



The role of architectural spaces in promoting children's creativity and developing their intellect

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Abstract: Creativity is considered to be the highest performance of human mind, and is not only a necessity, but also a reason for survival. Development of many human abilities, starts during childhood, children are born creative and this creativity depends on the strength of their imagination. Creativity and imagination are best developed during ages of 2- 10. So it is necessary to consider the creativity of a child in the early stages of his/her life. Space and its features play an important role in shaping the personality and is an important factor in children's development and growth, in fact it has a positive impact on children's physical and intellectual development. Designing special spaces for children such as kindergartens, is important because at this age the practical aspect of their creativity is addressed. However, such these spaces in Iran are not designed appropriately. The purpose of this study was to discover some variety based ideas in kindergartens and children's educational assistance spaces in Shiraz province, having an approach of promoting children's creativity, so that by applying the ideas in designing children's spaces, their motivation to play is promoted, their imagination and curiosity are enhanced, and their creativity is developed. In the present study, we investigated effective factors on the development of children creativity and we used the survey research method. In the architectural design and pattern forms we used the descriptive analytical method. The questionnaire instruments are a combination of elements, forms, colors, and creativity variables which were designed on the Likert scale. The results of the study consist of architectural ideas for designing kindergarten spaces in order to promote children's motivation and creativity, such as variability of the space, the interaction of open and closed spaces, variability, diversity and reconstruction of natural stimuli such as light, water, and plants.

1. Introduction

. Space and its features play an important role in shaping the personality. The space in a more specialized form is an important factor in children's growth which has a positive impact on children's physical and intellectual development. Nowadays, the majority of buildings which are being used as a scientific cultural center for children, don't architecturally meet the real needs of children. In fact, a special place allocated to children doesn't exist in Iran. There are several organization in Iran that reflect the social, cultural and scientific needs of citizens. Such as Museums, cultural centers, galleries. However, none of these organizations have considered children. Obviously, all people believe that museums are some boring places for children (Basirian & Saqafi, 2007:12).

The importance of the research:

It has been more than a century that kindergarten is officially recognizes as the first educational institution, but its difference with the primary schools architecturally was not considered until recently. Designing kindergartens was considered rational but cooperation of architectures and kindergarten teachers has been started recently. Despite the increased public awareness of architecture in the modernism era, there were no direct relationship between educational theories of kindergarten and the physical appearance of it. As a result, kindergarten buildings were colorless, boring, and performance oriented for years. The role of

architecture is not considered seriously in the country. Kindergarten spaces are designed tastelessly and without any architectural plan or principle. Under six year old children have some especial needs. As the members of the society they deserve to be in an environment which enables them to develop their social relations. This effect is as important as the effect of other architectural buildings such as houses, hospitals, and theaters.

In order to promote and facilitate the quality of education process, a kindergarten should be able to offer new perspectives to children, teachers and parents and address their needs.

The purposes of the study:

- 1- Designing a creativity based kindergarten
- 2- Compatibility of the form and the creative spirit
- 3- To develop intellectual and intelligence creativity with the help of forms
- 4- To increase and develop kindergartens which are mixed with art and creativity
- 5- To develop children's sensitivity and increase their self-confidences in modern kindergartens
- 6- To maintain children's mental health by architectural forms and creating a happy environment that motivates children to improve their abilities and inherent skills.

The review of literature

Some students of architecture faculty of the technical university of Berlin, by management of "Susan Hoffman" designed and carried out several projects. One of them is the Tuka Tuka kindergarten project. The purpose of designing this kindergarten was to establish a rational relationship between the interior and exterior environments. Therefore, a multidimensional stricter was designed as the facade. This façade created an interactional and communicative space, and was designed and implemented with inexpensive recycled building materials. This multifunctional façade created an environment in which children could benefit from different aspects of the space.

Jokar and et al (2008), investigated the impact of attributional believe predictions on children's creativity through motivational style mediation. They offered a hierarchical model in which attributional believes were considered as exogenous variables, motivational regulatory styles as intermediate variables and creativity as endogenous variables. The results of multivariate regression analysis showed that strategic and valence attributional believes, whether separately or simultaneously predict regulatory styles of attitude.

Qolam Hussein Mahdavinejad and et al (2013) randomly selected a school among middle schools of 11th district of Tehran. Among the school's class they randomly selected three 2nd grade class. In this quasi-experimental study, they evaluated the relationship of artistic spaces with creativity of students. The results of the study showed that artistic environment affects creativity of the students although, this effect is not linear and showed incompatibilities in some cases.

Fariba Parsamanesh and et al (2013) conducted a research on 3-6 year old orphan children which were protected by the welfare organization of Tehran. Through cluster sampling they selected 20 girls and randomly divided them into two groups (experimental and control). The findings showed that the creativity of orphans has enhanced with an assurance of 99% and would be proved by an assurance of 99%.

Nahid Radbakhsh and et al (2013) using cluster sampling selected 48 third grade girls of elementary schools of Semnan province (32 people for experimental group, and 16 people control group). To measure creativity they used form B of Torrance questionnaire of creative thinking. The results demonstrated that using games and storytelling significantly increased the creativity in all four components of the play and storytelling groups. Thus, playing and storytelling increases the creativity of students and those students who took part in playing and storytelling classes can find genuine solutions for problems.

Kaveh Rostami and et al (2012) using cluster sampling selected 40 fourth grade student of elementary schools of Shiraz Province. To collect the data they used Torrance test of creativity (Form B), which includes fluency, flexibility, originality, and elaboration subcomponents. In order to analyze the data, covariance analysis was used. The results showed that the creativity of students who were told thinking stories were significantly more than the control group.

Mahboubeh Alborzi and et al (2011), using cluster sampling selected 80 fifth grade students out of elementary schools of Shiraz province. Subjects were divided into two groups of experimental and control randomly. The results showed that evaluation expectancy has a negative effect on creativity. Among the subcomponents of fluency, flexibility, originality, and elaboration, control group showed a significant difference in the aspects of originality and elaboration. The results demonstrated a significant difference between boys and girls in the aspect of originality. Generally, external motivation had a negative influence on creativity.

Questions

- How the architectural form of children artistic centers does affects their creativity?
- Is there any significant difference between the perspective of the kindergarten teachers of Shiraz province to the role of educational environment and creativity of children?
- Is there any significant relationship between form and color, and behavioral disorders of children?

Hypothesis

The architectural form artistic centers of children affects their creativity.

There is significant difference between the perspective of the kindergarten teachers of Shiraz province to the role of educational environment and creativity of children.

There is significant relationship between form and color, and behavioral disorders of children.

Methodology

According to the questions of the study, we used the survey research method. In the architectural design and patterns we used the descriptive analytical method.

The questionnaire instruments are a combination of elements, forms, colors, and creativity variables which were designed on the Likert scale.

In order to collect data in the library studies we used note taking and in the field studies we used observation of kindergarten.

The population, sampling method and sample size (if possible):

The population of this study consisted of 300 kindergarten teachers of Shiraz province in 2014 and 2015. Because of the magnitude and distribution of population, "cluster sampling" was used. Thus 6 kindergartens were selected randomly among kindergartens of Shiraz province and then 7 teachers were selected randomly from every kindergarten.

Findings

To assess the creativity of the children and their teachers, the Torrance questionnaire was used based on age.

The analysis of kindergarten children's questionnaire:

42 of questionnaires were analyzed. The questionnaires consisted of 60 questions and the highest rating was assigned to question number 15. The majority of the population selected item B (how much trust do you have in the things that you do independently? A. I don't have much trust in the thing that I do independently. B. I have a relative trust in the thing that I do independently. C. I have much trust in the thing that I do independently.). The lowest rating was assigned to Question number 12 which is about political creativity (what do you do when you are faced with a problem that has occurred to your friends? A. I try not to get involved in their problem. B. I spend a little time to solve it. C. I spend a lot of time to solve it.). It is specified that item B has the highest frequency. Respondents assigned the highest ratings to question number 2 on flexible creativity, question number 3 on innovation and question number one on the attention to the details. This shows that respondents held a positive view on these questions. Respondents assigned the lowest ratings to question number 7 on flexibility, question number one on innovation and question number 15 on attention to the details. In these three questions, respondents had selected item B and C as their responses.

In order to ensure the reliability of the kindergarten children’s questionnaire, Cronbach's alpha analysis was used (Table 1). According to table 1, the Cronbach Alfa was high for all indexes and generally for the overall questionnaire. This affirms the high reliability of the questionnaire and the homogeneity of the respondents. Thus this questionnaire could be used for the purposes of the study and provide some credible results.

Table 1. The measurement of Cronbach's alphastatistico assessreliability

index	The number of questions	Cronbach Alfa
Political	15	0.95
Flexibility	15	0.94
Innovation	15	0.92
Details	15	0.908
total	60	0.949

Also in order to show how much the questions of a research are compatible with the goals of the research, the validity of the questionnaire is analyzed. Thus hidden factor analysis was used in the research. The extracted coefficient was higher than 0.6 that means all questions were appropriate and omission of some questions -to ensure validity -is not necessary. The first four factors explain the data variation in a best way. At this stage four indexes of the questionnaire are in accordance with four extracted factors. At the next stage we have to calculate the coefficient of each factors to ensure the high ultimate validity of questionnaires.

The analysis of kindergarten teacher’s questionnaire:

42 of questionnaires were analyzed. The highest rating was assigned to question number 1. The majority of the population selected item C (what do you do when you have frustrating problem? A. I’m not sure if I can solve the problem. B. I get upset. C. I try to find a good solution.). The lowest rating was assigned to question number seven which was about political creativity (what do you do when you are involved in a mathematical problem? A. I ask a math teacher or someone else to help me. B. I study a math book to solve the problem. C. I use the sources which are accessible.). Item B held the highest frequency. Respondents assigned the highest ratings to question number 4 on flexible creativity, question number 4 on innovation and question number 11 on the attention to the details. This shows that respondents held a positive view on these questions. . Respondents assigned the lowest ratings to question number 10 on flexibility, question number 9 on innovation and question number 14 on attention to the details. In these three questions, respondents had selected item B C their responses more than the rest of the items. In order to ensure the reliability of the kindergarten teacher’s questionnaire, Cronbach's alpha analysis was used (Table 2). According to table 2, the Cronbach Alfa was high for all indexes and generally for the overall questionnaire. This affirms the high reliability of the questionnaire and the homogeneity of the respondents. Thus this questionnaire could be used for the purposes of the study and provide some credible results.

Table 1. The measurement of Cronbach's alphastatistico assessreliability

index	The number of questions	Cronbach Alfa
Political	15	0.96
Flexibility	15	0.91
Innovation	15	0.82
Details	15	0.71
total	60	0.89

Also in order to show how much the questions of a research are compatible with the goals of the research, the validity of the questionnaire is analyzed. Thus by getting helps from experts of the field, hidden factor analysis was used in the research. The extracted coefficient was higher than 0.6 that means all questions were appropriate and omission of some questions -to ensure validity -is not necessary. The first four factors explain the data variation in the best way. At this stage four indexes of the questionnaire are in accordance

with four extracted factors. At the next stage we had to calculate the coefficient of each factors to ensure the high ultimate validity of questionnaire.

The results obtained from the hidden factor analysis showed this analysis can identify the indexes, therefore it is concluded that this questionnaire can be used as a reliable tool in the research.

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