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CALCULATION OF OUT-OF-SCHOOL EDUCATIONAL INSTITUTIONS NETWORK AND ITS PLACE IN RESIDENTIAL DEVELOPMENT

OBLICZANIE SIECI PLACÓWEK EDUKACJI POZASZKOLNEJ I JEJ MIEJSCE W ZABUDOWIE

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ABSTRACT

The article specifies the principles of functional and planning organization out-of-school educational institutions. On the basis of architectural and town-planning principles conception of perspective development of out-of-school educational establishment's network is worked out. Suggestions are given in relation to adjustment of normative radiuses of availability for out-of-school educational establishments. Functional and planning models and design suggestions for improvement of extracurricular educational institutions network has been developed for various types of out-of-school institutions.

Key words: Network of out-of-school educational institutions, radius of out-of-school educational institutions, level classification of out-of-school educational institutions, planning organization, the level of out-of-school educational institution.

1. INTRODUCTION

Modern socio-economic conditions in Ukraine set new educational challenges which affect the urban aspects of different types network of schools, their location in building, architectural solutions. One of the important components of the overall educational system is out-of-school educational establishments. Ukrainian national model of extracurricular education is unique and reflects social and national specification of pedagogical development. All integrated innovations should be thoroughly comprehended and analyzed.

The network of out-of-school educational institutions is essential in order to provide an activity of senior preschool and school aged children, which is integral to close interrelation between out-of-school and school establishments.

One of the most important aspects and conditions that directly influences the improvement of out-of-school educational institutions network is the availability of out-of-school facilities in relation to public service and housing, regulated by the relevant regulatory accessibility radiuses. However, most of the existing accessibility radiuses were established in Soviet times, in different urban conditions and require certain adjustments, but the radiuses for out-of-school educational institutions do not correspond to the current urban development at all. Due to the fact that in modern urban planning practice a significant part of new residential development is concentrated in the central areas of a city, the principle of micro-districts division loses its regulated structure and parameters.

The radius of out-of-school educational institutions is regulated by normative documents partially and generally, indicators are average and exclude the influence of local natural conditions, peculiar architectural and planning features of a residential area on the development of an educational institutions network. At the same time the level of out-of-school educational institution, its capacity and population coverage are not taken into account.

The relevance of this research is defined by need of improvement and expansion of the out-of-school educational establishments network in the conditions of reorganization of urban development. By creation of flexible network of out-of-school institutions of different types and definition of settlement indicators for various town-planning conditions.

2. MATERIAL AND METHODS

The research is based on the approaches that regard network of out-of-school educational establishments as a complex system phenomenon, which requires a comprehensive study by related sciences such as history, pedagogy, culturology, sociology.

The following methods were used in the course of the study: comparative analysis of foreign and domestic experience of design; system approach; environmental approach; graphic-analytical method; experimental modeling method and method of experimental design.

The review of the current state of the design and usage of out-of-school educational establishments in Ukraine provided an opportunity to identify both disadvantages and positive aspects, while comparative analysis made it possible to determine the ways of further improvement and development of these institutions.

The disadvantages of out-of-school educational establishments in Ukraine are the following:

- overwhelming majority of out-of-school educational establishments do not meet contemporary requirements to educational process;
- the majority of out-of-school educational institutions do not have their own premises, they are housed in adapted premises not having all necessary functional groups of premises.

The applied method made it possible to identify the need for the modernization of existing network of out-of-school educational establishments, as well as the need for the introduction of a new the level classification of extracurricular educational establishments according to the age and number of students in institutions.

The method of comparative analysis was used to study the variants of organization of networks of out-of-school educational institutions of Ukraine, European countries and also countries of Asia and America.

On the basis of summarizing domestic and progressive experience in the formation of modern educational material environment, analysis of scientific research on this issue, the following architectural and town-planning principles of formation of out-of-school educational establishments network are proposed:

- the use of different types of schools and educational buildings, combining the traditional kindergartens and schools with essentially new educational establishments which provide a diversity of educational models, the introduction of more effective educational technologies;
- the proximity of out-of-school educational establishments to housing and other places of public service;
- cooperation and blocking of areas of out-of-school educational institutions, the formation of different types of educational systems, regional districts and other educational organizations;
- functional and spatial integration of the out-of-school educational establishments into the surrounding;
- environmental friendliness of the educational environment, providing comfortable sanitary conditions in all out-of-school educational establishments by means of architecture and urban planning, economical use of energy, environmental enrichment [11].

These social and educational positions of the development of extracurricular educational system fundamentally change the approach to the formation of out-of-school educational establishments network. They give the chance to provide different types of out-of-school educational establishments and also to create groups of short-term stay for children houses and public organizations depending on the specific socio-economic, demographic and urban conditions.

3. THEORY

The study is based on the works by both domestic and foreign scientists in different areas of science.

Some aspects were studied by N. Ya. Kryzhanivska [9], whose work considered the issues of urban design of a recreational environment for children and L. N Kovalsky [8], in the dissertation is devoted to the organization of general educational institutions. The study is also based on the works, devoted to the general theoretical problems of designing educational institutions, by such scientists as V. I. Yezhov [18], V. I. Stepanov [15], P. A. Solobay [13]. The study also relies on the works, devoted to the general theoretical and practical problems of architecture and town planning, by M. M. Demin [4, 5], T. F. Panchenko [12], O. V. Timochin [16]. The issues of the universality and transformability of educational space was discussed in work by Alessandro Rigolon [1].

This research based on the works by V. V. Chepelyk [2] concerning of history of development Ukrainian Architectural Modern (in part of educational establishments) and Lindsay Baker [10], who studied a history of school design from 1900th to today.

These works cover the issue construction and shaping the architecture of school educational institutions and kindergartens, university and colleges. However, the issue of the complex shaping of the network of out-of-school educational institutions remains understudied.

That is why the issue of the development of architectural and town planning solutions of out-of-school educational institutions requires a comprehensive study and the preparation of relevant scientific guidelines and design recommendations.

4. RESULTS AND DISCUSSION

Out-of-school education can not be considered separately from the system of school education, so it is common to unite these processes. However, the formation of institutions network for out-of-school education is influenced by the educational level provided by a comprehensive educational institution where the educational function is integrated, namely, the age indicators of pupils are: 6-9, 10-14 and 15-16 years old. This should be taken into account when developing territorial educational districts.

In this research, the level classification of out-of-school educational establishments according to the age to the age and number of students in institutions is proposed (fig. 1):

- level I - house adjoining out-of-school educational establishments for 25 students with the age of 6-9 years old;
- level II - out-of-school educational institutions, interlocked or integrated into a school building, with a number of 60-80 students aged 6-14 years old;
- level III - out-of-school educational institution of the district level, designed for 200-300 students aged 10-16 years old;
- level IV - out-of-school educational institution of urban level, designed for 500-1200 students with the age of 12-18 years old.

To calculate necessary accessibility radiuses for out-of-school educational institutions, it is important to rely on demographic (*family planning, the share of children and youth population of a region*) and time factors (*time to get to an out-of-school educational institution*).

This research proposes normative regulation of indicators of walking distance accessibility to out-of-school institutions in accordance with the proposed institution level classification (depending on students number and significance in urban structure).

The network of out-of-school education is formed by a step-by-step model at different levels of town-planning organization of a settlement:

- there are four stages for urban environment: an apartment building or quarter, micro-district, district, city;
- the following levels of organization are envisaged for rural areas: a village without a school, a village with a school, a district center.

The network of out-of-school educational institutions should be designed taking into account the needs and capabilities of all age groups of pupils.

The basic principle of determining the service radius for out-of-school educational institutions is the mobility of the age group, which the institution is oriented to [14].

Based on the obtained data and distance time according to the uniform movement formula given in DBN 360-92 **, the recommended service radiuses of out-of-school educational institutions of the proposed classification were determined [3].

The service radiuses are given for conditional mixed construction (5-9 storey building) with an average density of 3 400 m² / ha, which predominates in most cities.

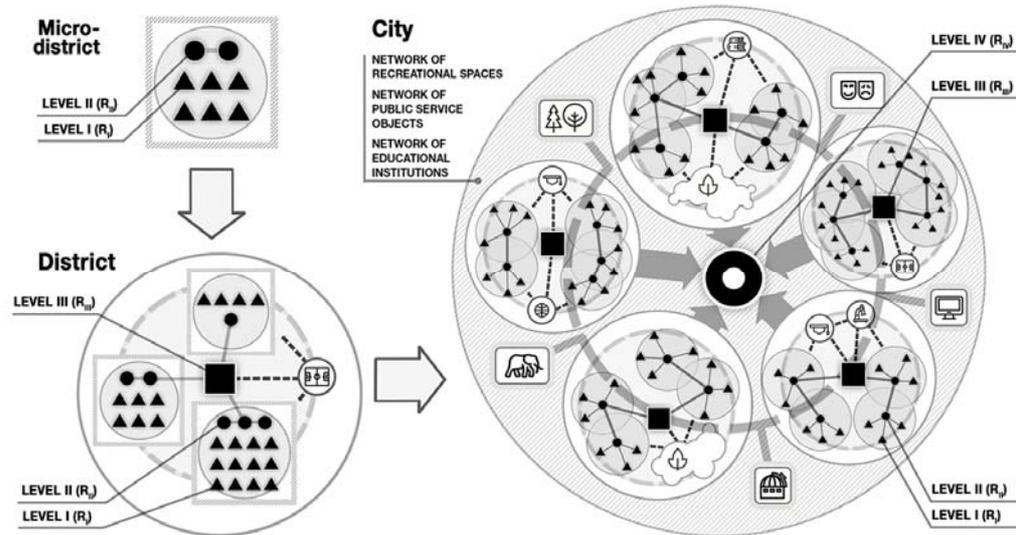


Fig. 1. The level classification of out-of-school educational establishments in urban environment.

Source: structural model developed by Iryna O. Merylova

The model of out-of-school educational institutions network, based on the same principles of organization, is different in urban and rural environment. For urban environment, the network of out-of-school establishments is potentially framed and will continue to develop, structure and expand, generating new types of out-of-school establishments, new connections with community service facilities and other network facilities of out-of-school educational institutions.

For urban environment the following calculations are required in order to develop a network of out-of-school educational institutions (fig. 2).

At the first level of the organization of out-of-school institutions network, it is planned to create out-of-school establishments as institutions of the 1st level for senior preschool and junior school aged children near places of residence according the most protected environment principle. To implement it, such institutions should be placed in the structure of residential quarter with quarterly construction and integrated into the structure of multi-apartment building in the district development. It is recommended to take a 400 m. service radius.

Institutions are formed as the type of adjoining club rooms for group work (hobby clubs, family leisure clubs, extended rooms, school preparatory departments, etc.).

The next step in organizing the network of out-of-school educational institutions in urban environment is the creation of an out-of-school institution at the micro-district level. Extra-school educational institutions of the second level are formed on the basis of school oriented to junior and middle school aged pupils. Focus on these age groups allows us to form a wider network of out-of-school educational institutions through the establishment of out-of-school institutions in schools without the third grade of school.

Integration of a second level educational institution with a school can satisfy the needs of out-of-school activity, mainly a prepared group of pupils involved in school education of the partner institution. Such a symbiosis is grounded by the territorial organization of the urban environment (walking routes organized by school district) and the convenience of a unified learning process in the system of school - out-of-school institution [7]. Since the out-of-school institution in such a system is secondary, the school capabilities (indicators of school capacity, dimensions, size and composition of school grounds) dictate the capacity and profile of the out-of-school institution.

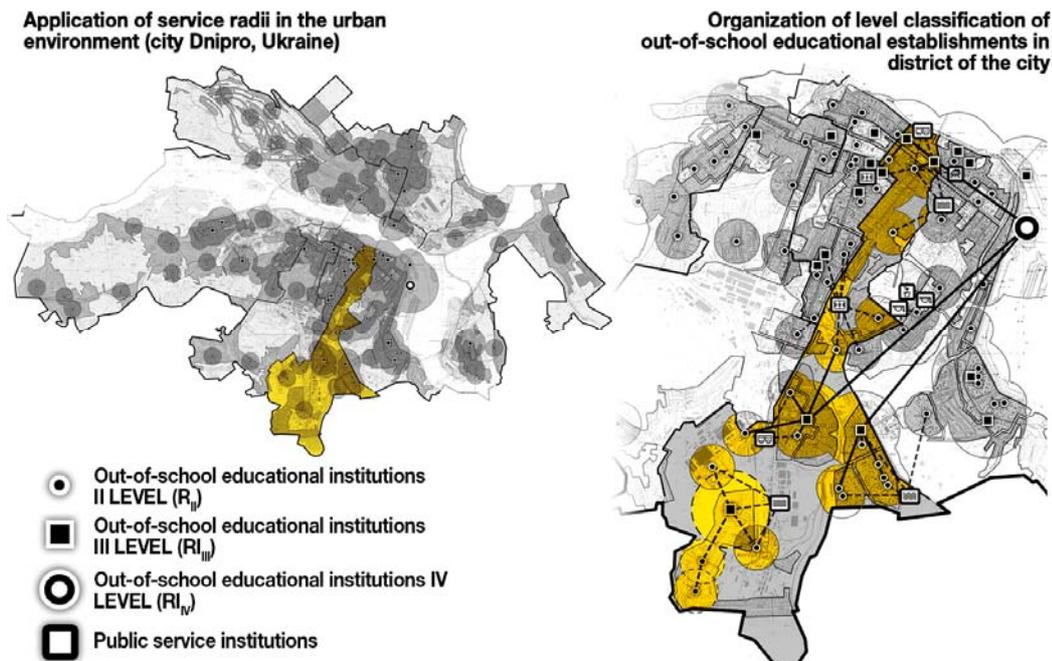


Fig. 2. Network of out-of-school educational institutions in structure of the city (project).
Source: developed by Iryna O. Merylova

The next is the district level organization of out-of-school educational institutions network in urban environment. It is an out-of-school institution of the 3rd level as an institution of district significance with an activity profile and it is oriented to 10-16 aged students. The institutions of this level are sports schools for children and youth, centers for artistic and technical creativity, regional music and dance schools, stations of young naturalists, tourists, ecologists and others, already formed types of out-of-school educational institutions of out-of-school activities.

Institutions of this level have traditionally been attracted to residential development and recreation. Thus, convenient pedestrian areas and transport links with public transport stops should be provided, assuming transport accessibility for the residents of the district. Pedestrian accessibility radius as the maximum recommended was adopted by DBN 360-92 ** [3]. The service radius for out-of-school educational institutions is 1,500 m. Transport accessibility should not exceed 15 minutes by public transport.

The activities of the district level institutions are related to district social facilities (libraries, palaces of culture, cinemas, stadiums, etc.) for their integration into the educational process.

The highest level of organization of out-of-school educational institutions network in the urban environment is the establishment of a municipal level institution. The City Palace of Children and Youth is the out-of-school educational institution of the IV level and can be an example of such educational institution. It is characterized by a multidisciplinary organization of educational process aimed at 12-18 aged. The establishment of this level should have convenient transport accessibility for any district of the city, which is one of the determining factors.

Another fundamental feature of placing an institution of this level is its significance as a town-planning, architectural and social object in the city. As a result, strict requirements both in terms of town-planning and architectural and artistic aspects are imposed to it.

In rural areas the network of out-of-school educational institutions as a part of service institutions network is poorly developed, which is typically of Ukraine. Historically, out-of-school activities in rural areas were conducted in a village club and school.

Today, due to the outflow of the population from villages, the reduction of school education in rural areas, a number of economic and social factors, the task to develop out-of-school educational institutions network in rural areas should be considered carefully. The problem of building an educational network is in the wide geographic distribution. It is advisable to combine territorially close educational institutions into territorial educational district according to territorial principle in order to expand educational facilities of institutions to make facilities and resources rational.

The model of organization of out-of-school educational institutions network in rural areas is not based on the principle of streaming pupils by age as in the urban environment, but on the principle to develop public service system of settlements, which is directly proportional to the population of this locality (fig. 3). The first stage of organizing such network in rural areas is the create an out-of-school institution in small villages, where there is no school due to insufficient demographic indicators. Thus, in such settlements, an out-of-school educational institution of Level I can be created on the basis of a village club.

Recommended accessibility radius is the normative radius of out-of-school educational services according to DBN 360-92 ** and it is 750-1500 m of walking accessibility or 15 minutes of transport accessibility (with a bicycle speed of 11-13

km / h) [15]. The number of pupils of an out-of-school educational institution depends on the number of school-aged children of this locality and territorially close settlements, out-of-school activities of which are based on this out-of-school institution.

The next stage in organizing the network of out-of-school educational institutions in rural areas is the formation of an institution of extra-curricular education of the second level, integrated or united with a village school [17]. The number of students in an out-of-school institution depends on the number of pupils.

It is recommended to adopt a minimum service radius for school establishments in accordance with DSANPiN 5.5.2.008-1 "State sanitary rules and regulations for placement, maintenance of general educational institutions and educational process organization", which is 2000 m or 15 minutes of transport accessibility [6].

The highest level of organization of out-of-school establishments network in the rural environment is the creation of an out-of-school institution of the III level of district significance. Such an out-of-school educational institution is recommended to be organized in urban type settlements. The service radius of these institutions is recommended to be taken equal to the maximum recommended value for schools in DSANPiN 5.5.2.008-1 "State sanitary rules and regulations for placement, maintenance of general educational institutions and organization of educational process", which is 15 000 m or 30 minutes of transport accessibility [6].

Such daily migration created for the organization of transport accessibility of pupils/students will allow to develop public service system of the district, increase the range of out-of-school activities, but it is possible only under the conditions of a developed transport network.

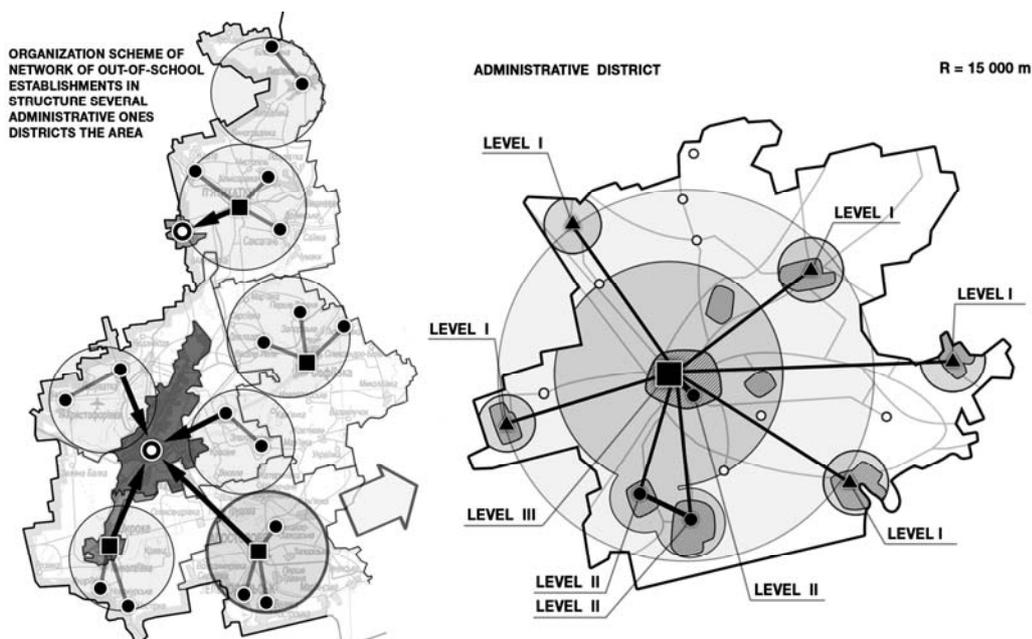


Fig. 3. Organization of network of out-of school establishments in rural areas.

Source: developed by Iryna O. Merylova

5. CONCLUSIONS

The proposals, obtained as a result of the study, may be used in the process of organization network of out-of-school educational institutions.

In this research, the level classification of out-of-school educational institutions according to the age of students and the number of institutions is proposed. Determined that

the out-of-school educational establishment's network in cities it is recommended to expect at the level of housing district, in rural locality - at the level of the territorial incorporated communities.

In the research, the algorithm of calculation of out-of-school educational institutions network has been developed. This algorithm is include of number of students, the number and simultaneous capacity of the building, handling capacity of the building and the area of the out-of-school institution territory. The method of calculation of radiuses of service for different levels of out-of-school educational institution has been improved.

The study determined the prerequisites for the development of a modern out-of-school educational institution, as well as the need for the systematization of the scientific knowledge on architectural design and town-planning organization of network of out-of-school institutions.

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