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Analysis of Attendability in Natural Open Spaces Influencing Dialogue-Oriented Criteria in Educational-Research Campuses; Case Study: Lahijan County*

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ABSTRACT

In addition to its main function as an education-research institute, the university campus promotes social interactions between individuals due to its important role in strengthening participative relationships created during free dialogues. According to previous studies, it seems that natural capabilities can enhance the quality of individuals present in a social platform, and this role can be found in the mutual effects of nature and the built environment. Hence, the present study aims to find some indicators and strategies influenced by the presence in and interaction with nature while defining the concept of dialogue orientation in engagement behaviors to ensure the dialogue process and improve the participation of users in such processes. The research approach is mixed qualitative-quantitative and the research method is descriptive-analytical. In this study, the effective dimensions were determined based on the logical argument of data obtained from library studies. To confirm the equations and test hypotheses, the data of the field phase were extracted from the researcher-made questionnaire filled out by the users who are architects in Lahijan County. The comments expressed by experts were analyzed through pls software. According to the obtained results, a significant nexus exists between attendability potentials within three criteria of improved mental, physical, and social health, and increased dialogue-orientation level. In general, this study shows that quality, distribution, and location of natural habitat-associated areas are substantial aspects that must receive great attention due to their vital roles in dialogue-orientation criteria regarding students' engagement in the learning process of designing university campuses.

Keywords: Dialogue-Orientation, Attendability in Nature, Educational-Research Campus, Social Interactions.

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1. INTRODUCTION

A sense of belonging and possible free and broad dialogue that creates the main theme of individuals' participation and plays an effective role in developing and promoting creativity requires a platform for influencing individuals to make decisions affecting their social fates (Mun 1987). Desirable collective interactions at different levels require paying attention to attendable platforms that dialogue-orientation is one of its most important ecological components and social interaction' subbranches. On the other hand, the possibility of nature perception and the tendency to get closer to nature and living elements implies an aspect of the built environment's qualities that affects the quality of behavior in activity places (Daneshgarmoghadam et al. 2011). In this case, higher education is a kind of new sociability in an academic community with its specific cultural relations and norms. If the university is perceived as a social-cultural structure and a field for the appearance of themes considered in the urban space would improve the quality of such spaces (Mustafa and Danoon 2020; Sharghi 2011). Dialogue orientation is important and necessary for promoting social interactions in the design of educational research campuses because it provides the field for individuals' participation in activities for their development and creativity. However, few social interactions in current university environments have led to undesired effects making people escape from collective activities, which are the most important requirements for human growth (Rastbin et al. 2012).

These interactions play a vital role in helping students to build their communities, and lively atmospheres on university campuses would contribute to the attendability and academic achievement of students (Al-Homoud and Abu-Obeid 2003). The reason is that many creative and novel ideas occur in outdoor environments far from classrooms and formal discussions (Lau, Gou, and Liu 2014). It seems that the quality of people's presence on a social platform may be influenced by the role of natural elements, which can be pursued in the identification of the effect of nature properties on the built environment and its subsequent impacts. Natural spaces are inseparable parts of many university campuses and attractive green areas are the prominent characteristics of the campus of the universities that have led to diverse student-based experiences and a positive image of the university (Hanan 2013; Matloob et al. 2014; Speake et al. 2013; McFarland et al. 2008; Salama 2008). Because educational-research environments are important due to their roles in the holistic nurturing of society, these collections must receive great attention. However, few studies have been conducted on how to deal with, understand, and use natural spaces daily life of students on the university campus. In this regard, this study analyzes the strategy of "dialogue-orientation" of the environment to improve the performance of educational-research campuses that are a social context. Moreover, this study defines and explains the concepts related to sociality and interaction to reach a clear understanding of the influence of free natural environment design on these categories. This study then addresses the triple nexus between humans, built environment, and natural environment in the next step to answer the following question: how can integrate elements of built and natural environments for dialogue orientation that leads to sociable behaviors regarding the dominant potentials of attendability in the north of Iran nature as a potential for the design of educational campuses.

2. BACKGROUND

Many studies have confirmed the effect of the functional quality of spaces and design capabilities of the physical environment in improving sociability. Daneshpour and Charkhchyan (2007) consider the space acceptance for different individuals and social groups, providing psychological and physical comfort, and continuous dynamic social presence in the space as factors affecting the improved collective life in public spaces. Kashani Jou (2010) introduced these spaces as third place emphasizing their vital role in creating social interactions and pointing to more concentration on the spatial and visual perception, strengthening social interactions and environmental considerations in public areas. Concerning the role of physical characteristics of public open spaces in increasing sociable behaviors, Torbai (2012) mentions the effect of three factors: safety and comfort, attractiveness and beauty, and accessibility and hierarchy. On the other hand, Behzadfar and Tahmasebi (2013) considered the influence of different individual components and their direct communication on the sustainability of social relationships. Overall, various studies have emphasized the necessity of diversity in social contexts in organizing educational-research environments to encourage interaction between different groups and the possibility of learning from each other (Chang et al. 2003; Gurin et al. 2002). The reason is that this factor increases the motivation of users for attending the space and subsequently leads to flexibility of collective space and more interactions between them (Bisadi, Mozafar, and Hosseini 2013).

Some studies have pointed to the students' preference for space use in environments outside the classroom, so sufficient time is provided for indirect learning experiences (Valles-Planells et al. 2014; Kasalı and Dogan 2010). Some researchers like Tanner have emphasized the necessary need for external spaces, including green spaces and activity places, and their positive effect on the learning process (Tanner 2000). Public areas and learning environments in open spaces, including natural routes and ecological activity realms provide more opportunities for

social interaction and encounters, while calm areas provide a place for students to rejuvenate themselves (Kenney et al. 2005). According to Hashimshony and Haina (2006), an approach is required for integrating the spatial arrangement inside and outside of the educational campus with exploratory scenarios (Hashimshony and Haina 2006). In total, previous studies have emphasized the important role of exploratory behaviors in nature for problem-solving ability and creative thinking because natural environments facilitate interactive behaviors.

3. THEORETICAL FOUNDATIONS

Here, the basic concepts will be presented.

3.1. Dialogue-Orientation in Attendable Public Spaces

Dialogue is a kind of interaction and impromptu communication between two or more people regarding common customs. From the anthropological-sociological viewpoint, dialogue means providing a fair equal context and situation for a group of people despite their differences allowing them to express their ideas while respecting their individual rights and personal privacies based on the collective rights and privacies and providing a field for participation and dialogue between them. Socrates was one of the first scholars who emphasized conversation as an approach to truth. He believed that meaning appears in the light of the conversation. conversation is a way for understanding. Conversation is divided into two categories of conversation with self (monologue) and conversation with others (dialogue). The followings are the results of the conversation:

A) internalization of moral calls
B) finding identity
C) eliminating the gap between traditionalists and modernists
D) creating civil society (Behzadfar and Mahmudi Kordestani 2010)

general features required for dialogism based on the viewpoint of Mikhail Bakhtin, the Russian philosopher, and linguist. These features have been reported in Figure 1:

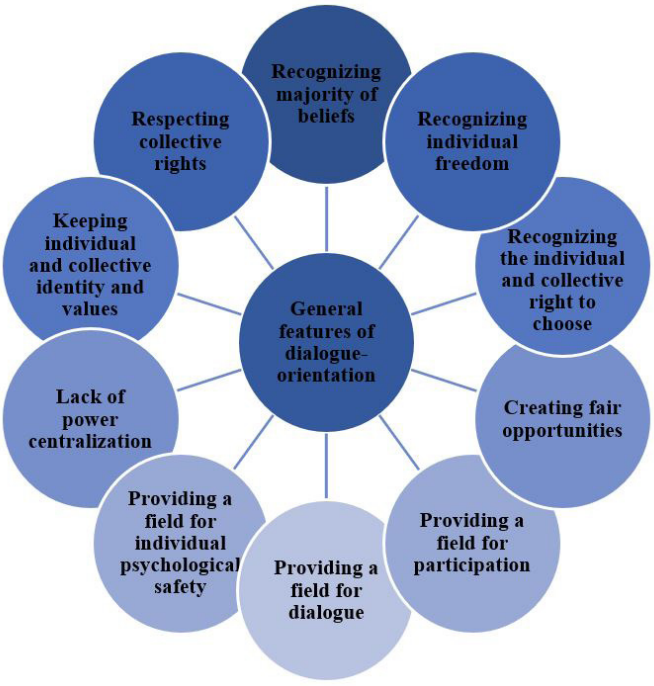

Fig. 1. General Features of Dialogue Orientation Based on the Theory of Mikhail Bakhtin
(Bakhtin 1994)

Regarding the quality of collective spaces, the considered freedom-oriented public space is a context with diverse collective ecological qualities that can provide the field for social life in society. In other words, such space is designed to support the rights of users with free access, freedom of action, and a sense of temporary territory for different ranges of people. Accordingly, the concept of freedom-oriented space focuses on the "design for the public" (Behzadfar and Mahmudi Kordestani 2010). The underlying condition based on which, a public space is considered an attendable space includes the ability to create social interaction and encounter. Quality and type of public spaces' sociability can be an important factors in shaping social presence and public participation or creating social capital in the urban

structure (Poormohammadi et al. 2013, 44). Factors affecting the creation of public spaces accepted by different groups include the following points:
1. safety, legibility, and predictability of spaces, providing territory, coherent structure, continuity.
2. environmental comfort, responsiveness, and suitable facilities in the space
3. ecological excitement that requires some dimensions, such as complexity and secretness, training, diversity and contradiction, choice, privacy, and attachment in the space
4. sociability (Avila 2001).
It is possible to achieve the qualitative norms of people-oriented public space design to find the qualitative properties of dialogue-oriented public space, design by assessing and classifying qualitative norms responding to general features of people-orientation and freedom of action (Table 1).

Table 1. Norms of Designing Dialogue-Oriented Collective Spaces Based on the Similarities in Qualitative Norms of Environmental Responsiveness

General Properties of Dialogue-Orientation	Qualitative Norms of Environment Responsiveness	Qualitative Norms of Dialogue-Oriented Collective Spaces
Recognizing the Majority of Beliefs	Using mixed uses-compatibility-diversity- diversity of use- an environment for everyone- adaptability	Possibility of Space Used for all People
Recognizing the Individual Freedom	Freedom of choice- providing freedom for space users	Freedom of Movement in Space
Recognizing the Right to Individual and Public Choice	Legibility of environment- freedom of choice- flexibility- selectable for all people- transparency and legibility in the environment- changeability- structure and legibility	Presenting Various Spatial Options for Users
Creating Fair Opportunities	Being permeable- access- access to opportunities- imagination and happiness- legibility	Being Accessible to Everyone
Providing a Field for Participation	Social mix- creating motivation through the application of various urban forms- the color of belonging- social and public life- consultation with and making users involved in plans- the quality of the public realm	Participation in Creating and Using Space
Providing a Field for Dialogue	Social mix- social and public life- public and specific spaces- creative relationships- the quality of public realm- social interactions	Possibility of Dialogue and Face-to-Face Interaction in the Space
Respecting Individual and Public Identity and Values	Meaning (sense)- hearing the sound of the past that means legibility of cultural heritages- sense richness- the color of belonging- historical preservation and urban restoration- cultural field and the environment- paying attention to architectural and environment values- originality and meaning- using traditional urbanism experiences in modern constructions- beauty- unity- harmony- history preservation, maintenance	Meaningfulness of the Environment
Respecting Individual Rights	Paying attention to human scale in plans- suitable scale	Suitable Scale
Respecting Collective Rights	Possible social life versus private life	Human Scale Definability of Territories
Providing a Field for Individual Psychological Safety	Vitality- the color of belonging- creating transparency and legibility of environment- safety- flexibility	Psychological Safety and Welfare
Lack of Power Centralization	Justice- equality and fairness- surveillance	Suitable Distribution of Amenities

(Behzadfar and Mahmudi Kordestani 2010)

3.2. Nature and Social Interactions in Educational-Research Environments

There is increasing empirical data indicating that interaction with nature brings measurable advantages for people. However, the advantages of physical health, cognitive function, and psychological health have received greater attention rather than social interaction with nature (Keniger et al. 2013). According to reviews, providing access to green space in public areas may alleviate some social challenges and increase social cohesion ultimately (Kingsley and Townsend 2006). Interactions with

nature can facilitate the social behaviors in adults and children (Kuo and Sullivan 2001), empower social capability (Westphal 2003), increase intercultural interaction (Shinew et al. 2004), and improve social cohesion and support (Coley et al. 1997). Kingsley et al. (2006) concluded that social gardens encourage more extensive social cohesion and connection (Kingsley and Townsend 2006). According to Kuo and Sullivan (2001), aggression is linked to attention performance and mental exhaustion, and vegetation potential used in public environments recovers attention performance and indirectly reduces violence and aggression in public spaces (Kuo and Sullivan 2001; Moore et al. 2007).

The potential social advantages of interaction with nature in learning spaces have been also addressed. The perceived social advantages for students participating in nature-based activities include social empowerment and interaction (Kuo and Sullivan 2001). Some questions are asked about where, when, how, and whom students learn for more effectiveness in dealing with traditional concepts of design and use of university spaces (Hashimshony and Haina 2006). Therefore, many studies have suggested that the natural landscapes of the university are considerable learning sources for students. Now, universities must be flexible spaces in which, the learning environment must be beyond improving technology, additional classrooms, and educational buildings. The whole university, including open spaces, indeed must be considered as a comprehensive learning context that provides holistic learning. The reason is that learning is a continuous and successive process that is done throughout the university not just in the internal space and in determined educational spaces (Harrington 2014; Kenney et al. 2005; Strange and Banning 2001). University campuses resemble urban patterns, which consist of both parts of buildings, spaces, and roads. When these details are considered for conceptualization, they might be distinguished as the environmental capability for social and individual consumption. The quality of the campus is identified by the activities occurring in it and its locations (Dober 2000). Communication networks well-designed between interior and open spaces in the learning process can influence the early and long-term experiences of students that create a sense of belonging in learner society. However, these networks are usually ignored. This potential can be examined by considering the whole university (buildings, routes, and natural open spaces in the university) as a structured integrated system that supports the interactive experiences of students. Incorporation of a "natural landscape" can directly or indirectly help the fatigue cycle and revival of users, especially students. Nevertheless, further attempts are required to understand these focus cycles on the university campus and through experiences. Keniger et al. (2013) Classified a structure for human-nature interaction through the following cases: indoor space (plants), urban space (high human impact), suburb (suburbs of the city or town), production landscape (agriculture), desert (low human impact), and specific species (animals, domestic animals). In this structure, human interaction can be done through three modes: indirect (we experience nature passively even if we are not there physically), accidental (accidental contact with nature through other activities), and intentional (purposive activity (Table 2). Empirical studies have used this framework to investigate all methods of human interaction in indoor, urban, and desert spaces indicating that humans would lose the most necessary rejuvenation state in the absence of attractive natural movements (Keniger et al. 2013).

Table 2. Students-Nature Interaction in Campus Landscapes

Different Types of Nature Collections	Samples of Interactions between Students and Nature			Natural Campus Areas	Landscapes' Properties
	Random	Indirect	Intentional		
Indoor Space (they have been mainly built)	View of exterior areas or wall pictures/murals	Leaf and branches or flowered plants in indoor spaces	Greenhouses used for botany classrooms	- Plants inside the building - Living labs - Indoor fountains and aquarium	- Size, shape, and place of windows - Density and adjacency of buildings - Open space management - The light quality of indoor and outdoor spaces
Urban (mainly built)	View of a roof garden through the window of students' rest hall	Mural of a landscape in the wall of a sidewalk or tunnel-shaped route	The external square used for art classrooms	- Spaces between university campus buildings - Areas with water-appearance properties - Green roofs	- Height of buildings - Complexity and decoration of façade - Sense of enclosure (without blocked views)

Different Types of Nature Collections	Samples of Interactions between Students and Nature			Natural Campus Areas	Landscapes' Properties
	Random	Indirect	Intentional		
Margin (dominance of nature)	View on nature reserve through the window	Campus routes reaching the suburb reserve	holding classes on sidewalk paths	- Protected grassland or forest - Planting trees - Lakes	- Ease of visual and physical access to the suburb - Continuity of movement route system
Production Landscape (considered for human needs and objectives)	Lectures in the classroom including pictures about relevant topics	Dealing with the route of a production land	Practices in the classroom related to the production landscape	- One farm	- Visual and physical access to the production landscape
Desert (totally natural)	Lectures in the classroom including pictures about relevant topics	_____	Student travel outside the university in the form of classrooms or recreational programs of the university	- Public-governmental lands near the university campus	Physical access to routes
Specific Species	View of wildlife outside the classroom window	Dealing with wildlife when walking between buildings on the university campus	Study of nature	Migratory birds or wildlife on the campus or near it	A habitat that attracts the wildlife

(Keniger et al. 2013)

3.3. Development of Hypotheses and Conceptual Pattern

According to the empirical and theoretical background of the study about the interactions in public environments, dialogue-orientation, and attendability in nature, the criteria and sub-indicators were divided into two categories of dependent (dialogue-orientation) and independent variables (potentials of presence in nature). Accordingly, Figure 2 has been illustrated.

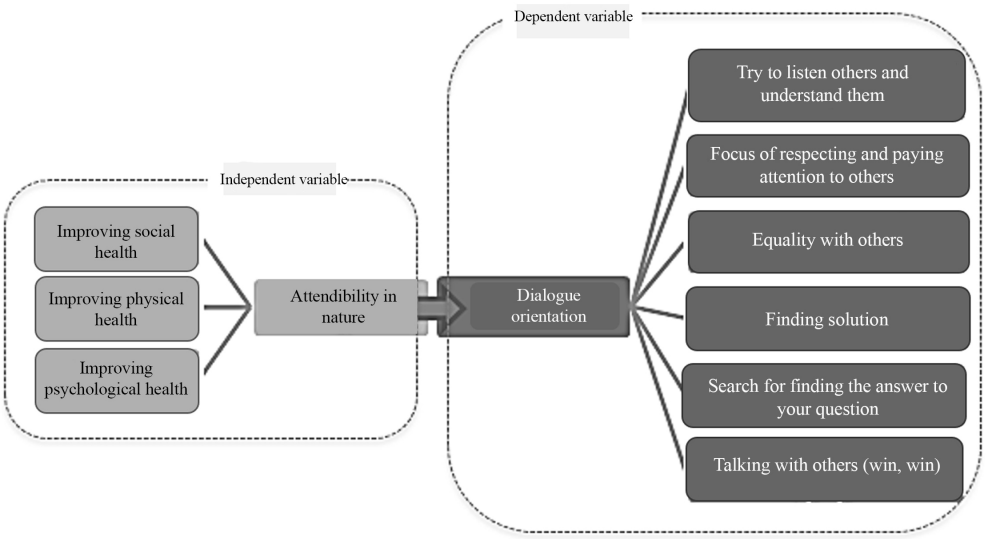

Fig. 2. Dialogue-Orientation and Attendability in the Nature

To determine the subset indicators of criteria of the independent variable (attendability in nature), two classifications were considered based on the environment response to collective behaviors and the potential of the natural environment with three subsets of improving psychological, physical, and

social health based on the comments of researchers of natural and interactive environments (public space). According to the results of the topic literature and presented definitions, one can make the relationship between attendability in the environment and nature potentials regarding their joint ranges (Table 3) to achieve the final classification of components of attendability in nature within three scopes of improving psychological, physical, and social health (Fig. 3). According to the main hypothesis of the study, it seems that the potential of attendability in the northern nature of Iran can be used to design an educational research campus to improve dialogue-orientation criteria and interactive behaviors. For this purpose, the conceptual structure of the study and functional framework of the study was designed and the considered hypothesis was tested (Fig. 4).

Table 3. Components of Attendability in Natural Environments

Components of Attendability in the Nature	Gathering Experience	Face-to-face meetings with people Direct communication through senses (Gehl, 2008)
	Sociability	Gathering intimate individuals together Creating a space accessible for all groups Some places for citizens and visitors to see each other with fewer limitations (Francis 2012,402) Creating spontaneous and unplanned events among people (Efroymson et al. 2009)
	Mixing Uses	Presenting natural facilities and capabilities matched with the performance of closed space Flexibility and being influenced by adjacency rules (Shojaee and Partovi 2015)
	Spatial Diversity	Diversity of uses and their activities during different hours for vitality Some spaces for improving communications and a sense of comfort in them (Jacobs 2008) Pleasant contact between individuals to accept them as society members A place for spending time and long conversations (Truss 2005)
	Increasing Physical Activities	Ease of public access to some places, such as bazaars, parks, etc. in different seasons Interaction with others regarding individual growth and sociability Some activities such as walking, watching, dialoguing, or studying in free and open spaces (Shojaee and Partovi 2015)
	Human Proportions	Creating people-friendly quality through the right combination of territories for activities (Lang 2004) A place for revelation with the scale suitable for face-to-face meetings of individuals (Norberg-Schulz 2005)
	Comfort (Safety)	Providing physiological well-being, territorialism, receiving a sense of ownership in the space Spaces for creating vitality and improving communications (Lang 2005) Active and inactive participation in good places (Carmona 2003)
	Refining Environmental Pollutions	Reducing noise pollution in the neighborhood of nature (Daneshpour and Charkhchyan 2007)
	Share Feelings	Encouraging and stimulating social interactions (Hall 2008)
	Watching Individuals	Creating people-friendly qualities through the right combination of uses and activities (Lang 2004)
	Peace (Mental Safety)	The considerable presence of individuals in the space, safety, using age and gender peers, etc. in the environments like parks rather that other spaces (Lennard 1984)

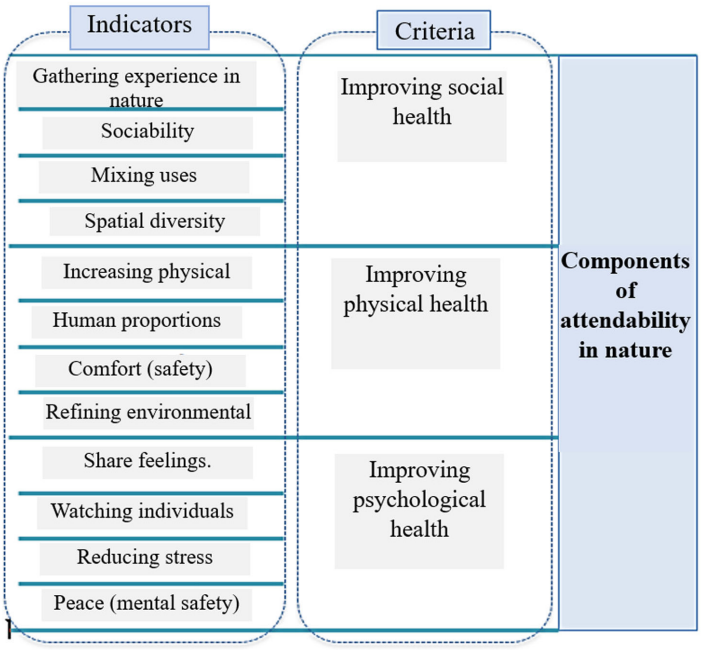

Fig. 3. Components and Sub-Indicators of Attendability in Nature

4. METHOD

In this regard, the research type of this study is a mixed qualitative-quantitative method. The research method is applied in terms of objective and is a descriptive-survey study in terms of data-collecting method. The comments of architect experts about the designed question were used to test the considered hypothesis. In this way, a researcher-made questionnaire was designed to gather the architectural experts' comments in Lahijan County regarding criteria of attendability in the nature influencing dialogue orientation and indicators related to their measurements for case study on educational-research campuses as the most important social centers in modern life. The selected statistical society among university experts in architecture, including professors and students of higher education in Lahijan County. Statistical society's size was measured using the Cochrane formula (n=270), and simple random sampling was used. The validity and reliability of the questionnaire have been assessed using the content validity method and Cronbach's alpha, respectively. Finally, the findings of this process have been analyzed based on inferential statistics-based data analysis. The research problem has been analyzed by using a conceptual model based on a set of equations derived from the literature on the nexus between some factors of attendability in nature and its influence on the dialogue-orientation. The type and quality of these equations have been determined based on the comments given by the statistical society. Regarding the experts' comments about the identified influential factors and the quality of their impacts, the proposed analysis model has been investigated using suitable analytical methods to assess correlation. Various statistical methods and tests were used through SPSS22 and Smart PLS3 software to answer the research questions and reach a conclusion. Descriptive statistics, including statistical dispersion indicators such as variance and standard deviation (SD), are used to describe and interpret the data. The Kolmogorov-Smirnov test is used to examine data normality, confirmatory factor analysis is used to confirm the validity of questions and find the key factors of each component, and structural equation modeling (SEM) is used for model fit based on the collected data. Figure 4 depicts the general process of this study.

5. RESULTS

5.1. Normality of Indicators

First, the normality of indicators is examined for one sample by using the Kolmogorov-Smirnov test before testing the research hypotheses (Table 4).

Table 4. Kolmogorov-Smirnov Test of Research Indicators

Index	Test Statistic	Sig.	Result
Improving Psychological Health	0.111	0.173	Normal
Improving Physical Health	0.082	0.200	Normal
Improving Social Health	0.081	0.200	Normal
Attendability in the Nature	0.078	0.200	Normal
Dialogue-Orientation	0.053	0.223	Normal

According to data reported in Table 4, the significance level of the Kolmogorov-Smirnov test is greater than 0.05 for all indicators. Therefore, all examined indicators of this study have a normal distribution.

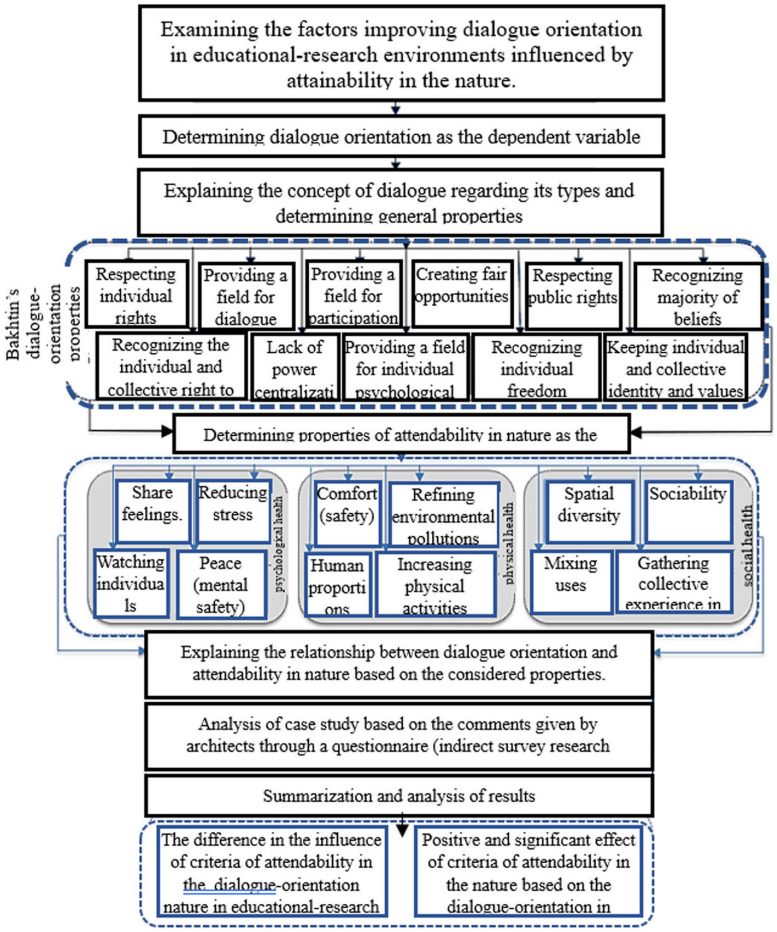

Fig. 4. The General Process of Research Phases

5.2. Testing the Structural Model of Research

After the model was measured, the structural model of research should be tested. The graphical output of the model has been shown in Figure 5.

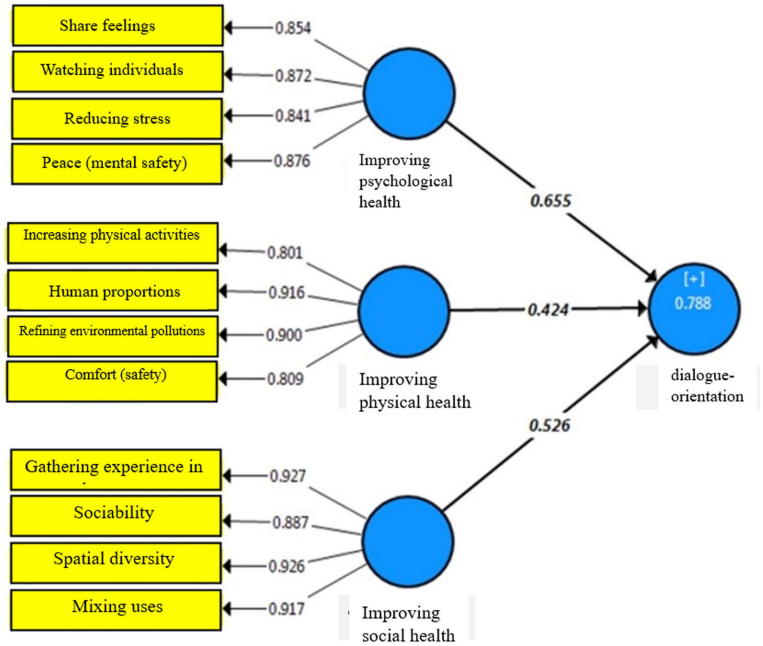

Fig. 5. Standard Path Coefficients of the Conceptual Model

The values written on paths indicate path coefficients. To test the significance of path coefficients, t-student values have been measured by using the Bootstrap method. If the t-student values are greater than 1.96, the path coefficient is significant at the level of 0.05 (Fig. 6).

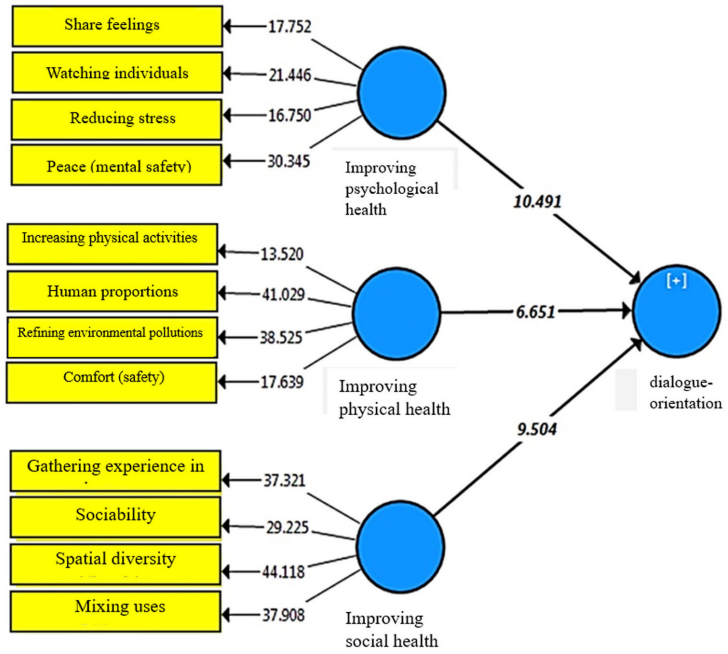

Fig. 6. Results of t-Student Test for Significance of Path Coefficients

Software output has been used to test hypotheses and the significance of path coefficients between variables. Path coefficients and their significance have been reported in Table 5.

Table 5. Results of Evaluating the Structural Model

Row	Path		Path Coefficient (β)	Significance Value (t-Value)	Result of Test
	From Variable	To Variable			
1	Sharing Feelings	Improving Psychological Health	0.854	17.752	Confirmed
2	Watching Individuals		0.872	21.446	Confirmed
3	Reducing Stress		0.841	16.750	Confirmed
4	Peace (Mental Safety)		0.876	30.345	Confirmed
5	Increasing Physical Activities	Improving Physical Health	0.801	13.520	Confirmed
6	Human Proportions		0.916	14.029	Confirmed
7	Refining Environmental Pollutions		0.900	38.525	Confirmed
8	Comfort (Safety)		0.809	17.639	Confirmed
9	Gathering Collective Experience in the Nature	Improving Social Health	0.927	37.321	Confirmed
10	Sociability		0.887	29.225	Confirmed
11	Spatial Diversity		0.926	44.118	Confirmed
12	Mixing Uses		0.917	37.908	Confirmed
13	Improving Psychological Health	Dialogue-Orientation	0.655	10.491	Confirmed
14	Improving Physical Health		0.424	6.651	Confirmed
15	Improving Social Health		0.526	9.504	Confirmed

According to Table 5, among four indicators related to the component of improving psychological health, the index "peace" with a loading factor of 0.876 had the highest influence, and the index "reducing stress" with a loading factor of 0.841 had the lowest influence. Moreover, among the four indicators related to the component of improving physical health, the index "human proportions" with a loading factor of 0.916 had the highest influence, and the index "increasing physical activities" had the lowest influence with a loading factor of 0.801 on the design of the complex. Among four indicators of the component "improving social health," the index "gathering collective experience in nature" had the highest influence with a loading factor of 0.927, while "sociability" with a loading factor of 0.887 had the lowest effect on the design of the complex.

Significance values between improving psychological health, physical health, social health, and dialogue orientation equaled (10.49), (6.651), and (9.504), respectively that are greater than (1.96) indicating the nexus between all three dimensions and dialogue orientation in educational-research campuses at the confidence level of (95%). In addition. Path coefficients indicate that components of improving psychological health (0.655), social health (0.526), and physical health (0.424) are ranked in a row regarding their influences on the dialogue orientation.

5.3. Impact of the General Index of Attendability in Nature on the Dialogue-Orientation

The relationship between these two variables has been examined using regression analysis. Table 6 reports the results of regression analysis on this hypothesis.

Table 6. Results of Bivariate Regression Analysis of Attendability in the Nature and Dialogue-Orientation

Item	β	β	t	p-Value	R	R^2	Regression Significance Test	
		Normalized					F	p-Value
(Constant Coefficient)	0.567	---	3.446	0.001	0.709	0.503	3.503	0.001
Attendability in Nature	0.717	0.709	17.096	0.001				

According to F-value and P-value, the regression is significant. Moreover, the coefficient of determination equaled 0.503 indicating that 50.3% of variations in dialogue orientation can be explained by attendability in nature. Moreover, the t-value for the significance of the regression coefficient of attendability in nature equaled 17.096, which is greater than the critical value of 1.96 indicating the impact of attendability in nature on dialogue orientation.

6. DISCUSSION AND CONCLUSION

Because educational-research campuses play a vital role in developing sociability, this study focused on how attendability in nature responds to social interactions and dialogue orientation. As mentioned before, attendability qualities in nature were considered in three dimensions to examine the criteria of dialogue orientation in educational-research environments. These three dimensions included improving psychological health (Sharing feelings, watching individuals, reducing stress, Peace (mental safety)), physical health (Increasing physical activities, Human proportions, refining environmental pollutions, Comfort (safety)), and social health (Gathering experience in the nature, Sociability, Spatial diversity, Mixing uses). Results of hypothesis testing confirmed that interaction with nature in educational-research campuses affects the behaviors supporting dialogue orientation, and a significant difference was found between factors of attendability in nature. It seems that among the three dimensions of psychological, social, and physical health, the emotional factor is the main one, and among the four indicators of improving psychological health, the index "peace" had the highest influence. Hence, recommended strategies have been reported in Table 7 based on the priorities obtained from the study results.

Table 7. Recommended Strategies for Dialogue Orientation Concerning Attendability in Nature Based on Priorities Obtained from Research Results

Dimension	Indicators	Strategies	Results	
Psychological Health	Peace	The adjacency of differently designed spaces with natural remote landscapes around the site space	Meaningfulness and thought in the environment	Dialogue orientation based on the viewpoint of Michael Bakhtin: Recognizing the majority of beliefs, respecting individual rights, creating fair opportunities, providing a field for participation, providing a field for dialogue, respecting individual rights, keeping individual and collective identity and values, recognizing individual freedom, providing a field for individual psychological safety, Lack of power centralization, respecting public rights, respecting individual rights, Keeping individual and collective identity and values
	Watching Individuals	Design various areas so individuals who are in the environment can easily meet each other	Increasing face-to-face interaction and psychological safety	
	Sharing Feelings	Making users' feelings involved and using their comments in doing various activities in open spaces	Participation in creating and using space	
	Reducing Stress	Creating spaces in the site complex to increase exploration in naturally designed spaces	An increasing sense of belonging to place	
Social Health	Gathering Collective Experience in the Nature	Non-continuous design of different parts and suitable distribution of facilities (educational, research, expo, service, etc. spaces), and their connection through integrated access routes in natural space Design of participatory semi-open and open spaces in nature, such as a space for study	Increasing time of stay and possible use of space for everyone	
	Spatial Diversity	Creating complicated but coherent and regular spaces Design different areas, such as places for sitting mixed with green spaces, pause space next to screeners to inform the activities of complex, filing and emptying the natural areas in the site	Providing various spatial options for users	
	Mixing Uses	Successive integration and connection between areas' function and nontransparent borders	Creating new landscapes in mind	
	Sociability	Creating different social and public activity areas inside the natural space	Increasing awareness and sense of sociability	
Physical Health	Human Proportions	Gathering some individuals together by creating areas with different heights while mixing with natural elements	Definition of territories	
	Refining Environ-mental Pollutions	Reducing external disturbing factors, such as noise pollution caused by vehicles near the site by using walls and green spaces	Keeping psychological peace and making better relationships between individuals	

Dimension	Indicators	Strategies	Results
Physical Health	Increasing Physical Activities	Design of land elevation or topography in the access route between the main spaces of the complex	Exploring and analyzing the environment and freedom of movement in space
	Comfort (Safety)	Design of some areas as a place for privacy with clear borders with private features	A possible social life while respecting the individual rights

According to the results of this study, it is recommended to pay more attention to realms related to open spaces because all aspects of the needs of students and users must be considered in the design of the university campus. Therefore, further studies must be done about the factors affecting the perception and use of natural outdoor spaces in the design of campuses. Ultimately, it is concluded that the quality of spaces, their distribution, and location are important aspects that must be considered due to their vital roles in dialogue orientation to achieve social interaction and participation in the learning process and research among students on each campus.

REFERENCES

- Al-Homoud, Majd, and Abu-Obeid Natheer. 2003. "UNIVERSITY OUTDOOR SPATIAL LAYOUT EFFECT ON PERCEPTION OF STUDENTS' INTERACTION AND GROUP SECLUSION." *Journal of Architectural and Planning Research* 20(3): 221-33. http://www.jstor.org/stable/43030661
- Avila, Montero, and Mónica Inés. 2001. "Factors that Influence the Social Life and Vitality of Public Open Spaces in Maracaibo - Venezuela. Case Study: Plaza de la Madre and Plaza de la República." Ph.D Thesis. Virginia Polytechnic Institute and State University. https://theses.lib.vt.edu/theses/available/etd-10292001151807-/unrestricted/01presentationpage.pdf
- Bakhtin, Mikhail. 1994. Dostoevsky's Polyphonic Novel: A Plurality of Consciousness, In *The Bakhtin Reader: Selected Writings of Bakhtin, Medvedev, Voloshinov*. edited by Pam Morris, Bloomsbury Academic, London.
- Behzadfar, Mostafa, and Payam Mahmudi Kordestani. 2010. "Qualitative Norms for Democratic Urban Spaces Design". *Armanshahr Journal of Architecture, Urban Design & Urban Planning* 2(3): 32-48. http://www.armanshahrjournal.com/article_32590.html?lang [in Persian]
- Behzadfar Mostafa, and Arsalan Tahmasebi. 2013. "Recognition and assessment of influential elements on social interaction (strengthening and improving citizen communication in urban open spaces, model city of Sanandaj)". *Bagh-e Nazar* 10(25): 17-28. http://www.bagh-sj.com/article_2928.html?lang [in Persian]
- Bisadi, Mona, Farhang Mozafar, and Baqer Hosseini. 2013. "Spatial Aspects of Public Areas Affecting the Researchers Creativity and Innovation in an Architecture and Urban Design Research Center Print". *Technology of Education Journal* 7(2): 137-147. https://doi.org/10.22061/tej.2013.333 [in Persian]
- Carmona, Matthew, Tim Heath, Taner Oc, and Steve Tiesdell. 2003. *"Public places, urban spaces"*. Oxford: Architectural Press. https://doi.org/10.43249780080515427/
- Chang, Mitchell J., Daria Witt, James Jones, and Kenji Hakuta. 2003. *"Compelling interest: Examining the evidence on racial dynamics in colleges and universities"*. Stanford, CA: Stanford University Press
- Coley, Sullivan, William C., and Frances E. Kuo. 1997. "Where does community grow? The social context created by nature in urban public housing". *Environment and Behavior* 29: 468-494. https://doi.org/10.1177001391659702900402/
- Daneshgarmoghadam, Golrokh, Seyed Hossein Bahrainy, and Alireza Einifar,. 2011. "An Investigation on sociability of the spaces based on perception of nature in the built environment". *Honar-Ha-Ye-Ziba Memari-Va-Shahrsazi* 3(45): 27-38. https://jfaup.ut.ac.ir/article_24682.html [in Persian]
- Daneshpour, Abdolhadi, and Maryam Charkhchyan. 2007. "Public Spaces and Factors Affecting Collective Life". *Bagh-e Nazar* 4(7): 19-28 http://www.bagh-sj.com/article_64.html?lang [in Persian]
- Dober, Richard P. 2000. *"Campus Landscape Function, Forms, Futures"*. New York, John Wiley and Sons.
- Efroymson, Debra, and Ruhan Shama. 2009. *"Making Cities More Liveable"*. HealthBridge and WBB Trust.
- Gehl, Jan. 2008. *"Life Between Buildings: Using Public Space"*. Translated by Shima Shasti, Academic Jihad Publishing Organization. [in Persian]
- Gurin, Patricia, Eric Dey, Sylvia Hurtado, and Gerald Gurin. 2002. "Diversity and higher education: Theory and impact on educational outcomes". *Harvard Educational Review* 72(3): 330-366. https://doi.org/10.17763/haer.72.3.01151786u134n051
- Hall, Edward T. 2008. *"The Hidden Dimension"*. Translated by Manochehr Tabibian. Tehran. University of Tehran Press. [in Persian]
- Jacobs, Jane. 2008. *"The Death and Life of Great American Cities"*. Translated by Hamid Reza Parsi. Tehran: University of Tehran Press. [in Persian]
- Kashani Jou, Khashayar. 2010. "Recognizing of Theoretical Trends in Relation to Urban Public Spaces". *Hoviat shahr* 4(6): 95-106. https://hoviatshahr.srbiau.ac.ir/article_1126.html?lang [in Persian]
- Harrington, Kim D. 2014. "Community on campus: The role of physical space". PhD Dissertation, Georgia State University. https://doi.org/10.577094858208/
- Hanan, Himasari. 2013. "Open Space as Meaningful Place for Students in ITB Campus". *Procedia - Social and Behavioral Sciences* 85: 308-317. https://doi.org/10.1016/j.sbspro.2013.08.361
- Hashimshony, Rifca, and Jacov Haina. 2006. "Designing the University of the Future". *Planning for Higher Education* 34(2): 5-19. https://www.academia.edu/download/34604545/Designing_the_Future_University.pdf
- Kasalı, Altuğ , and Fehmi Dogan. 2010. "Fifth-, sixth-, and seventh- grade students' use of non-classroom spaces duringrecess: The case of three private schools in Izmir, Turkey". *Journal of Environmental Psychology* 30(4): 518- 532. https://doi.org/10.1016/j.jenvp.2010.03.008
- Keniger, Lucy E., Kevin J. Gaston, Katherine N. Irvine, and Richard A. Fuller. 2013. "What are the benefits of interacting with Nature?". *International Journal of Environmental Research and Public Health* 10: 913-935. https://

doi.org/10.3390/ijerph10030913

- Kenney, Daniel R., Ricardo Dumont, and Ginger Kenney. 2005. "*Mission and place: Strengthening learning and community through campus design"*. Westport CT, American Council on Education and Praeger Publishers.
- Kingsley, Jonathan, and Mardie Townsend. 2006. "Dig in, to social capital: Community gardens as mechanisms for growing urban social connectedness". *Urban Policy and Research* 24(4): 525-537. https://doi.org/10.10800811114060103520 0/
- Kuo, Frances E., and William C. Sullivan. 2001. "Environment and crime in the inner city: Does vegetation reduce crime". *Environment and Behavior* 33(3): 343-367. https://doi.org/10.1177001391650133300 2/
- Lau, Stephen Siu Yu, Zhonghua Gou, and Yajing Liu. 2014. "Healthy Campus by Open Space Design: Approaches and Guidelines". *Frontiers of Architectural Research* 3(4): 452-467. http://dx.doi.org/10.1016/j.foar.2014.06.006
- Lang, John. 2004. *"Urban Design: A Typology of Procedures and Products"*. Translated by Seyed Hossein Bahrainy, University of Tehran Press. [in Persian]
- Lang, John. 2005. *"Creating Architectural Theory: The role of the Behavioural Sciences in Environmental Design"*. Translated by Alireza Einifar, University of Tehran Press. [in Persian]
- Lennard, Suzanne H. Crowhurst, and Henry L. Lennard. 1984. *"Public life in urban places: social and architectural characteristics conducive to public life in European cities"*. Gondolier PressImcl Council
- Matloob Faris Ataallah, Ahmad Bashri Sulaiman, Turki Hasan Ali, Shuhana Shamsuddin, and Wan NurulMardyy. 2014. "Sustaining campuses through physical character: the role of landscape". *Procedia - Social and Behavioral Sciences* 140: 282-290. https://doi.org/10.1016/j.sbspro.2014.04.421
- McFarland, Amy, and , T. M. Waliczek, and Jayne M. Zajicek. 2008. "The Relationship between Student Use of Campus Green Spaces and Perceptions of Quality of Life". *Hortechnology* 18(2) :232-238. https://doi.org/10.21273/HORTTECH.18.2.232
- Moore, Megan, Mardie Townsend, and John Oldroyd. 2007. "Linking human and ecosystem health: The benefits of community involvement in conservation groups". *EcoHealth* 3: 255-261. https://doi.org/10.1007/s10393-006-4-0070
- Munn, Norman L. 1987. *"Principles of Psychology"*. Translated by Mahmud Saatchi, Tehran. AmirKabir Publishing. [in Persian]
- Mustafa, Faris Ali , and Maysa Danoon. 2020. "Effect of Common Outdoor Spaces on Social Interaction: The Case of College of Engineering Campus at Salahaddin University – Erbil, Iraq". *Journal of University of Babylon for Engineering Sciences* 28(1): 229-238. (iasj.net)
- Nagda, Biren, Patricia Gurin, Nicholas Sorensen, and Ximena Zúñiga. 2009. "Evaluating intergroup dialogue: Engaging diversity for personal and social responsibility". *Diversity & Democracy* 12(1):4-6. http://igr.umich.edu/files/igr/Evaluating%20Intergroup%20Dialogue.pdf
- Norberg-Schulz, Christian.2005. *"Architecture: Presence, Language, Place"*. Translated by Alireza Ahmadian. Tehran: Niloofar Press.
- Poormohammadi, Mohammad Reza, and Roshan Kooshaneh. 2013. Evaluation and analysis of urban public spaces using TOPSIS model (Case Study : Tabriz). *Journal of Urban - Regional Studies and Research* 5(17): 37-52. http://urs.ui.ac.ir/article_20048.html?lang
- Rastbin, Sajed, Yasser Jafari, Yasaman Daram, and Amir Mohammad Moazzezi Mehr. 2012. "Research on Relationship between Environmental Qualities and Continuation of Urban Life in Public Realm". *Bagh-e Nazar* 9(21): 35-46. http://www.bagh-sj.com/article_1701.html?lang [in Persian]
- Salama, Ashraf M. 2008. "When Good Design Intentions Do Not Meet User's Expectations: Exploring Qatar University Campus Outdoor Spaces". *International Journal of Architectural Research* 2(2): 57-77. https://doi.org/10.26687/archnet-ijar.v2i2.233
- Sharghi, Ali. 2011. "Effects of University Campus Landscapes on Learning Quality of Students". *Bagh-e Nazar* 8(18): 51-62. http://www.bagh-sj.com/article_463.html?lang [in Persian]
- Shinew, Kimberly J., Troy D. Glover, and Diana C. Parry . 2004. "Leisure spaces as potential sites for interracial interaction: Community gardens in urban areas". *Journal of Leisure Research* 36: 336-355. https://doi.org/10.108000022221 6.2004.11950027/
- Shojaee, Delaram, and Parvin Partovi. 2015. "Analysis of Factors Affecting the Creation and Promotion of Sociability in Public Spaces in Different Scales of Tehran City (Case studies: Two Neighborhoods and an Area in District 7 Tehran)". *Bagh-e Nazar* 12(34): 93-108. http://www.bagh-sj.com/article_11093.html?lang [in Persian]
- Speake, Janet, Sally Edmondson, and Haq Nawaz. 2013. "EVERYDAY ENCOUNTERS WITH NATURE: STUDENTS' PERCEPTIONS AND USE OF UNIVERSITY CAMPUS GREEN SPACES". *Journal of Studies and Research in Human Geography* 7(1): 21-31 https://doi.org/10.5719/HGEO.2013.71.21
- Tanner, C. Kenneth. 2000. "The Influence Of School Architecture On Academic Achievement". *Journal of Educa-*

tional Administration 38(4): 309-330. https://doi.org/10.1108095782300103735 98/

- Torabi, Mohammad. 2012. "Neighborhood design based on the effect of physical characteristics of public open space in increasing interactions and social behavior". Master Thesis, Tarbiat Dabir Shahid Rajaei University.
- Valles-Planells, María, Francisco Galinan, and Veerle Van Eetvelde. 2014. "A Classification of landscape services to support local landscape planning". *Ecology and Society* 19(1): 44. http://dx.doi.org/10.5751/ES-06251190144-
- Westphal, Lynne M. 2003. "Urban greening and social benefits: A study of empowerment outcomes". *Journal of Arboriculture* 29(3): 137-147. https://doi.org/10.48044/jauf.2003.017

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