Architectural environment for young children’s habilitation

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Abstract. The article deals with the actual problems of the architectural environment formation of a new functional purpose - the young children’s habilitation or the “architectural habilitation environment”, which need to study, arose with the advent of habilitation institutions and services in Russia. The main disadvantages of the architectural environment of existing habilitation institutions are identified. The factors and requirements determining its specificity are revealed. Compositional, plastic, coloristic techniques for the organization of the architectural habilitation environment are proposed.

Introduction
Society and state increased attention in the last decade, to the socialization and inclusive education problems of children who have impairs or developmental delays risks has led to the introduction of new methods of medical, psychological and educational assistance to young children (from birth to 3 years).

One of such methods is habilitation that involves the specialists support in the undeveloped body functions and skills formation of a child, as opposed to rehabilitation, when it comes to their recovery.

This term is close in meaning to the terms “normalization” and “early intervention” used in Europe [1].

The opening of habilitation institutions and subdivisions poses a new challenge for architects — the requirements study for the architectural environment organization that is most suitable for habilitation. For its designation, the term “architectural habilitation environment” was introduced [2].

The importance of adequate space organization for the children’s full development is difficult to overestimate, as evidenced by the multi-year interest of scientists-architects to research in the field of designing preschool institutions and boarding schools for disabled children (Stepanov V.K., Zhelnakova L.V., Tsvetkova L.A., Lamekhova N.V.). The environment influence on the child is emphasized in the works of eminent scientists, educational psychologists who have created their own methods of educating preschoolers: Friedrich Froebel, Maria Montessori, Rudolf Steiner, and Loris Malaguzzi [3].

The purpose of this work is to identify organizing methods of the architectural environment for young children’s habilitation. To do this, it is necessary to determine the factors influencing the
formation of the architectural habilitation environment, the requirements for it, to consider the organizing experience of the architectural environment in the existing habilitation sites.

Architectural environment is a set of appearance and buildings and structures space designed for certain functions and endowed with necessary and sufficient in formativeness for the consumer, including using architectural plastics (according to CR 31-102-99 “Accessibility requirements of public buildings and facilities for the disabled and mobility impaired visitors”).

Based on the definition, the following components of the architectural environment can be distinguished: the space (its space-planning structure), the buildings and structures appearance (facades), the internal appearance and the material space content (interior).

Factors affecting the habilitation architectural environment
- psychophysical (developmental characteristics of children who are habilitated)
- functional and technological (types, teaching technology, necessary equipment);
- ergonomic (anthropometric and motor children’s parameters);
- psychological and pedagogical (psychological and cognitive children’s features);
- sanitary and hygienic (compliance of the space with the existing sanitary and hygienic standards).

Considering the psychophysical and psycho-pedagogical factors, it should be noted that the habilitation spaces are designed for children with a wide variety of developmental disabilities and physical abilities. In addition, the teaching method involves an individual approach to each child; therefore, the internal architectural environment should be designed as universal as possible, with the possibility of its adaptation for a particular child.

Functional and technological factor focuses on the parents’ presence at the habilitation classes next to the child, for whom it is necessary to provide comfortable accommodation. Classes offer individual wellness sessions with doctors, individual and group sessions with psychologists, pathologists, physical therapists. During the lesson, every 10-15 minutes the activity type changes, the motion activity is replaced by mental or creative that requires a quick transformation of the subject environment.

Architectural habilitation environment requirements
Architectural habitat environment requirements are defined as a result of the identified factors analysis.

a) functional space flexibility;

b) physical security for children - risk minimization of injury;

c) physical accessibility for children - the unhindered possibility use of equipment, moving around the building, including accompanied by parents;

d) psychological comfort for a child;

e) attractiveness (attractiveness) and the availability of stimulation development elements;

f) informative - ensuring ease of space orientation;

g) comfort (convenience) - the furniture and equipment correspondence with child’s needs and physical parameters and accompanying adults;

h) sanitary and hygienic safety - absence of harmful effects on the human body, the environment correspondence with sanitary norms and rules for young children;

i) practicality - risk minimization of the elements damage in the subject-spatial environment during the classes.

Architectural environment of the spaces in operating habilitation institutions
Children’s habilitation is carried out today mainly in preschool institutions units or social centers located in converted premises that are not planned for these purposes. The architectural units environment is formed in the context of funding lack and comes down to the redecoration and the
furniture and equipment placement in the premises. Facades decoration, entrance groups are not given enough attention.

As a result of the architectural environment survey of habilitation facilities in various Russian regions, a number of characteristic shortcomings was identified: the inconsistency between the functional and planning spaces organization and the habilitation requirements, ignoring the requirements for ensuring the physical environment accessibility and the psychological space perception by young children, outdated and not aesthetically attractive room design.

In foreign practice, it is difficult to evaluate the functional planning organization of habilitation spaces, since classroom practices may vary. However, more attention is paid to the requirements of physical accessibility, attractiveness and psychological comfort of the architectural habilitation environment in the USA and European countries. The environmental factor plays an important role: energy-saving technologies, natural finishing materials, landscaping of interiors, facades and roofs are widely used.

**Organization techniques of architectural environment for children’s habilitation**

The architectural environment is formed by compositional, plastic, coloristic techniques, scale, selection of finishing materials and subject filling.

The architectural habilitation environment organization should begin even in the development of space-planning object solutions. At this stage, it is important to ensure the functional premises flexibility providing for their transformation or sufficient sizes for universal use (halls transformation for group games, physical therapy and music therapy into a single assembly hall for public events, one room of increased space for individual sessions with a speech therapist, defectologist, a psychologist instead of three separate, etc.).

Physical security and physical accessibility is provided by the accessibility techniques for mobility impaired people, taking into account children’s anthropometric parameters [4]. In motion activity areas and on the movement ways there should be no constructive obstacles: detached columns, sharp protruding angles, sill plates. Simple planning solutions, centric compositions with internal atriums and recreation instead of long corridors, the walls smooth curvatures in plan facilitate child’s space orientation. It is also important to ensure good insolation of study rooms (orientation in the sector 85-275).

The facade and the entrance to the building are its "calling card". In the buildings of the habilitation institutions, it should attract children’s attention, intrigue, and cause a desire to enter. In contrast to the interiors, a child sees the entrance group for a short time. When its design bolder, coloristic and plastic solutions are possible.

The most difficult task is to create an architectural habilitation environment inside buildings.

Ensuring the requirements of psychological comfort, attractiveness and informativeness of the architectural habilitation environment requires the consideration of psychological and cognitive children’s characteristics. Preschool children explore the world mainly through playing activity, sensory world perception (visual, tactile, auditory) and the associative images formation. Images in the interior should be easily recognizable, but do not repeat objects directly, leave room for imagination and thereby keep the child’s attention (stylized elements of the urban environment, trees, and clouds).

The architectural environment should include semantic information codes that serve "as a stimulant, a driving force in the holistic process of a child’s personal becoming, enriching personal development, promoting the diverse abilities manifestation"[5].

In general, the environment perception by young children with developmental disabilities is similar to the perception of healthy peers. In this regard, it is advisable to take into account the existing recommendations on the construction of the architectural and spatial environment in preschool institutions for healthy children: creating an opportunity for the child to change the environment, alternating zones of activity and relaxation [6, 7]. However, children with certain types of mental
disorders (autism spectrum disorders, Down syndrome) need a specifically defined environment, more or less saturated in color and subject filling [8]. In general, it is recommended to use warm pastel colors as the base with the inclusion of bright color accents, the use of lightly mobile multifunctional furniture. In the premises, it is necessary to provide places for the parent comfortable accommodation near the child.

To ensure the environment safety, it is necessary to take into account the requirements of existing Sanitary Rules and Regulations for preschool institutions (fire safety, insolation, lighting, landscaping sites), use environmentally friendly materials, non-slip shock absorbing floor coverings. Improving the environment sanitary and hygienic conditions is facilitated by landscaping in recreational areas.

Summary
Today the architectural environment for children’s habilitation is a topical subject of interdisciplinary research of scientific architects, psychologists, teachers, engineers. Practical use of the proposed methods in its construction will allow solving the most characteristic architectural and spatial problems of existing institutions, to ensure that the environment meets the requirements of functionality, accessibility, security, attractiveness, information content. Such creation means of the architectural habilitation environment, such as space composition, coloristic, lighting, and finishing materials can be subjects for further more detailed study.

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