

The Effect of Environmental Awareness of Children on Child's Interaction Increase Emphasizing on Sustainability Approach

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ABSTRACT

The physical and psychological characteristics of children in different stages of their development are the basis of space planning and designing for them. This research studies the relation between design, green space and children's awareness and studies children's behavior in green spaces and investigates their mental image from ideal space to access an applied and effective method for promotion of the quality of places made for children. Paying attention to environment is considered as an integral part of sustainability and accomplishment of urban sustainability in theory and practice taking into account the environmental problem in this paper. The objective of this paper is to access a pattern of landscape design towards education and promotion of environmental concepts through practical experience of children in educational environments, learning from nature and integrating them with educational spaces in order to emphasis on sustainable development, promotion of environmental ethics culture and environment friendly living methods in children. One of the important applications of green space is its social – psychological application and it is required to change the mental structure about the anatomical and structural space of that environment in order to fulfill the social - psychological needs of children. This study is a descriptive – applied study and the information and data are collected through field and library studies.

KEY WORDS: Architecture, Child, Behavior, Green Space, Sustainability.

INTRODUCTION

In the past, the civilization complexes created themselves in accordance with the environmental and climatic conditions around and this has the least negative effect on environment, but as the population increases, they not only don't follow this form of environment, but also destroy the environment for their own development, which results in instability of civil and human life in societies [10, 20]. It is necessary to consider the presence of human and the way of his understanding and behavior when designing the spaces; otherwise the needs will not be fulfilled and the people will change the environment to organize the space and fulfill their needs, according to their values and objectives and will be also affected by the changed environment [6, 13].

So, in order to take advantages of human spaces, where the environmental values are considered, it is necessary to study the counter effect of human and environment and its consequences on behavioral patterns. Training is necessary for promotion of sustainable development and improvement of public capacities to get familiar with the environmental and developmental topics. So, it is important to access to public awareness about environmental resources, ethical principles, values, behaviors and skills in adaptation with the objectives of sustainable development [5, 12]. Ever-increasing interference of human in the environment through destruction of natural resources has created many problems and the world needs the common participation of people to solve this problem and decrease the environmental pollutants and this requires public and long-term training in all social levels. Here, the awareness of the child about the importance of environment protection and paying attention to sustainability is resulted in the shade of establishing more relations and interaction with green space [6, 14].

The environment and green spaces are considered as the backgrounds of sustainable development, supporter of natural life and cultural heritage of human society. Sustainable development is defined based on social, economic and environmental development and is an important part of design and skill educations which should be in relation with social values and natural resources. One of the effective ways to fight with the negative consequences of urban development and technology growth is reinforcement of the relation between human in the city and the nature [9, 10, 12].

RESEARCH METHODOLOGY

This paper tries to explain the role of promotional education for children in sustainability of urban green space. Studying the successfulness of educational plans for protecting and maintaining the urban green spaces through proper designing of green space for children can be effective. In order to accomplish this objective, the

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architect should understand the child and the space and his needs and identify his needs and know the environment where the child lives. These conditions pave the way for implementation of the principles of sustainable development to reduce environmental pollutants and reach the objectives of architecture and sustainable urban development.

This study is a descriptive – applied study and the information and data are collected through field and library studies. Most part of the scientific information used in this paper was obtained from scientific sources by documentary method.

Architecture & Environment

Human has always used architecture, as a tool, to live in the nature. Today, the importance of environment and its vital role in development and progress of different countries including the third world countries is undeniable and the desirable use of environment in a country can guarantee the persistence and sustainable development. So, a true understanding of the role of preventive factors and decreasing their effect and reinforcing the encouraging factors can result in successful protection of environment[10]. The international actions, such as healthy city and secure societies are among the basic objectives of global organizations, also emphasize on importance of making the environment salubrious[7, 9]. The relation between the nature and architecture, environmental considerations, environmental protection, environmental psychology and biological and ecological conditions are considered in biological environment.

City & Environment

The concept of city without green space in different forms is not imaginable. Development of cities has worsened the effects of irregular and unsustainable urban development and environmental pollution paves the ground for destruction urban green spaces [5], while the open and green spaces are combined as ecologic structures in cities and have appropriate spatial distribution they can have important ecologic performances [6]. Here, creation of artificial urban green spaces seems necessary for metropolises. The components of urban green spaces can be considered as a combination of open spaces and natural plant habitats.

One of the ways to reach sustainable urban development in order to access a sustainable city is paying attention to environment which has been proposed together with consideration of social, political and economic and populations issues[10]. It is important that the people have a proper understanding of environment, its structure and internal processes to move towards its sustainability and beautification [6]. In order to identify and reinforce the indexes of sustainability in cities, such as quality and quantity of urban green spaces [3, 5]. Urban green spaces such landscapes and natural views and urban gardens all create an opportunity to make relation between the children and the nature [3, 11], as they are born as environment friends and nature lovers and this can be observed through their curiosity [5, 9].

Social Domain & Environmental Sustainability

Public green spaces are important both in terms of fulfilling the biological needs and providing the a space for leisure time and making social relations and interactions; on the other hand, we can say that the main goal in designing of green space is to access the social and psychological effects of it in making the human and the nature close to each other [5, 6]. Sustainability has always a cultural and social dimension which deals with the behavioral – biological patterns, value system and the background of the concepts of a society in time. Hence, the changes which are necessary to have a sustainable future always depend on the cultural and social background of any society and the relation between human community and environment should be reviewed based on sustainable values [10].

When the activity of human can be done in a limited time or continuous, it will be towards sustainability of the environment without destroying the natural resources and decreasing the quality of environment. Teaching the true methods of consumption, environment protection and other things with natural origin to children and in elementary schools will be very effective and efficient [12, 21].

The Role of Green Space for Children

Human is dependent on the nature and the nature is also affected by the human and effects on him. The relation between the child and green space, nature, sea, flower and plants, open or roofed environment is considered as components of his dependence on the nature and are necessary for his life. On the other hand, human needs to protect the environment because of his sense of aestheticism, dependence and relation with the nature for the next generations and taking advantages of the nature in a correct way and childhood is the elementary stage of relation between human and the nature[11, 21]. The physical activities of children in the nature increases the enjoyment and stability of experiences in his mind and will eventually result in dependence of children on the nature and this good feeling will provide proper opportunities for discovering and creativity [3, 17]. The general tendency of children towards natural spaces of cities shows physical and psychological

adaptation of children with natural environments [16], as green space is a good place where the interaction and participation of children in regard with environmental decision-making will increase [6, 9].

Many general concepts of sustainable development can be used in designing of environment and landscape to indirectly make the users of environment and landscapes familiar with these concepts. Architecture can have an important role in creation of sustainable public and social spaces [17, 20]. Natural environments are very effective on cognitive development of children because of providing a place for exploring and playing. Development of children's creativity is mostly related with open spaces and these spaces activate the intuitive sense of children [17]. Existence of trees and maintenance of grassed areas increases the sense of peace and security in children [3, 22].

Development of dwelling in apartments and small residences without any yard and desirable open spaces and continuous watching of TV and computer will result in separation of children and green space, the consequence of which is lack of physical activity and interaction with the environment [11, 13]. In this regard and in order to solve the psychological problems and children and make them familiar with the concepts of sustainability and better relations in interaction with green space, open spaces of living area, parks and green spaces of schools are considered as effective factors.

Teaching of Culture in the Framework of Nature

The role of nature is more than creation of a proper place for playing. The psychologists believe that observing the growth of plants and paying attention of their changes during the time will result in understanding of the plants on one hand and will decrease anxiety of children on the other hand. Plants are the most variable and flexible tools of designers to create a place for children to play and learn and they should be used to stimulate the senses of children [1, 11].

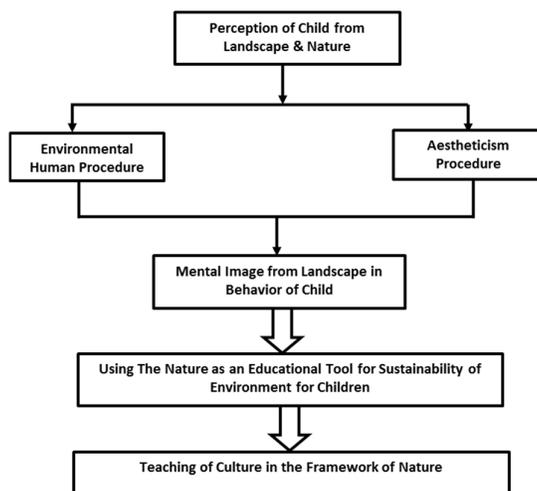


Fig. 1. Creating culture in The Framework of Nature for The Children

The effect of nature on creativity is undeniable such that we can see its traces in any research about creativity [1, 3]. Therefore, integration of architecture with the nature enables the human to use natural space as a background to activate his mind and participation of children and gradual changing of their culture is one of the best methods of development and protection of urban green spaces [10, 13, 20].

Determining Per Capita Green Space in Iran

The standard of open and green spaces has welfare-social dimension which is created according to the climate of any region. We cannot offer a single standard level or volume of green space for the whole country in Iran under the same conditions. According to investigations and studies made by the Ministry of Housing & Urban Development, the standard and acceptable per capita urban green space in Iranian cities is between 7 to 12m² for each person, which is low in comparison with the index determined by the United Nations (20m² to 25² for each person). Nevertheless, considering different geographical and climatic characteristics of Iranian cities, this amount is different and the approved plans of cities determine this amount[19]. Locating green spaces should follow some principles such as centrality, hierarchy and accessibility. Centrality of green space means that the green space should be in the center of the quarter, area or urban district as far as possible. The green spaces in different scales such as quarter and regional parks and the same should be in accordance with the anatomic structure where they occur.

A Method Suggested for Calculation of Per Capita Green Space

The following four parameters are used to calculate the urban green space for Iranian cities: The average area required for a healthy growth of a tree; the local climatic conditions, quality of environment, person or room density in residential houses (beautification organization of Tehran).

In studying of per capita urban applications there is a hint on the characteristics of playground with the capacity of 150-200 children and per capita area of 1 to 3m² for one child, averagely and the minimum area of 650m²[4].

Pattern for Green Space Designing in Playground

Playing is one of the most basic needs of a child. Especially in high density urban areas, where the houses get smaller and smaller for different reasons and the small and sometimes dark spaces of the houses don't give the opportunity of playing, physical activity and entertainment to children, the green spaces should be combined with open spaces. Green spaces and lakes are the focal points of playground for children with a place for eating and playing around it. The children don't like to be far from their parents and they want to be with their parents and have a special place for themselves. A place for writing memories down and painting are desirable for children [9, 22]. Outside open spaces considerably decrease emergence of violence and aggressive behavior or children and improves the spirit of team working in them[11, 17].The principles of designing playground for children include:

Application of natural elements, variation and integration, mysteriousness and complexity, being peace and calm, being surrounded, observance of acoustic issues, accessibility, controllability, visibility, awning, separating space and neutral area[21]. The child acquires different information from the environment while playing. Playing in childhood is tantamount to a strong resource for growth and development of perceptive, cognitive, psychological, social and sensorimotor skills of a child, so providing a secure environment for children's playing is inevitable[3, 7, 16].

TABLE 1, Environmental Concepts to be used for planning and designing for children

Designing in agreement with environment	Effects of plans on environment	Knowing the phenomena and rules
Organizing, proper structure and optimization of flexible designing and compliance with environmental conditions	Environmental effects Effect of plan on culture and behavior of children	Knowing the behavior of environment Knowing the cultural and social affairs regarding the children Environmental awareness of children

Children & Plants

Plants in an educational space of children are not the elements for designing and decoration only; they are means of playing and ways of learning more than anything else. The leafy and branched species of plants, which grow rapidly and are resistance against being climbed, kicked and peeled, should be selected. The researches of psychologists about the effect of plants and flowers on behavior of human shows that plants and flower moderate the behavior human during the day and looking at and touching the flower and plants rapidly changes the spirit of the human and the first sign of this change is smiling[8, 14, 17].Touching the animals and plants facilitate the process of cognitive development and encourages imaginative plays and stimulation of senses. Playground together with plant is not a boring place; although the plants for playgrounds should be carefully selected[11, 21]. Windows towards a landscape with plant coverage have positive effect on cognitive function of children in comparison with bare lands[2, 11].

TABLE 2, Characteristics of Natural Playground for Children

Components	Structures	Levels & Corners	Natural Places	Animals	Plant Coverage	Water
Samples	Using of changeable tools Locating a true place for playground. Creating variation in the space and activity. Stability (creating the sense of group memories and interest).	Social & private interactions and watching the landscapes Replying the sense of curiosity and adventure Being informative (official and non-official education)	Place for sitting and climbing Friendly space	Animals and birds	Trees, tall bushes to provide the conditions for children to explore and exchange	Pool, fountain

Open Space of Quarter for Children

Considering that open spaces of quarter, as the main component of a quarter, are considered as a loop of relation between the house and classroom, identification of the behavioral – perceptive needs of children in these spaces has an important role in providing their physical and psychological health and existence of green

spaces is one of the methods to increase non-official communications and social exhilaration in quarter spaces. Field studies show that gathering and relations of children in open and green residential areas is significantly higher than that in open spaces without plant coverage [5, 9, 21]. So, the capabilities of quarter spaces for emergence of special perceptions and behaviors of children go back to behavioral – perceptive needs of children and their internal motivations for exploring and discovering in them, on one hand and the potential capacities of open residential spaces on the other hand. Therefore, access to green spaces and plan coverage and participation in protection and maintenance of them can play a role in the quality of open residential spaces and have positive behavioral and cognitive effects [3, 16]. Existence of trees and maintaining the grassed areas increases the sense of security and peace in intra-city regions and doubles the level of playing and creativity of plays in places with trees and grassed area [11, 22].

Effect of Environmental Factors on Different Aspects of Children’s Growth in Educational Environments

Direct contact with outside environment and green spaces is considered as one of the important dimensions of child’s growth, while official education in roofed areas activates only some part of the child’s senses, so it is attempted to take the education to the yard and open spaces from roofed spaces[3, 9, 18], Presence of nature in educational spaces occurs very limitedly and this limited presence doesn’t consider the special needs of children and high capabilities of natural environment in fulfilling these needs[7, 15, 22]. Active learning in outside environment stimulates all dimensions of child’s growth in comparison with the roofed environment. Modern educational attitudes try to give a basic function to open spaces as classes. The results of criticisms for common education in schools, the importance of plating in education of children and designing of the existing schools has resulted in changes in the advanced educational system in the world and resulted in more creative design of schools with open plan.

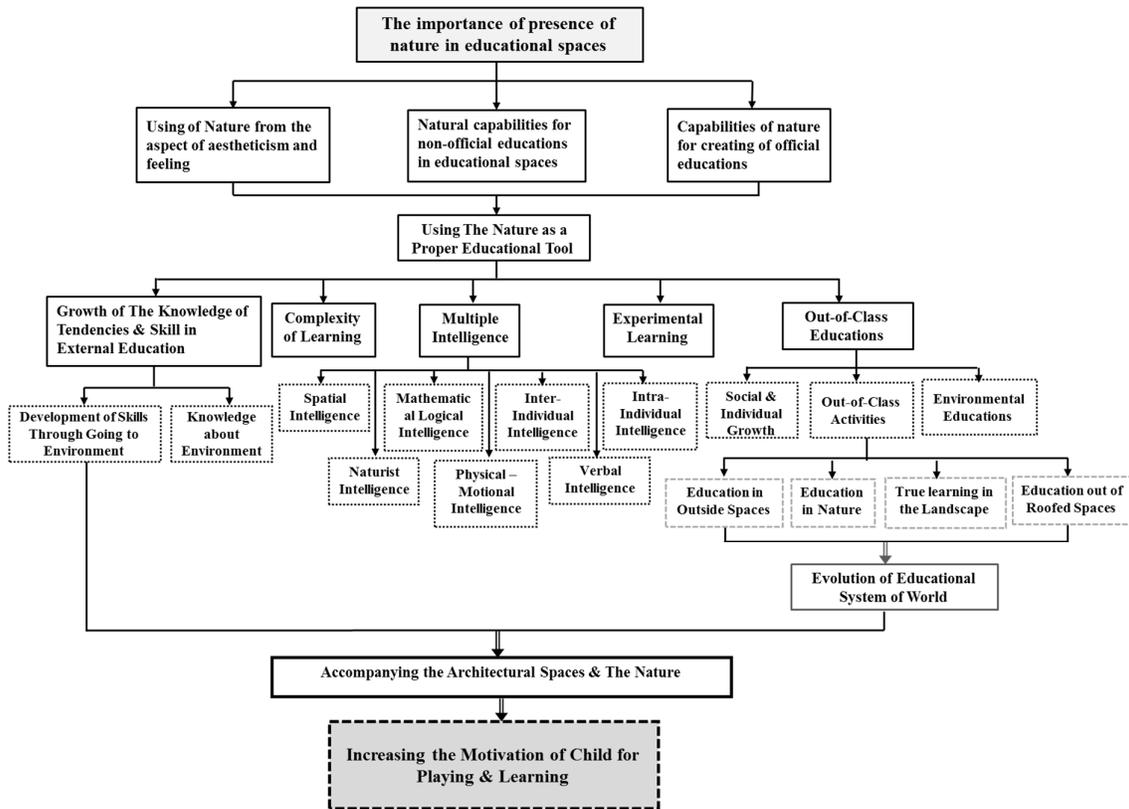


Fig. 2, Presence of Nature in Educational Spaces & Child Growth

The relation of educational space with the outside world for the child means that the educational discussions are related to the real world and learning under these conditions is more tangible and deep. In open classroom with flexible structure, there is more freedom in the environment, more independence for the child and more attention is paid to his individuality. Educational environment of children should be in direct relation with the nature. Existence of views towards natural landscapes gives mental relaxation to the child [3, 13, 17,

22]. Interest is one of the basic incentives in learning [12]. Attractiveness and usefulness of education stages in children should encourage them to continue and finalize their behavior analysis education.

From the viewpoint of environmental psychology, the educational environment should make learning easy and pleasant. Environmental factors (physical environment – architecture) can influence the learning process and help learning and education in interaction with non-environmental factors [13, 14, 18].

Using the Nature as an Educational Tool for Sustainability of Environment for Children

The nature and environment have been always important as the background of life and sustainable development, but the progress and science and industry and population increase have always encountered them with and big and serious hazard, which is destruction [16, 18]. One of the ways to overcome this serious hazard and reach sustainable development is to emphasize on public and general education, which is considered as one of the fundamental methods of environment protection. The young generation has the biggest role in protection of the environment. Considering that awareness and public understanding create the sustainability changes[3, 12], preparing proper educational systems and patterns can pave the way for promoting the environmental awareness, respecting the nature and reinforcing the public sensitivity towards protection and maintenance of environment.

On the other hand, one of the important facilitating factors for making changes and evolutions in order to prevent from destruction of environment and renewable natural resources is public education especially education of children. So, this will be possible when the education is in accordance with the rate of awareness and based on special conditions together with a reasonable efficiency[12]. First the security of the users and the necessary points for making the space appropriate to be qualified for education should be provided in order to provide suitable conditions to create an educational space in a city[18]. The children, as the future-makers of the society, can have an important role in environmental protection and it is very important to promote their interests through official and non-official education. It is necessary to investigate about the interests of the children and prepare plans based on their interest in order to design and execute proper educational programs for children[8,12]. Promotion and improvement of the quality of execution environmental protection education depends on determination of needs and prioritization of the needs in the first step. Through precise identification of educational needs, we can determine the basic columns of educational plan; so determination of educational needs is the starting point of any type of educational activity [14, 16]. The children can be able to understand the concept of environmental protection only through direct contact and free access to the nature and living creatures. Scientific experiences and direct and unlimited contact with the nature is important because most of the yards of schools and houses lack natural elements and suitable plant coverage[21].

CONCLUSION

This theory that green spaces influence the behavior of children and can be applied to adjust their behavior is acceptable and it is possible to promote the children ethically and socially through planning and designing urban green spaces. Paying attention to green spaces and increasing them, as one of the main factors in designing of spaces for children, is effective on promotion of educational – social activities, increasing the interaction between the child and environment, creating plans for solving traffic problems and reducing air pollution and increasing the area of green spaces and using urban green spaces.

TABLE 3, Suggestions for Environmental Education of Children for Promotion of the Interaction of Child and Green Space

Organizational	Educational – Cultural	Environmental
Studying the experienced environmental education plans in developed countries Studying the localization of sustainability education taking patterns from successful plans Studying the tentative plans and correcting the strengths Organizing and managing the plans related to children Providing the background for presence of disabled children together with healthy children	Paying attention to the sense of curiosity of children through creating mysteriousness and complexity Teaching the environmental concepts and promoting the sustainable objectives as a behavior in individual and social behavior Step-by-step education of children in green space Educational games in green space Participation of child in promotion of green space Awareness about the ordinary activities of children in interaction with natural resources and environment	Paying attention to potential of site Decreasing the pollution of environment and air Maximum productivity of green spaces with children Changing the type of relation between the child and environment Making relation between the children and the environment around them Promoting the environmental understanding and awareness level of children

The fencing of green space, color and light and in space, relation between green space and artificial spaces, genders and materials, relation between spaces for children and that for adults, place of flowers and trees and their relation with school are among the cases which are important for the children. The changes which are necessary to reach a sustainable future are always restricted to cultural – social background of any society and

the relation between human society and the nature should be reviewed based on sustainable values. Education of environmental concepts and promoting the objectives of sustainable development in social, economic and environmental dimensions is one of the strategic objective and necessities in education of children. The objective of this education is to access the scientific awareness about natural resources, ethical principles, values and skills towards the objectives of sustainable development and participation of children in making decisions.

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