

THE ENVIRONMENTAL REVITALIZATION OF THE SPACE FOR CHILDREN

UDC 727.57:159.922.73=111

Danica Stanković

University of Nis, The Faculty of Civil Engineering and Architecture, Serbia
danica.stankovic@gaf.ni.ac.rs

Abstract. *The purpose of this study is to deal with the problem of establishing specific child-environment relations. The goal of this paper is to indicate the relation children's developing needs and features such space has to have.*

The paper gives recommendations for revitalization of environmental values of this area as particularly important in the development of children. Through definition and reconsideration of spatial and functional structure of the space for stay in the context of the impact on the psychological needs of children, it proposes measures for redefinition of the existing concept of the space for stay in order to investigate its improvement.

Key words: *space, child, environment, revitalization, redefinition.*

1. INTRODUCTION

The causal relations of architectonic design – ambience quality factors in the pre-school facilities, are an important starting point in defining the physical environment where the children stay, and which is significant for the development of children at all.

Physical articulation and materialization properties of the space belongs to the field of architectural and designing initiatives and interventions. Each of the formulated properties of space where children stay in preschool facilities can be given the physical dimension through three synchronized activities: conceiving space for certain functions, creation of physical structures and selection of materials (quality, texture, color).

As the materialization is accompanied by a wide range of aspects which represent particular issues covered in this paper, attention is paid primarily to designing of valuable content and structural characteristics of rooms where children stay. Valuable content of these areas is determined by the diverse and rich activities properly organized in some of

Received November 11, 2011

Acknowledgement. The paper is a part of the research done within the project TR 36045 (Revitalization of pre'school facilities in Serbia: program and methods of improvement of ambient, functional and energy qualities) for the period 2011-2014. The author would like to thank to the Ministry of Education and Science of the Republic of Serbi..

the specially designed space segments for the children. The structural components of space where children stay in preschool facilities are different types of spatial elements of the specific characteristics that contribute to the formation and articulation of certain properties of space. Thus, certain structural characteristics of the space where children stay take part in the formation of certain properties of the surrounding physical environment.

2. SPATIAL CHARACTERISTICS AND DESIGNING PROCEDURE AIMED AT REVITALIZATION

When it comes to architectural elements of the space where children stay, the structural characteristics of these areas refer to the specifics of designed architectural elements in the areas of spatial planes, such as: floors, walls and ceiling planes. A special kind of elements in rooms where children stay are the constructed spatial structures that can have different dispositions within it.

2.1. Child and the ability to control space

Availability and the ability to control space and the elements in it are defined in two ways: with respect to handling and accessibility in and level of challenge that the room as an architectural space provides.

Accessibility in handling refers both to the dimensional characteristics of the equipment, and on all other measures in the area where children stay. Also, properties that limit children's activities are essentially incongruous with the activities for which they are designed for, as follows:

- in terms of size (surface area and height) of concrete partitions,
- in terms of the characteristics of the flooring and
- in terms of the number of elements present.

When it comes to the volume of space, it is desirable to:

- create niches in the single area where children stay for smaller (2-3 children) or for somewhat larger groups of children (up to 5)
- accentuate and outline a smaller ambient unit by the height of the space.

The change in height, which occurs as a hint of some partitions may be due to: architectural and construction interventions, lowering the light ceilings in specific areas of residence, formation sub-gallery and gallery space in the room and use of existing structural elements (space under the stairs, in the form of eaves or similar slabs projecting over the window or door beams, or under some higher parapet panels and the like).

Flexible space and equipment are of the utmost importance for the gradation of challenges and creation of environments of such competences.

2.2. The characteristics of coherent environments

When it comes to the architectural process, the characteristics of coherent environments are the most effective if they are clearly visible. Therefore, the coherence in areas where children stay in preschool facilities is supplied by the symbols of the environment and those can be different elements: visual clues, partitions, tags, directions and visual contact. Visual clues are some prominent or reference points in the areas where children stay. Distinctive visual clues may be represented by: certain units in space, only some

elements of the space or even a piece of equipment. They draw attention in a simple way by their special position or use, a strong contrast between what is their manifestation and the right structure, or high visual quality.

Partitions enhance the coherence of space, creating contrasts between its individual parts, or differentiating zones. The boundaries must be clear, but may be designed differently, as structural and as symbolic. Structural boundaries can be: curved walls, suspended ceilings or raised ceilings, prominent eaves and multiple floor platforms. Structural boundaries can sometimes cause poor "legibility" of space. If the levels of the floor are not clearly demarcated the child may constantly feel lack of balance.

Children often identify color and light as demarcation symbols. Changes in the texture of the floor are also effective symbols of limits, and sometimes it a rug or a carpet is sufficient to create contrast of the floor levels. If there are no borders or they are minimum, the conflict between neighboring activities increases.

Labels are symbols of the environment describing how a space or equipment is used. Directions of movement must be clear, otherwise the motion in space increases. A clear direction is always consistent and limited. [1]



Fig. 1 and Fig. 2. Kindergarten "Mother's Club Family Learning Early Education", Pasadena (California, U.S.A.), Harley Ellis Devereaux, 2003.

However, corridor communications are bounded by walls, and are not the optimal routes of movement, because they isolate and reduce the sense of connectedness with the surrounding area. It is necessary to limit the space in transparent way, like by:

- glass partitions and doors,
- low partitions or pieces of equipment that only partially divide a space.

Visual contact maintains coherence, because it allows the child to control the situation and has a good sight over an area. So visual cues, as well as partitions as demarcators of space boundaries, labels, directions of movement and visual contact can be symbols of the environment facilitating orientation.

As an architectural trait, the specific forms or geometric forms can also contribute to creating a space with coherent properties. If the type of the room where children stay is flexible with the capacity to change, it is necessary that some partitions are permanent in character and precisely there the visual cues should be developed.

2.3. The safety of the space for children

Important components in designing procedure when it comes to the safety of the space for children are:

- barriers, their height and transparency,
- grouping of smaller spatial units, by type of functions.

Supervised activities that require this level of partition so that the height of barriers and possible transparency provide the desired safety. When it comes to unattended activities, it is necessary that the space for children possess safe places for uninterrupted independent activities, and that partitions provide concealment from view, by their height and the degree of transparency.

Rules of coincidence of space and activities are relevant for safety considerations, too. Potentially dangerous activities that require full supervision, should be placed in close proximity to one another and should not be combined with areas of relatively safe activities.

It is also important that the child's becoming independent is supported by space, and designed for safety.

2.4. The space wich encourage

Way of designing the space in order to encourage certain activities for children, depends on the program and method of work in preschool facilities.

Dominant role of moving in space requires the following:

- larger areas of free space when partitioning is not desirable or
- one part remaining free, while others are partitioned in small divisions;
- partially complete spaces, because they encourage the exploration of undiscovered areas, partially partitioned areas and partially equipped zones;
- horizontal and vertical structuring, because the space is used efficiently
- variety of floor levels, niches and curvature of vertical walls and partitions.

On the other hand, sensitive environment encourages stationary exploration.[2]



Fig 3 and Fig 4. Kindergarten "Taka-Tuka-Land", Berlin, German, Susan Hofman, 2007.

2.5. The complexity of the space for children

The potential for complexity lies in those spaces where children stay which are characterized by a number of different environments and specifically built and designed sub-units. From the architectural-designing point of view diversity of the areas for stay can be built on two levels: by variations of spatial possibilities and equipment.

In both variants, the procedure is identical and includes differentiation of separate small spatial units. Thus the created spatial structures contribute to the complexity if they are designed as follows:

- partially closed,
- movable partitions and
- unusual shape partitions. [3]

For the partitioning of single spaces the barriers that may be made of different materials and different types are designed: as full or transparent partitions and for the partial partitioning of different heights or to the ceiling.

From the aspect of specific formative design, the space where children stay with a rich internal structure can be built by an architectural-designing procedure comprising:

- combination of straight and curved surfaces,
- horizontal and inclined,
- rough and smooth surfaces.

2.6. The renewal potential of the space for children

Renewal potential of space where children stay can be achieved through: nature or natural elements and certain types of objects.

When due to bad weather the average time children can spend playing in the yard of preschool facility or in nature is shortened, the relationship of indoor and outdoor areas and the accompanying area becomes very important. There are multiple options to contribute to the quality of these relationships in an architectural way, those being:

- connection to the external environment, partially protected outdoor stays and visual contact with the environment,
- introduction of the external environment in the interior, internal courtyards and atriums and
- elements of nature in the inner space.

Direct way of using open space regardless of adverse weather conditions, rain or snow, is a partial venture outside, ie by stay in the covered exit areas such as:

- terraces and porches,
- paved yard areas - specially treated, and thus prominent areas suitable for playing, while covered and sheltered.

An indirect way to increase the quality of the relationship of internal and external space is to establish a visual contact with the natural environment of a preschool facility. In this respect the architectural possibilities are varied:

- window apertures are set at the eye-levels of children and let in the vividness and freshness of the outside world,
- transparent partitions have large area, and can even cover area from floor to ceiling, and a glass wall in the ground floor can create the illusion that children stay in the open,
- skylights in the ceiling of the space where children stay, provide the zenithal light, give a view of the sky and give another dimension to relations with the external environment.

In preschool facilities located in the central urban areas, in confined locations remote from nature, one may intervene by designing: internal courtyard, formed by a surrounding building or atrium, in glass, at the center of the building.

The elements of nature into the interior of pre-building can be designed as:

- greenhouses, that is, a set of different plants in one place in the form green space
- or as the individual elements of nature in the area for children, which may or may not be necessarily be plants only.

Animals, for example, fascinate children and they love to spend time looking at the aquarium with fish. Objects that are in the area may also contribute to the renewal potential of the area. Musical instruments and all other objects whose use helps children create their own imaginary world are also interesting. [4]

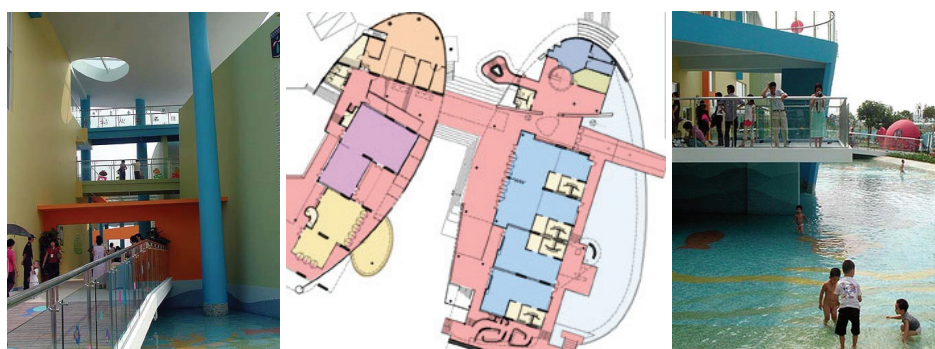


Fig. 5, Fig. 6 and Fig. 7. Water as a renewal potential in Kindergarten "Sunshine" in Zhongshan, Kina, F. Min, W. C. Hung and Y.T. Chi, 2006.

2.7. Child and the territory for privacy

For analysis of the relation environment - the child's behavior in seeking privacy and territories for privacy, the following factors are important: size of the group, that is, a number of children in the group, size of the room and space where children stay and the manner in which it is designed and equipped.

Kindergarten environment, both physical and interpersonal can be helpful in seeking privacy and the territory for privacy, but it seems not to be the case. The reasons vary, but are often in close relation with the applied designing procedure and when it is based on the following requirements: protection of the child, age limitations in the use of space and the need for constant supervision.

On the other hand, pre-school facilities provide full support and necessary conditions for the regulation of social interactions when the child care area is designed to as consisting of separate differentiated zones: for individual activities, activities in small groups and activity in large groups. [5]

The size of the room and the number of children define the area as individual, medium or partially public, in the internal spatial hierarchy. Privacy is reduced when the area of space cannot meet the different levels of interaction. When there are spaces for partial public interactions, but very little space where one can be alone, sheltered places, and separate areas for small groups can be created by a certain organization of equipment.

The shelters in the space where children stay provide potential for:

- for an interrupted playing, but also for,
- observation of activities one does not take part in,

- the retirement from of excess contacts and
- for expressing emotions when a child does not want to share them with others in the room.

The disadvantages of space for children's room designed as a single, large room of an open type are indicated by the behavior of children in such environments. Children are more aggressive and more mobile, lively and noiser. In an unpartitioned space, children tend to run more. Therefore, the design concept of a children institution, of an open or closed layout has its advantages and disadvantages in relation to the need for a hierarchy regarding the public character of the space. Too undefined and flexible layout of open space reduces the level of privacy. Closed layout is not flexible and reduces the potential of space to adjust to changes in the needs of children. Designing a modified open layout with pockets for special activities and barriers, meet the needs for privacy and maintain the necessary degree of flexibility.

2.8. The space with which children will identify

In order to make spaces in which children reside in preschool facilities pleasurable it is necessary to form them so that they represent environments familiar to children, who will love to spend time there, and will be tied to them by warm feelings, and will wish to return to them and with which the children will eventually identify. Two architectural-designing procedures may affect the formation of such space with which children will identify and to which they will be attached: creation of a warm domestic atmosphere and by personalization of space. [6]

Creation of an environment similar to home, from which the children come and where there is a familiar atmosphere, can be accomplished in many ways:

- by organizing smaller spatial units (in area and volume);
- by functional connections, governed by the spatial relationships similar to housing organization and
- furnishing (eg. screening, reducing the entry of light) and using appropriate materials (wood and other warm structures).

Personalising space is most simply achieved by introducing elements created by the children, all those things that children consider personal, like when children keep their drawings on the walls.

3. CONCLUSION

The knowledge about the ways the pre-school education and the children staying in the pre-school facilities affect the children's development, and about the results of this influence, is of high importance for the professional and scientific public, and for the society as a whole.

The quality of pre-school education, in one part refers to the quality of architectonic design, that is, the quality of organization and materialization of the designed physical environment of pre-school premises. Therefore, there is a qualitative definition of an architectural environment where children stay, as a factor of importance for the intellectual and social activities for children. Considering the knowledge that the quality of designed and built environment affects the intellectual, social and emotional development of children, there is the issue of what designing procedure will contribute to the quality of the environment in pre-school facilities, and also in children's education and overall development. [7]

Properties that limit children's activities are essentially incongruous with the activities for which they are designed for, as follows: in terms of size (surface area and height) of concrete partitions, in terms of the characteristics of the flooring and in terms of the number of elements present.

When it comes to the architectural process, the characteristics of coherent environments are the most effective if they are clearly visible. Therefore, the coherence in areas where children stay in preschool facilities is supplied by the symbols of the environment and those can be different elements: visual clues, partitions, tags, directions and visual contact.

Important components in designing procedure when it comes to the safety of the space for children are: barriers, their height and transparency and grouping of smaller spatial units, by type of functions.

Way of designing the space in order to encourage certain activities for children, depends on the program and method of work in preschool facilities. From the architectural-designing point of view diversity of the areas to stay can be built on two levels: by variations of spatial possibilities and equipment.

Renewal of space where children stay potential can be achieved through: nature or natural elements and certain types of objects.

Pre-school facilities provide full support and necessary conditions for the regulation of social interactions when the child care area is designed to as consisting of separate differentiated zones: for individual activities, activities in small groups and activity in large groups.

Two architectural-designing procedures may affect the formation of such space with which children will identify and to which they will be attached: creation of a warm domestic atmosphere and by personalization of space. Creation of an environment similar to home, from which the children come and where there is a familiar atmosphere, can be accomplished by organizing smaller spatial units, by functional connections, governed by the spatial relationships similar to housing organization and by furnishing and using appropriate materials.

REFERENCES

1. Canizares and J.Fajardo, *Kindergartens, schools and playgrounds*, Loft Publications, Barcelona, Spain, 2007.
2. M.Dudek, *A design manual schools and kindergartens*, Birkhauser Verlag AG, Basel-Boston-Berlin, 2008.
3. G.T.Moore, T.Sugiyama and L. O'Donnell, "The children's physical environments rating scale", Australian Early Childhood Association Biennial Conference, Hobart, Australia, 2003.
4. N. Rot, *Osnovi socijalne psihologije*, Zavod za udžbenike i nastavna sredstva, Beograd, 2003.
5. D.Stanković, A.Milojković and M.Tanić, "Physical environment factors and their impact on the children in the pre-school facilities", *Facta Universitatis, Series Architecture and Civil Engineering*, Vol.4.Nº1-2006, pp.51-57, University of Nis, Nis, 2006.
6. D.Stanković and J.Stojić, "Psycho-developing needs of children and spatial features for children's stay", *Facta Universitatis, Series Architecture and Civil Engineering*, Vol.5, Nº1-2007, pp. 71-75, University of Nis, Nis, 2007.
7. D.Stanković, "Space in the function of psychological stability of child", *Facta Universitatis, Series Architecture and Civil Engineering*, Vol.6, Nº2 - 2008, pp. 229-233, University of Nis, Nis, 2008.

AMBIJENTALNA REVITALIZACIJA PROSTORA ZA DECU

Danica Stanković

U ovom radu se istražuje problem uspostavljanja specifičnih odnosa na relaciji dete – ambijent boravka. Cilj je da se ukaže na korelaciju dečjih razvojnih potreba i osobina koje bi prostori za boravak trebalo da poseduju.

U radu se daju preporuke za revitalizaciju ambijentalnih vrednosti ovih prostora kao posebno značajnijih u razvoju dece. Kroz definisanje i preispitivanje prostorno-funkcionalne strukture prostora za boravak u kontekstu uticaja na psihološke potrebe dece, predlažu se mere za redefiniciju postojećeg koncepta prostora za decu i njihovo unapredjenje.

Ključne reči: *prostor, dete, ambijent, revitalizacija, redefinicija.*