



## **Determination of the Environmental Design Factors Contributing to Children's Creativity Based on the Concepts of Shahnameh**

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### **Abstract**

Research on creativity, especially the ways of increasing it in children, has grown exponentially. While most of these studies have focused on different aspects of how and why the external factors are influencing people's creativity level, including children; study on local concepts and elements can be considered as a new attempt in this framework. The present research is aimed at emphasizing on the local concepts and elements affecting growth and improvement of children's creativity level, recognizing the identity and mythological dimensions of the Shahnameh and the concepts and elements that can be inferred from it. The central question of the present research is that what aspects of environmental design can create meaningful links between the identity and mythological aspects of Shahnameh and the level of creativity of children? Theoretical studies show that the eight components of colour, painting, natural elements, geometry, signs and symbols, story, security and movements that have been used in Shahnameh can affect the factors that are influenced on the formation and growth of creativity, including motivation, imagination, personality and skills. Accordingly, after codifying the conceptual model, the theoretical findings were gathered in the form of a field-studied (questionnaire) in the statistical population of the research (parents and educators of Ramsar kindergartens) and analysed. This research is a correlation study and its field findings are analyzed through factor analysis in SPSS software. The results of this study show that the use of the environmental factors inferred from Shahnameh affect children's creativity development through their impact on different indicators of creativity such as imagination, motivation, personality and skills. In addition, from the eight elements used in Shahnameh, just movement, story, painting and geometric forms and signs and symbols have significant influence on children's creativity level.

**Keyword:** *creativity, Shahnameh, child, environmental design, factor analysis*

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### **1. Introduction**

Children-specific environmental design needs special precision- this age group has different physical and mental conditions and even this difference is also true for different childhood stages themselves. In recent years, the number of resources and research associated with the personality of children in Growth Psychology framework has increased [1], numerous researches have demonstrated the role of environmental factors in the development of children's creativity [2-5]. The issue matches the environmental probabilism concept [6]. Hence, it is necessary to understand the factors which have influence on the environmental design affecting children growth and creativity. On the other hand, Shahnameh, as one of the masterpieces of Persian literature, is full of concepts and contents narrating national identity in an epic and mythological framework [7]. In this narration, storytelling has been chosen as the poetic literary expression of the desired theme.

Shahnameh stories are full of spaces fitted out to disrupt the space elements and describe the historical events of interest and hence strengthening the field of imagination and fantasy which provides the contact. The narrative sets the story in the form of literary poetic. The stories of Shahnameh are full of spaces which utilize various extraordinary elements to describe historical events, thus providing a forum for strengthening the imagination and fiction of the audience [8]. Accordingly, this document is considering the recognition of Shahnameh mythological dimensions in a spatial (environmental) framework in a way that is usable in children-specific environments, focusing on the formation and growth of children's creativity and emphasis on national identity. In this framework, the central question of research is that "what specifications of the environmental design can make a meaningful link between the mythological identity aspects of Shahnameh and the improvement of children's creativity? Therefore, the research hypothesis is that using factors related to mythical-identity patterns in the design of environment is effective in development of

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children's creativity through the strengthening and reformation of imagination and fiction. The methods of data collection at the stage of theoretical studies were document gathering and in the field study questionnaire. In this study, the factors and indicators that are identified through theoretical investigations and their relation are evaluated in the research territory (Ramsar kindergartens) as a case study, then gathered data are analysed by factor analysis technique and finally are concluded.

## 2. Literature review

### 2.1. Children Creativity and factors affecting its growth:

Based on existing studies in the field of psychology, a large part of an individual's creativity is formed in childhood [9] and children are more affected by the environment. In other words, most children's personality dimensions are transmitted through the environment around them. In general, factors which have effects on creativity can be divided into two categories, individual and environmental factors: the individual factors are related to the characteristics and environmental factors are associated with the individual situations that are formed in relation to others [10]. Therefore, children receive information from the environment, which is effective in shaping their creativity. Studies show that the education and imagination of children is effective in promoting their creativity, which is shaped and strengthened through the stimulation and consolidation of the environment and the application of architectural ideas [11]. Accordingly, the creativity of children depends on their imagination power and the best time for development of creativity and imagination is the ages of 2 to 10 [11]. In this case, other researchers have also emphasized on motivation, skills and personality characteristics (including curiosity, searching and questioning) in creativity development [12]. On the other hand, imagination is important in childhood, in this way, children can achieve new relationships and new perceptions of phenomena better. Children think and express their thoughts about new concepts through creative and imaginative efforts [13]. By using their imagination, they not only obtain new knowledge from the world around them, but can also live it as they like. One of the most important factors that makes creative thinking possible is imagination [1]. Children dream and imagine so as to express their desires; they play fantasy games to achieve anything they wish for. Fantasy games are rooted in the creativity of the child. The child's imagination comes out from the stage of playing through the development of his mind and is drawn to the scenes of childish stories and speeches. Theorists argue that the growth of a children's imagination in childhood and through playing can make them artists, painters, inventors, and explorers in future [13]. Children interact with the world around themselves by playing and they are excited to discover

their surroundings [14]. In addition to enhancing the child's skills, the game helps his/her imagination too [9]. Children in age of pre-school are keen for imaginative games. They expand their imagination in childish games and include new experiences gathered from the surrounding area in their games. These games play an important role in forming their character [1]. The imagination of a child grows more in environments which he/she can discover. Children create their complex environment through their imagination, in environments that are so simple and not a place to explore [15]. (Fig1)

### 2.2. Shahnameh and the recognition of its environmental factors and concepts:

Ferdowsi's Shahnameh is a poetic narrative of Iranian history based on historical myths and realities, and is a rich source of Iranian common heritage and the continuation of Iranian identity can be observed in it. Historical themes expressed in the language of poetry and story, in addition to the historical significance of noteworthy human concepts, cultural aspects, and especial literary solidarity, are rich in many aspects of the applying various elements in the explanation of different spatial situations [16]. Below, some of the most important elements of spatial and environmental qualities used in Shahnameh's historical and mythological descriptions of are presented:

**A) Story:** Shahnameh is a poetic work that describes events and historical realities and the ancient national heritage in the form of a fictional story that is full of good-natured concepts. The stories of Shahnameh teach the concept of hard-working and staying connected with a solid past [17]. The storytelling of events in Shahnameh, in an epic framework, describes the psychological states of the story's heroes and spatial details of scenes that make the reader imagine him/herself in the space of the story [12]. These stories are full of spatial descriptions about the environment of historical incidents, and thus as a poetic element, they also include spatial and environmental contents.

**B) Movement:** Movement is the most basic component of epic poetry, and by using the words, weight, movement elements and various motion-related images of movement. Shahnameh shows its skill in describing the states and emotions of characters in different situations [12]. Thus, Shahnameh is not described without motion, even when the heroes are standing at a point they make the story dynamic. Shahnameh identifies movement directions and leads heroes to the tragedy and tragedy positions [12]. In this way, the factor of movement which is closely related to environmental design has a clear presence in Shahnameh.

**C) Nature:** Nature and its various elements have always been a determinant in designing space, and it has a significant presence in Shahnameh, both functionally and symbolically. Ferdowsi lived in a period when

description of nature was one of the main themes of poetry. He tried to make the elements of nature a symbolic and supernatural dimension [18]. Therefore, in Shahnameh, various plants, fire, water and mountains have symbolic meanings and are often intrinsic to Iranians' cultural and religious beliefs [18].

**D) Colour:** Colour is a featured visual element which reflects many artists' own desires. Colours have become symbolic and have obtained social meanings over time. In Shahnameh, the colour element has been considered 4197 times, about one third of them are related to black and white [19]. However, the application of colours in Shahnameh has had a major impact on the characterization and general atmosphere of the stories.

**E) Symbols:** Many of the moral themes and high human values in Shahnameh are expressed through mythological symbols and various signs. That is, each element of the environment in Shahnameh is a symbol of one of the elements of life. The elements of nature such as water, rain, desert, plants, etc, attract more attention [18].

Moreover, the study of poems of Ferdowsi's Shahnameh and the concepts used in it, highlight the central role of the element of security as a concept related to the spatial characteristics of environment in the framework of the artistic stories of the work and on the other hand, geometric shapes and elements have been used several times in every spatial specification of themes and concepts of the poems [20]. Also, the art of painting with representing the historical and mythological narratives of Shahnameh and describing the dominant atmosphere of stories, has always been a part of Shahnameh's poetry for centuries [21]. So, spatial and environmental factors that have been directly or indirectly used in Shahnameh are presented in figure 2.

### **2.3. Role of Shahnameh's environmental factors in the development of children's creativity:**

Theoretical studies about the concept of creativity and its main indicators, especially in children's age group, have shown that four factors of imagination, skill, motivation and personality are the most influencing factors in creativity formation and growth. On the other hand, the studying and researching of the concepts used in the poetic literary works of Ferdowsi's Shahnameh conclude that some of the elements and concepts used in the description and development of historical conditions, beside spatial nature, can be considered as environmental factors affecting children's creativity promotion, through influencing creativity and growth indicators. The factors used in the design of children's creativity-led environments can also be transformed into design elements. Fig3 illustrates the relationship between the various environmental design factors (used in Shahnameh) and indicators influencing the development of children's creativity (conceptual model of the research).

## **3. Materials and Methods**

### **3.1. Methodology:**

As a correlation study, the present research considers the relationship between the two variables which are environmental factors used in Shahnameh and children's creativity. Since the relationship of variable has been definite in conceptual model as a hypothesis (based on literature review), factor analysis is used for achieving a permanent result. According to this, firstly the environmental factors used in Shahnameh are introduced by related references and after recognising effective indicators of children's creativity promotion, research questionnaire is defined based on the research conceptual model to evaluate the relationship between environmental design factors and indicators of children's creativity promotion.

### **3.2. Statistical population, number of samples and sampling method:**

The statistical population of this study is parents and educators of kindergartens in Ramsar city. Due to the limited statistical population, cluster random sampling method was used. At first, a sample of 10 people was selected from the statistical population and a questionnaire was compiled for assessing the validity of the research. Then, this questionnaire was presented to 37 teachers and parents of children in kindergartens in Ramsar. Accordingly, the statistical population of the study includes 37 kindergarten educators in 6 kindergartens in Ramsar, in the age range of 23 to 40. From among these participants, about 60% have a bachelor's degree and higher.

### **3.3 Statistics Analysis:**

In this research, a 14-item questionnaire, with each item having five choices of very high, high, medium, low, and very low, was used; the scoring for each item was in the order of 5 to 1, respectively. The items of the questionnaire were about "the effect of spatial factors derived from Shahnameh on the children's creativity and the influencing factors".

## **4. Results**

Based on the collected responses and their measurement, Table1 shows the correlation coefficient matrix between the factors. This matrix is calculated based on a significant coefficient of 0.05 and 0.01 for each component. The data also show that symbols and signs have a higher correlation with other factors and the colour shows the least correlation. To determine adequacy of the selected sample size, the Kozar-Maier-Alkin (KMO) test was used. Also, to show that the correlation between test materials in society is not zero, the Bartlett Spread Test was used. Table 2 shows that the functionality of the data is suitable. Considering that the meaningful value (sig = 0/000) is less than 0.05, there is correlation between the test items in the

statistical society; therefore, the functionality of the data is verified. Also, the numbers of total variance explained by factors, which are used in order to determine the number of beneficial factors are mentioned in Table3. According to the data in this table, in the amount of extraction elements part (the sum of squares of transfer after rotation), the specific values and percentages change after the rotation, and the compression percentage of the variance explained by these extracted elements is equal to before the rotation. In Fig4, the special values of the factors on the curve are shown as a descending order and the extracted elements are located above the dotted line, so they are selected as extracted factors after the rotation. Table4 shows the factor loads after running the rotation. According to the results obtained from the variables loaded on the first element extracted, the components of movement, natural elements, painting, security, story, geometric shapes, and symbols and signs have the most effective factor load, and the colour component has the strongest factor load on the second extracted element.

**5. Discussion**

The findings of the study, based on the alpha coefficients of the factors, show that factors of colour, natural elements and security (which were components of Shahnameh), in the confirmatory factor analysis different aspects of the environment and correct routing and create mobility and dynamism in children the sense of reflection, targeting, exploration, and tranquillity developing in them. The factor of "painting", which, in connection with Shahnameh, is often expressed as a miniature expression of the subject of poetry and stories, can be used to identify children's spirits and influence the formation of their identity. The factor of "story", the most significant factor in Shahnameh, enhances the phase, were eliminated due to the disruption in the

reliability of the questionnaire. Therefore, the factor of "movement", as manifested in Shahnameh by describing states and characters and making the characters better known in an environment, can also recognize the imagination in the reader's mind and by guiding children to thinking, establishes the perception of causal relationships and critical thinking in them. The factor of "geometric shapes" in the environment makes it more attractive and memorable for children's play and definition of forms around and makes it possible to grow their talents and creativity. The symbol and sign factor, as one of the learning tools, enhances the information processing and the way of responses in every person, including children. The findings from the analysis of the distributed questionnaire and the statistical data show that among the eight spatial and environmental factors used in Shahnameh, five factors of movement, story, painting, geometric shapes and symbol and sign have meaning in affecting the formation and development of creativity in children. However, according to the data in table 4, all factors can influence children's creativity promotion, but due to 3 other factors' not having enough capabilities, they eventually aren't confirmed according to the research aims.

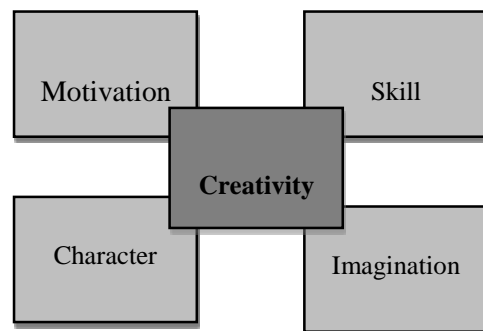


Fig1. The summary of effective factors on creativity from different perspectives (source: authors)

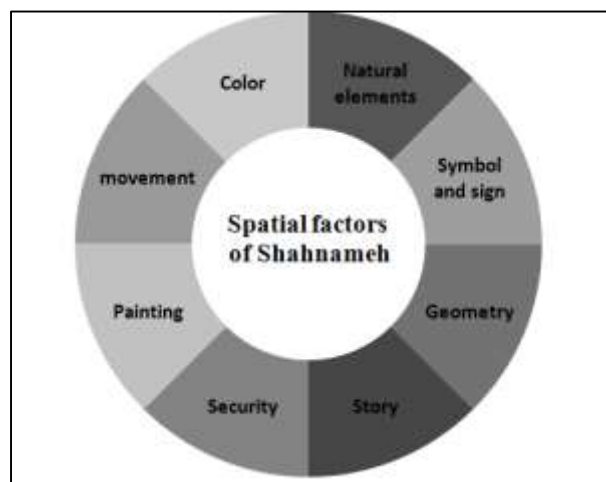


Fig2. Spatial factors or related concepts used in Shahnameh (source: authors)

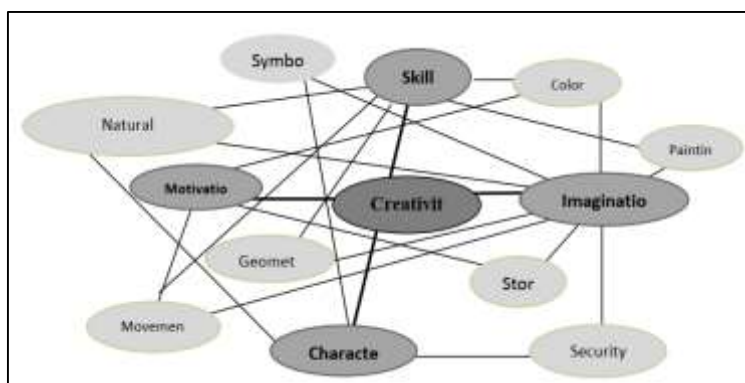


Fig3. Chart of relationship between environmental design factors used in Shahnameh and indicators influencing the development of children's creativity (source: authors)

Table1. Matrix of correlation coefficient between studied factors

Symbol and sign	Geometric shapes	Story	Security	Painting	Natural elements	movement	Colour	
								Colour
							0,326**	movement
						0,057**	-0,079	Natural elements
					0,898**	0,060**	-0,082	Painting
				0,7**	0,71**	0,057**	-0,018	Security
			0,767**	0,810**	0,77**	0,9**	0,207*	Story
		0,83**	0,740**	0,76**	0,731**	0,71**	0,309**	Geometric shapes
	0,80**	0,91**	0,79**	0,9**	0,88**	0,704**	0,208*	Symbol and sign

Table2. Results of KMO related and Bartlett Sphere test

Significance level	Degrees of freedom	Spin test for Bartlett	KMO size
0/000	28	998/297	0/820

Table3. Summary of the variance explained by the studied factors

Total convolution squares after rotation			Total convolution squares before rotation			Special initial values			Factors
Cumulative variance	Total variance	special amount	Cumulative variance	Total variance	special amount	Cumulative variance	Total variance	special amount	
66.5	66.5	5.3	69	69	5.5	69	69	5.5	1
84.69	18.1	1.4	84.69	15.6	1.2	84.7	15.7	1.2	2
						90.6	5.9	0.47	3
						95.6	5	0.4	4
						97.8	2.3	0.2	5
						99.1	1.2	0.09	6
						99.6	0.5	0.04	7

						100	0.4	0.03	8
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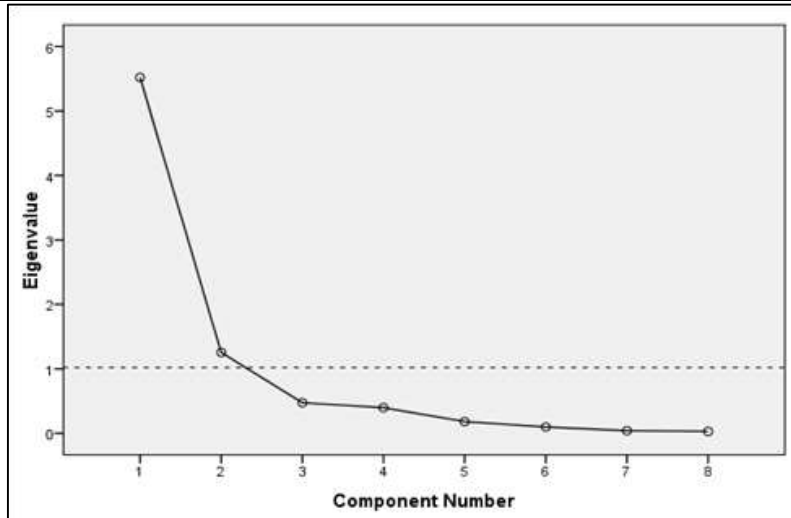


Fig4. Specific variation pattern for the required factors

Table4. Effective load values after rotation

Elements		factors of Shahnameh
2	1	
0.901	-0.031	Colour
0.003	0.717	Movement
-0.090	0.922	Natural Elements
-0.102	0.949	Painting
-0.007	0.789	Security
0.306	0.912	Story
0.306	0.842	Geometric Shapes
0.224	0.946	Symbol And Sign

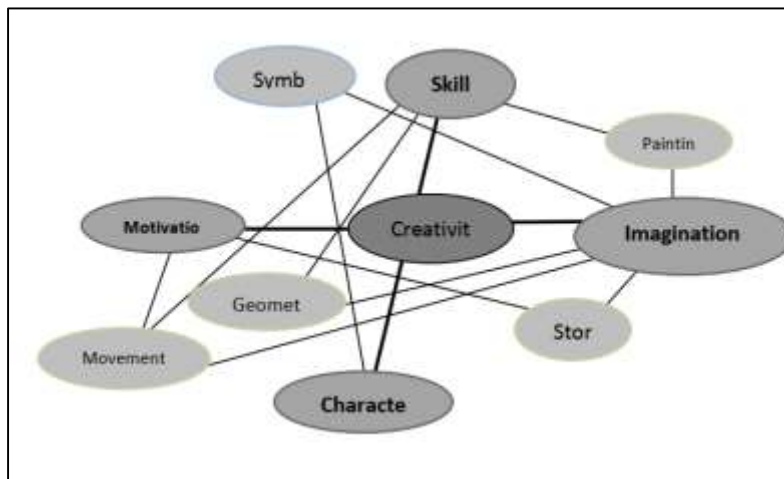


Fig 5. Chart of environmental factors extracted from Shahnameh and their effectiveness on promoting children's creativity (source: authors)

## 6. Conclusion

Various aspects of the human-environment relationship and the various effects that different environments have on different mental and psychological aspects of human beings has been discussed in numerous studies. In this study, the subject of creativity, especially in children, and its relation to environment was considered. Regarding the identity and mythological features of Ferdowsi's Shahnameh, which have always been of interest for Iranians, the influence of the elements and environmental and spatial components used has been studied and evaluated for the development of creativity index in children. Therefore, in order to do the field measurement, theoretical findings about the spatial components used in Shahnameh and their effects on the level of creativity in children (in other words, the conceptual model of the research test), a 14-items questionnaire was used at parental and instructor level in Ramsar city kindergartens. The validity of the questionnaire was assessed by confirmatory factor analysis method and according to the results of factor analysis, 8 significant factors were identified. Then the related questions were specified and interpreted. The results of this study show that using environmental components extracted from Shahnameh, regarding their impact on different aspects of creativity formation such as imagination, skill, motivation and personality, has an effect on the development of children's creativity. Accordingly, five factors of movement, story, painting, geometric shapes and symbols in this field were identified and their impact on the formation and development of children's creativity was confirmed. Therefore, Fig3 (conceptual model) is modified after the field measurement of the research, as is shown below (Fig5)

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