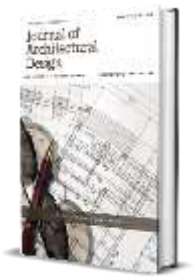

A New Approach to the Design of Preschool Institutions

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ABSTRACT

The paper considers a new approach to the design of preschool institutions, taking into account the psychology of children's perceptions. The basic principles of creating the environment, motivating children to study, and developing their mental, creative and physical abilities were identified. Buildings of preschool institutions are seen as means of the world perception and social adaptation of children. The child perceives the world through visual, tactile and other sensations. All factors of changing the world should be reflected in the architectural style of a building.

Keywords: motivating children, buildings of preschool, developing their minds

Introduction

Currently, the design of preschool institutions is aimed at creating an environment, which develops the mental, physical and creative abilities of a child, who perceives the world through visual, tactile and other sensations, and all factors of the changing world should be reflected in the architectural style of a building. This article identifies and studies the basic principles of creating such a developing environment which have been used in Europe for many years [1-3]. For Russia, these principles are innovative and should be universally implemented in practice while creating projects for children.

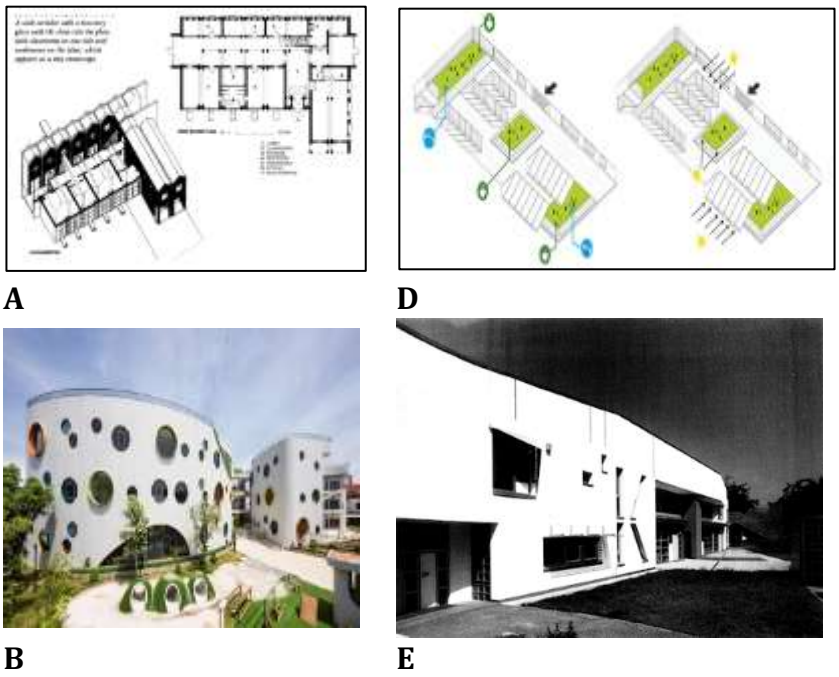
Main Part

The study of the main tendencies in the design of preschool institutions Historical analysis of the design of institutions for children has shown the origin of such projects. Preschool institutions as a building type first appeared in Germany in the early nineteenth century, the creator of this concept was Friedrich Fröbel, a German theorist. In the late XIX century Rudolf Steiner, the Austrian philosopher and architect, revealed the impact of the architectural environment on the psychological state of a child.

Four approaches to designing kindergartens in the 1980-ies In the mid-twentieth century preschool institutions in Europe were not particularly attractive as far as the architectural look is concerned, only the

functional point was considered in their design. In the 1980-ies it was realized that preschool institutions are a completely new building type, requiring a special approach to their design. During the same period, four main approaches to preschool institution design were developed (Fig. 1). The first approach is metaphorical. An illustrative example is the kindergarten project "KITA" in Frankfurt. Architect Christoph Mackler believed that there was no such thing as architecture for children. In his project, there are no so-called "children's elements" [4-7]. He used the metaphor of a small town where classes are a kind of terraced housing, and the corridor plays the role of a street. Critics believed that Mackler was too serious about children and that the environment was too detached from reality in his project. Another example of the metaphor approach is the kindergarten in the form of a sinking ship in Stuttgart (Luginsland Kindergarten, Stuttgart by architects Behnisch and Partner architects) (Fig. 1). The second approach is organic. In his kindergarten project Austrian architect, Hundertwasser attempted to establish a link between man and nature by means of architecture (Fig. 1). The third approach includes the structures of the late modern. According to architects, developing this approach, a building is only a frame, a neutral shell without any narrative content, and the elements relevant to children should be placed inside this frame. An example is a kindergarten by architect Wilson [8-12].

The fourth approach is modular architecture. The examples are temporary structures assembled from the factory blocks to meet social needs in the postwar period (Fig. 1).



A **D**

B **E**

Fig 1. The basic approaches in the design of preschool institutions in the 1980-ies.
A- Metaphor, B- Organic, D- Late modern, E- Modular

The principles of preschool institutions designed based on the research of psychologists. Today, architects around the world are also concerned with the question of what a modern preschool institution should be. At the end of the XX century, studies in the field of children's psychology were being actively conducted, and they all were reflected in this or that way in the modern architecture of kindergartens [13-19].

Design principles based on studies of psychologists. According to the research by Judith Seaver "The Philosophy of the Educational Approach", interior design must be directly connected with the educational program, which includes structured activities

(scheduled classes) and unstructured activities (allowing a child to choose classes). With that in mind, the main tendency in designing modern preschool institutions should be an “open structure” room layout and throwing out the traditional corridor system. In large spaces, the zones for both quiet relaxation and active games are created with the help of movable partitions, different floor levels, different floor coverings and other ways [17-20]. Children, following their inner impulses, choose what they want to do. Thus, a flowing space without “idle” places is formed (Fig. 2a).

In 1994, one more study experiment was conducted: inside the standard classroom another smaller "classroom" in the form of a box structure was created. When in a smaller room, children were spending much more time on a specific activity, than in the standard classroom. It was concluded that in the structure of the building, the architects should provide more private, reduced-scaled spaces for children. One of the examples of the such solution of the kindergarten design with open plan and private spaces is the kindergarten in Tromso in Norway (Fig. 2b).

Psychologists came to one more conclusion that architects must keep in mind the visual horizons of the child: windows at the child's eye level, and horizontal elements corresponding to the door height (Fig. 2c). The reflection of psychological philosophies in architecture

2a. “open structure” room layout

2b. private, reduce-scaled spaces

2c. small child-sized windows

Fig. 2. Design principles based on the research of psychologists.

The perception of the building as an enormous space for games. The next approach to the design of modern preschool institutions is the perception of the building form as a giant space for games. Currently, architects can pitch lots of ideas for children’s play activities.

Playful elements can be a part of the facade. The example is the reconstruction project of a kindergarten in Slovenia. The idea to turn the facade of the building into a playful element was influenced by the lack of equipment for games in the building. The new facade consists of turning bright boards, and children can change the exterior of the kindergarten and room lighting by themselves as well as study different colours and textures of materials.

The walking paths in the building can be turned into playful elements – atriums have trampolines and corridors, passages are organized like a climbing gym, and stairs are duplicated with slides. For example, one kindergarten in Tokyo resembles a giant slide for children.

Principles of preschool institutions design based on psychological research. Thus, based on the above-mentioned studies it was concluded that the environment an architect creates for children should educate and develop. By creating a comfortable environment for children of preschool age, an architect should follow the principles of:

- open structure room layout;
- allowing active movement in each room;
- allowing children to explore, develop sensory experience (the use of different texture surfaces);
- creation of private spaces for relaxation, quiet games and private lessons;

- ensuring visual diversity of forms and spaces, creation of contrasts;
- communication with the external environment, and natural surroundings;
- creating the mood of the space by means of architecture, according to its function.

An example of the use of all the above-mentioned principles can be the kindergarten Kids Troplo in Hamburg (Germany), designed by the architectural firm Kadawittfeldarchitektur. The facade of the building attracts attention with its interesting geometry, contrasting colours, and bright colour accents against a neutral background. Central, double-level space is a huge place for outdoor games with a wide variety of facilities for a child allowing to move and create. At the same time, the architects took care of secluded spots, where tired children can have rest, read or draw. The main staircase in the central space in addition to its initial function is an area for active play, and movement and also may perform the role of the forum. Panoramic windows ensure good lighting and visual interrelation of the interior space with the natural environment. Moreover, the building of the kindergarten is not only functional and flexible for future changes but also energy-efficient.

Conclusions

Recently in Russia, architects have also started looking for new and different from typical design approaches to organising children's educational institutions. Studies of the impact of social needs and psychology on children's perception of the architecture of a building and the organization of interior space have been conducted. Mostly, these studies are aimed at finding new principles of school building design. As for preschool institutions, this question is less studied. This research can give a good start for a new step in the development of modern kindergartens in Russia.

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