

The Role of Green Playground on Social Interactions of Children (Case Study: Pasdaran Park in Bandar Anzali)

Hossein Safari, Parisa Sami Khaftani*

Abstract: Playground is effective on behavior of children; however, the severity of this effect and its variety in different playgrounds is still unclear. Identifying the playing area, reviewing local observations, evaluating interactions and their extent, and analyzing the level of communication between children can lead to correct ranking of playgrounds. Features of playground and the created space along with vegetation and plants are effective factors in attracting children and encouraging them to increase interactions. Various features of playground can determine the extent to which a child participates in social interactions. These features, along with other environmental factors, allow the development of social behaviors for children. Therefore, playgrounds must have potential facilities and capabilities for influencing children to provide high quality. This study will analyze the Pasdaran Park playground using quantitative method and distributing questionnaires. Field study is required to obtain the results. To this end, a questionnaire containing 18 questions was developed using parameters and factors previously defined and scored on a 5-point Likert scale. Fifty park visitors were questioned. According to the results, the most important factors, which can increase satisfaction and meet visitor needs include providing new access routes and improving the existing ones, increasing children interactions in green spaces, using vegetation in the environment, improving the environment according to the needs of users. The results of this study can be used as guideline for designing and developing this space and similar spaces.

Keywords: Bandar Anzali; children; green playground; Pasdaran Park; social interactions

1 INTRODUCTION

Urbanization and industry development have deprived millions of children of their natural rights and have reduced their presence in the society, to the point where children are referred to as invisible beings. The external information of urban space, such as environmental configuration, may affect decision-making in way finding [1]. Urban organization systematizes urban spaces to integrate spaces, provide comfortable access, create a beautiful environment, provide necessary physical spaces while preserving urban identity and sustainable urban development [2]. People, including children, spend considerable time in urban spaces. Children are more affected by the environment. Therefore, proper design of urban spaces is very important to children. Society can be advanced when problems of children are considered and irreparable damages can be incurred when they are neglected [3]. Children have more complex psychological needs; thus, it is very effective to design urban spaces considering the developmental psychology, mental characteristics, health and safety of children in fostering creativity, enhancing the sense of cooperation and interactions of children.

Most playgrounds are just a separate part of the urban space not related to the surroundings and decorated with just a little vegetation [4]. It is not surprising that many scholars have extensively criticized the structures of these areas, children activity and interactions in these areas, because they are repetitious, predictable and tedious and are not attractive for children and do not promote their interactions. Considering the importance of accessibility in the busy modern life, each project requires to be located properly [5].

Most playgrounds are defined by several colorful structures and secure rubber surfaces (to prevent injury); they not only have limited equipment, but also malfunction as a social place [6]. The primary expectation of a playground

considering social aspects of children and their families is not met in almost any of these areas [7].

Children environment should be stimulating as much as possible so that their potential talents are realized. Talents of children will be realized better in more enriched and peaceful living and social environments [8]. If children have to be educated in a space where their researcher soul is destroyed and their growth and creativity are prevented, the efforts to improve the quality of learning and creativity growth in the future will be useless.

Emphasis on comfortable, safe, available, responsive, attractive and creative spaces underlies physical and mental growth of children. Obviously, dynamic interaction of children and discovery of environmental capabilities require their active participation in shaping and exploiting the environment. Children will understand the social sense of a space, environmental awareness, sense of belonging and effectiveness through participation in the environment and they will not consider themselves as indifferent user of the environment [9]. Children can be educated by architectural elements in physical and functional organization; in this regard, the elements fitted to physical and psychological conditions of children can be used to bring diversity and attractiveness for children.

This may remind the contemporary playground principles, defined by the McDonald's model and evoked by Eric Schollerser as commercial part of product development, which is in fact a cold spiritless place.

It is not surprising that many authors question the concept of playground and its functions, and believe that many childish games are not played in these grounds. In this context, advantages of existing playgrounds are also limited because playground sites are usually selected without proper investigations and their accessibility is not acceptable.

Playgrounds in urban environments are so inconsistent with children needs that Cunningham and Jones (1999)

consider playgrounds as confession to failure of urban planning. Perhaps, we need to return to the old concepts of playgrounds such as Children's Garden or common ideas of the 1970s, according to which parts or the whole city should be converted into a playground. In order to achieve an appropriate result and a comprehensive study of the relationship between spatial and behavioral characteristics of children, it is necessary to consider all the requirements at the same time.

The present study tends to determine whether playgrounds can become a proper space for playing and interactions and whether this can be enhanced and modified by using green space. This study considers the following general hypotheses:

- 1) There is a relationship between spatial quality and behaviors of children in playgrounds.
- 2) This relationship is strong and can be enhanced using green space.
- 3) All effective factors on quality of a playground are influenced by green space.

To properly understand these hypotheses, it is necessary to focus on children behaviors in playgrounds and consider the relationship between certain characteristics, spatial design and playing patterns in playgrounds. This study tends to present frameworks for effect of green space in enhancing social interactions of children in playgrounds by reviewing the results of previous studies in different parts of the world.

2 LITERATURE REVIEW

2.1 Natural Environment

Previous studies show that the relationship between the type of playground and children behavior indicates some general features as well as specific details that can well show the correlation between certain activities and quality of the space. One of the first studies conducted on children behavior in contemporary and traditional playgrounds and emergence of curiosity was done by Howard et al. [35]. This study showed that traditional playgrounds limit the activities of children to functional games (based on physical activity), while contemporary playgrounds induce new ways of playing and emerge new creativities for children.

Other studies show that children behavior during playing may not be affected by playground and its elements. While it cannot be ignored that some general features of space can affect children behavior and lead them to a certain game.

To explain conditions of outdoor playgrounds with different growth aspects of children, Herrington and Lesmeister list seven factors, including character, context, connectivity, change, chance, clarity and challenge [10]. These seven factors have also been widely used in other studies.

General features related to playground equipment include game finish challenge, primary needs for children activity and space flexibility for children [11].

Nicholson [12] further developed his theory of loose (non-rigid) parts, in which he addresses the relationship between creativity and the type of variables in the

environment. These results were confirmed by Herrington and Studtmann [4] and it was observed that children on the playground initially go to loose objects such as sand, water, and colorful pebbles; thus, it is recommended to create water games and sandboxes in playgrounds.

The effect of children learning is much higher in natural environments; in such environments, children learn more motor abilities and social skills [13]. The playground should support physical, social, emotional, and cognitive development of children. In addition, it is necessary to consider several important features in any playground:

- Appearance: Playgrounds should be attractive and unique.
- Application: Playgrounds should have gradual challenges, the required equipment and supplies, and flexible objects and materials to provide children with the opportunity to test and experience.
- Layout: Playgrounds should be clearly defined by individual applications and spaces, which should also be correctly connected. This will invite children to playgrounds. It is necessary to combine the playground with complex surroundings correctly and gently to have good performance [6].

2.2 Vegetation (Green Space)

Some apparent features of playgrounds such as natural [14] and unique elements and gardens and special spaces [15] have been considered as stimuli for increasing children activity. Human-designed playgrounds (without vegetation) encourage children to understand and discover the complexities within, while in natural spaces, children mostly on fantasy games and social activities [4].

Many authors emphasize the natural environment as a suitable space for children and playing. Some suggest that playgrounds should allow the development of green space and vegetation. This is associated with strong evidence of healing and therapeutic effects of natural environments on children [16].

Good results and insights were obtained in a comprehensive study on parks and playgrounds in Dhaka, Bangladesh. This study considered rankings and reasons for unwillingness of people to use public spaces and parks. Because of tropical climate [36], there are abundant and various vegetation in this country. Therefore, other effective factors are mentioned below. The results address different aspects of the quality of parks and playgrounds (Work for a Better Bangladesh, 2015).

According to objectives of this study, two important factors, which can be considered in design of suitable playgrounds, are layout and tree shadows.

In studies conducted in the South East Asia, park users addressed the following issues:

- 1) Promoting health and hygiene in the parks
- 2) Improving security of the parks
- 3) Increasing facilities and equipment in the parks
- 4) Improving access to the parks and available spaces
- 5) Others.

Therefore, it can be concluded that the main priority of people is health and hygiene of the parks. This will be significant given user culture as well as services provided by Urban Services Department of the Bandar-e Anzali Municipality. Considering the objectives of this study, the third factor to consider for increasing popularity of the parks is to increase available facilities and equipment. This, which itself includes many subsets, will also include children playground, which we tend to improve considering the user needs.

Direct participation of children in creating their space not only leads to a greater tendency for presence and interaction in the environment, but also provides physical, mental, social, talent, and creativity growth [17].

To secure parks while implementing the integrated safety, health, and environmental management, basic and standard data should be used to design playgrounds around the world, because if parents are uncertain about safety and security of the parks, this uncertainty can affect the visit to the parks and playgrounds [18]. The requirements of the 6346 National Standard Series are not considered for provision of park equipment, and there is no coherent system for supplying goods, installing based on the standards, and establishing a maintenance system in municipalities [19].

Risk assessment of existing playgrounds shows that all parks are in semi-critical range and necessarily require proactive actions; 15.4% of the cases are normal, 71.8% are semi-critical and 12.8% are critical and require urgent action in terms of safety [20].

2.3 Access Route

Another favorite activity of children, which is manipulation and alteration of existing objects, requires opportunities to access various objects [21]. It is very important to consider functions of the playground components in terms of their cost-effectiveness in order to describe proper understanding of the environment and its usefulness [22].

Frost [23] asserts that an appropriate playground should be located in an enclosed, compact, and efficient area to be more attractive to children. Attractiveness of the playground is one of the effective factors on creativity of children.

Fakouri Moridani and Hossein Safari [24] conducted a study in Institute for Intellectual Development of Children and Young Adults. In spite of its proximity to downtown, this institute has not been noticed by citizens. In order to measure the status quo (present situation) and survey operations, observation was used in the gate, directional splits, and people following. The findings indicate that given that motor potential and access are based on the simulation to reach the convenient center, but gate observation showed that traffic and traffic levels of pedestrians were very low in this path [24].

2.3 Interactions

The type, quality, and diversity of playgrounds directly affect the type, quality, and diversity of their play [13], as

well as behavior of children [25, 37]. This implies that an appropriate playground can provide good opportunities and qualities for children to develop their collaboration and interaction [26]. Different games can be considered as effective strategy for identifying playgrounds [27].

Some other studies confirmed that traditional playgrounds stimulate competition in children, while appropriate playgrounds stimulate the sense of adventure and curiosity in children. Campbell and Frost [28] found that most children playing in traditional playgrounds tend to be physically and functionally active and small number of people are engaged in creative activities. They recommend creative playground, which includes contemporary elements along with some adventure facilities. In this situation, creativity of children has increased significantly.

The extent of children participation in different games was addressed in many subsequent studies, which showed that children tend to play games and show violent behaviors in traditional grassed playgrounds [29]. Brown and Burger [30] studied the relationship between the type of playground and the form of the game. Their study did not show a significant relationship between these two factors. In other words, they could not find a relationship between the type of playground and activities of children.

Moore et al. [13] suggested that multiple stimulation is a key factor for children who experience sensory disorders, so that they can further understand the environment. Various studies on arrangement of equipment in playgrounds also show that creation of limited and semi-private spaces for children to provide a limited sense of peace and solitude has a great influence on creativity growth, so that they tend to include other children after dominating a certain part from the playground [31].

Brown and Burger [30] suggested playground zoning, which encourages sandboxes, typical protected areas, and car-free spaces. They believe that landscaping and provision of suitable materials for playing in this space are the most important effective factors on behavior of preschool children.

3 METHODOLOGY

Design of methodology begins with primary scientific presumptions. One of the important components in design of playgrounds is their potential facilities as well as social features, which, given the different equipment available in them, can further show their positive and negative points to users. In this way, a contemporary playground can be a real space and a social environment for children given their specific needs. Sociology of a playground focuses on social capabilities of the space; that is, it considers the ability of children to engage in social games, apply social skills such as cooperation and understand rules and their participation. Similarly, the ability to play in one place can be considered the potential to play in the space. For example, potential child interaction in real activities (not only games) is considered in this section.

The data was collected through observations, interactions, and questionnaires. Next, descriptive data, including general profile of participants, was collected and

analyzed. This method provides an overview of the discovered data. This data analysis method creates a triangle between the data collected in observations (using notes and wallpapers) and surveys. This procedure can provide the considered results for the studied site.

The obtained data is directed according to the information obtained from the literature and previous studies, so that they can be generalized properly. In order to better understand the procedure, note the methodology as outlined below.

- Problem statement: In this section, the information and general reviews of previous studies are presented and the gaps are explained accordingly. It is determined that the parks existing in different cities can be improved. This improvement can be defined in different areas; this study focuses on playgrounds.
- Identification of objectives and questions: Focus on a certain point of a public park in Bandar-e Anzali requires consideration of user needs. This can be defined in different ways. A certain part of this park is dedicated to children and special items will be determined to enhance the quality of their activities. These can be addressed in the form of research questions as follows:
 - Is green space involve in quality of playground?
 - Can green space be associated with certain goals such as increased curiosity of children?
 - Are parents encouraged to use green space in the public park?
 - Does green space have a positive effect on creativity of children and users of this park?
- Methodology: The choice of methodology is an important and significant approach that paves the way for determining the overall framework and strategy of the study. There are three types of scientific studies, qualitative, quantitative, and mixed (qualitative-quantitative). In this study, considering the relevant literature, the best and fastest way to achieve relevant and reliable results is to use quantitative method with questionnaire. This method can provide reliable results by using proper statistical techniques, if proper number of users are available.
- Data collection: In this study, field databases are formed by using questionnaires. These questionnaires are designed on a five-point Likert scale and have a good statistical balance. The collected data can be analyzed and the results can be obtained.
- Analysis and findings: This step includes two parts. The first part involves statistical studies using a software. This section uses SPSS software version 19; initial statistical results can be achieved by appropriate statistical design for data analysis. The second part involves explanation of statistics to translate mathematics to practical language. In this section, the considered results can be approached and the items defined by the questions can be evaluated.
- Discussion and conclusion: This section is according to the previous section; in other words, it is the final argument or inference. Given the literature and the data collected in the previous section, logical implications are

made which will help other authors and provide others with the plan considered by the author given the findings.

Observations, surveys, and interactions can provide a deep understanding of people and their demands. The literature indicates that authors tend to use other methods such as questionnaires because of limitations of interview [32, 33]. Taylor and Bogdan also argue that people have stable attitudes and respond differently in different situations; thus, distribution of questions should be well controlled and it is recommended to eliminate the existing barriers to interviews. Considering the development of statistics science and the ability to use its capabilities, however, it is no longer recommended. In general, the methodology and its steps can be seen in the Fig. 1.

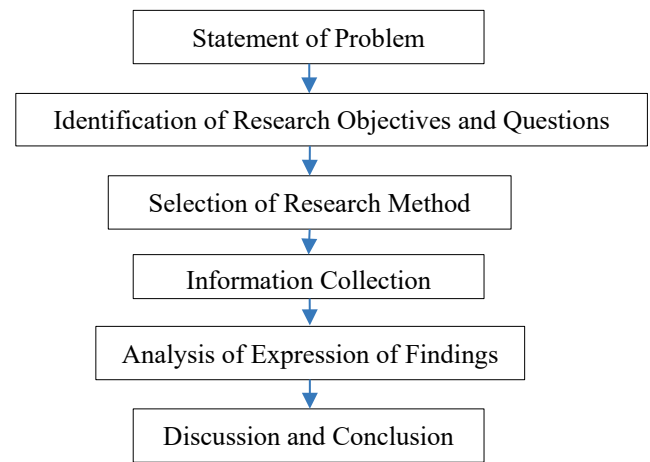


Figure 1 Steps of methodology (Author)

3.1 Case Study

This park has an area of 23490 m² and is located in Pasdaran Street (Fig. 2 and Fig. 3). Vegetation of the park include trees such as pine, oak, mulberry, and shrubs such as magnolia, privet (*Ligustrum vulgare*), crepe myrtles, as well as hedge plants such as Buxus and Japanese barberry (*Berberis thunbergii*). The park was opened in 2002 with furniture, play equipment, toilets, drinking water, lighting fixtures, security guards, and stores. There is also a gardener. The park is also classified as Beach Park [34].



Figure 2 Right: available spaces and vegetation used in the park; left: interior and playground (Author)

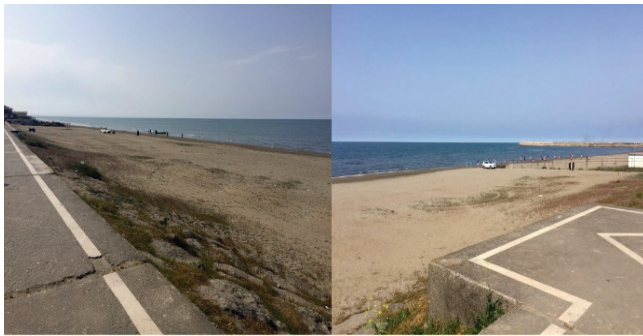


Figure 3 right: the park in vicinity of the beach; left: limited green space and empty spaces in different parts of the park (Author)

Table 1 Suggested solutions for designing spaces suitable for children (Author)

| No. | Solution | Example | Result |
|-----|---|--|---|
| 1 | Safety | Increasing resident interactions, monitoring the commuting, controlling spaces by residents, reducing uncontrolled spaces, arranging the components, controlling the number of people living in the area | Increasing the social and psychosocial security of children |
| 2 | Usable open spaces | Zoning children-specific open spaces, suitable combination of indoors and outdoors | Responsiveness to development of communications and game in children |
| 3 | Connection with nature | Designing green spaces in which children can play | Healthy growth of senses, learning and creativity, and respect for nature |
| 4 | Playgrounds | Spaces for water games, slides, swing, special playgrounds, and local match fields on a larger scale | Fun and happiness of children and their growth |
| 5 | Semi-open spaces | Providing semi-open and green spaces between buildings, designing balconies of houses | Leisure time supervised by parents |
| 6 | Multipurpose indoor spaces for children | Providing salons with flexible layout, like kindergarten, for group playing | Learning social behaviors and collective activities |
| 7 | Roof | Providing green roof, outdoor gathering place for all people | Increasing creativity, improving the quality of life and creating a healthy environment |
| 8 | Spatial proportions suitable for children | Using children-specific furniture, balancing the spaces used for children | Sense of attachment to space, satisfaction with childhood, health promotion |
| 9 | Children involvement in design and planning | Organizing painting workshops on bio spaces, using children views in furnishing playgrounds | Guaranteeing social sustainability, involving children in decision making |

4 RESULTS

Different needs of children, as well as their age and behavioral requirements, are associated with the need to build playgrounds, which generally should be considered before building a new space. Some of these features can be listed as shown in Tab. 1.

To obtain practical results, it is necessary to perform field studies. To this end, the parameters and factors defined in the previous section were used as a questionnaire with 18 questions on a five-point Likert scale. People and visitors ($N = 50$) were questioned and the results were extracted using this information. General profile of these people can be presented as descriptive statistics as follows: 36% of people were 20-30 years old, 30% were 10-15 years old, 24% were older than 30, and only 14% were 15-20 years old. Participants were 60% male and 40% female. Of them, 50% had high school diploma and under, 28% had master's degree, 18% had bachelor's degree, and only 4% had PhD; 72% of participants were Gilak and 28% were Turk; 90% of participants lived in Bandar-e Anzali and 10% did not; 72% lived in other neighborhoods and 28% lived in Pasdaran neighborhood.

The results obtained from the questionnaire were imported to SPSS software and analyzed by one-way t-test. To compare the means obtained from the used questionnaire, it is necessary to define a value as a reference for significance. In this study, the significance value at 5% is 3.5 and the significance value at 1% is 4. The results can be seen in Tabs. 2 ÷ 5.

Table 2 Statistical analysis of environment questionnaire by SPSS (author)

| No. | Question | Degree of freedom | Value |
|-----|---|-------------------|-------|
| 1 | Fresh air can have a positive effect on playing. | 49 | 4.7** |
| 2 | Natural environment encourages practice and effort. | 49 | 4.6** |
| 3 | Proper playground saves money. | 49 | 3.4 |
| 4 | Diversity of games increases by vegetation. | 49 | 3.5* |

* $P < 0.05$; ** $P < 0.01$

In this section, all questions get high score from respondents. Thus, the positive effect of fresh air on playing and increased practice and effort in the natural environment was significant ($P < 0.01$) and increased diversity of games by vegetation was significant ($P < 0.05$). However, the effect of financial savings when using the playground is not acceptable.

Table 3 Statistical analysis of vegetation questionnaire by SPSS (author)

| No. | Question | Degree of freedom | Value |
|-----|--|-------------------|--------|
| 1 | Vegetation in the playground increases children interactions. | 49 | 3.86* |
| 2 | Vegetation in the playground increases children health awareness. | 49 | 4.42** |
| 3 | Vegetation in the playground increases environmental awareness. | 49 | 4.5** |
| 4 | Vegetation increases the presence of children in playgrounds. | 49 | 3.92* |
| 5 | Vegetation around the playground increases creativity of children. | 49 | 3.76* |

* $P < 0.05$; ** $P < 0.01$

All questions related to vegetation were significant. Increasing children health and environmental awareness with vegetation was significant ($P < 0.01$) and increasing interactions, children presence and creativity with vegetation was also significant ($P < 0.05$).

Table 4 Statistical analysis of access route questionnaire by SPSS (author)

| No. | Question | Degree of freedom | Value |
|-----|---|-------------------|--------|
| 1 | Green routes encourage more children to playgrounds. | 49 | 4.5** |
| 2 | Increasing number of green access routes can encourage parents to use spaces. | 49 | 4.48** |

* $P < 0.05$; ** $P < 0.01$

In terms of access routes, majority of respondents evaluate both questions effective and both questions are significant ($P < 0.01$).

Table 5 Statistical analysis of interactions questionnaire by SPSS (author)

| No. | Question | Degree of freedom | Value |
|-----|---|-------------------|--------|
| 1 | Vegetation in playground can lead to their curiosity. | 49 | 3.76* |
| 2 | Peacefulness of green playgrounds leads to longer presence. | 49 | 4.7** |
| 3 | Risky behaviours in playgrounds are reduced by children contact with the green space. | 49 | 4.2** |
| 4 | Green playground lead to stronger communications of children with each other. | 49 | 3.36 |
| 5 | Children find more friends in green playgrounds. | 49 | 3.46 |
| 6 | Playing in green spaces increases vitality and happiness of children. | 49 | 4.7** |
| 7 | Peace of children and parents in the playground explains the presence of vegetation and improves children interactions. | 49 | 4.52** |

* $P < 0.05$; ** $P < 0.01$

Peace of children resulting from vegetation will lead to more presence and reduces their risky behaviors. Their vitality and happiness increase and peace of children and their parents increase their interactions. These questions are all significant ($P < 0.01$); they also show significant results regarding creativity ($P < 0.05$). Two questions regarding more communication between children in green playground and increasing number of friends are not significant.

5 CONCLUSION

According to the results, it can be argued that the most important parts with the ability to increase satisfaction and meet user needs are:

- 1) Providing green access routes and modifying the existing routes.
- 2) Increasing children interactions in green playgrounds.
- 3) Using vegetation in the environment.
- 4) Modifying the environment and designing according to user needs.

It should be noted that all of these cases are presented as mean of responses. According to the studies conducted in different parts of the world, emphasis on access routes is reported as the most important factor for the first time. Increasing interactions and vegetation have also been considered in other studies. Special need of users is also one of the useful factors in design, which can have effective results in improving the quality of the environment.

Using the results of this study, the process of improving and redesigning the Anzali Pasdaran Beach Park can be done to achieve a desirable and efficient park in accordance with demands of users and environmental resources, as well as emphasis on green space and its effects. This space can increase the public interest in the park and entertain children in a special playground. Children entertainment along with increasing social capabilities and interactions and creativity is one of the most important factors considered in various design processes and can be a sign of design success.

6 REFERENCES

- [1] Safari, H. & Moridani, F. F. (2017). Syntactical analysis of the accessibility and sociability of a square in the Kuala Lumpur City Center. *Frontiers of Architectural Research*, 6(4), 456-468. <https://doi.org/10.1016/j.foar.2017.06.005>
- [2] Askarizad, R., Safari, H., & Pourimanparast, M. (2017). The Influence of Organizing Historical Textures on Citizenry Satisfaction in the Old Texture Neighbourhoods of Rasht. *Emerging Science Journal*, 1(3), 57-68. <https://doi.org/10.28991/ijse-01114>
- [3] Aghajanbegloo, S. (2013). *Story Therapy*. Varjevand Publications, First Printing, Tehran.
- [4] Herrington, S. & Studtmann, K. (1998). Landscape interventions: new directions for the design of children's outdoor play environments. *Landscape and urban planning*, 42(2-4), 191-205. [https://doi.org/10.1016/S0169-2046\(98\)00087-5](https://doi.org/10.1016/S0169-2046(98)00087-5)
- [5] Khotbehsara, E. M. & Safari, H. (2018). A Systematic Review of Affective Factors on Locating Specialized Hospitals. *Civil Engineering Journal*, 4(9), 2210-2217. <https://doi.org/10.28991/cej-03091151>
- [6] Czalczyńska-Podolska, M. (2014). The impact of playground spatial features on children's play and activity forms: An evaluation of contemporary playgrounds' play and social value. *Journal of environmental psychology*, 38, 132-142. <https://doi.org/10.1016/j.jenvp.2014.01.006>
- [7] Aghajanbegloo, S. (2015). The Effect of Wall Painting on the Transfer of Educational Concepts in Preschool Children. *Proceedings of the 5th Congress of the Iranian Psychological Association, Contemporary Psychology*, 11-13.
- [8] Ebrahimi, N. (2017). The Effect of Architecture (Residential) on Children's Behavior, *International Conference on Architecture and Urban Planning, Tehran*.
- [9] Erfanifar, F., Khoshbakht, F., Shirvani, D., & Alborzi, M. (2015). Children's Play and Characteristics, *Congress of Iranian Psychological Association, Tehran*.
- [10] Herrington, S. & Lesmeister, C. (2006). The design of landscapes at child-care centres: Seven Cs. *Landscape Research*, 31(1), 63-82. <https://doi.org/10.1080/01426390500448575>
- [11] Sando, O. J. (2021). Places for Children (Doctoral dissertation, Norwegian University of Science).

- [12] Nicholson, S. (1974). *The theory of loose parts*. In G. Coates (Ed.), *Alternative learning environments* (pp. 370-381). Stroudsbrough, PA: Dowden, Hutchinson, and Ross.
- [13] Moore, R. C., Goltsman, S. M., & Iacofano, D. S. (1997). *Play for all guidelines: Planning, design and management of outdoor play settings for all children*. MIG Communications, 800 Hearst Ave., Berkeley, CA 94710.
- [14] Mason, J. (1982). *The environment of play*. Leisure Press.
- [15] Hartle, L. (1996). Effects of additional materials on preschool children's outdoor play behaviors. *Journal of Research in Childhood Education*, 11(1), 68-81. <https://doi.org/10.1080/02568549609594696>
- [16] Kim, S. (2021). Environmental Design Factors for Open Space in Healing Facilities-Focused on Ann & Robert H. Lurie Children's Hospital and the Nationwide Children's Hospital. *International Journal of Advanced Culture Technology*, 9(1), 7-15.
- [17] Najafi, M., Daviran, A., & Nouralshahi, J. (2013). Strengthening the Creative Sense of Children in Playgrounds Case Study of Zanjan Flower Park, *The First Conference on Architecture and Sustainable Urban Spaces*, Mashhad, Parham Applied Research Group.
- [18] Saraci, M. H., Jamshidi, P., & Surrender, S. (2013). Children's Playground Safety Assessment in Parks (Case Study: Yazd Town Parks), *First National Conference on Geography, Urban Development and Sustainable Development*, Tehran, Koomesh Environmental Society, Aviation University.
- [19] Soltan Nayeri, M. (2016). Assessment of the safety improvement of children's play land equipment in Tehran's parks, *the first National Conference on the Development of Health, Safety and Environment in the field of recreational, sporting, religious, and cultural places of the city with the approach of protecting citizens and cities*, Tehran, Amirkabir University of Technology.
- [20] Rezvani, S., Heidari, S., Roustapisheh, N., & Dokhanian, S. (2022). The effectiveness of system quality, habit, and effort expectation on library application use intention: the mediating role of perceived usefulness, perceived ease of use, and user satisfaction. *International Journal of Business Information Systems*, 1-18. <https://doi.org/10.1504/IJBIS.2022.10049515>
- [21] De Monchaux, S. & De Monchaux, S. (1981). *Planning with children in mind: A notebook for local planners and policy makers on children in the city environment*. NSW Department of Environment and Planning.
- [22] Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston, MA, US.
- [23] Frost, J. L. (1992). Reflections on Research and Practice in Outdoor Play Environments. *Dimensions of Early Childhood*, 20(4), 6-10.
- [24] Moridani, F. F. & Safari, H. (2018). Evaluation of the vitality of Lahijan's institute for the intellectual development of children and young adults using space syntax.
- [25] Kritchovsky, S. (1969). *Planning environments for young children: Physical space*.
- [26] Wardle, F. (2000). Supporting constructive play in the wild. *Child Care Information Exchange*, 5, 00-26.
- [27] Shin, D. & Frost, J. L. (1995). Preschool children's symbolic play indoors and outdoors. *International Play Journal*, 3(2), 83-96.
- [28] Campbell, S. D. & Frost, J. L. (1985). The effects of playground type on the cognitive and social play behaviors of grade two children. *When children play*, 81-88.
- [29] Humphreys, A. P. (1984). Rough-and-tumble in preschool and playground. *Play: in animals and humans*.
- [30] Brown, J. G. & Burger, C. (1984). Playground designs and preschool children's behaviors. *Environment and Behavior*, 16(5), 599-626. <https://doi.org/10.1177/0013916584165004>
- [31] Frost, J. L., Wortham, S. C., & Reifel, R. S. (2001). *Play and child development*. Merrill, Prentice Hall.
- [32] Zalnezhad, K., Esteghamati, M., & Hoseini, S. F. (2016). Examining the Role of Renovation in Reducing Crime and Increasing the Safety of Urban Decline Areas, Case Study: Tehran's 5th District. *Armanshahr Architecture & Urban Development*, 9(16), 181-192.
- [33] Zalnezhad, K., Hosseini, S. F., & Alipour, Y. (2019). The Impact of Livable City's Principles on Improving Satisfaction Level of Citizens; Case Study: District 4 of Region 4 of Tehran Municipality. *Armanshahr Architecture & Urban Development*, 12(28), 171-183.
- [34] Alipour, M. (2017). *Spatial Analysis of Urban Green Space in Bandar Anzali (Case Study of District 1 Gardens)*. Master's Thesis for Geography and Urban Planning, Faculty of Humanities, Department of Geography, Islamic Azad University of Rasht.
- [35] Hayward, D. G., Rothenberg, M., & Beasley, R. R. (1974). Children's play and urban playground. A comparison of traditional, contemporary and adventure playground types. *Environment and Behavior*, 6(2), 131-167. <https://doi.org/10.1177/001391657400600201>
- [36] Ghiasi, F., & Fashi, F. M. (2019). Ethical Climate of Operating Room of Educational Hospitals Affiliated To Ilam University of Medical Sciences from the Point of View of Anesthesia and the Operating Room Students. *Indian Journal of Forensic Medicine & Toxicology*, 13(4), 1812-1816. <https://doi.org/10.5958/0973-9130.2019.00573.5>
- [37] Sharifi, N., Rezaei, N., Fathnezhad-Kazemi, A., & Ghiasi, F. (2021). Association between Fear of COVID-19 with Self-care Behaviors in Elderly: A Cross-Sectional Study. *Social Work in Public Health*, 36(5), 606-614. <https://doi.org/10.1080/19371918.2021.1937435>

Authors' contacts:

Hossein Safari, PhD
Department of Architecture,
Rasht Branch, Islamic Azad University,
Rasht, Iran

Parisa Sami Khaftani, PhD, Assist. Prof.
(Corresponding author)
Department of Architecture,
Rasht Branch, Islamic Azad University,
Rasht, Iran
parisasami@chmail.ir