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Designing Appropriate Learning Spaces to Stimulate Children's Creativity- A Case of Sirjan, Iran

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ABSTRACT

Due to the population growth and lack of appropriate amenities and facilities for children, it is essential to design spaces in which children can discover their talents. The aim of this study was to design suitable spaces for 3-6 year olds with an emphasis on environmental features affecting children's mind and behavior, and to improve it in terms of creativity. Using Delphi method, the questionnaire, confirmed by architecture professors, was used to survey 125 parents to find appropriate ways to design spaces for children. Descriptive statistics and Friedman tests were used to analyze data in order to rank the different dimensions of architectural design for children. The results showed that the variables had not the same priority, and the highest priorities were the existence of garden spaces and creative thinking respectively.

Keywords: Architecture for Children, Children's Garden, Creativity, Sirjan.

INTRODUCTION

Children are future inheritors of a country (Sadeghi, 2010: 2). Many factors influence the quality improvement of architectural environment for children. In finding the root causes in both formal and informal environments, not paying enough attention to dynamic and creative education, especially in pre-school ages, has been considered as a human bridge (Shahrarai, and Soleymannezhad, 2002: 192). According to educational experts the young children who have spent a few years of their life are like a soft wax that can take good changes (Nourouzi and Derakhshandeh, 2008: 127) and this is the child who shapes himself for future (Montessori, 1989: 65). Designing spaces for children such as kindergartens are important since in the ages of 4-7 children experience a practical imagination (, 1991: 54). Therefore, architectural environment should be able to motivate children. Today, the most important thing in architecture is "the nature of architectural space" and understanding its sense by users (Porbeh, 2015: 42).

Architecture for children is a concept which designs the environments appropriate for children (Kroner, 1994: 8). Studies show that creativity is created in childhood and the best time for creativity and imagination developments occur between the ages of 2 and 10 years old. During these years children are under the influence of environment and naturally are curious about it. While in Iran, learning spaces such as kindergartens lack a proper design (shafaee and Madani, 2010: 215). In addition, the nature plays a pivotal role in the children's development and growth. In general, children are interested in things available to them (Bell, 2008: 13). The Environment gives an opportunity to move forward and to have amusements as well as the opportunity to explore and to have positive contribution (Spencer and woolley, 2000: 181-198). One of the clear distinctions between human and animal is the power of creativity. By giving knowledge to man, maybe God gives him the ability to be like Him and take His traits (Mahdavinejad et al., 2014: 127). Albrecht believes that creativity is a rational mental process to create innovative

ideas (Alvani, 1999: 223). Creativity takes place in the man-environment interaction; the environment stimulates the man physically and socially and encourages creativity in members (Jones, 2003: 1257).

In recent years, Researchers have examined the creative thinking in children from various aspects such as teaching methods and emotional aspects; but less attention has been paid to the quality of architectural spaces. Children's mental health in adulthood is rooted in proper training at the time of childhood, both in the family and in society. Favorable learning space is indebted to good architecture and to identifying the users of that space. So, using ideas resulted from this research, one can consider a kind of design for kindergarten and child garden in which child's creativity will improve and help him to think profoundly. The present research surveys 125 parents having children between 3-6 years old in Sirjan. Two variables of creativity and garden spaces in the kindergartens are examined to find the most important factors in designing which affects children's creativity.

Literature Review

The first empirical study on children has begun in the 17th century and now and it is in an evolutionary process. The empirical and scientific process began in the seventeenth century in the history of scientific and practical realization of children by Comenius (1593-1673). He introduced children as a separate individual and paid attention to their interests and talents by publishing books such as "The Visible World in Pictures". Arnold Gesell et al. (1961-1880) have conducted wide researches on children's physical improvement in the Child Study Center at Yale University and have reached valuable experiences. As Stanly Hall, Gesell also believes that human growth is the result of phylogeny as well as an individual evolution (Nato gene), and the changes in the behavior rooted in these two kinds of developments. Then Jean Piaget (1940-1950) and John B. Waltz expressed their attitudes towards children (Porbeh, 2015: 43).

In the field of children's creativity, Froebel (1782-1852) believed that learning will occurs through active games. Playing in open spaces can encourage children to move freely (Weston, 1998: 18). Montessori (1870-1952) also expressed that creative games enhance creativity (Molali, 2004:42-46). Like Piaget, Vygotsky (1896-1934) declared that thinking will appears before language by using tools. He believed that creative and imaginative games can separates children from the real world and allows them to enjoy some acts like flying a plane (Rashtchi, 2010). Torrance (1951) also expressed that whenever we have a deficiency we feel tension and discomfort and try to remove this tension; As a result we start to struggle and ask questions (Meyers, 1988). Gardner (1982) declared that literacy and obedience can reduce creativity, and Ranco (1990) introduced creativity as the result of experiences obtained in life. Lesner (1989) and Hillman's (1983) studies were theoretical researches that examined the evolution of creativity in life from birth to age 11 (Amiri and Assadi, 2008: 26-27). Today the contemporary researches classified into two groups: one of them examined ways to foster creativity such as Bodreva and Leong (2005) and others examined the factors which lead to foster. This group believes that the children's capabilities and talents are affected by social factors, parents, teachers and learning spaces (Niemic and Ryan, 2009; Lynch, 2009; Reeve and Halusic, 2009) (Alborzi, 2011: 7). Hoseini Dehshiri (1997: 40) also expressed that creativity growth should provide the emergence of potential possibility by external conditions.

In Iran, The first kindergarten was established 95 years ago by missionaries and minority religions in Tehran. Jabbar Baghcheban founded a kindergarten called as children`*s* garden in Tabriz in 1925, and established another garden in Shiraz a few years later. The first kindergarten called Children's garden was founded by Friedrich Froebel in Germany in 1840.

Increasing the number of kindergartens is very impressive in our country. According to the statistics recorded there were only 7 kindergartens in Iran in 1944, whereas this number expanded to 74 in 1953 and to 431 in 1973. Today, more than 14 thousand kindergartens works across the country, the ones also ready to take care of one-month-old baby (State Welfare Organization of Iran). It should be mentioned that these centers are not designed appropriate for children. Most kindergartens are in fact land use change from residential buildings and even apartments to kindergartens where they seems to become a childish environment with painting and coloring (Noghrehkar, 2010: 40).

EXPERIMENTAL SECTION

This practical study is based on human needs, and its method is of survey kind. Survey is a method of collecting data from a certain group of people asked to respond to a number of questions. First, objectives are made clear, and second a comprehensive definition of population is presented. The next stage is data collection divided into two classes: library and field researches (Groat and wang, 2002). Library studies include access to books and texts, online portals, contact and correspondence with institutions and organizations. The most common tools used in

surveys are questionnaires and interviews. Delphi method was used to prepare the questionnaire. To develop the questionnaire, the affecting factors have been derived by internet and library searches (See Fig. 1).

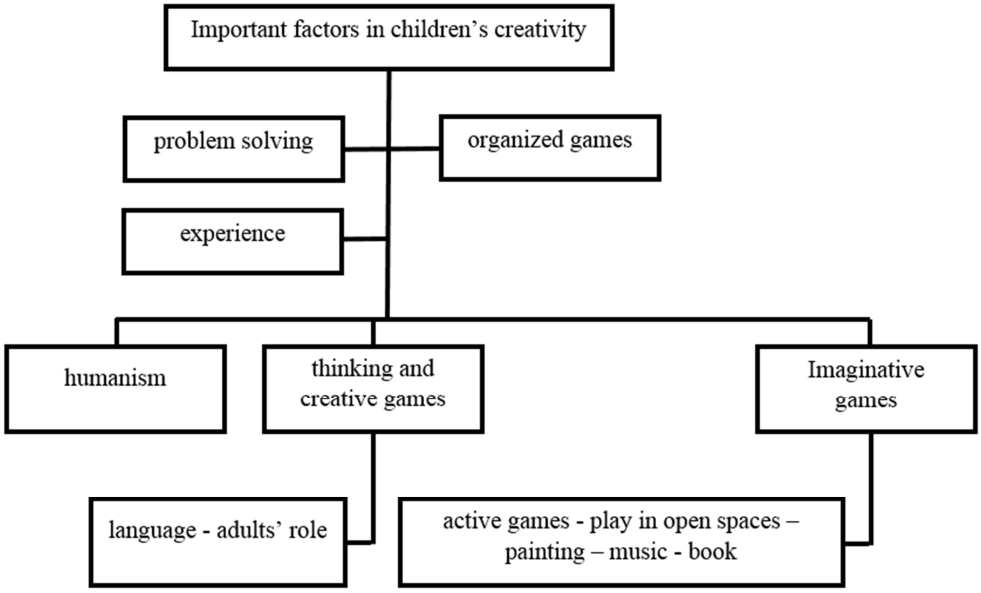

Fig.1: important factors in children's' creativity (source: authors)

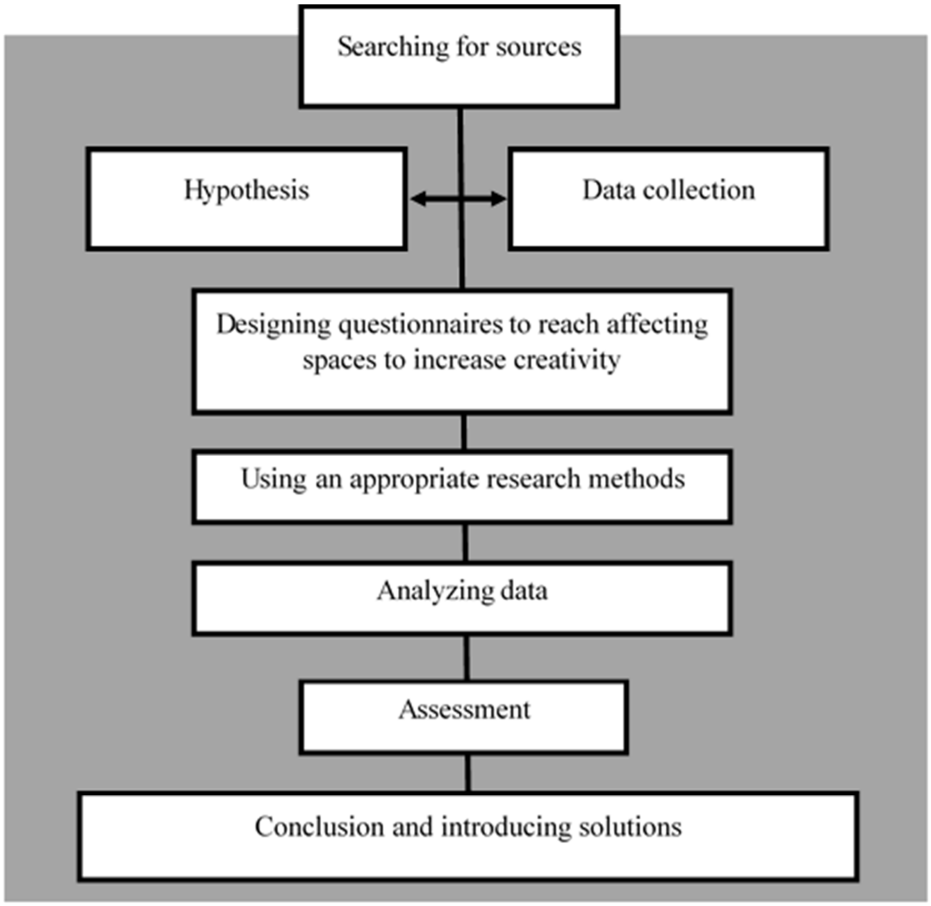

Fig. 2: Research executive process diagram

Delphi method relies on a panel of experts that after expressing their comments on any issue they achieve a consensus. Although experts' judgment seems mental, it is more valid than individuals' statements because it reaches more objective results (Pashaeizad, 2008: 64). In order to design the questionnaire, first, parents' opinions

on important factors affecting space design for children were gathered; then, first draft of questionnaire was designed. After some architectural experts' approval, it was revised and redesigned, and finally the final version of questionnaire was prepared to survey 125 samples. Descriptive statistics (frequency, percentage), related charts and Friedman Test were used to analyze data collected and to rank the dimensions of architecture for children.

Case Study

Kerman province, the ninth largest province of Iran, is in the southeast of the country (Database Portal of Ministry of Interior). Sirjan city (latitude: 55°45´ and longitude: 29°27´) with an area of about 12719 km^2 and height of 1735 m from see level is located in the southwest of Kerman province (Fig. 3). Sirjan is located in the hot and dry climate. Its average annual temperature is about 16 ° C and its average rainfall is 120 mm. At the 2011 census, its population was 185623 (Kerman Governor's Department of Statistics and Information)

Fig 3. Sirjan in Kerman and Iran

What makes it an important city is its location which is in the country's main roadways as well as having mines leading to economic developments. Therefore, it faces an increase in the number of immigrants. According to the Welfare Organization, this city has 23 kindergartens with a population of 50-60 between 3-6 years old children. These kindergartens are located in the buildings first made as residential buildings, sometimes they lack standards and even some of them have not a good skylight. Learning occurs inside the building and therefore the outside is neglected.

RESULTS AND DISCUSSION

a. Demographic Characteristics

According to Table 1, 13 men and 112 women participated in the research. Age category includes respondents between 20-30 years old (43.2%), 31-40 years old (52%), 41-50 years old (4%) and older than 50 (0.8%). Nearly 15.2% of the respondents had Diploma, 18.4% had A.A., 53.6% had B.A./M.A., and 12.8% had M.A./M.Sc.

b) Inferential Statistics

Regarding the existence of outdoor play equipment such as swings and slides in the kindergarten, the results showed that 67 respondents (53.6%) completely agreed and 30 of them (24.0 %) agreed. As a result, it seems that the design for this space is ideal for samples. Observing the spatial shape of garden and its impact on close relationships between children and data obtained from questionnaire showed that that 56 samples (44.8%) completely agreed and 38 parents (30.4%) were agreed about the space. Therefore, the garden's space is an important factor in close relationship between children. In order to design a space for children's self-defense training, the results showed that 31 persons (24.8%) chose completely agree and 31 persons (24.8%) also chose agree. As a result, the design for this purpose is ideal for samples. For the best and the worst elements contributing to children's creativity in the garden, the results obtained reported that 46 respondents (36.8%) chose sand playground as the best element and 69 respondents (55.2%) chose paintball war games as the worst element. Sand playground, therefore, is the best choice for samples. About protected space for adult works that children may like (in small sizes), obtained data indicates

that 102 persons (81.6%) agreed and 9 persons (7.2%) disagreed. Thus, designing such a space is favorable. Examining the spatial design for the development of creativity showed that 84 respondents (67.2%) preferred gardening and 27 respondents (21.6%) preferred sand playground. So considering spaces for both gardening and sand playground will increase creativity. On the relationship between ideas and colors and children's learning enhancement, data revealed that 83 persons (66.4%) preferred high levels of color and 30 persons (24.0%) preferred spongy ideas with colorful circles. As a result using high levels of color and spongy ideas (children's favorite ideas) can enhance children's learning and their interest to the environment. Data related to the question asking a space for music center showed that 81 parents (64.8%) agreed and 39 parents (31.2%) were disagree. As a result, designing a space for music learning is ideal. Designing a space for storytelling in the garden also was ideal since 78 respondents (62.4%) completely agreed and 13 respondents (10.4%) agreed. a space designed for mask making workshop in the garden also was considered as ideal. In this regard 70 persons (56.2%) completely agreed, and 32 persons (11.4%) agreed.

Table 1: Demographic characteristics of samples (n = 125) (source: authors)

characteristics	number	Count (%)
Gender		
Female	112	89.6
male	13	10.4
Age		
20-30	54	43.2
31-40	65	52
41-50	5	4
More than 50	1	0.8
Educational background		
Diploma	19	15.2
A.A.	23	18.4
B.A/BSc	67	53.6
M.A/MSc	16	12.8

c) Friedman Test

According to data obtained, Friedman test is used to prioritize and to determine which keyword is more important in the design of kindergarten.

Table 2: Friedman's statistics

	Mean Rank
Children garden	3.55
creativity	2.34

Table 2 shows the inferential statistical which introduces each variables' mean rank. The larger the average rank, the most important it is. Therefore, in this study, the children garden and creativity play an important role in creative thinking respectively. Table 3 indicates the number devoted to each variable, the chi-square (X^2) and Sig. since sig is less than 5%, the same priority of variables is rejected.

Table 3: results of Test

N	125
Chi-Square	339.535
Sig.	0.001

CONCLUSION

This paper aims at achieving a suitable spaces for 3-6-years-old children with an emphasis on environmental features affecting children's mind and behavior and improving them in the terms of creativity. It was also noted that the architecture should make the necessary motivation in children. Therefore, the results contain designing appropriate spaces for children with the aim of motivating their creativity.

Examining factors showed that the existence of play equipment such as swings and slides, designing a space for children's self-defense training, considering sand playground, protected space for adult works that children may like, a space for gardening, a space for playing music, storytelling, and a space for mask making are effective in order to reach creativity. Also the shape and design of the garden can play a role in children's relationships. The results showed that it is better to prevent the designing of space for playing paintball war games. Designing spaces with high levels of color and the spaces that are familiar to children (like the idea sponge and colorful circles) can affect learning and increase their interests in the environment. Friedman test showed that the ranking of variables are

not the same and the priority belongs to the garden (=3.55) and then creativity (= 2.34). In addition, as the Sign is less than 5%, therefore, the same ranking is rejected.

Recommendation

It is recommended that organizations and individuals concerned with designing for children pay attention to activities which are important in life and can enhance child's creativity; otherwise, efforts do not any sense and the creativity will not motivated.

More and larger researches can be conducted on children's interests to specific spaces in kindergartens which are appropriate for different gender to develop their creativity.

Some researches can be conduct to determine the impact of the new architectural styles on children according to their own interests and to promote learning.

Due to the generalizability of this research, the method can be used to examine the factors stimulating creativity on different ages and different educational levels in learning and play spaces.

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