among them. Due to the use of SPSS statistical software, 3 questionnaires were removed from the statistical operation due to being distorted, and the research objectives were analyzed using descriptive and inferential statistical methods. Out of 132 respondents, 81 (61.4%) were women, 33

(25%) were men and the rest were not mentioned. The age frequency table of participating students is presented according to table number 3 (Table 3).

Moreover, 40 people (30.3 percent) were first-year students, 20 people (15.2 percent) were second-year students, 33 people (25 percent) were third-year students, and 38 people (28.8 percent) were fourth-year students and above, and 1 person has not answered either. Based on the presented research model, the questionnaire included three factors: furniture, social interactions, and presence, so in the furniture section, variables of beauty (5 questions), function (6 questions) and form (9 questions), social interactions (9 questions) and accessibility include the time of use (4 questions), number of times and type of users (4 questions), method of use (6 questions) and duration of use. Based on the analysis, the beauty factor of furniture, harmony, and color variables have the highest level of satisfaction, and the material variable has the lowest level of satisfaction among students. Regarding the performance of furniture, connection with green space is the best and diversity is the worst functional feature. In the field of furniture form, proportions with about 81% have medium to high satisfaction, while furniture geometry has caused the most dissatisfaction with 80.3%. Based on the obtained information, Table 4 shows the distribution of the abundance of furniture and its variables in general.

According to the data, the performance of the furniture is more satisfactory than other factors

Table 3: Frequency and percentage of participating students according to age group

Age group (years)	18-25	26-30	31-40	41 and up
Abundance (people)	119	5	5	3
Percentage	90/2	3/8	3/8	2/2

Table 4: Frequency of general characteristics of furniture in the three areas of beauty, function and form

	Very low	Low	Average	High	Very high
Beauty	(1/5)2	(25)33	(59/1)78	(14/4)90	-
Function	(0/8)1	(16/7)22	(65/8)87	(16/7)22	-
Form	(1/5)2	(22/7)30	(67/5)89	(8/3)11	-
Furniture	(0/8)1	(17/4)23	(70/5)93	(11/3)15	-

with 17% and the variables of beauty and form are in the next ranks with 14 and 8%. Therefore, by using a non-parametric binomial test of all variables of performance, beauty and form with a level of sig=0.000 at the error level of 5%, it indicates the rejection of the assumption that the satisfaction level of students is at least 50%, which indicates the inappropriateness of the mentioned factors in the existing furniture design. in the field of social interactions; conversation was considered the best by 35% and collective activity by 1.3% was the most inappropriate factor in using furniture. Besides, the perspective factor can be mentioned after the conversation as the most acceptable type of social interaction in the use of furniture among students. Regarding attendance as a dependent variable of the research, the results obtained are as follows:

Regarding how to use furniture, talking and sitting are the most used and eating the least. Regarding the time of use, students use the furniture more during the break between classes, and they use the furniture the least during noon (lunchtime). In addition, students together with

their friends (about 50%) use the furniture in the university, while they have the least cooperation with professors (more than 91%) in using campus furniture. The frequency distribution of the number of times of use (Table 5) shows that more than half of the people have used the furniture less than 2 times a day, which may be due to the inappropriateness of the furniture space. (Table 5)

Moreover, Farwani's distribution table regarding the duration of use (Table 6) indicates that about two-thirds of the students use the campus furniture for less than 10 minutes.

According to the frequency distribution table related to attendance and its variables in general (Table 7), the number of times of use (19 percent), the manner of use (18 percent), the duration of use (17 percent), the time of use (9 percent) and the type of users (7 percent) are, therefore, based on the binomial non-parametric test for all attendance subgroup variables at a significance level of 5% error. It can be seen that the assumption of usage rate can be rejected in at least 50% of cases. (Table 7)

In terms of correlation measurement,

Table 5: The number of times furniture is used on the campus of Sari Azad University

Numbers	0	1	2	3	4 and up
Abundance	(27/1)35	(38)49	(17/8)23	(9/3)12	(7/8)10

Table 6: Duration of using furniture by students of Sari Azad University in the open campus of the university (authors)

Time (Min.)	0-5	5-10	10-30	30-60	60 and up
Abundance	(36/4)44	(28/3)66	(24/4)31	(7/9)10	(4/7)6

Table 7: The frequency and percentage of attendance of students based on the method and time of use and the type of users (writers)

	Very low	Low	Average	High	Very high
How to use	(5/3)7	(38/9)51	(37/4)49	(15/3)20	(3/1)4
Using time	(19/7)26	(40/9)54	(30/3)40	(8/3)11	(0/8)1
Type of users	(17/1)22	(39/5)51	(36/4)47	(7)9	-
Attendance	(3/8)5	(44/7)59	(37/1)49	(14/4)19	-

Table 8: The relationship between a conversation (of social interaction factors) and the most important features of furniture from the perspective of students (writers)

	Harmony	Green space	Proportions
Conversation	=0/208d=0/012 & Sig	=0/197d=0/013 & Sig	=0/007d=943 & Sig

Table 9: The relationship between the general characteristics of furniture (beauty, function, and form) with social interactions based on the opinions provided by students (writers).

	Somers' d	sig
Beauty and social interactions	0/375	0/000
Performance and social interactions	0/35	0/000
Form and social interactions	0/396	0/000
Furniture and social interactions	0/484	0/000

Table 10: The relationship between a conversation (one of the factors of social interactions) and the most important features of presence in the furniture space (authors)

	Somerset	sig
Conversation and friends	0/502	0/000
Conversation and rest time	0/356	0/000
Conversation and talking	0/55	0/000
Conversation and sitting	0/541	0/000

Table 11: The significant relationship between social interactions and factors affecting presence in university outdoor furniture (authors)

	Somers' d	sig
Social interaction and how to use	0/603	0/000
Social interaction and time of use	0/458	0/000
Social interaction and frequency of use	0/368	0/000
Social interaction and duration of use	0/322	0/000
Social interaction and type of users	0/481	0/000

Table 12: Relationship between furniture characteristics and attendance factors of students (writers)

	Somers' d	sig
Performance and how to use	0/20	0/038
Form and type of users	0/224	0/026

according to the order of the scales, the dependence of the variables of social interactions and presence, and the independence of the furniture variable, Somers's relationship index is used and summarized in the table below. It should be noted that due to the increase of variables, only a significant relationship has been considered. In table 8, the relationship between harmony, green space, and proportions of the factors related to the beauty, function, and form of furniture is presented with dialogue as one of the factors that shape social interactions. The obtained information indicates that there is a significant relationship between harmony and conversation, although this rate (0.208) is weak and the same

result is also established in connection with green space. On the other hand, the proportion of furniture has no significant relationship with creating a platform for conversation (5% error) (Table 8).

In the relationship between the variables of furniture and furniture in general with social interactions, all cases are significant at the 5% error level, which means there is an effective relationship; how the strongest connection between furniture and social interactions is established? (Table 9)

In examining the relationship between social interactions and the variable of conversation with the factors of presence and presence in general

(Table 10), there is a significant relationship between them; this means that the higher the amount of conversation, the factors affecting attendance such as communication with friends, using during breaks between classes, talking and sitting in the furniture space also increase. (Table 10)

Further, social interactions and factors affecting attendance according to Table 11 have had a significant relationship with each other. There is a correlation of 0.549 between social interactions and attendance in general, and this indicates that increasing the number of social interactions will result in more attendance (Table 11).

In the relationship between the highest variables in the field of furniture and presence, only between harmony in the beauty of furniture and activity of sitting in the use section, there was a significant relationship with an error level of 5% ( $d=0.16$  and  $sig=0.038$ ). Table 12 also shows a significant relationship between furniture variables and attendance (Table 12).

Therefore, according to the total information obtained, furniture and attendance have a significant relationship at the error level of 5% ( $d=0.285$  and  $sig=0.002$ ).

#### **4. Results and Conclusion**

Many of the world's most prestigious universities conduct this type of research every few years to receive new information and to be more in tune with the demands of students to increase their satisfaction with all kinds of educational spaces, which is an important reason to be aware of the importance of this research in universities (It is Iran). The purpose of this research was to investigate the role of seating furniture in the university open space on the attendance rate of architecture students of the Islamic Azad University of Sari branch, which was carried out using a descriptive and analytical method. The results of the data analysis indicate that the hypotheses raised in this research were confirmed; in the opinion of architecture students of Azad University, sitting furniture has played an effective role in increasing social interactions between students and the university, as well as between students, and as a result, it has led to

an increase in their presence in the open space of the university. From the conclusions of this research, it is possible to mention the satisfaction of students with harmony and color from the beauty component of furniture, as well as the lack of satisfaction with furniture materials. Also, in the form of furniture, from the point of view of architecture students, proportions are more important than other components of the form such as geometry, variety, safety, and climate. In this research, it was found that designed furniture is suitable for sitting and talking, and it is less possible to do other collective activities. The last activity formed by students is eating on the sitting furniture, which could be one of the best uses of the sitting furniture. In this research, there was a strong and meaningful relationship between furniture and social interactions. Likewise, an effective relationship is evident in the relationship between social interactions and attendance. As a result, the relationship between furniture and attendance is a direct and important relationship that can be expressed from the component of furniture beauty, and harmony, and from the component of how to use the sitting.

Failure to comply with the standard principles of seating furniture design at Sari Azad University has caused a decrease in different types of student activities and social interactions between them, and as a result, their attendance has decreased, especially during free time between classes. In a general summary, the degree of satisfaction of the architecture students of Sari Azad University with the university's open space furniture indicates its inappropriateness, which has reduced the tendency of students to attend more and more effectively in the university, and as a result, this tendency to not attend has led to the scientific and cultural communication with other students and professors which has decreased. The result of this continuous absence from the university will have effects on the educational quality of the students, which is not addressed in this research, but it is worthy of consideration. The following suggestions can also be made.

Improving the quality and quantity of seating furniture for more and better use by students to increase the attendance rate in the university.

-Paying attention to the different characteristics

of furniture during design and construction in the fields of beauty, form and function.

- Paying attention to the different capabilities of university seating furniture during design and construction in terms of providing conditions for different types of individual and collective activities of students.

- Paying attention to the importance of social interaction as an important component in increasing student attendance at the university and the scientific and cultural growth of students.

In the end, it can be stated that by observing the things mentioned in the design and construction of different elements of the university's open space, such as the place to sit in the open space, it is possible to have a more dynamic university, more active and non-passive students, and the result of this continuous presence of students in the university is definitely to the scientific growth and social and cultural results are more students.

## References

- Alimardani, M. and Mahdinejad, J & Efsemi, T. (2014), "Qualitative development of urban space to promote social interactions (Case example: Ahmadabad Street, Mashhad)", *Applied Arts Quarterly*, No. 7, Autumn and Winter, pp. 5-14.
- Behzadfar, M. (2006), "City Identity: A Glance to Tehran Identity", Tehran, Shahr Press Institute.
- Behzadfar, M. and Arslan T. (2012), "Identification and evaluation of the factors affecting social interactions, strengthening and development of citizen relations", *Bagh Nazar*, summer 2012, number 25, pp. 17-28.
- Bell, S. (2003) "Landscape, Pattern, Perception, Process" translated by Behnaz Aminzadeh, Tehran University Press, first edition.
- Brander, H. (2013), "Urban design towards a more sustainable form of the city", translated by Hossein Bahreini, Urban Planning and Processing Company Publications, Tehran.
- Carr, S. (1982), "Some Criteria for Environment", from. In S. Kaplan and R. Kaplan (Eds). *Human scape Environments for People*. Michigan: Ulrichs books.
- Daneshpour, S.A.H and Charchian, M. (2006), "Public spaces and factors affecting community life", *Bagh Nazar*, No. 7, pp. 19-28
- Efroymsen, D.&Thi Kieu Thanh Ha,T& Thu Ha, Ph.(2009),"Public Spaces: How They Humanize Cities",Dhaka: HeaithBridge- WBB Trust.
- Einifar, A (2000), "Environmental human factors effective in the design of residential complexes", scientific research journal of Fine Arts, No. 8, pp. 109-118.
- Faizipour, M. and Asadpour, A. (2012), "The process of re-creating Tehran's squares with the aim of citizens' social interactions", *Urban Studies Research Quarterly*, No. 7, Summer 2012.
- Falahat, S. (2015), "The concept of sense of place and its shaping factors", *Fine Arts Magazine*, No. 26, pp. 57-66
- Farazmand, R. and Sahizadeh, M. (2012), "Investigation and analysis of factors affecting vitality from the perspective of social interactions in evaluating the performance of urban public spaces (case study: Kermanshah Municipality parking area)", *Haft Hesar Urban Research*, No. 6, Year 2, Winter, pp. 29-42.
- Fargas, J. (2000), "Psychology of social interaction: interpersonal behavior", translated by Mehrdad Firouzbakht and Khashayar Beigi, Tehran.
- Gehl, J. (2008),"Life in the Space Between the Buildings", Translated to Persian by Shasti,Sh. Tehran: University Jihad Organization.
- Ghasemi E, (2006)" Where are We From: Identity of Residential Textures" Tehran, Rozaneh Press.
- Gibson, J.J. (1979),"The Ecological Approach to Visual Perception", Boston:Houghton,Mifflin.
- Hall, E. T. (1982),"The Hidden Dimension",New York,Anchor Books,Doubleday.
- Huang, L. (2006),"A Study of Outdoor Interactional Spaces in High-rise Housing", *Journal of Landscape and Urban Planning*, 78, 193-204. <https://doi.org/10.1016/j.landurbplan.2005.07.008>
- Huffman, R. (2006),"The Value of Urban Open Space",*urban land*,65(1),pp.108-111.
- Kashanijo, Kh (2009), "Recognition of theoretical approaches to urban public spaces", *City Identity Magazine* 4(6), pp. 95-106.
- Kurniawati, W. (2012),"Public Space for Marginal People",*Procedia – social and Behavioral Sciences*: (36), pp. 476-484. <https://doi.org/10.1016/j.sbspro.2012.03.052>
- Lang, J. (2008), "The creation of architectural theory: the role of behavioral sciences in environmental design", translated by Alireza Einifar, Tehran University Press, Tehran.
- Lang, J. (2008),"Creating Architectural theory ", the role of the behavioral sciences in invironmental design, New York. Van Nostrand Reinhold.
- Lennard, S.C. and Lennard, H. (1998), "Designing urban spaces and social life", translation: Mojtabipour, Rasul, *Architecture and Urban Planning Magazine*, No. 44 and 45, pp. 82-78.
- Lotfi, S, and Miandoab, M. (2018), "Measuring the level of access to urban facilities using fuzzy logic in the Tabriz city case study", *Journal of Urban Management*, No. 30.
- Lynch, K. (1972),"The Image of The City", Cambridge, Ma: the MIT Press.
- Lynch, K. (1997), "Theory of the good shape of the city", translated by Dr. Seyed Hossein Bahreini, University of Tehran, Tehran.
- Mansouri, S.T and Jahanbakhsh, H. (2015), "Measuring the factors affecting the promotion of social interaction and sociability in urban space (Case study: Modares Street, Kermanshah)", *Journal of the Scientific Association of Architecture and Urban Planning of Iran*, Spring and Summer, pp. 59-65.

- Marcus, C.C., Francis, C. (1998), "People Places: Design Guide Lines for Urban Space", New York, NY: Van Nostrand Reinhold.
- Maria Zaninn, E, Dos santos, J.E., and Carlos E. (2005), "Environmental Analysis and Zoning for an Urban Park Management Purpose", Vol.48, n.4, pp.647-655, July 2005. <https://doi.org/10.1590/S1516-89132005000500018>
- Mortezaei, R. (2013), "Approaches in urban furniture design", Publications of Iran's Municipalities Organization.
- Osmond, L (1957), "Function as the basis of Psychiatric ward design", New York, Holt Rinehart and Winston. <https://doi.org/10.1176/ps.8.4.23>
- Riahifar, A. (2012), "Investigation of the proper distribution of free space in improving the quality of contemporary urban residential spaces in Tehran", Hoyt Shahr, No. 15, pp. 71-82
- Seif Elahi, S. (2008), "Sociology of Iran's Social Issues (Collection of Articles and Opinions)", Tehran, Jamia Pajohan Sina Publications.
- Sennette, R. (1974), "The Fall of Public Man", New York, Norton & Company.
- Tabrizi, O, and Mokhtabad M. and Faizi, M. (2013), "Effects of designing urban spaces and collectivist architecture on interactions and social communication", Urban Management, No. 37, Winter, pp. 257-272.
- T-Wood, J. (2019), "Interpersonal communication: psychology of social interactions", translation: Firozbakht, Mehrdad, Tehran, Mehtab Publishing.
- Von Mies, P. (2004), "Looking at the foundations of architecture from form to place", translated by Dr. Simon Ivazian, University of Tehran, Tehran.
- White, W, H. (1980), "The Social Life of Small Urban Space", Tuxedo, Maryland: Printers II inc.
- Zangiabadi, A. and Tabrizi, N (2013) "Urban Furniture Design and Planning" Tos Mashhad Publishing House, Mashhad

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