

Promoting Inclusive Education in Kazakhstan: Environmental and Architectural Aspects

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Abstract

Inclusive education allows everyone to study under equal conditions, despite limited opportunities and language barriers. An inclusive education allows one to adjust to environmental conditions and become an equal member of the society. It also reduces the risks of isolation from the outside world for people with disabilities. In an organization of inclusive education, the core objective is to increase comfortable conditions for learning in academic institutions, such as schools.

This paper examines the issue of improving the spatial environment of such academic institutions, in order to promote appropriate architectural and planning concepts to achieve inclusive education. The objective is to study the peculiarities of inclusive educational environments in Kazakhstan. The study examines private, public and general education schools and gymnasiums.

The research was conducted in three secondary schools in Almaty (Kazakhstan). A survey with medical staff, social workers and psychologists was carried out to determine the spectrum of inclusion in the schools. The methods were chosen to comprehensively examine the significance of architectural aspects for inclusive education in Kazakhstan. The paper determined a spectrum of inclusion, and compiled a matrix of compliance with the universal design criteria. It also developed an architectural concept for organizing a comfortable environment for inclusive education.

As a result of the research, it has been identified that architectural aspects are fundamental in creating universal design for inclusive educational environments. The conclusions of the study are of practical value and can be used in the development of universal design in modern inclusive educational institutions.

Keywords: architecture, inclusion, education, school, buildings, interior.

Introduction

Modern inclusive education is a unique opportunity for every child with physical, intellectual, linguistic or other characteristics to be involved in an integrated, holistic process of learning and development (Kabylov et al., 2017; Nabiev et al., 2019; Dinara et al., 2020; Galimzhanova et al., 2020). This opportunity allows an individual to become an equal member of society. It reduces risks of segregation or isolation (Scriabin and Korlyakova, 2015).

Several studies show that organisation of inclusive education is based upon the creation of complex conditions (Nurgalieva et al., 2020; Tukhtamisheva et al., 2020). An essential aspect

of these is the readiness of the employees in the field of education to implement a full-fledged inclusive pedagogical process, which implies the introduction of a humanistic education system, the creation of an internal, moral and psychological climate, the organisation of high-quality psychological and pedagogical support during the period of adaptation, development, and socialisation of children. Equally important in improving the quality of inclusive education and creating comfortable conditions is also the provision of schools with appropriate materials and technical support facilities (Zhaina et al., 2018; Estemesova et al., 2021; Yestemessova et al., 2020).

These, invariably involve equipping schools with furniture of appropriate dimensions to suit the functions and users, provision of proper illumination and thermal conditions, appropriate sanitary and hygienic requirements, well-furnished gyms and libraries with books and equipment, as well the provision of computer science rooms (Mikheeva, 2015). Zakharova and Kozyrenko (2016) present a retrospective analysis of the stages in the creation of institutions for children with disabilities. They define six stages of the formation of planning the structures, shapes as well as the qualities of the interior environments of boarding schools.

The absence of institutions tailor made for inclusive education is a world-wide problem. In fact, this situation was typical for all the countries of the post-Soviet period, including Kazakhstan. A good example of the educational environment is the Psychological and Pedagogical Rehabilitation Correction Centre for Children with Early Autism, in Russia. The centre was built from 1996-2000 in Moscow. The architects Chernikhov and others believed that they designed the building on the basis of children's drawings, taking into account the special psychological perception of the surrounding world by the autistic children (Fig. 1). Designing an educational environment that considers the special needs and perception of autistic children can be seen as a positive step towards promoting their well-being and learning outcomes. The use of children's drawings as a basis for the design can also be seen as a creative and inclusive approach. However, the design should also meet the safety and accessibility standards required for educational institutions.

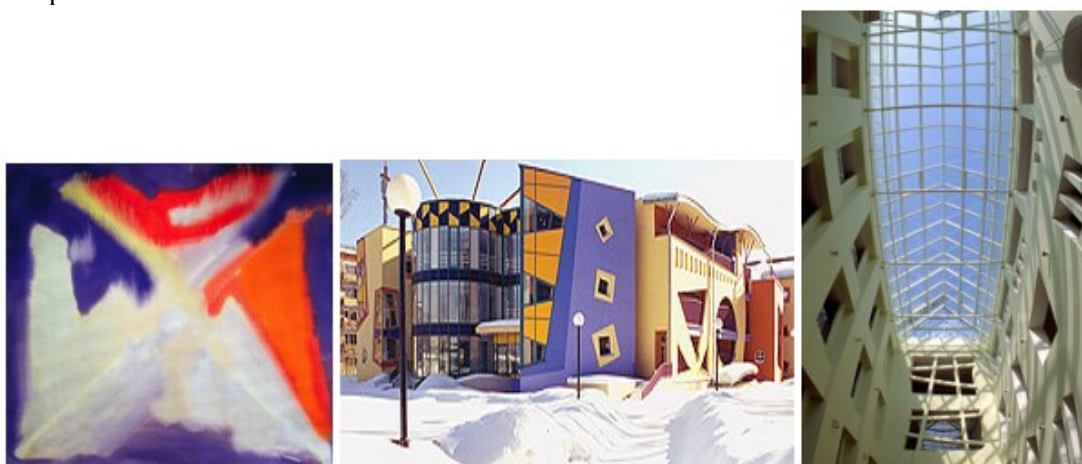


Fig. 1: Psychological and pedagogical rehabilitation and correction Centre for children with early autism, Moscow, Russia.

Source: School for autistic children, 2008

Since 2011, inclusive education in Kazakhstan has been an integral part of the state policy, which guarantees a continuous modernisation of general education, special conditions and the necessary social and psychological and pedagogical support for all the children with no exceptions (Batrakova, 2019; Order of the Minister of Education and Science of the Republic of Kazakhstan No. 348, 2015). The concept of inclusive education appeared in Kazakhstan owing to the National Scientific and Practical Centre for Correctional Pedagogy. First, in 1999, a project for inclusive education was implemented jointly with UNESCO (United Nations Educational, Scientific and Cultural Organization), and in 2002, a thematic scientific and practical conference was also held. In the implementation of the conceptual approaches to the

development of inclusive education in the Republic of Kazakhstan, the four major key indicators have been identified. They include methodological, personnel, educational and methodical, material-technical support. Material-technical support, for instance, means the creation of an accessible learning environment, the strengthening of the school material-technical basis through special educational-methodological and technical means, providing the educational environment with up-to-date technical means, the creation of educational programs and the organisation of work places for people with disabilities in classrooms (Amandykova et al., 2019).

The aim of the article is to reveal the peculiarities of the inclusive education environment in Kazakhstan.

Theoretical Basis

Inclusive education is a state policy aimed at creating a support system for children with various types of disabilities, so that students can study in a general education school on an equal basis with ordinary children in the future, master the program according to the standard, and have equal conditions in education. Kukhta (2016), for example, is convinced that the current financing system in Kazakhstan does not yet contain a sufficient number of incentives and mechanisms for the development of inclusion.

For a quality educational process with children with disabilities, there are a number of conditions: early identification of children's specific features; monitoring of their psychophysical development; assessment of the level of assimilation of curricula, assessment of medical, educational, social needs; creation of a correctional and developing environment, visual and didactic materials; involvement of parents of students at all stages of education; the involvement of a special program coordinator for students with special needs; creation of specialised centers to provide qualified advisory and methodological assistance to teachers of educational institutions (Order of the Minister of Education and Science of the Republic of Kazakhstan No. 348, 2015).

Batrakova (2019) says that, one of the major things in inclusive schools is the creation of a comfortable and universal design. A key feature of schools designed according to the principles of universal design is the construction of a building in which children with physical or other disabilities have access to all the premises necessary for the learning process. There is also an essential rule - maximum of functions on the minimum of space. This implies that for the students, everything they need should be nearby in the learning process. Such spaces should be open, and without partitions, free-standing massive objects or sharp corners. The study shows that universal design in pedagogy differs from other areas of application. The difference lies in the fact that it might take into account the educational needs of all students at the same time. For instance, a keyboard based on universal design principles will be as easy to use as possible, however, at the same time, a curriculum built on the same principles should leave room for development and growth for all students, even those with disabilities.

Since the study revealed that architectural aspects are fundamental in creating a universal design for an inclusive educational environment, the concept of organising a comfortable inclusive educational environment was formed. Universal design implies the creation of a flexible subject-spatial environment, and the presence of buildings that have alternative types of tasks for children with special needs. Estemesova et al. (2021) claim that the universality of design lies in the creation of various alternatives for the child in the learning process.

Steinfeld and Maisel (2012) consider universal design as a factor in raising the standard of living and creating comfortable conditions for all people, regardless of their characteristics. Experts emphasize that the objective of universal design in pedagogy is to optimize the environment for all the students as much as possible, without the need for adaptation and special concepts. Sanger (2020) shares the opinion that universal design is extremely vital in inclusive pedagogy, since it has the ability to influence the level of perception of information by students. In accordance with the results of the research, it can be added that special thematic courses for teachers are necessary in Kazakhstan, since not all educators have a clear idea of what the

concept of contemporary inclusive education consists of. The main goal of universal design is to support all students having different characteristics in the process of adaptation and socialisation. Universal design is aimed at making the learning process fun and accessible to everyone, regardless of the students' characteristics.

There are various opinions regarding the significance and role of universal design. A barrier-free environment is an integral part of modern inclusive education. Despite the fact that inclusion originated in the discourse of disabilities, inclusive education is currently viewed from the perspective of human rights, social equity and justice. The outcomes demonstrate the completeness of their application in the study and analysis of current trends in the universal design industry. The study is limited to modernised inclusive educational institutions. At the same time, according to Nabiev et al. (2019), the major task will be to improve architectural concepts for an inclusive educational environment. The concept of inclusive education is far more extensive than special. Thus, it should not be limited to students who have specific characteristics. Inclusive education should not be seen as an alternative way of delivering special education, but as an opportunity to transform the entire education system.

Mikheeva (2015) states that it is essential to create a universal design. It is of capability to improve social development and the process of adaptation of students to the educational process, since universal design creates all the conditions for the development of social skills and adaptive social interaction. Owing to such architectural concepts, a positive environment is formed within the team, since students with special abilities can quickly join the educational process if all the conditions necessary for them are available. Respect for differences is vital in inclusion. It is very important to increase the responsibility of the public towards students with disabilities. The most essential thing is to change the attitude towards those with special needs, to teach cohesion and life in a unified, full-fledged group, regardless of the external or internal characteristics of the students.

Research Methods

Medical staff and school teachers were interviewed to determine the spectrum of inclusion in three secondary schools of different types in the city of Almaty (private school, public school, gymnasium). During the November-March 2022 academic year, interviews were conducted with 7 school medical workers, 12 social workers, and 9 psychologists. The sociological survey was conducted personally. Interviewee inclusion criteria and interview questions focused on their experiences working with students. The interviews were structured. All participants were asked the same set of questions in a standardized format.

Statistical data were collected according to the following criteria: the number of students studying under the inclusive education program (a total of 286 students); the number of children from socially vulnerable families and orphans (354); the number of children from families of refugees and national minorities struggling with social adaptation (65 students). In addition, an analytical comparison of the obtained results with the conclusions of other scientists, who are engaged in the practical development of issues of an integrated approach to the study of architectural aspects of the educational environment, and their influence under the inclusive system, was carried out.

At the final stage of the research, the results of the scientific research were summarized, which reflect these results and generally determine the main trends of the further development of the entire environment of inclusive education. The authors proposed several conceptual plans for the reconstruction of the space of existing schools. A comprehensive study was conducted to assess the extent to which school buildings meet universal design standards with an emphasis on subject-spatial environments.

Findings

The materials of social guardianship were studied, and tutorials were held in order to clarify the characteristics of left-handers and right-handers (Figure 2-4).

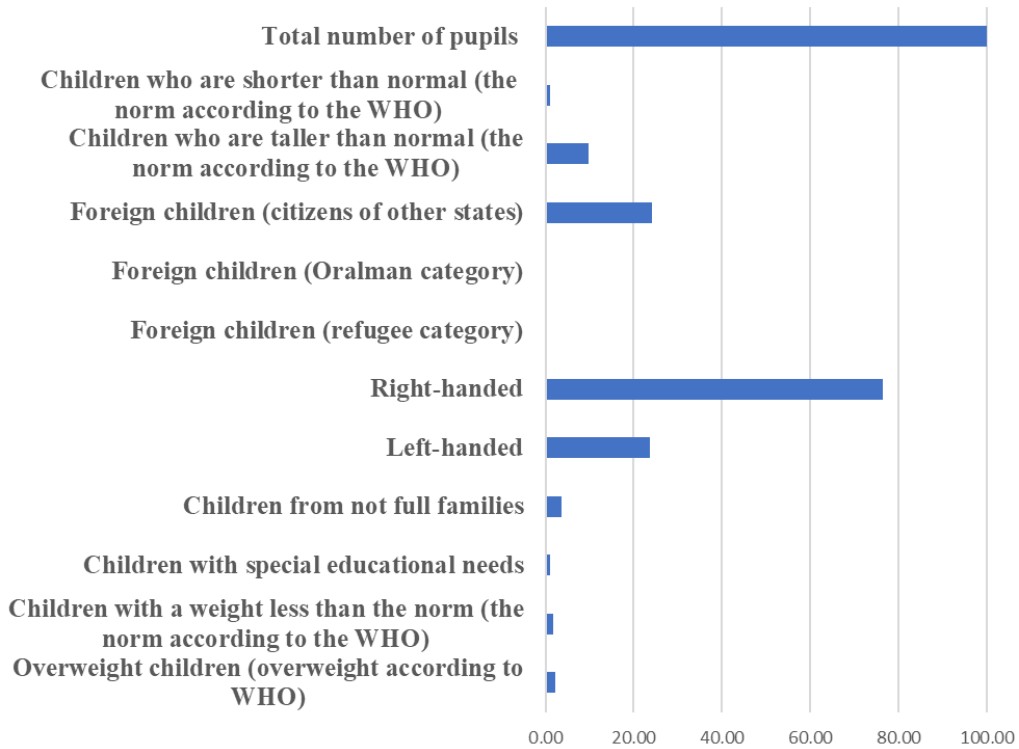


Fig. 2: Ratio of the inclusion spectrum in private school
Source: WHO – Worldwide Health Organization

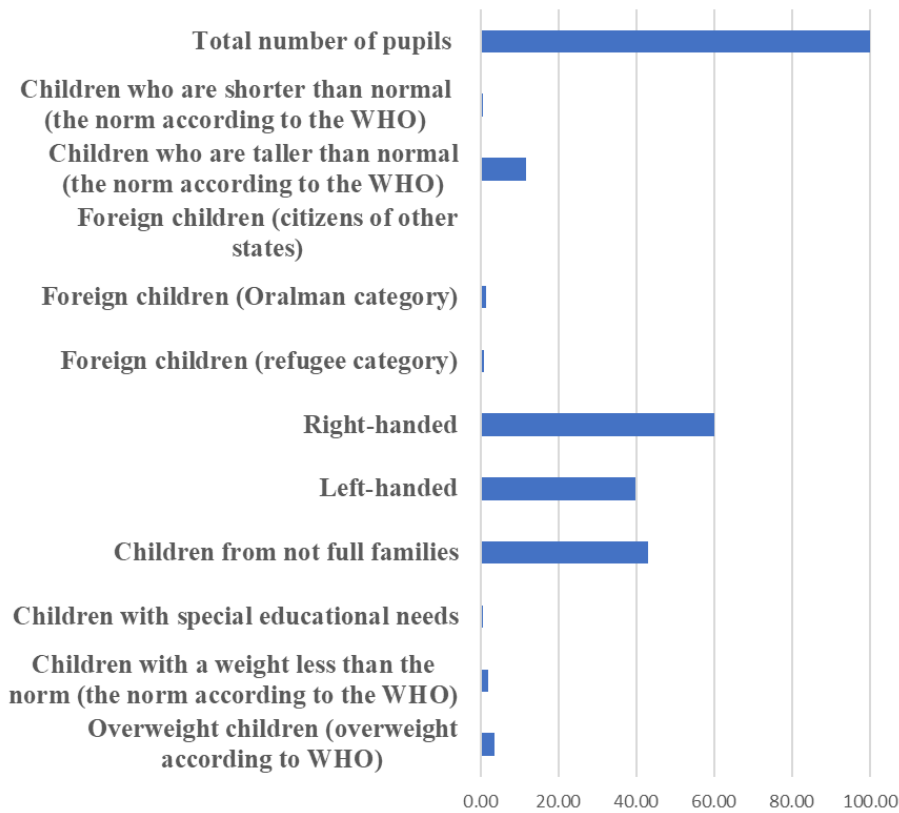


Fig. 3: Ratio of the inclusion spectrum in public school
Source: Author

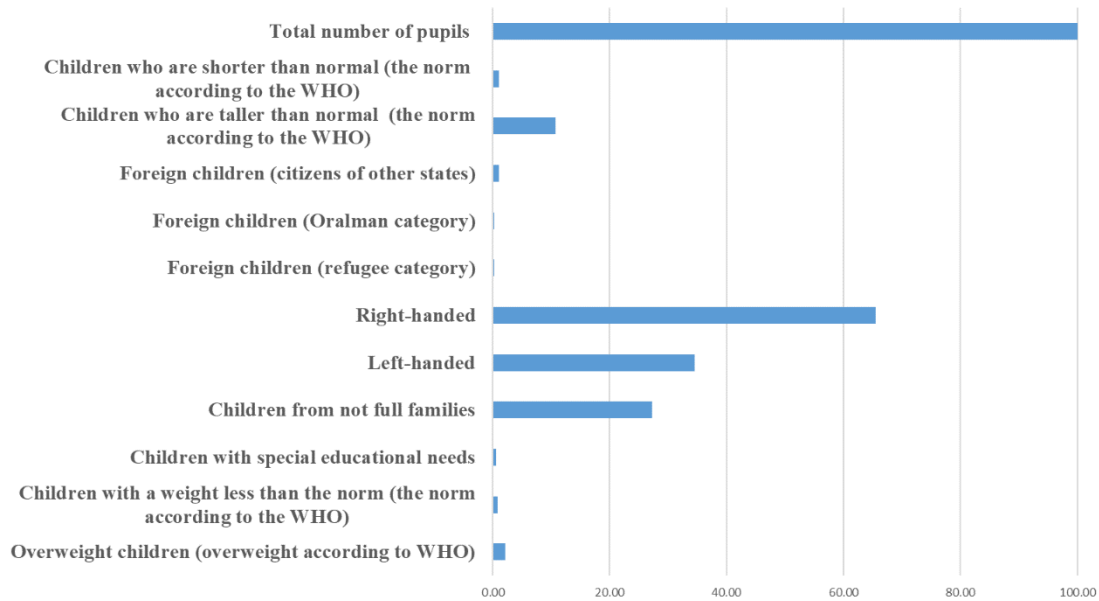


Fig. 4: Ratio of the inclusion spectrum in gymnasium against the same issue
Source: Author

In Kazakhstan, universal design is a new, up-to-date area of scientific research and architectural and design project work. A barrier-free environment is becoming popular. It is based on planning techniques and regulatory requirements. However, this concept does not imply the creation of a universal environment. There are several examples when, using individual elements of a barrier-free environment, the integrity of the architectural installation of buildings and architectural complexes was demolished. Unlike a barrier-free environment, universal design embraces all the aspects of inclusion. In addition to the aspects considered in this research, special conditions are taken into account: a language barrier, various addictions, absent-mindedness and depression. Therefore, the objective of universal design is to optimise the environment for all people as much as possible, without the need for adaptation and special concepts (Fig. 5).

	International schools		Private schools		State schools	
	Haileybury Almaty	NI Schools	Tamos Education	New Generation School	Gymnasium 68	Middle School 144
Door width	○	○	○	○	△	△
Ramp availability	○	○	○	○	○	○
Sanitary rooms	○	○	○	○	△	△
Equipped student seats	△	△	△	△	△	△
Easy accessibility to classrooms	○	○	△	△	=	=
Availability of recreational facilities for schoolchildren	○	○	○	○	=	=

○ corresponds
 △ corresponds in part
 = is inconsistent

Fig. 5: Analysis of the compliance of the subject-spatial environment of school buildings in Almaty with the criteria for universal design
Source: Author

Fig. 5 presents the result of the research and shows the correspondence of the school buildings of Almaty city of different levels and forms of ownership. The analysis shows that the city's international schools and private schools correspond to the universal design criteria at a greater degree. Public schools correspond to the given criteria only by half.

Concepts and proposals emerging

In order to improve the quality of the subject-spatial environment of inclusive education, along with the concept of universal design, application of the criteria of “protecting space” is suggested. Within the framework of this study, it is offered to introduce the principles of openness into the structure of school buildings and ensure good visibility, and observability of space. Closed, blind corners and walls should be avoided. This idea may be implemented by introducing additional glazing. For instance, in addition to the major window apertures that provide natural lighting to classrooms, it is offered to glaze part of the walls from the side of the corridor (Fig. 6).

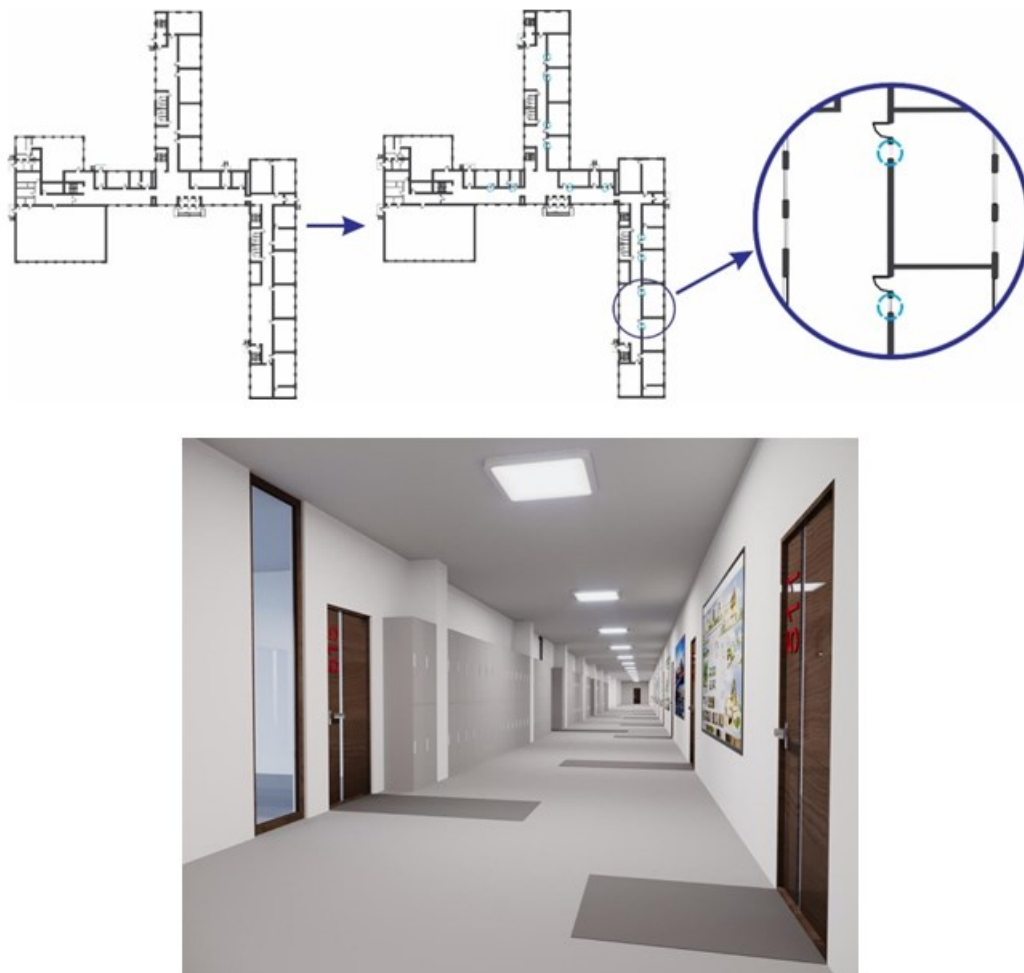


Fig. 6: Concept suggestion for applying the “protecting space” principle (more viewable spaces)
Source: Author

Another essential aspect in organising the spatial environment of inclusive education is the application of graphic design tools. Graphic design directly affects the quality of education, as it is able to model a comfortable educational environment. For instance, one may

use various inclusive posters, actively implement multiple pictograms that help improve space orientation, etc. Also, elements of multimedia art, art objects.

Discussion

During the creation of the research, a comprehensive study of the architectural concepts of several schools in Kazakhstan, which have inclusion programs, was carried out. The study revealed that not all the schools in Kazakhstan meet all the standards and requirements. The outcomes of the study conclude that for a high-quality educational process, it is necessary to create a comfortable educational environment.

Zakharova and Kozyrenko (2016) state that inclusion requires the heads of educational institutions to have a competent management system at all stages. Efficiency in this matter is measured by a whole range of conditions, among which one can distinguish aspects such as, for instance, the determination of workers in the educational environment to implement inclusion, the humanity of the education system, which includes the formation of a favorable moral and psychological environment within the group, the organisation of high-quality rehabilitative assistance, and psychological-pedagogical support in the process of socialisation of children. The research confirms that a qualified teaching staff is a fundamental factor in creating a full-fledged inclusive educational system. Based on the outcomes obtained, it can be concluded that out of 100 students in private or general education schools, and lyceums, about 40 students have different characteristics. There is no doubt that inclusion is a necessity for modern schools. Inclusive education is an innovation for the traditional education system of Kazakhstan.

Batrakova (2019), for instance, says that the core idea is that in the process of learning in an inclusive environment, it is not the student who should adapt to the process, however, vice versa - the teaching methods should adjust to the needs of the child. For students with disabilities, there exist various options for learning: home education, distance learning, special schools, boarding schools or remedial classes. As it was found out, socialisation of children with disabilities is better in general education schools than in specialised institutions, since students gain social experience, and acquire a sense of completeness when communicating with healthy children. Additionally, healthy children, studying together with special students, become more tolerant, responsible, and independent. A peculiarity of the inclusive education program is that individual methods of obtaining information are applied here. Consequently, the student receives an identical education, like their classmates. However, special techniques assist in acquiring knowledge.

As it was discovered earlier, in Kazakhstan, as in other countries, the state standard is the basis for the development of all curricula, educational and methodological complexes, criteria for evaluating students with special needs, unified requirements for architectural and planning concepts, material, technical, information and communication support in the process of organising inclusive education. This document specifies the key requirements for the level of preparation, load and content of the curriculum for students with special needs.

Batrakova (2019) also states that in Kazakhstan, there are a number of problems associated with the implementation of inclusive education, among which are a lack of specially trained teaching staff, insufficient material and technical equipment of educational institutions, as well as misunderstandings from the public. The study has revealed that the architectural aspects of the issue are the major ones, since in Kazakhstan, most of the schools, which students with special needs attend, are not ready for a full-fledged, integrated learning process in terms of architecture. There are no special ramps and elevators. The major issue is misapprehension on the side of parents of healthy children regarding the fact that a child with special needs will study in their child's class, since such parents have the impression that this will negatively affect the educational process.

In accordance with the identified features of inclusive education, a conclusion can be made that the main need of modern inclusive schools is a universal design. This architectural concept means modeling of all the material components of space, taking into account the capabilities and needs of the maximum number of people, regardless of physical, mental or

other characteristics. As Oscar (1973) says, the objective of inclusive design is to ensure the availability and ease of exploitation of material objects, services or programs for all people without exception. In the universal design, it is permissible to apply assistive devices and technologies for certain groups of people with disabilities if necessary (7 Universal Design Principles, 2021). Nurgalieva et al. (2020) argue that, without highlighting its features in the educational environment, the main principles and factors of universal design are equality and flexibility in use, simple and intuitive design, easily digestible information, error tolerance, low effort, size and space to access and use.

Conclusions

Thus, the creation of comfortable conditions for the implementation of an inclusive education program should be based upon statistical data of the diversity spectrum of students. The data on the spectrum of inclusion presented in this study emphasize the relevance of applying the principles of universal design for all types of secondary education institutions: private schools, public general education schools and gymnasiums. Empirical research of the spatial environment of school buildings of various types have shown partial compliance with the requirements of universal design. The authors of the study argue that the criteria and principles of universal design are one of the key areas in improving the comfort of the subject-spatial environment of school buildings with inclusive education. In order to solve the tasks, related to the creation of comfortable conditions in inclusive education institutions, it is necessary to expand and search for new methods and ways of organising the subject-spatial environment.

The results of this study may be presented as tasks for announced contests for the development of a subject-spatial environment for inclusive education. Conceptual, creative developments, and designers' inventions aimed at improving the quality of the environment of inclusive education should be widely developed in society. Therefore, in the development of an architectural and spatial concept for new school buildings or in the reconstruction of existing ones, the participation of school teachers, secondary school students, educators, undergraduates, doctoral students and students of architectural and design specialties is necessary. The outcomes of this study are of practical importance and are offered for use in the reconstruction of the examined schools in the city of Almaty and in the construction of new schools of inclusive education.

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