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### **Methodological Aspects of Inclusive Education in the Field of IT Technologies**

#### **Abstract**

*The main problem:* Today, the introduction of inclusive education is becoming one of the priorities of the state policy of the Republic of Kazakhstan in the system of modern education. In accordance with the law on Education, equal access to quality education for citizens is guaranteed, taking into account their intellectual development, psychophysiological and individual characteristics. The article is devoted to the analysis of the development of inclusive education. The author considers the problems on the way to the introduction of inclusive education, provides an analysis of the experience of conducting an IT school within the framework of inclusive education. An attempt has been made to identify the factors contributing to the successful implementation of inclusive education methods in the modern educational space.

*Objective:* To consider the issues of the development of inclusive education in the Republic of Kazakhstan. To present the methodology of teaching children with special educational needs, to suggest possible ways to solve problems on the way of introducing inclusive education into the domestic education system.

*Methods:* The methods of analysis, synthesis and deduction were used in the article.

*Results and their significance:* Based on the results of the work carried out aimed at identifying the main problems hindering the process of implementing inclusive education, as well as based on the results of the analysis and the identified main aspects in the cognitive activity of children with hearing and speech disorders, the author of the article proposes a methodology for teaching children multimedia technologies. In addition, the author clearly substantiates the need to prepare a teacher for the use of inclusive education methods, due to the lack of willingness of some teachers to teach in a class (group) in which people with disabilities study, fearing to get into a situation of psychological and professional discomfort.

*Keywords:* limited opportunities, inclusion, IT school, methodology, multimedia technologies.

#### **Introduction**

The term "Inclusive education" comes from the French word "inclusif" – including, and implies the disclosure of the principles of building the learning process for children with disabilities in secondary schools. Inclusive education provides an opportunity for every child to be "included" in the process of learning, upbringing, development and adaptation in society, regardless of the physical, intellectual, social, emotional, or other characteristics available to him. And then creates the conditions for a growing person to become a full member of society and reduces the risks of his isolation.

#### **Materials and methods**

– In modern society, there is an opinion that inclusive education implies the reorganization of the educational process in order to make it accessible to everyone, including people with disabilities. Thus, inclusive education in a broader sense implies the definition of a person's place in society [1].

– The process of integrating a person with disabilities into the education system involves solving the following stages:

– The reorganization of the education system, in general, and the educational process in particular;

– Redevelopment of educational facilities taking into account the needs of people with disabilities;

– availability of the necessary training tools;

– professional readiness of teachers, etc .

Due to the fact that the number of children with disabilities, unfortunately, is growing every year, the problem of education of people with disabilities is urgent and requires due attention.

In accordance with the Law on Education in the Republic of Kazakhstan, citizens are guaranteed the equal right to receive affordable and high-quality education for every person, taking into account intellectual development, psychophysiological and individual characteristics [2]. According to the State Program for the Development of Education and Science in Kazakhstan for 2020-2025, by 2025, 100 % of preschool schools and 70% of colleges and higher educational institutions should organize conditions for inclusive education. [3]. The National Action Plan for Ensuring the Rights and improving the quality of life of persons with disabilities in the Republic of Kazakhstan until 2025 has been approved [4]. On June 26, 2021, President of the Republic of Kazakhstan Kassym-Jomart Tokayev signed the Law "On Amendments and Additions to Some Legislative Acts of the Republic of Kazakhstan on inclusive education" [5].

– There are currently more than 160 thousand children with disabilities in the Republic of Kazakhstan who need inclusive education. Only about 23% of them participate in such an educational process.

– In addition, there are still a number of difficulties in implementing inclusive education for people with disabilities. Among them:

– insufficient organization of the educational environment for people with disabilities;  
– lack of friendly attitude towards people with disabilities among trainees and employees of the education system, as well as insufficient awareness of their rights and opportunities;  
– lack of necessary professional training.

– Along with the above difficulties, the author suggests that the fundamental stage of the implementation of inclusive education is the stage of changing the psychological aspects and professional competencies of teachers. There are the following problems:

– Insufficient training of employees of the education system to work with people with disabilities;

– lack of special competencies in the activities of teachers when working in an inclusive educational environment;

– psychological barriers and professional stereotypes of teachers.

The modern education system for people with disabilities in the Republic of Kazakhstan is currently undergoing significant changes. Thus, today in the republic

– 45 % of kindergartens (2,772 out of 6,159) work in the inclusive education system;

– 75 % of secondary schools(5,261 out of 7,014 schools);

– 50 % of educational institutions of technical and vocational education (in 410 out of 821 colleges);

– 112 higher educational institutions (for comparison: in 2023 there were 93 such universities, in 2022 – 75).

By the end of 2025, according to the Ministry of Education, 100 % of kindergartens and schools and 70 % of colleges will be adapted for inclusive education.

– N.N. Malofeyev identifies the following groups of children with disabilities in his works:

– Integration occurs due to the fact that no developmental abnormalities have been identified;

– education is provided in regular kindergartens and schools as a result of the parents' desire;

– the training is carried out in conjunction with normally developing peers of long - term correctional work;

– classes are taught in mass kindergartens and schools, taking into account developmental disabilities [6].

The success of learning and adaptation in society varies for the above groups. Conditions, taking into account the peculiarities of children's development, as practice shows, are created only for the final two categories. In most cases, the following practice is observed: children are formally with their peers, in practice they are actually excluded from co-education for a number of reasons. If conditions are not created for a person in the education system according to his needs, then he does not receive a high-quality education, and his situation worsens in the future. Malofeev believes that the introduction of inclusion "for show" in order to report on its alleged use is discrimination in its hidden form [6].

– At the moment, the introduction of inclusive education is becoming noticeable in the activities of secondary schools in the Republic of Kazakhstan. These include:

– School No. 13 Petropavlovsk. In this school, more inclusive education is provided for 10 years, children with musculoskeletal disorders are taught;

– Secondary school No. 11, Rudny. Children with mental retardation are taught at this school;

– Secondary school No.7, Kostanay. Children with severe speech disorders are integrated in this school;

– Gymnasium No.65 in Nur Sultan, an experimental school for the inclusion of children with hearing impairment and musculoskeletal system in general education;

– SCHOOL No. 27Karaganda. This school is a republican experimental platform of the Ministry of Education and Science of the Republic of Kazakhstan for the introduction of inclusive education.

– Secondary school No. 40 in Pavlodar. Thanks to the implemented "School for All" program, children with disabilities and children with disabilities are integrated in this school.

– Today, in the public consciousness, inclusion implies the most progressive approach that allows anyone to get education, regardless of the type and severity of the violation. The application of inclusive approaches in the education system is becoming one of the priorities of the state policy of the Republic of Kazakhstan in the education system. Evidence of this can be seen in national legislative initiatives. Since 2019, the AMANAT Party has been implementing the Kedergisiz Keleshek project ("A Future without Barriers"). The main directions of this project are:

– development of inclusive education;

– assistance in employment;

– creating a barrier - free environment;

– ensuring the accessibility of transport infrastructure.

In order to keep up with the times, Kazakhstan overcomes difficulties on the way to introducing inclusive education and tries to solve the problems that have arisen, including through the introduction of international experience:

– Following the example of foreign ones, the position of teacher-assistant tutor has been introduced in Kazakh schools.

– Teachers of the Republic of Kazakhstan are learning the basics of adaptive sports, together with their French colleagues they are developing special programs in order to introduce adaptive sports into the school curriculum.

– The direction of learning is developing through inclusive games, which involve both ordinary children and special ones.

– Charities are opening inclusion support rooms where children are taught using the methodology of applied behavior analysis.

However, on the way to the introduction of inclusive education, there are some problems, the solution of which would greatly contribute to its further development:

– creating an educational environment in educational organizations without barriers for people with disabilities;

– Creation of support mechanisms for people with disabilities;

– changes in the staffing table in educational organizations where people with disabilities study;

– Some parents of healthy children are opposed to inclusion;

– Some teachers are not ready to teach in a class (group) in which people with disabilities study, for fear of getting into a situation of psychological and professional discomfort.

According to the author, there is a need to develop carefully thought-out changes in the education system, including in the training of teachers.

In the studies of Russian teachers and psychologists, data were obtained that in children with hearing and speech impairments, the productivity of attention depends on the nature of the information presented: letters, numbers, shapes, etc.

An analysis in the field of studying the stability of attention of children with hearing and speech disorders showed that during the beginning of school age, the stability of attention ranges from 10-12 minutes, and at the end of the period it is up to 40 minutes.

Based on the above, the attention features of children with hearing and speech impairments are characterized by the following aspects:

- The amount of attention is reduced. Children with hearing and speech impairments perceive less information;
- great fatigue. Information is received on an auditory-visual basis.
- Low switching rate. A student with hearing and speech impairment needs a little more time when moving from one educational activity to another;
- Difficulties arise in the distribution of attention. Children with hearing and speech impairments have some difficulty writing and reading at the same time.

Thus, the assimilation and memorization of information by children with hearing and speech impairments is difficult due to impaired interaction with others. What a hearing child learns involuntarily is available to a child with hearing and speech impairment only in conditions of special training and in the process of applying great efforts.

The author of this article, together with the faculty and staff of the Innovative Eurasian University, organized an IT school for children with hearing and speech impairments. The courses were attended by 13 students from grades 8 to 10 of the State Educational Institution "Special Comprehensive Boarding School No. 1 for children with hearing and speech disorders" and 2 hearing children. A sign language interpreter worked together with the faculty and staff of the University. The IT school is organized in order to attract children's interest in modern information technologies. During the lessons, there were minor difficulties in explaining the material, which were eliminated by changing the method of its presentation. This is due to the lack of professional training in teaching children with special learning needs. It should be borne in mind that attention is one of the central factors in teaching deaf students.

### **Results**

As part of the autumn IT school in InEU, teachers have developed methodological materials to simplify the stage of assimilation and consolidation of knowledge by children with hearing and speech disorders.

Let's take a closer look at the methodological material prepared by the author of this study. At the beginning of the lesson, together with the sign language teacher, the theoretical material was explained to the students with a visual demonstration of the program's capabilities. Then the children began to perform practical tasks under the direct supervision and help of a teacher. At the end of the lesson, the students successfully completed an independent task.

*The module "Creating interactive videos in Vectorian Giotto".*

The module Creating interactive videos in Vectorian Giotto allows you to get acquainted with the basics of creating the simplest animation, animated videos, working in the Vectorian Giotto program.

The training program.

Studying this module will allow students to develop their creative abilities, provides an opportunity to try themselves as a screenwriter and director of cartoons.

Purpose: To familiarize students with the Vectorian Giotto multimedia program, to organize students' interest in modern computer technologies, to develop imagination, logical thinking and to organize a creative campaign.

*Requirements for the preparation of students:*

Students

*should know:*

- the purpose of the Vectorian Giotto multimedia program;
- Features of the Vectorian Giotto multimedia program;
- the main elements of the Vectorian Giotto interface;
- graphic and multimedia file formats.

*they must be able to:*

- to launch and close the program;
- to carry out the process of opening and saving files in the Vectorian Giotto program;
- use the tools of the Vectorian Giotto program while working with it;
- Save, view and publish animated videos;
- Draw with a brush;
- Apply different types of fill;
- work with the library;

- create, delete, duplicate a layer;
- Apply various effects to the text;
- Create a simple cartoon.

*The content of the training.*

Introduction.

Computer animation and its history. The main types of computer animation.

Vectorian Giotto multimedia program.

Basic concepts: extensions, tools, layers, interface, palettes.

The program interface. File formats. Vectorian Giotto multimedia program (menu features, workspace, scene, layers, toolbar, properties panel, color control panel, symbol library).

Drawing and coloring.

Select the main and background colors. Filling. Using drawing tools: pencil, brush, eraser, fill, eyedropper, ink, circle, square.

Highlighting and moving.

Basic concepts: *selection*.

Methods of allocation. Using various selection tools: Selection, Lasso, Sub-selection. Moving and changing the selection border, changing the size.

Working with layers.

Basic concepts: *layer, layer name, layer mask*.

The concept of a layer. Using layers to create a video. Operations on layers: deleting, moving, merging, renaming. Document saving formats.

Working with the symbol library.

Basic concepts: *symbol library, conversion*.

Converting objects on the desktop into a movie clip and a button, moving to the symbol library. Removing a movie clip from the scene. Moving symbols from the library to the workspace. Creating an animation.

Working with text.

Basic concepts: *text*.

Working with the Text component. The design of the text. Text placement Zooming, rotating, and moving text. Applying built-in effects to the text.

Working with images.

Basic concepts: *images, import*.

Importing an external drawing into the workspace. Resizing, converting an image. Creating an animation.

*\* Practical work. Task 1. Animation – A Boat.*

*Task 2. Animation – Cloud.*

*Task 3. Animated postcard.*

*Task number 2. Animation is a Cloud.*

1. Create a new project by running the command: File – New Movie.
2. It is necessary to change the color of the stage to blue: Modify – Document.
3. At this stage, we draw the sun using the following tools: Oval (O) and Brush (K).
4. Select the drawn objects with the mouse, right-click on the first keyframe – RMB (context menu) - Create motion tween.
5. Select 100 frames (frame ruler) and press F5 for slower movement (Figure 1).

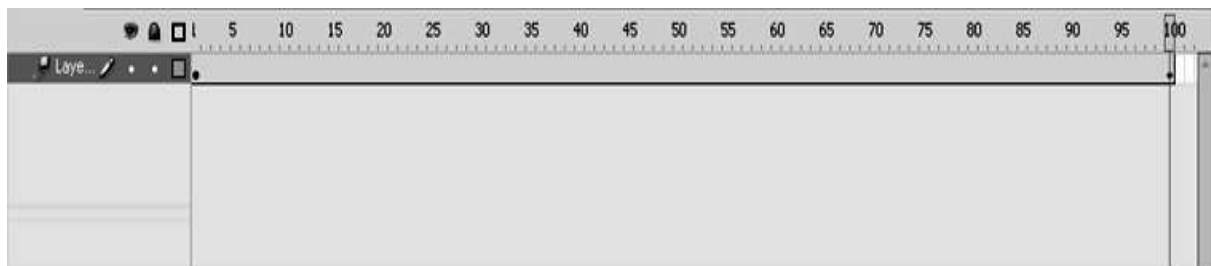


Figure 1 - Duration of the video

1. At this stage, move the sun in the opposite direction.
2. Let's view the animation using the Ctrl+ Enter keys.
3. You need to add a new layer (menu items Insert – Timeline – Layer). On the new layer, draw a cloud with a brush, select the white fill color (Shape panel on the right) and alpha transparency = 50% (Transform panel – Color Transformation tab – select alpha in the drop-down list and set 50% - Enter).
4. On the first keyframe of the cloud layer, press the right mouse button – RMB (context menu) – select Create motion tween.
5. Select 100 frames (frame ruler) and press F5 (for slower movement).
6. At this stage, we will move the cloud in the opposite direction.
7. Let's view the animation using the Ctrl+Enter keys
8. Select the File – Export Flash Movie menu item and name it Cloud (Figure 2).



Figure 2 – Cloud animation

### **Discussion**

Based on the results of the study, the author made the following conclusions:

- a child with hearing and speech impairment needs much more time to assimilate and memorize educational material;
- Step - by - step instructions are required when preparing practical tasks;
- Visual materials and demonstrations of actions are required during classes.
- When organizing the educational process in which children with hearing and speech impairments are supposed to participate, the teacher is obliged to take into account their characteristic cognitive features.

### **Conclusion**

Inclusive education should be purposeful, not spontaneous. Therefore, it is optimal to train a person with disabilities within the framework of a continuing education system. One of the most important aspects for the successful and effective functioning of an inclusive educational environment is the high-quality professional training of a teacher, as the main key figure.

## **THE LIST OF SOURCES**

- 1 Назарова Н.Н. Интегрированное (инклюзивное) образование: генезис и проблемы внедрения / Н.Н. Назарова // Социальная педагогика. – 2010. – № 1. – С.77-87.
- 2 Закон РК «Об образовании». – [Электронный ресурс]. – Режим доступа: [http://online.zakon.kz/Document/?doc\\_id=30118747](http://online.zakon.kz/Document/?doc_id=30118747).
- 3 Государственная программа развития образования в Республике Казахстан на 2020-2025 годы. – [Электронный ресурс]. – Режим доступа: <https://adilet.zan.kz/rus/docs/P1900000988>.
- 4 Национальный план действий на долгосрочную перспективу по обеспечению прав и улучшению качества жизни лиц с инвалидностью в Республике Казахстан до 2025 года

- (Постановление Правительства Республики Казахстан от 26 мая 2019 г. № 326). – [Электронный ресурс]. – Режим доступа: [https://online.zakon.kz/Document/?doc\\_id=39276702](https://online.zakon.kz/Document/?doc_id=39276702).
- 5 Закон Республики Казахстан от 26 июня 2021 года № 56-VII «О внесении изменений и дополнений в некоторые законодательные акты Республики Казахстан по вопросам инклюзивного образования. – [Электронный ресурс]. – Режим доступа: [https://online.zakon.kz/Document/?doc\\_id=39579626&pos=1;-8#pos=1;-8](https://online.zakon.kz/Document/?doc_id=39579626&pos=1;-8#pos=1;-8).
- 6 Малофеев Н.Н. XXI век: векторы модернизации системы образования детей с ограниченными возможностями здоровья / Н.Н. Малофеев // Открытая школа. – 2012. – № 9(120). – С. 16–20.

## REFERENCES

- 1 Nazarova, N.N. (2010). Integrirovannoye (inklyuzivnoye) obrazovaniye: genezis i problemy vnedreniya [Integrated (inclusive) education: the genesis and problems of implementation]. *Sotsialnaya pedagogika*, 1, 77-87 [in Russian].
- 2 Zakon RK «Ob obrazovanii» [Elektronnyy resurs] / Zakon.kz. – Rezhim dostupa: [http://online.zakon.kz/Document/?doc\\_id=30118747](http://online.zakon.kz/Document/?doc_id=30118747).
- 3 Gosudarstvennaya programma razvitiya obrazovaniya v Respublike Kazakhstan na 2020-2025 gody [The State program for the development of education in the Republic of Kazakhstan for 2020-2025]. (n.d.). [adilet.zan.kz](https://adilet.zan.kz). Retrieved from <https://adilet.zan.kz/rus/docs/P1900000988> [in Russian].
- 4 Natsionalnyy plan deystviy na dolgosrochnuyu perspektivu po obespecheniyu prav i uluchsheniyu kachestva zhizni lic s invalidnostyu v Respublike Kazakhstan do 2025 goda (Postanovleniye Pravitelstva Respubliki Kazakhstan ot 26 maya 2019 g. № 326) [National Long-term Action Plan to ensure the rights and improve the quality of life of persons with disabilities in the Republic of Kazakhstan until 2025 (Resolution of the Government of the Republic of Kazakhstan dated May 26, 2019 No. 326)]. (n.d.). [online.zakon.kz](https://online.zakon.kz). Retrieved from [https://online.zakon.kz/Document/?doc\\_id=39276702](https://online.zakon.kz/Document/?doc_id=39276702) [in Russian].
- 5 Zakon Respubliki Kazahstan ot 26 iyunya 2021 goda № 56-VII «O vnesenii izmenenij i dopolnenij v nekotorye zakonodatelnye akty Respubliki Kazahstan po voprosam inklyuzivnogo obrazovaniya [Law of the Republic of Kazakhstan dated June 26, 2021 No. 56-VII "On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on inclusive Education]. (n.d.). [online.zakon.kz](https://online.zakon.kz). Retrieved from [https://online.zakon.kz/Document/?doc\\_id=39579626&pos=1;-8#pos=1;-8](https://online.zakon.kz/Document/?doc_id=39579626&pos=1;-8#pos=1;-8) [in Russian].
- 6 Malofeyev N.N. (2012) XXI vek: vektory modernizatsii sistemy obrazovaniya detey s ogranichennymi vozmozhnostyami zdorovia [XXI century: vectors of modernization of the education system for children with disabilities]. *Otkrytaya shkola*, 9(120), 16–20 [in Russian].

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## IT технологиялар саласындағы инклюзивті білім берудің әдістемелік аспектілері

*Негізгі мәселе:* Қазіргі қоғамда мүмкіндігі шектеулі жандарға білім беру мәселесі өзекті және тиісті назар аударуды қажет етеді. Бүгінгі таңда инклюзивті білім беруді енгізу қазіргі заманғы білім беру жүйесіндегі Қазақстан Республикасы мемлекеттік саясатының басым бағыттарының біріне айналуда. Білім туралы Заңға сәйкес Қазақстан Республикасында білім беру үрдісінің әрбір субъектісінің зияткерлік дамуын, психофизиологиялық және жеке ерекшеліктерін ескере отырып, азаматтар үшін сапалы білім алуға тең құқылы кепілдік беріледі. Мақала инклюзивті білім берудің дамуын талдауға арналған. Автор инклюзивті білім беруді енгізу жолындағы мәселелерді қарастырды, инклюзивті білім беру шеңберінде IT-мектепті өткізу тәжірибесіне талдау жасады. Сондай-ақ, мақалада қазіргі білім беру кеңістігіне инклюзивті білім беру әдістерін сәтті енгізуге ықпал ететін факторларды анықтауға тырысады.

*Мақсаты:* Қазақстан Республикасында инклюзивті білім беруді дамыту мәселелерін қарау. Ерекше білім беру қажеттіліктері бар балаларды оқыту әдістемесін ұсыну, отандық білім беру жүйесіне инклюзивті оқытуды енгізу жолындағы мәселелерді шешудің мүмкін жолдарын ұсыну.

*Әдістері:* Мақалада талдау, синтез және дедукция әдістері қолданылды.

*Нәтижелер және олардың маңыздылығы:* Инклюзивті білім беруді енгізу үрдісіне кедергі келтіретін негізгі мәселелерді анықтауға бағытталған жұмыстың қорытындылары бойынша, сондай-ақ есту және сөйлеу қабілеті бұзылған балалардың танымдық іс-әрекетіндегі талдау мен анықталған негізгі аспектілердің нәтижелері бойынша мақала авторы есту және сөйлеу қабілеті бұзылған балаларды мультимедиялық технологияларға оқыту әдістемесін ұсынды. Сонымен қатар, автор мұғалімді инклюзивті білім беру әдістерін қолдану кезінде білім беру процесіне дайындау қажеттілігін нақты негіздейді, бұл кейбір мұғалімдердің психологиялық және кәсіби ыңғайсыздық жағдайына түсуден қорқып, мүмкіндігі шектеулі адамдар оқытылатын сыныпта (топта) сабақ беруге дайын болмауымен байланысты.

*Түйін сөздер:* шектеулі мүмкіндіктер, инклюзия, it-мектеп, әдістеме, мультимедиялық технологиялар.

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### **Методические аспекты инклюзивного образования в сфере IT технологий**

*Основная проблема:* В современном обществе проблема образования людей с ограниченными возможностями, является актуальной и требующей должного внимания. На сегодняшний день внедрение инклюзивного образования становится одним из приоритетных направлений государственной политики Республики Казахстан в системе современного образования. В соответствии с законом об образовании, в Республике Казахстан гарантировано равноправное получение качественного образования для граждан с учетом их интеллектуального развития, психофизиологических и индивидуальных особенностей каждого субъекта образовательного процесса. Статья посвящена анализу развития инклюзивного образования. Автором рассмотрены проблемы на пути внедрения инклюзивного образования, приведен анализ опыта проведения IT-школы в рамках инклюзивного образования. Также в статье предпринята попытка выявления факторов, способствующих успешному внедрению методов инклюзивного образования в современное образовательное пространство.

*Цель:* Рассмотреть вопросы развития инклюзивного образования в Республике Казахстан. Представить методику обучения детей с особыми образовательными потребностями, предложить возможные пути решения проблем на пути внедрения инклюзивного образования в отечественную систему образования.

*Методы:* В статье были использованы методы анализа, синтеза и дедукции.

*Результаты и их значимость:* По итогам проведенной работы, направленной на выявление основных проблем, препятствующих процессу внедрения инклюзивного образования, а также по результатам проведенного анализа и выявленных основных аспектов в познавательной деятельности детей с нарушением слуха и речи, автором статьи предложена методика обучения детей с нарушением слуха и речи мультимедийным технологиям. Кроме того, автором четко обоснована необходимость подготовки преподавателя к образовательному процессу при использовании методов инклюзивного образования, связанная с отсутствием готовности части педагогов преподавать в классе (группе), в которых обучаются люди с ограниченными возможностями, опасаясь попасть в ситуацию психологического и профессионального дискомфорта.

*Ключевые слова:* ограниченные возможности, инклюзия, IT-школа, методика, мультимедиа технологии.

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