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Research Article

The effect of nature on the learning rate of elementary school students in cities with dry climate from the perspective of teachers and their parents

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Abstract

Unfortunately, in today's world, along with the expansion of cities around the world, children are separated from daily experiences in the natural world. Changes in homes, streets, and the advent of technology that take away children's free time instead of being outdoors have made children's free time increasingly full of predetermined and monitored moments. They limit their lives more than before. Schools are one of the important spaces where children spend many hours of their day in the most important ages of modelling and learning, and it is one of the most important spaces to re-establish this relationship. Schools are one of the important spaces where children spend many hours of their day. They spend their day there in the most important ages of being exemplary and teachable, and it is one of the most important spaces to re-establish this relationship. The presence of nature in educational spaces is often very limited, and this limited presence is also done without considering the special needs of children and the high capabilities of natural environments in meeting these needs. It is necessary to design natural environments in schools with the aim of meeting the different needs of children in growth, education and learning. This research was conducted with the aim of investigating the role of nature in children's learning from the perspective of teachers and parents. This research is of a hybrid type and field methods, indirect observation and library data collection have been used. In indirect observation, two types of questionnaires related to parents of students and teachers were prepared and randomly distributed among 580 parents of students and 50 elementary school teachers. The reliability of the test was obtained using Cronbach's alpha of 0.890. The results of this research indicate that physical location as one of the factors of children's learning has the greatest effect on children's education and learning.

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Introducton

Changes in lifestyle and technological advances in the cities, especially in large cities have changed human life. Nowadays the advances caused humans prefer landscaped and nature built environment (Van den Berg, Hartig & Staats, 2007).This reflects the separation of the human from the real nature while his strong need to it where the children have less daily experiences among these people. (Mozaffar, et al., 2009: 44)

Studies concentrating on children find that environments predominated by natural features are valued most (Elsley, 2004; Korpela, 2002; Loukaitou-Sideris, 2003) Furthermore, outdoor public spaces providing trees and vegetation are

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used more frequently by adults and adolescents than are spaces without those features (Coley, Kuo, & Sullivan, 1997). Findings on humans' general preference for nature and greenery imply that exposure to green environments has beneficial effects on humans' restoration, well-being, and health (Wells & Evans, 2003), given that the potential of environments probably depends on people liking the environment (Christina Kelz& Gary William &Evans, Kathrin Röderer, 2013). With regard to the above materials, we can say that nature has an important role in human life, especially children, who have been disconnected from the nature in todays' world and this connection is necessary to be re-established. Schools are one of the important areas where children spend many hours of their daily life at important ages of modelling, educability and learning and one of the places to re-establish this relationship. Based on the results of a Scottish study about the training program, learning is a chaotic matter for children and hardly put a simple issue in the way of a pre-determined result. And it seems that they understand the world through linking a part of their information to other parts and comparing them with each other and become dependent on events which are felt through rational, physical, emotional, aesthetic and spiritual ways. (School Curriculum & Assessment Authority SCAA, 1996).One of the most important factors affecting children's learning is the environment. Learning environment is a cultural, social and physical context where learning takes place. Understand how a learning environment becomes effective, is necessary to design an architectural environment. Effective learning environment is an environment which along with the other effective factors in children's education such as curriculum, teachers and ...has an important impact on education. Although the physical environment of the school is only one of the factors affecting learning; but we can say that it is considered as the most important component in an active learning environment (De Gregori A, 2007).

This study focuses on the importance of the nature on children's learning in schools. The study of educational theories indicates the children's educators' interest in the education out of the classroom environment along with the education inside the classroom and the nature as a learning tool has been focused. The nature has a great deal of potential to improve skills in children and can be a proper substrate to foster various aspects of child development and learning. The existence of natural places also leads to spiritual relief, freshness and the sense of belonging to the school environment.

Literature Review

The importance of educational environments to improve the quality of learning and teaching is obvious nowadays. Many researchers have investigated the importance of designing the educational environment on children's learning in recent years. Researchers such as Tanner also emphasize the need of outdoor places including green areas and its positive effect on learning (Tanner, 2007:309-330). Recently, school architects and planners have focused on the importance of involving users (children) in the designing process. Bjorklid writes Piaget believes that: "Children should be able to conduct an experiment and a research themselves and gain experience that these issues will be effective in children's learning" (Bjorklid, 2003).This caused the use of innovative approaches in children's education at times. This issue was first developed by one of the educational activists such as Lawrence Sarmin in America, which was developed through combining Steiner's educational model in many parts of the world. Many educators in America have defended the need to abandon traditional practices not only in education, but also in the design of educational facilities (Derek Bland, Vinathe Sharma-Brymer, 2012).

Theoretical Framework

Nature impact on children

Many children in urban environments do not have access to nature. Many parents prohibit their children from exploring wild natural areas because parents and children have little familiarity with nature, parents have concerns about children's safety, and children experience academic pressures and other demands on their time (Louv, 2005). This reduced contact with nature may influence children's development. Empirical research has demonstrated that experiences with nature have a positive influence on children. Davis, Rea, and Waite (2006) suggested that spending time outdoors may help children develop positive values about nature, whereas Wells (2000) suggested that children whose home environments improved the most with regard to greenness after relocation were more likely to have higher levels of cognitive functioning after relocation. Wells and Evans (2003) indicated that natural environments can increase children's

psychological well-being. Children whose homes had more nearby nature coped better with life stress than those whose homes lacked nearby natural areas (Judith Chen-Hsuan Cheng, Martha C. Monroe, 2012).

Environmental Based Education

Environmental Based- Education (EBE) focuses on the natural environment, but this emphasis is a vehicle for improving students' learning and skills through the interdisciplinary integration of subject matter and a local, place-based, community focus (NAAEE & NEETF, 2001). EBE is typically implemented in middle schools or high schools and often takes a problem-based approach to investigating an issue or phenomena that is important to the students and the community. EBE is characterized by integrated learning across curricular domains, problem solving, decision making, independent and collaborative learning, and the taking of multiple perspectives (NEETF, 2000). Lieberman and Hoody (1998) examined 40 programs using the environment as an integrating context, a term sometimes used interchangeably with EBE, and reported that students demonstrated better performance on standardized assessments of math, science, social studies, reading, and writing; fewer discipline problems; and increased engagement and enthusiasm for learning (Torquati, Cutler, Gilkerson & Sarver 2013) .A focus on nature in education has historical roots in the nature study movement of the late 19th and early 20th centuries, which emerged in part in response to urbanization and concern that a lack of contact with nature compromised children's health and well-being (Knight, 2009). Nature study sometimes included a formal focus on natural sciences but often was a more holistic approach to education, encompassing aesthetic, spiritual, and physical components (Laaksoharju and Rappe, 2010). Both Montessori and Waldorf educational approaches incorporated authentic experiences in nature and developing reverence for nature (Hutchison, 1998; Petrash, 2002). Nature study and outdoor education were marginalized during the mid- and late 20th century, as educational priorities variously shifted to the space race and international competitiveness, vocational education, information technology, and standards-based education. Although most of the research on the influence of nature on children's development and on EBE has focused on elementary-age children and adolescents, there is increasing interest in nature-focused education in early childhood (Hazreena Hussein, 2012). Interest in nature as a focus and medium for education. There is increasing evidence of the importance of natural environments for children's development and well-being (e.g., Taylor & Kuo, 2009; Wells, 2010). In addition, evidence is accumulating that educational initiatives that are characterized by EBE, environment as integrating context for education, and education for sustainability show promise both for student academic achievement as well as for accomplishing objectives related to environmental literacy and citizenship (North American Association for Environmental Education [NAAEE] & National Environmental Education and Training Foundation [NEETF], 2001; Office for Standards in Education [OFSTED], 2009; Stone, 2009). The role of nature in children's development and education is gaining prominence in cultural contexts and policy as well. Richard Louv's (2006=2008) Last Child in the Woods: Saving Our Children From Nature-Deficit Disorder galvanized a movement that is becoming institutionalized through organizations such as the Children & Nature Network.) Chawla, L., & Cushing, D,2007)The contemporary interest in nature is becoming systemic, reflected in policies such as the No Child Left Inside act in the United States and the inclusion of education for sustainable development in the national curriculum of the United Kingdom (OFSTED, 2003) and position statements such as the Re-Connecting the World's Children to Nature: A Call to Action (World Forum Foundation Nature Action Collaborative for Children, 2008).

Learning Beyond the Classroom

The concepts related to this issue can be as follow: learning out of a confined space, outer space training, training outside indoors, environmental education, learning outside the classroom in terms of education which also bring different results that stem mostly by different training taking place in a context (Mozafar et al., 1388: 39). Education in urban schools may be done inside school yards. However, teachers in some environments may have access to urban parks and several schools simultaneously benefit from a city park (Dewey, 1963). Certainly these areas in big and small city schools and schools located in urban and rural areas will be different. What is common in all these thoughts in mind is that education happens outside the classroom indoors. However, this method does not believe that training and education beyond the classroom is better than classroom-based training, but demonstrates that some teachings should be offered outside the classroom and in the more general meaning, the training into the classroom should combine with teaching outside the

classroom with traditional holistic education. These type of general thinking is very common. (Chawla and Cushing, 2007).This educational approach that has its roots in theorists such as Johann Pestalozy, John Dewey, Paolo Freire and Patrick Geddes can be found, who have been conducted the relationship between external training by people, places, and activities in their views (Higgins, 2012). In addition to the studies done in designing educational spaces that have mentioned above, we mention Parkash studies that provide templates for the design of educational spaces. Among the models presented in this book is the importance of the need for internal and external communications and internal and external perspectives as an important principle in the design of educational spaces which have been emphasized. Parkash writes about the importance of communication within and outside the educational space that: "people are naturally created in a way that need to communicate with the outside world, and this need is evident, especially at an early age. So we have to take advantage of the opportunity to connect the inside and outside space. He also discusses the importance of internal and external perspectives in schools and says: "For this reason, most of the learning happens in restricted spaces in schools is essential to students' horizons by creating visible lines to the extent that it may be extended beyond the classroom. The landscape of 15 meters or more gives us an opportunity of view change that is important for eye health and comfort (Parkash, 2012). Research indicates that the presence of children in the natural environment reduces stress in them. Also, children who spend their time in green areas have fewer illness symptoms (Taylor and Sullivan, 2012). Green area at schools also increases academic performance of children. (Sullivan, Taylor, Kuo, 2004) The involvement of children can also be used in the development of natural places at schools. This method causes positive emotions in children. The physical participation of the children in architectural compounds and elements of landscape architecture will lead to a sense of satisfaction in children and the retention of experience in their mind (Sebba, 2005:42-69).

Problem of Study

The main hypothesis of this study is the presence of nature and natural places, as one of the major factors influencing the growth of knowledge, and children are learning. The subgroups of this hypothesis include the following items:

- The natural places have a lot of abilities in educating children and the proper design of natural places at schools can improve a part of children's education.
- The proper designing of natural places at schools could be effective on children's feelings regarding the school environment and their sense of belonging to the school environment.

Method

Research Model

The main areas of research include the design of educational spaces, and child psychologist. The design of appropriate learning environments and courses in nature are the main purpose of this study. the method of this research study is not in the usual way as the way children perceive and express is different of the adults' understanding, perception and expression , because personality and age characteristics of children caused the use of practices such as test-image (painting) to express their favourite class and school. The use of this type of test is because the children create well mental picture in their favourite spaces, and it increases their learning. Barraza, in relation to children writing from observations surroundings, states that "Children schemes are a powerful tool in providing useful information for evaluating the observations of the surrounding environment ". Research method is that math and science classes have been held outside of the school environment, 580 students (as the toughest courses) in 3 chosen schools and each school individually had 6 classes in 5 courses outside the school and in nature. Children reactions and learning in the natural environment and the typical classroom environment have been observed and recorded. And then the students were asked to draw their interesting and effective learning class they have ever had during their education according to their experiments. All plans and drawings received in time and stretched and obtained in the class under supervision of the teacher. Official approval to participate in this research and to use the images has been issued by the school principal and parents. And no other information than the children school year was collected about their background. Then questionnaires completed by 50 teachers and 580 students (280 boys and 300 girls) according to learn and holding classes in nature and the data analysed by using statistical methods and SPSS 20 software.

As described above, two methods have been used in this study in order to obtain more favourable results. First Method: Children's illustration from their own desired and favourite class they had during their course of study. Second Method: Distributing a questionnaire among 50 teachers and 580 students, and then analysing it.

Participants

Students at grades 3, 4 and 5 (9-10-11 years) in 3 elementary schools (near the park) in Shiraz were studied. The selected age group was recognized as appropriate for the study, because the studies indicate that the symbolic representation usually occurs during the last period of childhood and is distinguished from "knowledge, insight and ingenuity". Also at the age of 7-9 years, "Children have a graphical language that contains special symbols and the three-dimensional understanding (three-dimensional organization) and at the age of 9-11 they attempt to be more precise.

Data Analysis

Analysing the mental images of children

There were wide variations in the participants' artistic abilities, but this was not a concern about children's analysis because by observing their behaviour and talking to them about the content of the image, enough descriptions and information were collected. Each design and the interview along with it was encoded by the content in order to determine the common characteristics among the 100 received samples and obtain a through this process. Keywords explored in these images are: place, the school and the desired class, environmental considerations and any special feature including the green area and gardens.

Results

Stating children's designs

In this part of the study we express and explore some designs from the children

My favourite place for learning is where the breeze is blowing in my face and trees sway gently from side to side. I sit on warm and cozy sand I look at the sun. Every morning I wake up and I look at the rising sun. This is where I think I like to study in and I think it is better than the sealed and shut class (male, grade4).

My design of the learning Environment is a rain forest (uninhabited) and intact. I like to study in a relaxing place, away from the noise. I like that I can walk out with a book, to sit on a bed of flowers and read a book ... I think the classroom is too shut. Being outside makes you feels better (male, grade 5).Instead of studying at home, I like traveling in my nature. It's such a joy (male, grade 5).

I like to study around a lake ... where you can take your head in the water and watch the fish closely. (Such a learning environment is ideal for the children or any student who studies aquatic animals and birds.) You can even camp out for the night and observe nocturnal animals (male, grade 3).

Why not having a school outside? We can also study, play and do sports outside. The idea I previously had about the school was changed after this experience. It is better to study in a good environment. It is better for us because oxygen is everywhere and there is no need to use electricity because the sun shines (male, grade 5).

I like to study in a relaxing place where you can hear the sound of birds. I also like to work alone so that I can concentrate. And there should be a waterfall in that environment because its sound is relaxing (female, grade 6).

My future school is near the beach ... I think it is a quiet place and a great place to work in (female, grade 3).

I like to study in a field of grass instead of the couch and be happy with all the kids and study Mathematics (female, grade 4).

I like to study in a place that is quiet and the birds always sing there, where my dreams are realized.

I like my class to be a place where you can lie down, rest and a cool breeze caress your skin (female, grade 4).

I like to study somewhere full of beautiful trees and read books and play with my friends in their shadow. (male, grade 5).

I like to study in a classroom full of colourful flowers and their ubiquitous smell. (male, grade 3).

Concerns about the environments with an external nature, joined the ideas about technology, along with awareness of environmental protection.

This is a good place to study, where solar panels can provide electricity for the fans and lamps. The passing water has a soothing sound, with electric window on the roof just lets in the required light to (male, grade 5).

In my ideal school, the first thing that comes to mind is an environment-friendly school ... learning animal diseases and their treatment methods (female, grade 3).

I like my class to be in a large area full of fruit trees. (female, grade 3).

I like to learn my new lessons near a water-filled waterfall and be away from these horrible classes (male, grade 5).

I like to study on the grass and under the trees through which the sun shines, I like the studying method of the nomadic (male, grade 5).

I like to study in a place where large birds are flying over my head (female, grade 4).

I like my class to be on a lush and tall tree, so tall that I could touch the clouds. (male, grade 3).

These children's imaginations about their favourite and effective learning place can be observed in a way that AS Neill's Summerhil School has been made: "the classes are inside but the enclosure of trees is as an area of learning such as a class. The school is considered as a beautiful and energetic place for the staff and the students. The area is open to students and they are allowed to climb trees." Illich proposed the complete removal of school boundaries. Illich suggested the community facilities to be served as places for education; this project is "decentralization of schools". When Holt was asked that “what message do you have to teachers of the developing countries? He replied "To have a school there is no need to have a building ... there is no need to have a have a school to educate ...”. In children's designs, most features include natural environment. Many participants think of studying in a rainforest, beach, or in rural areas with a green area to have a direct experience with the nature. And such an environment provides a quiet relaxing place to learn for many of the participants.

Interpreting students’ designs with regard to their talk

Designing the main instrument for children to express their ideas of the best classes they have had in their entire education; talking with the children, along with their drawings provided important information about what they had drawn, which helped a lot to understand and analyze the figurative data. A problem in the figurative content analysis was the interpretation of the contents on the position of the viewer that his history, social and cultural relationships may vary with the artist (student) that this could cause incorrect assumptions and misperceptions. It has been tried not have such an interpretation.

Interpreting students’ designs reveals that they want studying to be mostly fun and in a place that is environment friendly. Their imaginations are involved in colorful and exciting places; and also insist on where they can learn something and be in contact with real life. Some quotations as below:

I think of a happy and colorful school where students enjoy attending the class (male, grade 5).

It would be nice if the class is full of colorful flowers (like rainbow) that cause happiness in everyone (male, grade 3).

More than 83 percent of students were considering these features in open and natural places. It is clear that students do not like boring classes. Boringness in their schools would eliminate or reduce the interest for learning. The children also preferred to have schools with trees, grass, water and outdoor garden instead of brown, dark and dusty classrooms.

These results are consistent with findings of similar researches (Birkett, 2011; Burke & Grosvenor, 2003; Doherty, 2005; Pointon, 2000) about children who experience their need to space, light and clour in the open space. The key features of an ideal and effective classroom learning of the children include: Playground with framework for climbing, tree houses for classes in the quiet space with water sound, musical sound of nature instead of bells, colourful place for painting, reading and outdoor games, greenhouses for growing fruit and vegetables for consumption and selling them to make money, creative environment full of colourful flowers and large green spaces, oxygen-rich atmosphere. These listed issues are parallel with different climatic conditions of Shiraz. According to the students' experience of the class as well as natural environment, they imagine their favorite learning environment in outdoors which is active and full of trees and relaxing. This reflects the desire for children to learn outside of the boring and frustrating classroom. This has been promoted in other countries by educational fans such as the Experiential Learning Centre of John Dewey in America, Neil summer hill school in England, Ivan Illich's de schooling movement (anti School Ivan Illich's movement).

Table 1. Children's Illustration of their favorite class during their course of study

Analysis research topics

A wide range of participants (children) in this study held their favorite class and effective learning outside today's close classroom as well as in environmental in nature with direct and palpable education and portrayed as large, happy, exciting and colourful environments and have stressed holding classes in nature- due to having experience in this field as their expectations from their favorite custom class space is limited in nature.

Questionnaire data analysis

In this study, two types of questionnaires prepared and distributed between educators and students in four elementary schools, two girls' and two boys' schools and Factors affecting children's learning are investigated in both the questionnaire and the nature of learning, anxiety, fond of children to school, working children. Among students and educators from four schools, 580 students (280 boys and 300 girls) in the third, fourth and fifth grade and 50 teachers (25 in the girls 'schools and 25 in the boys' school) have been randomly selected as the study population. The following table shows the number and percentage of students' gender in the chosen levels.

Table 2. Number and percentage of participants

Educational level	Gender	Number of classes	Number of students	%
Grade 3	girls	6	120	20.68
	Boys	6	120	20.68
	Total	12	240	41.36
Grade 4	girls	3	60	10.34
	Boys	4	80	13.79
	Total	7	140	24.13
Grade 5	girls	6	120	20.68
	Boys	4	80	13.79
	Total	10	200	34.47

Schools that have been selected as the sample in this study have been allocated a range as nature in their yard (trees and plants). Following table analyses the relationship of children and nature outdoor in their school and information have collected by field observations and interviews with students.

Table 3. Children connection with nature with open space in the school

The performance of students in nature	f	%
Use nature to study	313	53.96
The nature of the game	267	46.03

The above table indicates that 53.96% of children use their environment within school yard with trees and flowers and plants to study. Table 3 is to review and study better outcomes for children by segregation and we came to the conclusion that most of the boys (53.57%) use the courtyard of their school with more trees and plants for game and most of the girls (61%) use their school yard with more trees and flowers for their study.

Table 4. Children connection with nature in the school open air, differentiated by gender

Gender	The performance of students in nature	f	%
Boys	Use nature to study	130	46.42
	The nature of the game	150	53.57
Girls	Use nature to study	183	61.00
	The nature of the game	117	39.00

Analyzing the data related to students in nature

This part of the study demonstrates the average weight (the students use of nature to play and study), Single-sample T-test (a test that the average of a community is distribution based on T and analyses that how much an average of a society is more or less than a fixed amount) shows the relationship of students with outdoor nature, that average amount are 4.1947 and 3.8947 for studying and games, respectively. The results were obtained according to the whole 5-item Likert scale (very high = 5, high = 4, mean = 3, low=2, very low = 1). Number 3 in one-sample T-test was selected as mean for school students' relationship with nature in school open space. The results indicate that the average used of nature by students in the study (4.1947) was higher than this value and this represents a significant impact of the nature on the teaching and learning of students.

Table 5. Quantitative table of children connection with nature in the school open air Source: The authors 2023

The performance of students in nature	Number	Mean	Standard deviation
Use nature to study	313	4.1947	.19876

The nature of the game	267	3.8947	.29876

Table 6. Single-sample T-test quantitative table of children connection with nature in the school open air

The performance of students in nature	T	df	SIg	Mean difference	95% confidence interval of the difference
-	-	-	-	-	Lower Upper
Use nature to study	313	4.1947	.19876		.7196 .8726
The nature of the game	267	3.8947	.29876		.5083 .7135

The aim of the study is to examine the role of nature in teaching and learning of children. Questionnaire assessed factors affecting children's learning at school by using analytical model of study. The following tables reflect the opinions expressed by teachers in the questionnaire.

Table 7. Factors Influencing Children learning at school

Row	Factors	Mean	Standard deviation	Total
1	Physical space class	4.1525	.84718	50
2	Children interact and collaborate with each other	4.1356	.81912	50
3	Children's sense of attachment to class	4.0000	.85096	50
4	Anxiety	3.9661	.92785	50
5	Children communicate with teachers	3.7966	.82587	50

According to the table above, we came into the conclusion that physical space and physical classes have the highest effect than other factors with an average of 4.1525. Then the interaction and cooperation of children with each other, a sense of belonging for children to class, anxiety, relationship between children and the secretary are the other factors that affect student learning.

Analysis questions related to the questionnaire, holding classes in nature in 5 periods

It was concluded by above investigation that physical space of class is effective on children's learning. So keeping in mind the purpose of this study (the role of nature in learning and education), classes in science and mathematics (as the most difficult courses) were held in nature (on 5 second semester of students). We analysed the effect of nature on factors affecting children's learning. According to teachers, an interest in challenging courses among students is more with their presence in nature and outside of the boring and dull classroom. In order to a more favourable result among students, we separated the questionnaire between girls' teachers and boys' teachers and the top result was true among girls and boys, separately.

Table 8. The role of the nature of the factors influencing children's learning

Row	Factors	Mean	Standard deviation	Total
1	Anxiety	4.1000	.86944	50
2	Distractions	3.7831	.85066	50
3	Interest in the lessons	4.2186	.89266	50
4	Cooperation children	4.1317	.81493	50

Table 9. The role of the nature on the factors influencing girls' learning

Row	Factors	Mean	Standard deviation	Total
1	Anxiety	4.0000	1.05045	25

2	Distractions	3.9831	.88066	25
3	Interest in the lessons	4.1186	.87266	25
4	Cooperation children	4.1017	.86493	25

Table10. The role of the nature of the factors influencing boys' learning

Row	Factors	Mean	Standard deviation	Total
1	Anxiety	3.4068	1.05240	25
2	Distractions	3.4576	1.13445	25
3	Interest in the lessons	3.5862	1.02657	25
4	Cooperation children	3.7797	1.14572	25

The survey indicates that the nature has significant relationship with students' interest in teaching and learning. For further proof, single-sample T-test was used in this context and number 3 is selected as the middle of factors affecting children's learning in nature. Calculations show that each of the factors influencing children's learning in nature was higher than this amount.

Table 11. One sample T-test results for the role of nature in the factors affecting learning in boys and girls

Row	t	df	Sig.	95% confidence interval of the difference
Girls	-	-	-	Upper Lower
1	10.450	25	.000	1.3733 .9318
2	8.442	25	.000	1.1226 .6063
3	6.703	25	.000	1.1532 .7112
4	6.367	25	.001	1.0470 .5462
Boys	-	-	-	Upper Lower
1	10.649	25	.000	1.3733 .9310
2	4.392	25	.000	1.1226 .6063
3	3.227	25	.000	.1532 .71121
4	4.205	25	.001	.5462 .8256

To prove the hypothesis by citing the questionnaires, by using the chi-square test, we should find a significant relationship between the role of nature and children learning concepts and emotions and a sense of peace and belonging towards the school environment. The results of the test between two variables of nature and interest to teach the students shows the correlation coefficient as 0.683 and a significance level of .000. as the significance level is less than 0.05 level, we have enough evidence to reject the null hypothesis and conclude a significant positive relationship between nature and the students' interest in learning and in fact the presence of students in nature makes them to find an interest in challenging courses, followed by increased learning and thus the first hypothesis is accepted. Maximum correlations, based on the role of nature on anxiety, distraction, information exchange and cooperation, were 0.676, 0.657 and 0.528, respectively, with significant levels of 0.000, 0.000 and 0.001. It can be said that the significance level is less than 0.05 as sufficient level, therefore the null hypothesis is rejected, and it can be concluded that there is a positive and significant relationship between nature and anxiety, distraction, exchange of information and children cooperation. And the second hypothesis will be accepted as concerning the effects of nature on a sense of peace and belonging to the school among children.

Table 12. Evaluation of the correlation coefficient and significant level of the impact of the nature on learning factors

Row	Factors	r	Sig
1	Nature impact on anxiety	.676	.000
2	Nature impact on distraction	528.	.000

3	The effect of the nature of the interest to lessons	.683	.000
4	Nature impact on cooperation children	.657	.001

The following table generally is using a correlation coefficient of 0.772 and a significance level of 0.000 (significance level less than 0.05 level) which shows the relationship and the role of nature in children's learning.

Table 13: Correlation coefficient and significant of the impact of nature on learning Source: The authors 2023

Table 14. Analysing Factors in the environment and effective on school children learning

Row	Factors	Mean	r	Total
1	Light	3.8644	.99060	50
2	Color	3.9322	.80653	50
3	The materials used in class	4.0000	.85096	50
4	Class size	4.1356	.81912	50

By separating the questionnaires between girls and boys we concluded that boys' school believe the extent of space, as one of the factors in the nature, has the greatest impact of their learning. Girls' schools believe that light, as one of the factors in the nature, is the most effective factor on their learning.

Table 15. Analysing the factors in the environment and effective on boy students' learning

Row	Factors	Mean	r	Total
1	Light	3.4915	1.04011	280
2	Color	3.5593	1.02168	280
3	The materials used in class	3.6271	1.04878	280
4	Class size	3.7119	1.14547	280

Table 16. Analysing the factors in the environment and effective on girl students' learning

Row	Factors	Mean	r	Total
1	Light	3.6102	1.06701	300
2	Color	3.3559	.96065	300
3	The materials used in class	1.25060	3.5254	300
4	Class size	1.04011	3.5085	300

Discussion and Conclusion

According to the obtained results and analysis, it can be concluded that the presence of students in nature increase their interest in studying as one of the factors affecting learning in comparison with other factors (anxiety, distraction, cooperation and information exchange students, student liaison with the players). This can be a very important factor in learning and education. Natural light and space in the class as natural factors will cause students to be interested in challenging courses and their learning, compared to boring and dull and small classes, will increase in nature.

Information obtained in this study lead us to conclude that physical space of class has the greatest impact on children education as one of the factors affecting student learning. So by creating an outdoor classroom we can see tremendous impact of nature as a suitable space for classes as well, because the nature is one of the most important factors in generating interest among students and therefore increases the lessons they are learning. Studies have shown that features found in nature, such as the expansion of space, and natural light enhance the students' learning. Holding classes in nature or creating natural spaces in the class and school, in addition to a positive impact on children's learning, will be able to meet the needs of specific groups of children. These needs include: the needs of educational, social and psychological development. Emotional needs and physical growth. Meeting the needs, will change physical environment of class into effective environmental for education of children.

In the first group, the natural spaces should be suitable to children's cognitive development with the aim of increasing knowledge and learning. In the second group, the space should be natural for social and physical growth of children. Social spaces are designed in natural environments, offers interaction and communication and a platform for students to deal with each other and creates collective and individual children's playgrounds which cause noticeable social and physical growth. In the third group, the natural spaces are designed in combination with artificial spaces and create visual elegance with the aim of creating a beautiful surroundings to create a sense of belonging for children. By analysing the questionnaires, it can be said that two research hypothesis include: natural spaces has many capabilities for the

teaching and learning of children, and proper designing of natural spaces in schools can improve part of children training. The proper design of natural spaces in schools could make children feel a sense of peace and belonging to the school environment which has been approved and indicates that the nature has an important role in teaching and learning of children

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