

Elaborating the Role of the Educational Spaces' Environmental Factors in Facilitating the Learning by the Primary School Students; Case Studies: Shahid Beheshti and Allameh Tabataba'ei Primary Schools in Hamadan*

Mozhgan Torkaman^a – Sara Jalalian^{b**} – Omid Dezhdar^c

^a M.A. of Architecture, Faculty of Art and Architecture, Hamedan Branch, Islamic Azad University, Hamedan, Iran.

^b Assistant Professor of Architecture, Faculty of Art and Architecture, Hamedan Branch, Islamic Azad University, Hamedan, Iran (Corresponding Author).

^c Assistant Professor of Architecture, Faculty of Art and Architecture, Hamedan Branch, Islamic Azad University, Hamedan, Iran.

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ABSTRACT

The architectural designing of the schools and their constituent elements alongside with the other educational factors has a considerable effect on the students. The present study has been conducted for the purpose of elucidating the relationship between and the role of the educational sector's environmental factors in facilitation of the children's learning in the primary school grades based on two qualitative and quantitative approaches. The first part is a literature review using a qualitative approach and a descriptive method and the second part uses a quantitative approach based on correlation method. The study samples have been selected from amongst the primary schools in Hamadan and in regard of the idea that it was necessary to choose the schools for controlling the interfering variables to the maximum possible extent. After performing the required investigations, two samples of the educational environments, i.e. Shahid Beheshti girl primary school and Allameh Tabataba'ei primary school, were selected for possession of the inclusion criteria. The independent variable was the environmental factors constructing the educational sector and the dependent variable was the students' academic achievement. The required data related to the independent variable was prepared and collected through preparation of a list of observations and investigation of the standard level of the factors constructing the educational environment that were rated based on Likert's five-point scale; the students' academic achievement was determined based on the investigation of the students' average final scores in the end of the term. The obtained data was analyzed through SPSS software and it was found out in correlation test that there are significant and positive relationships between six of the environmental factors constructing the educational spaces, i.e. quality of light, acoustic comfort, educational equipment, newness of the classrooms, diversity in form and flexible furniture with the children's academic achievement. The collection of these factors at one another's side set the ground for the conditions under which the student can more comfortably concentrate on the lesson materials. On the other hand, these are expected to provide better conditions for the teachers for better transferring of the lesson materials to the students thereby to facilitate the students' learning.

Keywords: Environmental Factors, Educational Spaces, Learning, Children, Education.

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** E-mail: jalaliansara@yahoo.com

1. INTRODUCTION

Teaching and, subsequently, educational environments, have the highest effects on the mentality and civilization of the communities. For about two centuries, large schools were constructed based on the linear model of learning; in those schools, identical groups of children gathered around in a place, called classroom, and moved through a process of acquiring various knowledge during one year in the end of which they sit for a test based on certain codified standards so as to ensure what they had learnt. Then, they were allowed to move on to higher stages. Many theoreticians, including the teachers and architects, criticized this educational model. The results of these criticisms at the common education in schools and designing of the existent schools led to a more creative designing of the schools, smaller classrooms and more readily administrable schools with open plans, paying of attention to the entirety and all various aspects of the children's personality, replacement of calm and disciplined classrooms by group discussion spaces and transformation of the internal environments of the school to communities with warm and safe spaces. In the continuation to these criticisms of the architectural design of the traditional schools, numerous studies, as well, were devoted to the effect of architecture on the quality of education. Studies showed that the group of the children who has studied in schools with better spatial qualities makes more educational progress in comparison to the children who have studied at schools with dark classrooms, broken windows and shortage of the facilities and other shortcomings. For several decades, the engineers, architects, psychologists and teachers paid attention to the role of light, color and playing in the constructed environments in learning and successful community behaviors. The studies also emphasize the negative effects of high levels of noise in the learning environments (Mozaffar, Mahdizadeh, & Mirmoradi, 2009, p. 38).

According to the investigations and studies performed in the past, the factors influencing the students' learning are different and diverse. These factors can be divided into four sets: teacher's skills, educational course's conditions, educational environment and the conditions and facilities of the classroom (Butt & Rehman, 2010, p. 5446). Amongst these factors, teacher's skills are in the first rank of priority and have the highest effect on the students' learning. Moreover, the educational course's conditions obey the rules and regulations of the time and this is beyond the scope of the present study authors' work area. Educational environments and the conditions and facilities of the classroom are the factors the present study is trying to clarify the methods of their enhancement and improvement.

In fact, an effective learning environment is the space wherein all of the factors influencing the children's teaching like curriculum, teachers and others are

utilized to exert a significant effect on the children's education. Although the physical environment of school is only one of the influential indicators in learning, it can be stated that it is the most important influential indicator in an active learning environment (De Gregori, 2007, p. 48).

The prerequisite to the reformation of the education's context is creation of spaces related to students' activity. These spaces have the appropriate and favorable conditions for the physical, mental, affective and social development of the children. This can be actualized via designing details in the spaces considering the behavioral patterns of the children. Environment psychologists have studied the children's behavioral patterns in the educational environments and they have pointed to effective cases like size, lighting and other factors that play a substantial role in increasing learning (Lotfata, 2008, p. 73).

Efforts have been made in the present article to deal with investigation and analysis of the properties of the architectural spaces required for children and exploring the relationship between the educational environments and the facilitation of the children's learning through the study of the data collected in various studies performed on Shahid Beheshti and Allameh Tabataba'ei primary schools in Hamadan thereby to attain a conclusion that can be put into practical use in architectural designing of a space for children and construction of environments in adherence to their characteristics and spirit and hints that facilitate the enhancement of their learning.

2. STUDY METHOD

The present study has used the mixed-methods design including both qualitative and quantitative research methods in terms nature. In the first part of the studies, a qualitative approach based on descriptive-analytical method has been adopted and the second part utilizes a quantitative method based on correlation indicating the variables' interrelationships. The independent variable was the physical factors constructing the educational environment, including the classroom's light, color, furniture arrangement, diversity of the form and space, dimensions of the space and acoustic and thermal comfort. The dependent variable was the quality of the children's learning in primary school grades.

Since the study has been conducted in Hamadan, the case studies have also been selected from amongst the schools therein. Thus, the second part of the study tries performing the study in such a way that the interfering variables can be maximally controlled. Accordingly, to control the type of the students' gender and eliminate the subsequent effects on the children's learning in the first place, both schools were selected so that all of the students can be from one sex; afterwards, in order to control the effects of

intelligence and talent on learning, a decision was made to select both of the schools from amongst state schools since such a selection was thought to provide the researchers with students who are in an ordinary and similar level in terms of intelligence and talent in contrast to the non-governmental schools. In the end, it was attempted to select two state girl primary schools in a close distance in one urban district so that the factors like the teachers' skills and the type of the culture and the families' attitudes towards the education could be controlled and the only difference of the two schools could be limited to the standard level of the physical factors constructing the educational environment. Thus, in order to more carefully control the abovementioned factors as the interfering variables and control their effects on the children learning, it was concluded following the investigations and in consideration of the aforementioned conditions that the interfering variables have been largely controlled since both of the Shahid Beheshti and Allameh Tabataba'ei Primary schools are state and girl primary schools located in a close vicinity of one another in one urban district and that both of them have teachers almost at the same level in terms of teaching skills. On the other hand, the only difference between these two primary schools was their enjoyment of the set standard for the factors constructing the educational environment. It is worth mentioning that the physical factors constructing the educational environment are approximately close to a standard level in Shahid Beheshti Primary School but they are in a large distance from the set standard level in Allameh Tabataba'ei Primary School. In every school, five classrooms were randomly selected and the study sample suze was set at 280 students. In the present study, the relationship between the factors constructing the educational environment as the independent variable and the children's

quality of learning as the dependent variable was investigated through preparing a list of observations and examination of the standard level of the factors constructing the educational environment based on Likert's five-point scale. Then, the collected data was used for drawing the descriptive diagrams indicating the statuses of the environmental factors in the studied classrooms of the two selected schools in such a way that it became possible to make a comparison between the two schools in terms of the extent to which the environmental factors constructing the educational space enjoy the set standards.

In the next stage, as the dependent variable, the academic achievement of the students was investigated in three levels, namely very good, good and acceptable, based on their work papers in the end of the semester and according to the fact that the students' scores are assessed in a descriptive form in primary school grades. Then, the academic achievement averages were determined in a study of their work papers in both of the schools and the descriptive diagrams were delineated for the academic performance of the students enabling the comparison of the academic statuses in both of them. The collected data was analyzed in SPSS. In order to investigate the statistical relationships between the indices of the educational factors constructing the educational space and the academic achievement of the students, use was made of Spearman's correlation coefficient with a significance level set at 0.05.

3. STUDY BACKGROUND

In the present article, the summary of the results obtained in a review of the studies conducted with titles close to the present study's subject matter has been given in the following table listing the factors effective in children's learning (Table 1).

Table 1. The Results Obtained From the Studies by the Domestic and Foreign Researchers

Researcher	Report/Article Title/Project	Results/Key Points
Shahnaz Mortazavi (1997)	Educational spaces from psychological perspectives	1) Benches in a classroom and their arrangement; 2) Proper dimensions of the classrooms 3) Creation of spaces for the students' movement and participation
Bahram Saleh Sedghpour (1998)	Selection of proper color for the educational space	1) Color 2) Light 3) Sound 4) Equipment
Aynaz Lotfata (2008)	The effect of environmental factors on the learning and behavior in educational environments (primary schools) in city	1) Components' proportions 2) Scale 3) The type of space organization 4) Color 5) Light 6) Sound 7) Open spaces in the school yard

Ahmad Reza Nasr Esfahani and Atefeh Sa'edi (2002)	The effect of physical factors of the classroom on the students' academic achievement	1) Temperature and ventilation of the classroom 2) Organization and decoration of the classroom 3) Educational equipment
Karim Mardomi and Mahsa Delshad (2010)	Flexible learning environment	1) Enlivening of the connective routes and transition spaces to places for learning 2) Stretching of the learning domains from closed spaces towards the semi-open spaces like terraces and completely open spaces like yards 3) Creation of collective (active) areas changeable for use as multipurpose places (resting, group learning and so forth) 4) Transparency and possibility of presence in all of the activities that are happening in the compound even if in visual form
Kamelnia (2010)	A novel approach to the designing of learning environments	Proper lighting in a school leads to the improvement of the students' performance; creation of a healthier and safer internal environment and prevention of the boring environments and so on.
Henry (2001)	A report under the title of schools' facilities	1) Chairs and comfortable workspaces; 2) Changeable arrangement of the classrooms; 3) Use of attractive colors, textures and patterns for covering the floors and walls
Tanner (2000)	The effect of school's architecture on the academic achievement	Exterior spaces, including the green spaces and playgrounds
Khan and Kotharkar (2012)	Evaluating the performance of the school's environment	Delimitation and separation of the administrative and educational sections in schools causes the tranquility of the students.
Earthman (2002)	Physical facilities and students' academic achievement	1) Non-oldness of the schools' buildings 2) Pleasant temperature in the classrooms
Prakash Nair (2005)	The language of schools' designing	The necessity for connecting the inside and the outside and the importance of the internal and external landscapes as two important principles in the designing of the educational spaces
Oneill (2009)	Designing for educational spaces	Selection of the furniture should be done in such a way that it can be readily displaceable by the teachers and students for the creation of various arrangements and novel educational experiences
Azzi (2007)	Evaluation method of school building's designing with the possibility of using various bioenvironmental aspects for the welfare of the school system	Thermal conditions can influence the users' health and the unfavorable conditions can cause indifference and even stress; fresh air is needed for preventing the tiring of the users
Tuna and Kacar (2013)	A research on constructivism in educational spaces	Learning environments based on constructivist approaches play a considerable role in increasing the students' learning
Day (2007)	Environment and children	Scale influences the comfortability hence sociability; the children rapidly feel that they are lost hence helpless in large spaces
Tyagi and Verma (2013)	The effect of constructivism on the scientific successes of the primary schools' students	When the classroom environment is in such a way that the conditions are prepared for the exchange of the ideas and notions between the students and their participation in learning

Karsi and Alipaşa (2014)	A research on the effectiveness of Bybee Instructional Design Model on learning	Provoking the students' sense of curiosity causes an increase in the motivation of the students for taking part in the classroom activities and boosts their activeness in the learning process
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Considering the novel educational concepts and the idea that the classrooms are in a process of change in the world, two concepts are always constantly existent: "education in open spaces" and "constructive education" both of which are reflective of a movement from traditional ideas of teacher-centered education towards learning-centered education (Dahlgren & Szczepanski, 1998, p. 20). Emphasizing on the expansion of education to exterior spaces, the educational methods cause diversity in the lesson plans in such a way that different ideas are offered for the use of the nature for teaching under different conditions and in a consideration of the culture and status of every lesson and teacher. The common aspect of all of these ideas is that the teacher and the students are encouraged to more pervasively learn from the classroom. This is reflective of the idea that this method of education does not believe that the instruction outside the classroom is better than

the classroom-driven education rather it is solely expressive of the idea that some instructions can be better provided outside the classroom environment and it underlines in a more general sense on the combining of the intra-class teachings with extra-class teachings (Higgins & Nicol, 2002, p. 2). According to the materials presented about the growth psychology and teaching of the children and considering the results of the studies performed in this regard and also, as mentioned earlier, the various factors that influence the children's learning with one of them being the learning environment, the results of the first part of the present research paper, i.e. the qualitative analysis of the proposed subject matters, have been displayed in the following diagram that is composed of two parts: a) the factors affecting the children's learning; b) the factors affected by learning (Fig. 1).

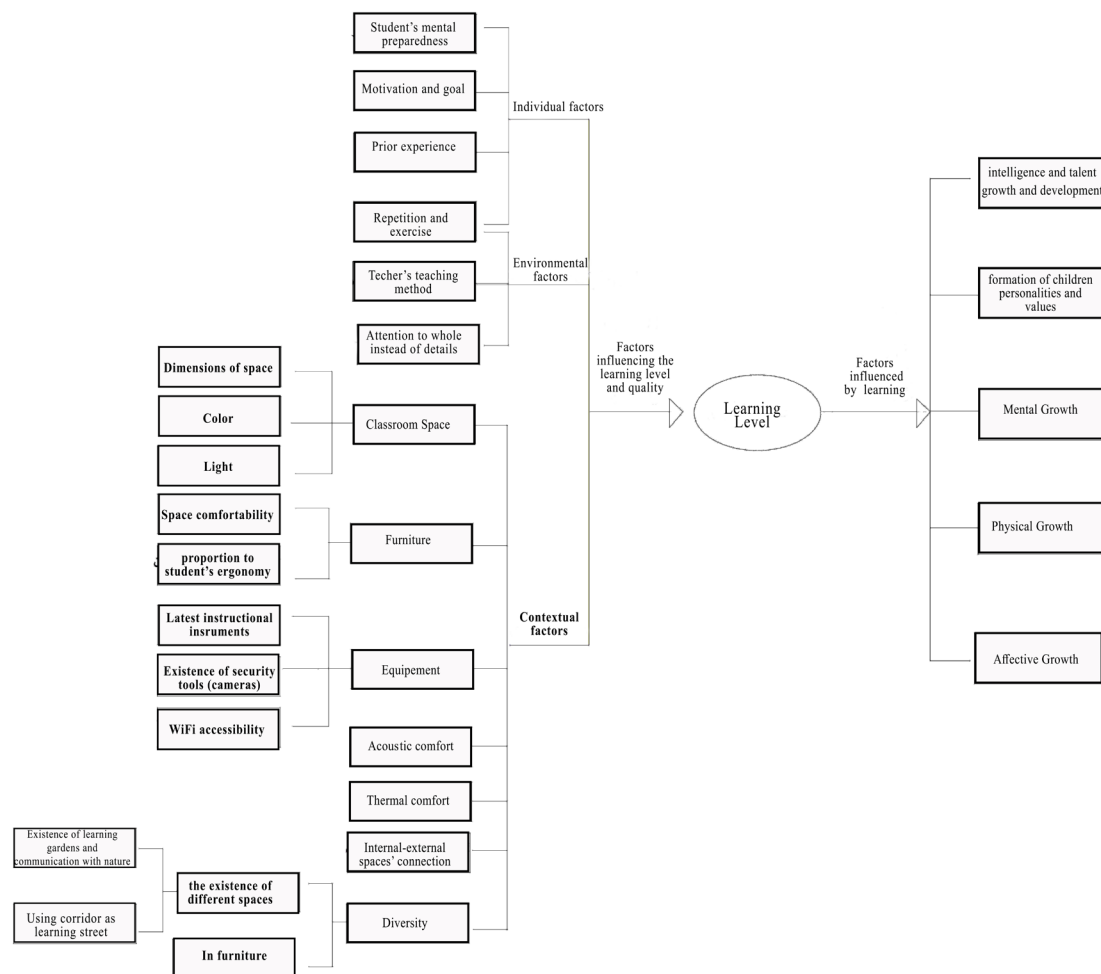


Fig. 1. The Factors Affecting Learning and the Factors Affected by Learning

4. INTRODUCING THE STUDY CASES

The studies related to the second part of the study that was implemented in a quantitative method were carried out in a cross-sectional manner in 2014 in Shahid Beheshti and Allameh Tabataba'ei University in Hamadan. For the case of the present study, efforts were made to choose the two state girl primary schools in a single urban district and in close distance to one another so that factors like the teachers' teaching skills and the families' culture and attitudes towards the education could be controlled. Additionally, both of them are state schools for keeping the students' scattering in an identical intermediate level in terms of their average talents and intelligence. The schools' only difference was the standard level of the factors constructing the educational environment. The following part succinctly introduces these two primary schools:

4.1. ALLAMEH TABATABA'EI GIRL PRIMARY SCHOOL

Allameh Tabataba'ei girl primary school is situated in Hamadan near Shahnaz intersection on Eastern Azad Avenue in a close vicinity of Allameh Helli boy primary school (Fig. 2).

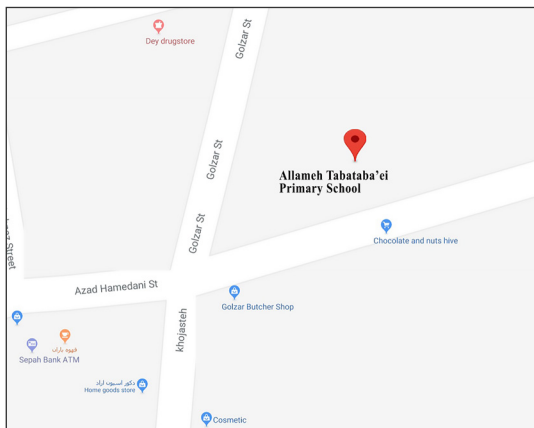


Fig. 2. Allameh Tabataba'ei Primary School's Site Plan

The school works in one educational round and it is a single-storey building containing eight classrooms that accommodate 200 students from the first to sixth grade, including two first grades, two second grades and one class of the remaining grades each (Fig. 3). The classrooms of the school are not standard in terms of dimensions and enjoyment of natural light and their furniture, such as benches and the desks, and the color of the walls is old and worn-out.



Fig. 3. The Plan of the Single-Storey Allameh Tabataba'ei School

4.2. SHAHID BEHESHTI GIRL SCHOOL

Hamadan's Shahid Beheshti girl school is located in front of Nazari Garden, Aref Qazvini Street, University Square (Fig. 4). The school works in two rounds in an alternative manner. It has 14 classrooms accommodating 380 students. Half of these classes belong to the first, second and third grades in one round and the other half belongs to the fourth, fifth and sixth grades in another round of school work hours. Half of the classes are on the first floor and the other half is on the second floor (Figs. 5 & 6).



Fig. 4. Shahid Beheshti School's Site Plan

The dimensions of Beheshti Primary School's classrooms are at least closer than those of Allameh Tabataba'ei Primary School in terms of length and width to standard considering the number of the students in such a way that a class containing 30 students is 5×7 in Shahid Beheshti Primary school but 2.5×3.5 in Allameh Tabataba'ei Primary School. In regard of the enjoyment of the natural light, the classrooms have two windows with standard widths on the left wall in Shahid Beheshti Primary School hence a more appropriate amount of light enters the classrooms; but, in Allameh Tabataba'ei Primary School all of the classes, except one, have windows ranging between 60 to 70 centimeters in widths and

installed on the back wall that causes the entry of unfavorable and imbalanced light into the classrooms.

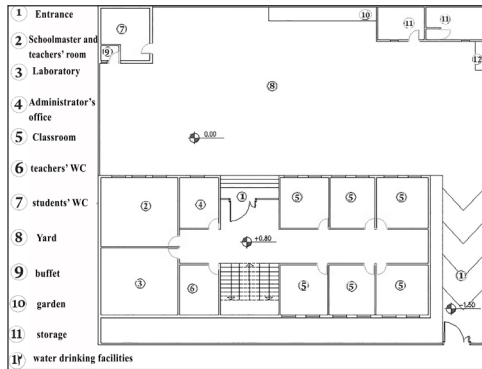


Fig. 5. The Plan of the Ground Floor in Shahid Beheshti Primary School

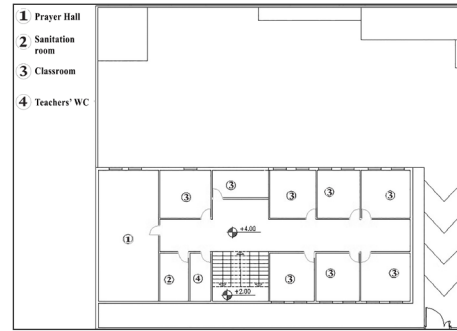


Fig. 6. The Plan of the First Floor in Shahid Beheshti Primary School

At first, the two schools were divided into six educational, service, connective, pedagogical, administrative and open space areas and their corresponding subspaces were determined (Figs. 7 & 8).

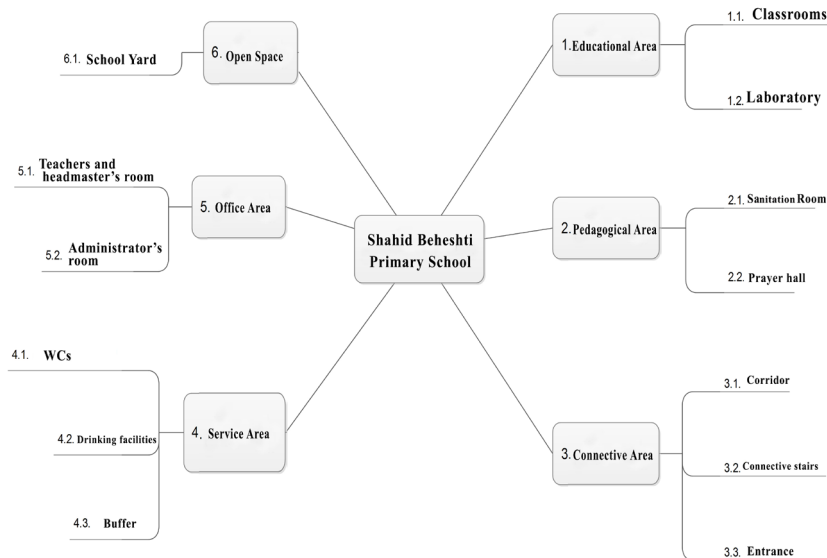


Fig. 7. Zoning and Determination of the Subspaces Corresponding to Each Area in Shahid Beheshti Primary School

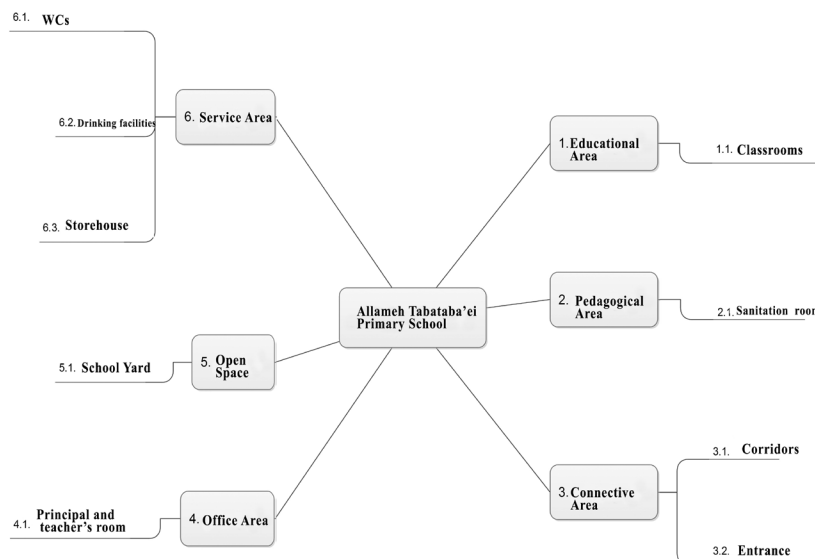


Fig. 8. Zoning and Determination of the Subspaces Corresponding to Each Area in Allameh Tabataba'ei Primary School

The studied individuals were the students from five classrooms in Shahid Beheshti Primary School and five classrooms in Allameh Tabataba'ei Primary School (for a total of 280 persons). The classrooms were randomly selected from the first to fifth grade in every school. The study instrument was a list of observations and investigation of the standard level of the environmental factors constructing the educational spaces that was obtained through an inspection of the status quo of every school. Five scores were considered for every proposed factor for determining the level of the schools' enjoyment of the standards set by the organization for the renovation of schools and the authorities specifying the related standards in such a way that score 5 indicated the enjoyment of the perfect standard; score (4) denoted the closeness to the standard; score (3) designated a little difference from the standard; score (2) showed an almost large difference from the standard level and score (1) reflected the non-enjoyment of the standards at all. In the end, the collected data was analyzed in SPSS software. The results can be seen below.

5. STUDY FINDINGS

The findings obtained from the list of standard levels' observations in the educational section of both of the schools indicate that Shahid Beheshti Primary School is closer in terms of its enjoyment of the factors constructing the educational environment to the predefined standard levels than Allameh Tabataba'ei

Primary School (Fig. 9). The environmental factors constructing the educational area are: light, spatial dimensions, color, space's newness and freshness, existence of educational equipment, existence of the furniture in accordance to the predefined standards and in coordination with the children's ergonomics and flexible in respect to the space, acoustic and thermal comfort and diversity in form and educational spaces. After calculating the average scores of the rates assigned to each factor in the selected classrooms of the two schools and delineating the descriptive diagrams, it was made clear in a comparison of the obtained data that the light quality has the best status in Shahid Beheshti Primary School with the highest average score, 4, and factors like educational equipment, furniture, acoustic and thermal comfort and diversity are in their lowest quality in Allameh Tabataba'ei Primary School for their obtainment of the lowest mean score, 1 (Chart 1).

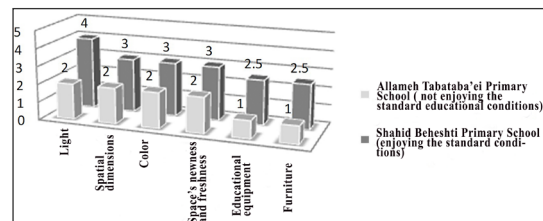


Chart 1. The Mean Scores Obtained from the Investigation of the Environmental Quality Indices in the Education Areas of Shahid Beheshti and Allameh Tabataba'ei Primary Schools

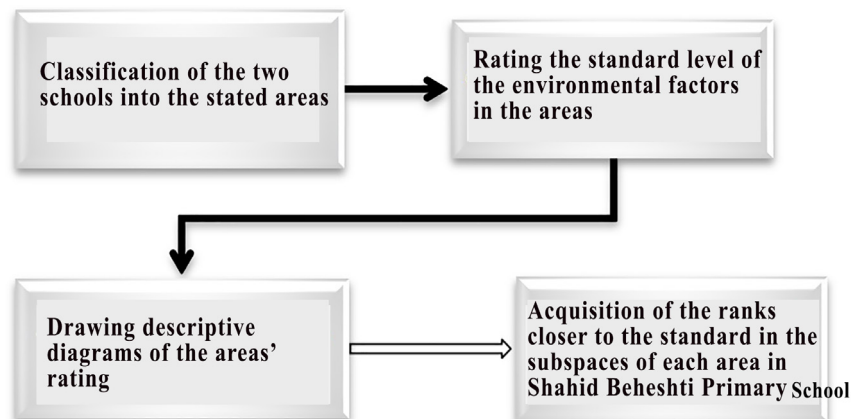


Fig. 9. Summary of the Results Obtained from the Investigation of the Environmental Factors in the Specified Areas of the schools

The data related to the students' academic achievement indicated that 82% of the students from Shahid Beheshti Primary School and 69% of the students from Allameh Tabataba'ei Primary School have very good averages (Chart 2). Based thereon, the academic achievement of Shahid Beheshti Primary School was found in a more favorable status than that of Allameh Tabataba'ei Primary School (Fig. 10).

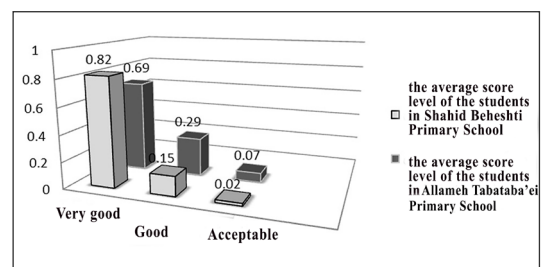


Chart 2. Determining the Students' Score Levels in Shahid Beheshti and Allameh Tabataba'ei Primary Schools

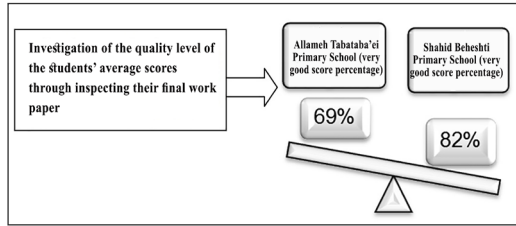


Fig. 10. Summary of the Results Obtained from the Investigation of the Quality Level of the Students' Average Scores in the Two Primary Schools

Amongst the nine environmental factors constructing the educational space that their enjoyment of the predetermined standards was investigated in both of the schools through observation list and comparison, a significant and positive relationship was evidenced as shown below between six factors, i.e. light, acoustic comfort, educational equipment, newness of the classrooms, existence of flexible furniture and diversity in form and space, with facilitation in academic achievement of the children (Fig. 11).

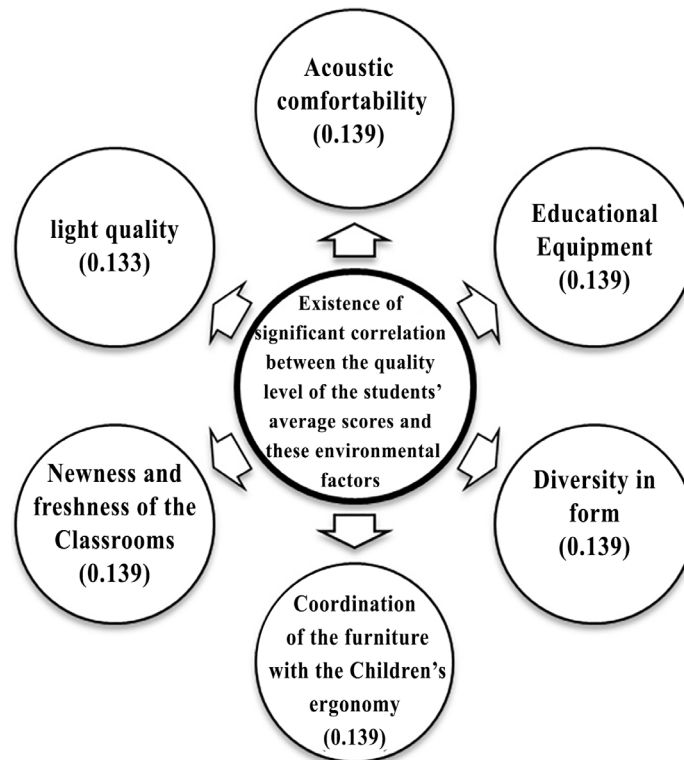


Fig. 11. Investigating the Relationship between the Students' Average Scores and the Studied Environmental Factors in the Educational Areas of the Primary Schools

6. DISCUSSION AND CONCLUSION

Paying attention to the children's psychological and physical characteristics in designing educational spaces can contribute to their scientific learning and expression of their talents and finally their growth and blossoming and it can also have a substantial effect on their desires for attending the educational spaces hence increase in and facilitation of their learning because when the children observe in their immediate environments that everything has been built according to their spirits and that their psychological and physical attributes have been taken into account and also that they have been respected, they would have twice as much of happiness and interest for attending the space and learning the new materials and it might even cause the growth and development of a larger number of their internal talents. According to the results obtained from analysis in SPSS and based on the examination of the obtained correlation correlations that are indicative of

the positive and significant relationship between the six aforementioned environmental factors constructing the educational spaces and the students' academic achievement, the forthcoming section presents explanations about the importance and the type of the effect these independent variables have on the academic achievement levels of the students. Considering the positive relationship between diversity in educational forms and spaces and the students' academic achievement, it can be pointed out that the children need spaces for learning and playing and these spaces, meanwhile being controllable, should not limit them; they have to be fascinating and encourage more mobility than passivity for children are interested in experiencing more than anything else. If the spaces designed for the children, especially the educational spaces can influence the mental and emotional powers of the children, they can also take part in their education and, at the same time, provide them with a happy

environment full of energy. For instance, the direct corridors that are quite common in educational spaces cause the creation of an unpleasant sense of being controlled for the children and this diminishes their desire for the educational spaces. Therefore, in order to counteract such an unpleasant feeling in the children, the schools' corridors can be transformed into learning avenues wherein diverse and variegated activities occur; they can be also spaces for discussion and conversation, gathering corners, small work stations, individual closets for all the children, exhibitions of the works and workshops and so forth to name some of them. In fact, corridors are expandable spaces of the classrooms that are considered as their continuations. Moreover, alongside with the investigation of the contextual factors of the educational environment and matching them with the children's spirits and features, paying attention to the existence of diverse spaces like open spaces having the capability of creating places for the children's playing is of a great importance. Nowadays, it has become obsolete to imagine that such educational spaces can be only indoors. Educational spaces include the entire open and closed spaces and all of the places and elements within the area of a school. The quality of the spaces in a school building or the filled spaces, open spaces or yard, indoors, contextual discipline and their interrelationships are amongst the most important aspects of the school designing. This way, besides respecting the children's spirits and characteristics, environments can be designed accordingly that cause an increase in the interest, zeal and happiness of the children for attending the educational and learning environments as a result of which their talents can be better developed. The contextual designing of the educational spaces through observance of the criteria related to light, color, spatial dimensions and newness of the environment influences the children's level of learning quality. Due to their unique limitations, the educational spaces are prone to conversion to rigid and spiritless places but all of the efforts should be applied to prevent it from happening. Giving importance to the educational spaces and observation of the related principles and standards in designing such centers leads to the creation of an environment that is in proportion to the students hence the society's psychological wants. As for the importance of observing the lighting standards and its relationship with the children's learning, it can be pointed out that a large deal of learning happens in the learning process through vision. Thus, if the power of vision is inflicted with a defection, the learning decline would arise. The goal of supplying light in school is creation of an environment wherein a student can see things in the best possible way and with the least amount of effort so that his or her force can be spent for acquiring information and learning not for compensating the vision problems that are the properties of less lighted environments. Of course, it has to be pointed out that the amount of the

required light differs depending on the activity type. Sound is also another important factor influencing learning. Although the sounds find their way from outside into the classroom, the students dedicate their power of hearing to the teacher's voice and only let materials they hear from the teacher through into their brains. In case that the exogenous sounds find their way into the classroom, the learners would have to unwantedly allocate a part of their hearing faculty to them or at least avoid listening to none of them, even the teacher's voice. In such cases, confusion most often occurs in the learners and the importance of the spatial siting of the classroom becomes clearer in this regard. As for the classrooms' organization and arrangement, it can be stated that the most important change in the educational spaces is the breaking of the teacher and the students' line of vision and creation of a space for more eye contact between the students. To do so, the linear rows are essentially considered contradictory to the students' spirits. In traditional classrooms that the students' chairs are arranged in regular rows one behind the other and the teacher's chair is placed in front of thereof, the participation of the students in the back rows is less than that of the students in the front rows and they will also have to pay a greater deal of attention to the teacher hence losing their relationships with the other students. Such an order and discipline might be very favorable when the teacher is giving a new lesson to all of the class but learning from the classmates and group working would be rendered impossible. The students in the back rows of the class are in a large distance to the teacher and they can more easily neglect the teacher and create disorder in the classroom. In classes that the students are needed to work and participate in groups, they can establish mutual relationships with each other and the teacher if the students are sit in a circular arrangement; in this case, the teacher becomes a part of the students and she can guide and navigate the collective discussions of the students besides teaching new materials to them. However, when investigating the chairs' arrangement in the classroom, it is of a great importance to pay attention to all of the students. One of the essential needs of the children is that they want the teacher to pay attention to them and if the physical space of the classroom elicits such a feeling in the students, there is no doubt that amount of the discipline problems would be considerably decreased. In the end, it can be concluded from the review of the conducted studies that the investigated environmental factors of the educational area influence the students' learning. Such an effect is in such a way that the collection of these factors altogether should set the ground for the students in such a way that they can more easily concentrate on the instructional materials and they should also provide the teachers with better conditions so that they can also be able to better transfer these instructional materials to the students thereby to facilitate learning for the students.

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