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Research Article

IDENTIFYING FEATURES OF ARCHITECTURAL OF INSTITUTE FOR THE INTELLECTUAL DEVELOPMENT OF CHILDREN & YOUNG ADULTS; BASED ON CREATIVITY APPROACH

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ABSTRACT
Kids are young and delicate members of society and can effect on forming their surrounding environment by expressing their interests and needs. They need suitable spaces for their growth and nurture of their internal capabilities. Experts mainly focus on summarizing residential neighbors and public spaces with their residents' needs along with increasing developments in small and big cities which lack desirable and suitable spaces, since these spaces form main parts of residents' environment and time like children and adolescents, and from the point of view of engineering human factors, bettering the quality of these spaces may affect children and adolescents' health and creativity. One of the ways of representing creativity is to construct motivating, capable, and in general creative spaces and making creative environment is the most important factor to present new thoughts. Therefore educational spaces and places for children shall be perfectly suitable for their physical, mental, emotional and social growth and be based on their needs and innate temperament to set the way for their correct nurturing and educating as the healthy generation of "tomorrow". The purpose this paper is, to identify space features of Institute for the Intellectual Development of Children & Young Adults (IIDCYA) by reviewing ideas and obtained experiences related to designing IIDCYA. Findings show that energetic, developing, and happy, curiosity and discovery motivating spaces, relations and comparisons, visual perspective of children are among the most important architectural features of IIDCYA toward developing their creativity.

Keywords: *Kid, Space, Architecture, Growth, Creativity*

INTRODUCTION
Certainly architecture can arouse curiosity and creativity sensations, especially if we are deeply involved with it from our very childhood period. Studies showed that human capability and creativity is established in his childhood and the best period for improving creativity and imagination is between 2 to 10 years old. Kids are highly affected by their surrounding environment and naturally reflect on it. Recent studies have reviewed various factors impacting on children creativity, as educational methods, emotional and cognitive aspects of children, and educating issues among others, but these are little. In order to the quality of architectural space in nurturing children creativity, it should be noted that architecture may have very profound effect on children character. This sensitivity is much more important particularly regarding architecture for recreational, educational and cultural spaces for children and if skeleton and space are intellectually designed they can arouse behaviors and reactions which can help more growth in children.

Therefore, designing a space congruous with children's conditions depends certainly on enough knowledge of different steps of growth, foundation of space planography and designing for them; it should have suitable and appropriate conditions for physical, mental, emotional and social growth and be based on children's involvement with understanding environmental factors; a different space different from adults' spaces, a childish space full of closeness, kindness and happiness which set the suitable way for easy access to nurturing and growing their creativity and reaching this purpose shall be possible by architectural designing rules congruous with mental and physical features of children and also possibility of identifying sensible phenomena by children's senses.

However, in recent years a considerable amount of children's leisure time is spent by watching TV which result in decreasing physical movement, environmental awareness and non-interaction with his/her surrounding environment. The lack of playgrounds, somewhere to go, search, tumble, and cavort to show thrill and creativity and local semipublic-semiprivate spaces had worsened this condition. While it shall be noted that interaction with environment is vital in minority, childhood, and adolescence periods for improving and developing physical, cognitive and creative capabilities and living environment in these periods have certain effects on forming existential character, and physical and mental growth.

Literature Review

Child

Determining the range of childhood in different countries are various. However, Article 1 in Convention on the Rights of the Child defines child a person under 18. Article 1 in Law of Supporting the Rights of Children enacted in 2003, also define a child as a person under 18 (Ebrahimi and colleagues, 2009).

Grouping Children by Age

Division of Children by Age is as below:

Infant: 0- 2 years old; preschool 2-5 years old; School 5-11 years old; adolescent 11-14 years old; juvenile 14-18 years old (Ebrahimi and colleagues, 2009).

The Psychology of Child Growth

Theories of Psychology of Growth and Learning

Jean Piaget believed that humans have inherited two main interests one of which is adaptation (attraction and congruity, confrontation and agreement with nature) and the other is organization (mental schema). This process is known as forming cognitive growth. He divided Cognitive Development into four categories (Milani and Hadafi, 2013).

Table 1: Piaget's Stages of Cognitive Development

1	The Sensorimotor Stage	This stage involves nearly first two years of living of an infant. At this point in development, a child's intelligence consists of their basic motor and sensory explorations of the world. Child, during this period, obtains his perceptions of the surrounding environment by sensory explorations through automatic activities.
2	The Preoperational Stage	Nearly from 2 to 7 years old; child obtains verbal expressions for his surrounding environmental elements in this period like "book" or "man" or "dog" which are later his signs to name objects, animals and so on.
3	The Concrete Operational Stage	Between 7 to 11: most of this period is spent in school. The child is still working in a physical world, but s/he use observations and experiences as a base for generalizations. S/he extends Prenumber and number concepts; concepts which are vital in understanding mathematics.
4	The Formal Operational Stage	Usually between 11 to 12: in this period child is not limited to objects, and s/he can think without depending on physical world and expand new concepts.

(Milani and Hadafi, 2013)

Jerome S. Bruner: his view mainly emphasizes on the process of thinking. Mental development involves three stages; Bruner believed that these three developments occur successively, but this does not mean that only one thinking style shall be used in every period.

Table 2: Jerome S. Bruner's Stages of Mental Development (three modes of representation)

1	Enactive representation (action-based)	Children in this period represent the events they experience in action or movement based reactions.
2	Iconic representation (image-based)	Children preserve their life events as mental images.
3	Symbolic representation (language-based)	Child obtains a symbolic system most of which contains language.

(Milani and Hadafi, 2013)

Development Necessities

Children development, like every other natural development, has some stages, steps and directions. Development is divided into physical, mental and psychological stages. Physical stage of the child has a strong effect on his/her character. Fundamental necessities of child development are summarized in three points (Lafon, 1990).

Table 3: Development necessities from Lafon view

1	The necessity of Understanding environment and expanding cognition
2	The necessity of health, physical security and developing bodily skills
3	The necessity of satisfying emotions, interaction with environment and developing motivations

(Lafon, 1990)

Table 5: Defining Creativity

1	Stiffen (1991)	He defines creativity as the skill of combining thoughts and views in a unique way by correlating between them.
2	Dr. Rezayan (1995)	Creativity is applying mental capacities to make a new thought or concept.
3	Albrecht (1987)	Creativity is a mental process to make new thought and innovation is the process of changing Creativity to an action and result.
4	Parnes (1963)	A process which involves thinking and reaction and human connects to his/her past experiences (motivators like objects, signs, concepts, people and situations) and presents at least a set of unique reactions.
5	Oxford English Dictionary	Creating- Making
6	Robert, Musician	Stating original views, innate part of human
7	Francis-Gardner	The capability of making something we imagine.
8	Clarkston (1984)	Having the brave of Being Different

(Source: Authors)

Imitation, Play and Rules

Undeniable significance of play as a context of development for children which cause physical and psyche and even mental growth is so obvious. UNESCO state in this regard that playground spaces can meet children development needs in all aspects including physical, perceptual, social and emotional development.

However we mean playgrounds which are constructed based on psychological features of children and can satisfy their needs in abovementioned aspects. Based on space accountability law, Ittelson states: a corner of a street where in a building is constructed may be better in meeting children need than a newly

constructed playground which is equipped with various kinds of pre-built tools like swing, slide and so on. It is interesting that spatial quality for adult is formed in this period but was not followed later (Ittelson, 1974).

Emotional Development of Child

Scientific evidence shows that emotional development starts from the very beginning of life and has longstanding consequences during one's life. Since birth, infants expand their capabilities for expressing experiences, and different feelings and also their potential capabilities to acquire language to communicate and prevent from unsuitable feelings. Developed social skills in the first 5 years are also related to sensorial capabilities and greatly impact on later skills like forming successful relations in school and during life (Milani and Hadafi, 2013).

The Concept of Creativity

Theoreticians have various definitions about creativity. Some significant definitions are summarized in above table (5):

This definition show that Creativity involves:

1- Viewing things and matters in a new manner

2- Learning from previous experiences and connecting this to new situations; flexible thinking and breaking borders and limits

3- Using non-traditional methods to solve problems

4- Going beyond current information

5- Creating something unique and original (Duffy, 2002).

Effective Factors on Creativity

Some environmental factors are effective in increasing the process of creativity development. These factors involve:

1- Natural Factors of Environment: making landscapes in natural environment can help creativity development (Mccopy and Garym, 2002). Even the presence of plants in internal spaces can impact on the process of creativity.

2- Shape and Area of Spaces: shape and size of spaces can set the way for association of people and groups to make social relations and interactions. The amount and type of group relations have positive effect in the process of creativity; so designing space from viewpoint of performance, shape and size is significant in increasing the process of creativity development. So we can say that increasing relations and quality of these relations can have positive effects on the process of creativity development (Hornecker, 2005).

3- Flexibility of Performances: spaces are used for different purposes and performances during different periods.

4- Imagination: it is related to the motivation of child to imagine in different situations.

5- Using children's works: using works of best artists in decorating space and constructing a space which eases working freely day by day can have positive effects in the process of creativity development (Amabeli, 1997).

6- Curiosity: here it means, questioning and trying to find answers by children (Shafahi and Madani, 2010).

Creativity and Child Environment

The word of "Creativity" is used in different contexts and meanings. There are also different theories about it, but it should be noted that the most comprehensive theory is from Gilford the American scientist. He divided intellectual capacities of human into 150 separate factors which every of them, can be measurable separately. Some of these features in his view are directly effective in emerging creativity. These feature and characteristics are as follow:

1- Fluidity (psychical): making some thinking in one period

2- Flexibility (litheness): creating various and unusual thoughts and different solutions for one problem

3- Newness (originality): using unique solutions

4- Expansion (extension): making details and determining connotations and applications

5- Combination: putting together some incongruous thoughts
6- Analysis: breaking symbolic structures into forming components
7- Organizing: changing the forms of designs, functions and applications
8- Complexity: the capacity of deal with various and related thoughts simultaneously
He considered the first three as directly affecting the emergence of creativity. He also points to another kind of thinking in opposition to this thinking and names it "convergent thinking" which is directly related to Intelligence; however, contexts of the process of creativity development is important; with study of scientists' ideas, we can conclude that there are consensus points: 1- creativity is acquisitive like other human capacities and it is not limited for special and limited numbers of human; 2- the process of creativity development demands special conditions and passing special educations. 3- There are different kinds of obstacles in the emergence of creativity, a few of which are only dependent on physical capabilities of human and most others are dependent on social, cultural and educational aspects. Therefore, if suitable conditions are prepared, it is possible to nurture creativity in all humans. In so doing, we can point to childhood and its role in nurturing creativity, as it is obvious that a kid who is nurtured in an unappropriated space would have lesser capability of creativity and most problems of humans regarding creativity roots in this period (Mozaffar, 2008).

The relation of Child, Space and Architecture

If we want children to express their creativity, we shall make environments for getting this goal. So we shall remember two aspects.
1- Emotional environment
2- Physical environment (Duffy, 2002).

Living Space of Children

Making spaces for children involves engineering, designing, and constructing suitable spaces for their life. Today space is considered as a continuous space since preschool in surrounding environment and educational and non-educational spaces to next periods. Forming these spaces, on the other hand, demands following rules and regulations of designing to apply all forming components of internal spaces like volumes, detections, and specially colors; in other hand moral, spiritual and psychological features shall be under due focus in this regard.
According to the previous studies in recent years, which had been obtained by special attention to suitable spaces and environments for children, we can divide various spaces as below:
1- Natural Spaces: like tree, water and living animals which form the main and most important space for children.
2- Open Spaces: Extensive spaces wherein children can run from here to there and consume their inner energies.
3- Public Spaces: which involves paths, roads, hospitals, libraries and so on.
4- Some spaces for adventure: these spaces shall be filled with complexity wherein the imagination and visualization capacity of children can be developed as a result of their being there.
6- Hidden Spaces: Independence of Children would increase by these hidden spaces.
7- Playground spaces: which involves lots of play tools and toys suitable for children so that they can interrelate with each other in a happy environment besides discharging their energy.
So there is no doubt that children need appropriate time and environments for a comprehensive and multilateral development. Lack of space, and lack planning by adult managers for free times of children and fear of practical and external factors of environment (like traffic, strangers' threat and so on) are among the problems that would impact on certain development and their long-term health and happy. Therefore, making adequate space and time can prepare a context wherein children can design their sources, know their identity, dependence on society, social relations and terms, relation with nature and make physical activity (Talaee, 2010).

Designing Educational Spaces for Children

There are considerable factors which impact on children performance, behavior and attitude in schools, but many of these factors are overlooked by designers and this caused non-appropriate conditions which

may inhibit academic success. Recent Studies show that there is some relation between physical conditions like: multi-sensory workshops, light, acoustic color (voice), smell, touch, weather, relations, space and students' behavior, performance and moral.

1- Studied Cases

In this section some cases are presented as for more reviewing:

Table 6: Reviewing features of Educational Space

Project Features	Index Items in Designing
Haghpanah Girls' Elementary School Architects: Muhammad Arab, Mina Moein-al-Dini Location: Iran, Isfahan, 2012	1- Using simple and understandable bodies and avoiding every kind of complex spatial organization. 2- Applying color as introduces its role and character from its external facing and makes feeling of comfort along with happiness and animation. Visual penetration in related body of city to make connection between city and school and movement in city and decrease feeling of closed-ness within the building.
8-section Kindergarten Architect: Los del Desierto Location: Almeria, Spain, 2009	1- Obeying proportions and standards 2- Continuous relation between interior and exterior 3- making attractive facing with different colors 4- separating classes with colors for every age group 5- separating public spaces with different colors
Elementary School and Kindergarten of Pascal Architect: Peru atelier Location: Holland	1- making a space of meetings, conferences, and ceremonies. 2- library in the corridor, and it has no closed space. 3- connection between upper floors classes by a transparent stair to library and meeting saloon. 4- Classes lookout through transparent sidewalls to studying space in corridors. 5- there are drawer doors on the floor that makes it possible to use a part of the yard as a class in sunny days.
Panoram kindergarten Architect: Jian Carlo Masantie Location: Santa Marta, Columbia.	1- constructing flexible spaces 2- constructing one central yard surrounding it filled with flowers and petals 3- classes filled with racemes so that natural aeration and day light are maximized; while every block has a conical and asymmetric roof.

(Source: authors)

RESULTS AND DISCUSSION

Creativity is a potential capacity of human which can be developed and flourished by an appropriate and nurturing space. According to the significance of childhood period and learning from life in this period, it is necessary and vital to construct environments which can flourish this potential in the best way. In designing a nurturing and motivating space for improving children creativity should consider to physical and psychological needs.

Table 7: Architectural Features

Features	Effective Components
Energetic	Fluid, dynamic, moving, flexible, color
Happy Space	Comfort, movement, attraction, balance
Development	Change
Curiosity	Thrill, excite, environment's finesse, ambiguity, sizes, context
Discovery	Innovation, making new things, internal and external

Proportions and Standard	Appropriate parts suitable for children, obeying security
Visual Look	Simplicity, being challenged

Providing comfort and psychological security by an environment is the first prerequisite of a suitable environment for children that can develop their creativity and satisfies their various needs. An environment which have motivational and arousing factors interrelated with comfort and quietness and risk acceptability in opposition to security. Children demand physiological, psychological, social and educational needs and these factors impact on the type of their physical and psychological development and increasing their creativity so spaces that particularly designed for children must meet these needs. There are some rules of designing and fitting spaces which can have positive effects on children creativity (table 7).

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