Transport Infrastructure as a Factor of the Attractiveness of the Urban Environment

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Abstract. The article is not a standard one and has a cross-disciplinary nature. Studying of the structure of the attractiveness of the urban accommodation environment is presented in the article. The author summarizes the scientific views on the entity of the accommodation environment. The authors believes, that urban enronment as whole, including social infrastructure and educational space, supposes the existance of well developed transport infrastructure. The author considered the example of the influence of so called "environment-and-infrastructural space", on the municipal organisation as a part of urban environment.

1 Introduction

It is obvious that for the successful activity of the municipal organizations conditions of comfort and safety are to be created. Urban processes have to develop taking into account the use of architectural space of the buildings and structures, on the basis of effective decisions made by architects and constructors. "The most part of buildings which we will use within the next century have been already constructed. Many of these buildings need reconstruction for the purpose of increase in internal comfort and satisfaction of the difficult purposes of climate" - one famous Austrian researcher, who has wished to remain the unknown, writes.

Scales of activities for construction, reconstruction, capital and to maintenance of buildings and constructions of the educational organizations are defined by some state target programmes.

Let us consider the following example. One of the purposes of the Federal target programme of development of education in Russia for 2016-2020 is the creation of the scientific-and-educational and creative environment in the educational organizations, the construction of facilities begun earlier within the Federal target program of development of education for 2011-2015 will be complete and also investment projects on construction of facilities social, educational-and-laboratory, sports, economic and municipal infrastructure are realized. The amount of financing of actions of the programme is 112987.1 million rubles including: at the expense of means of the federal budget – 88365.71 million rubles, from them the subsidy to territorial subjects of the Russian Federation – 13343.54 million rubles and the subsidy to legal entities – 420 million rubles; at the expense of means of budgets of territorial subjects of the Russian Federation – 13763.54 million rubles; at the expense of non-budgetary sources – 10857.85 million rubles [1, 2].

Thus the group of people, making decisions on the educational institutions development is not limited to participants of educational activity, architects, builders, teachers and managers of an education system. The wide range of cross-disciplinary tasks, the construction and educational complex are available.
It means the creation of conditions for development of the modern educational environment as the means of support of introduction of new educational technologies and updating of content of education, and through maintenance of improvement of infrastructure of education. There was the urgent need in the special tool which would allow to solve this cross-disciplinary problem. Before starting consideration of this problem it is necessary to set some key definitions.

The urban environment is the reality, the combination of already developed historical influences and intentionally the created the conditions and circumstances directed to formation and development of the identity of the pupil.

From this point of view of synergetrics the urban environment – it is the system-educated space in which interaction of subjects of educational process with the external environment and the internal environment (architectural space) therefore individual traits of the identity of the pupil reveal is implemented.

Architectural space - is the esthetic category, characterizing properties of the space which is artificially created by architecture [3].

The French theorist Le Corbusier has expressed the desirable interrelation of architectural space and its social functions by a very laconic formula — "Architecture or revolution". Certainly, this communication is in fact not so rectilinear and unambiguous. But it would be wrong to underestimate it also.

Architectural and technical approach to the social space allows to realize one of the main and initial objectives of activity of the person, which is the security from external influences. The concept "architectural space" consists of the spatial form, the planes of the protection and pieces of the equipment, is visually limited in the form of the concrete spatial form. The absolute value of space in the interior is mentally commensurated with the number of people who will be in the chamber.

The architectural space has important property of orientation and the orientation, dynamics of the development.

Educational process is the purposeful activities for training, education and development of the personality by organized teaching and educational and educational and informative processes in unity with self-education of this personality providing assimilation of knowledge, skills at the level, which is not below the state educational standard.

Educational process needs to be considered as the complete dynamic system which backbone factor is the purpose of pedagogical activity (education of the person).

Educational process as the system functions in certain external conditions, such as: natural and geographical, public, production, cultural, architectural space of the educational complex.

The educational space is the concept, which is absent in the British encyclopedia, Big Soviet encyclopedia, the International encyclopedia of education, the Philosophical encyclopedic dictionary, the Pedagogical encyclopedia, the Pedagogical dictionary, the Dictionary of Russian in 17 volumes [4].

Therefore, from the subjective point of view of authors of the article the educational space is the organized, structured, socialized in special way spaces: the mussels performing the functions on broadcast of social and individual experience, development of culture making his essence.

In turn the development of social activities, processes and technologies which provide educational environments of high level constantly are in the center of attention of our state and society. At the same time the need of creation of the material spatial environment of the corresponding operational properties is obvious. The esthetics and functionality of architectural space of buildings of the educational organizations is the demanded product of activity of architects, designers, developers of engineering sections of the project.

Educational objects of different years of construction in Moscow became the object of the research.

The matter of the research are the design decisions on routine maintenance and overhaul repairs of educational complexes in Moscow.

The choice of an effective design decisions on routine maintenance and overhaul repairs of educational complexes in Moscow was the research objective.
2 Methodology
The main methodical approach to the formation of the decisions on the development of the educational environment is based on ensuring the following compliances:

- architectural space of buildings and structures, to operating conditions of urban processes;
- conditions of technical-and-economic efficiency of design decisions on routine maintenance and overhaul repairs, when providing operational characteristics with them with the lowest expenses [5].

Nowadays there are numerous scientific views on the entity of the educational environment. So, P. A. Sorokin considers the environment from the point of view of features of the social space: on the one hand, ability of individuals to set different relations, with another — to be grouped in various systems of interaction. V. Ya. Kikot and V. A. Yakunin claim that the greatest changes in the identity of students happen under the influence of those factors and conditions which arise in the leading types of joint activities. According to Yu. V. Senko, the educational environment looks as the space-and-temporal communication which can be provided as the system characteristic of dynamic combinations of the space-and-temporal constants determining interaction "teaching - studying". V. A. Kozyrev represents the educational environment as the developing integrity which structural components are used by subjects of educational process for mastering and broadcast of humanistic values during intersubject interaction and conversion of object activities. V. I. Slobodchikov claims that the boundaries of the maintenance of the educational environment and its composition are set by the object of culture and the inner world of the individual [6, 7].

3. Results
Having analyzed the definitions of various types of educational environments, G.Yu. Avdiyenko offers the generalized definition of the educational environment - as the social and space-and-subject environment of the concrete establishment of education with the established norms of the interpersonal, educational and training systems in which by means of updating of inner world and refraction of external conditions through experience of the pupil as the result of his or her activity there is the development of the personality.

The solution of the cross-disciplinary task in the zone of combination of fields, and the more it, the more effective design decision is made.

Recently years scientists-teachers address the idea of educational space at the solution of pedagogical, organizational-and-administrative tasks more and more often. The concept "educational space" became the discussed category of pedagogics not only among the scientists (such as Vilensky M. Ya., Ginetsiansky V. I., Konev V. Ya., Meshcheryakov E. V., Sirs V. I., Slobodchikov V. I., Shendrik I. G., I. Frumin, B. Elkonin, etc.), but also among the teachers of comprehensive schools. It is caused by the introduction of this term to contents of the State educational standards of new generation [8, 9].

The concept "urban space", is used in literature and educational practice less than the concept of an education system, has, nevertheless, essential value for the characteristic of both the education, and its
legal regulation. The matter is that the concept "educational space" covers not one educational system, but a set of various systems (subsystems) which develop in the educational field.

"The educational space" is defined:

- as the zone of the person activity, the closest development surrounding, him or her in the educational institution as "territory" where there are some sources of the developing influence its factors are generated, regularities and the principles work, different types of activity are carried out, pedagogical technologies are implemented (Kolesnikova I. A.);
- as the variety of the activities meeting requirements of compatibility and participation of the student in them as the designer and the offtaker of his or her own plan;
- as the set of influences and conditions of formation of the personality, and the opportunities for development and improvement by subjects of formation of the social and spatial and subject environment as well.

The urban space has to promote comfort of existence and development of children and adults, personal growth of all the subjects of the environment. The creation of educational space is possible only where there is a mastering different ways of action where each subject exerts impact on other subject and in this regard can change own position, develop a new way of interaction or the judgments, actions to exert impact on change of positions of other subjects. The educational space is the product of joint designing of all his elements within the operating educational processes therefore he can't be considered separately from events in which it is reproduced also those new effects which arise in the course of his birth.

Thus, qualitatively organized urban space will allow the pupil to get a good education, having presented him rather free choice of an individual educational trajectory. Taking into account that it is offered in literature (G. N. Serikov) to allocate several coordinates of educational space.

The standard regulating coordinate which is supposed to characterize the legal and moral grounds predetermining operating conditions of any educational system in the corresponding educational space.

The perspective focusing coordinate focuses in the determination of social value of the expected results of functioning of the educational systems. The characteristic of this coordinate contains, particularly, the analysis of two major social and valuable expectations peculiar practically for any society – quality of education and a demand of graduates of various skill level.

The activity stimulating coordinate of educational space reflects specifics of material and non-material conditions of activity of participants of the educational relations in the corresponding educational space in general or in its any sector or element.

Communicative and information coordinate acts as the means of reflection of interrelations between various and diverse educational systems entering "big" educational system and, respectively, educational space. Beside the coordinates considered, the educational space is characterized by some other features: performance, system signs, geometrical parameters which develop in one more coordinate allocated in this research which is the architectural-and-construction coordinate, and the basis of architectural space of the educational environment as well.

Architectural space is the esthetic category, characterizing the properties of the space which is artificially created by architecture. The architecture is the material-and-spatial environment which is artificially created by the person having esthetic qualities. The architectural environment consists of several components, which are: masses, spaces, conditions of the environment, illumination, acoustics, the movement of air. The concept "architectural space" consists of the spatial form, the planes of a protection and pieces of the equipment. The architectural space is visually limited in the form of the concrete spatial form. The concept of the architectural environment is concretized by the space to which interaction between the certain subject and its environment extends. While the space realizes the communication from the architecture to a person, the environment realizes the communication from a person to architecture. Considering the architectural environment, we speak about behavior of people who carry out certain activity in the space. Thereby the space is the environment substance, but does not enter it as it is perceived by more significant.
This term is often used in work by designers and architects, for example, when describing open sites of the city space. As architects and designers describe the space of chambers and territories constantly, the term "architectural space" is necessary in the sphere of design-and-construction activity. The architecture essence is the determination of space.

In the sphere of strengthening of material-and-technical resources of educational institutions for creation of conditions for providing high-quality educational services in 2016, some works on repair and maintenance, improvement of the territory, delivery of the educational equipment have continued.

In 2011-2013 along with Department of information technologies, a large-scale re-equipment of material-and-technological base for the development of modern information technologies in education has been carried out. In the general education organizations conditions for transition to a new federal state educational standards are completely provided.

For the detection and support of projects of the technologically developed schools, since 2013 the joint project of Department of Education of Moscow and Department of information technologies of Moscow with involvement of the leading Russian and foreign IT companies "School of New Technologies" is implemented. According to the results of two stages of the competitive selection of project participants 220 winners who are developing the technology solutions of implementation of educational process, ready to broadcast of innovative experience, underwent strict selection and public protection of the projects were defined. Winners received the equipment necessary for implementation of their projects, including language laboratories, interactive planetaria, television stations, printing houses, 3D-studios, extension of an Internet channel to 100 Mbit/sec., combining of local area networks of certain buildings in the unit network is provided to them. Winners could first take advantage of the city information decisions ("Web conference", "Cloudy accounts department", "Pass and a supply"), and also to join the extensive partner program of the project.

The "Moscow Electronic School" project becomes the following stage of the development of informatization of schools.

4 Discussion
In total in 2016 32 buildings of the municipal facilities, including educational institutions for 12,415 persons wee put into operation, including:

- 22 buildings for preschool children for 4,940 persons (including by budget funds of Moscow – 14 buildings for 3,185 persons, by funds from investors – 8 buildings for 1,755 persons);
- 10 buildings for school students for 7,475 persons (including at the expense of city budget of Moscow – 6 buildings for 3,300 persons, by funds from investors – 4 buildings for 4,175 persons).

For the purpose of execution of the "Assistance to Creation in Subjects of the Russian Federation (proceeding from the Predicted Need for new sites in the General Education Organizations for 2016-2025" programme approved by the instruction of the Government of the Russian Federation of 23.10.2015 No. 2145-r within Targeted investment programme of Moscow, 6 buildings for school students for 3,300 persons were built, also through actions for optimization of the use of educational locations of schools in Moscow places for 10,430 persons were created in addition.

In total during 2011-2016 205 buildings for preschool children (places for 33.7 thousand persons), 68 buildings for school students (places for 36.6 thousand persons), 1 college (places for 300 persons) were constructed.

Since 2014, for the purpose of effective and rational use of the areas of the buildings included into the Targeted investment programme of Moscow and the address list of projects of repair, the competition of projects of the development of the educational organizations on the right of including of these objects into the complex. In the buildings which are newly-constructed and repaired in 2016 only those educational organizations which provide the most interesting and effective pedagogical concepts of the use of locations realize educational process.

The state programme of Moscow "Development of education of the city of Moscow" for 2012-2018 provides financing of 2,972.8 billion rubles. The programme, includes actions for all the activities of the education system.
The approach to the resources allocation has changed: having closed in 2011-2014 gross supplies of equipment prime requirements of schools which equipment during the previous period had selective and irregular character, nowadays the system passes to direct orders of schools under specific projects for the benefit of pupils. The mass standard repairs made over the last 5 years and which have allowed to create modern conditions of training at schools of the city are replaced by repairs under the concrete pedagogical strategy of the concrete schools on the further use of the repaired chambers today.

During the era of mass construction the desire of the state to standardize all his processes and stages as much as possible looks quite natural. And at last here the turn has reached the design and prospecting works. However some difficulties can be excessively serious during realization of this task in such a specific sphere. Therefore it is extremely difficult to predict the final result.

"Nobody was engaged in writing of standards for the design and prospecting works for the long time. It occurred because nobody had set such a task — the vice-president of NOPRIZ Azary Lapidus explains. However the last edition of the Town-planning Code orders to do it. And therefore it is necessary to be engaged in this subject from scratch".

According to the expert, "today standards in architecture and design is a real "terra incognita". So far it is not even clear in which format it is necessary to create these standards. Moreover, disputes on whether it is necessary to carry out this work in general have already erupted. The position of many architects is the following: “it is impossible to put architecture into the rigid framework of standards".

But not all the experts agree with the statement: among the architects there is no unanimity. So, the president of NOPRIZ Mikhail Posokhin believes that this task is feasible. "Yes, it is impossible to regulate rigidly creative process, - Mikhail Mikhailovich considers, - however other stages of architectural work can be quite regulated.

Projects of reuse and the constructive decisions made within them are designed to increase the safety of buildings and structures and to limit the application of inefficient decisions. The law No. 368-FZ promotes implementation of provisions of the Town-planning Code of the Russian Federation regarding architectural-and-construction design, examination of the project documentation, implementation of the state construction supervision by introduction of institute of the project documentation of reuse, providing the opportunity to reuse such project documentation, including the documentation, which is necessary during the implementation of state and municipal contracts for performance of work on construction of facilities of capital construction.

The law No. 368-FZ provides the establishment of the concept of economically effective project documentation of reuse, formation and updating on the basis of the established criteria of the databank of the most economically effective project documentation of reuse.

As Noyfert notes in the prolog to the 40th edition of the reference book "Construction Design": "The essence of such a theory of eternal formation, which is the servant of the development, is that it does not give the ready recipes ready for the use of councils of the preserved ideas, it gives only the elements, units and the method for their combination, concoction of configuration and harmonization".

However the question is how to provide the best design decisions.

In buildings maintenance the opinion and experience of the architect remains unclaimed.

There is a problem of broader application design solutions of repeated application. Decomposition of projects formation of elements of units in Noyfert’s terminology is necessary for this purpose. What will be result and eventually goods in the market of design services in this case? The result will be virtual studio for the designers and exhibitions of effective decisions.

How can we deliver a barrier to illiterate decisions on replacement of elements of finishing, filling of apertures of systems of technical providing? That is to be done according to the list of architectural, technical, organizational and technological, economic tasks, solved during repair and maintenance.

Sometimes the head finds out that any modernization has been carried out, after the tax inspection. The formulation "change of properties of buildings and structures" is frequent in the statements of tax inspectors (according the analysis of acts of tax audits).

At the same time it is rather simple to put some restrictions through projects of repeated application, standard design projects, flow charts and projects of works, etc.
In maintenance of service of the architect are not provided, the building do not exist for 10-15 years without improvement. Replacement can improve it, but can also disfigure. Sometimes the improvement according to the tax inspector opinion is not the improvement according to the architect.

The basic (standard) set of principle elements as the part of repair is defined: walls, ceilings, floors, sanitary devices and electric equipment. The lists of characteristic works which need to be regarded and executed during capital repairs of the element are created for each of these elements.

For the estimation of cost standard sets of budget documentation in structure are developed for each of elements depending on design decisions for different types of schools: repair lists, local estimates and resource sheets. The sets of documents are developed for each element of the four types of buildings.

The characteristic floor-by-floor complexes of works for the differing floors on four types of buildings are created for the estimation of cost during the organization of performance of works within the capital repair. For each of floor-by-floor complexes of works according different types of buildings standard (basic) sets of budget documentation repair lists, local estimates and resource sheets are created.

Thus, the information base of the recommended standard basic decisions on estimation of cost of capital repairs for the four types of buildings, which is flexible and convenient in application, is created. The use of information base will allow to analyze the cost of the performed works, to make reasonable economic-and-organizational decisions on performance of capital repair and maintenance with the use of information technologies.

5 Conclusions

Architectural space as well as transport infrastructure of urban environment is being extending. The provision per 1 sq.m does not mean growth of its appeal.

The efficiency of the decision of both theoretical, and application-oriented tasks in the enhancement of the "environment-and-architectural space of establishment of education" system is connected to a goal-setting which is born in the design business. The possibilities of achievement of the objectives of project business are based on the application of the modern transport infrastructure as well as the transition to big data systems. The modern methods of the analysis allow to pass the way from the heuristic decision to mathematically strict model of formation of effective elements of design decisions.

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