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Involving Children with Visual Impairments in the Educational Process During English Language Lessons in an Inclusive Classroom

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Abstract

In this article, we would like to explore the most relevant and accessible educational resources available today, as well as methods and forms of organizing an inclusive learning environment for working with visually impaired and blind children in English language lessons. We will consider several important aspects of teaching that need to be taken into account when working in an inclusive classroom and present a lesson model based on audio-lingual and communicative teaching methods. The article also provides examples of assignments for in-class and extracurricular work using various components of the universal access system and educational applications, which will assist children with visual impairments and serve as a valuable supplementary resource for teachers.

Keywords: Inclusive education; Innovative technologies; Education for the visually impaired and low vision; Audio-lingual method; communicative teaching; universal access.

1. Introduction

1.1. Features of Perception in Blind and Visually Impaired Children

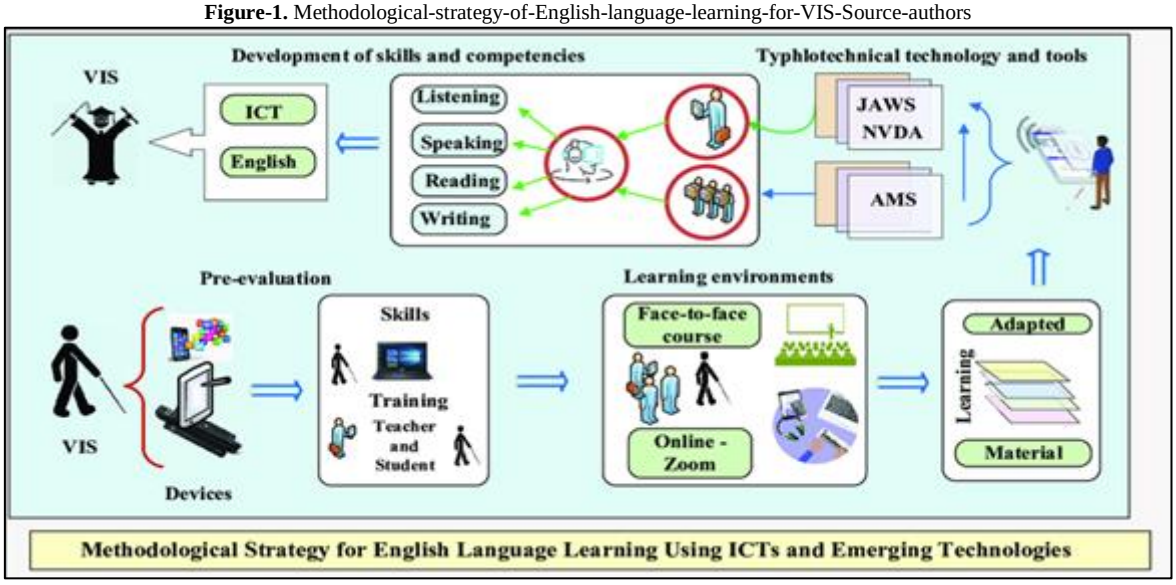
Visual impairment in a child can significantly affect the development of important learning skills and cognitive mechanisms. It is noted that children with low vision experience fragmentary and slowed perception, diminished panoramic vision, and reduced observance. As a result, they encounter difficulties in forming a holistic perception of the external world (Abdullayeva, 2022). The challenges faced by children with visual impairments, related to difficulties in perceiving the surrounding reality and developing mental functions, can complicate the process of managing and organizing their education.

However, as emphasized by L.S. Vygotsky, the absence of vision can lead to a profound restructuring of the organism and personality. The compensatory capabilities of the body allow redirecting a person's abilities and strengths in such a way as to neutralize the defect and weakness (Abdullayeva, 2021). Let us pay attention to some of his observations regarding the developmental characteristics of blind and visually impaired individuals.

Blind and visually impaired children tend to have better memory development compared to sighted individuals - they exhibit better verbal, mechanical, and logical memory. Blind individuals are inclined towards increased attentional activity and compensatory development of other mental processes, such as emotions, imagination, tactile perception, olfaction, and hearing. The main weakness of a blind person lies in limitations in freedom of movement and helplessness in relation to spatial orientation. However, in the modern world, where social functions take precedence over biological ones, it turns out that blind children, unlike, for example, deaf-mute individuals, have more opportunities to establish social connections. Therefore, they have a chance to succeed and develop as significant, influential members of society, as social units. This leads to the most characteristic step taken by a person with a visual impairment, which subsequently influences the development of their character and personal qualities - overcoming visual impairment through social compensation, thanks to immersion in the experiences of sighted individuals through language. Since the process of communication is the same for both blind and sighted individuals, language and speech become tools for overcoming the consequences of blindness. In this case, the development of social psychology plays an important role, particularly in creating conditions under which visually impaired children can communicate with non-visually impaired children. The most objectively accessible way to create such an environment is through inclusive education, rather than special education. If a child with a visual impairment is provided with the opportunity for completely adequate communication and mutual understanding with sighted children in the classroom through speech, "they will have a chance to overcome their blindness through words." The conflict that arises from the interaction between the visually impaired individual and the external environment can stimulate super-compensation. Thus, the defect becomes the driving force behind the psychological development of the individual. According to Vygotsky, in such cases, the struggle often ends in victory, and the

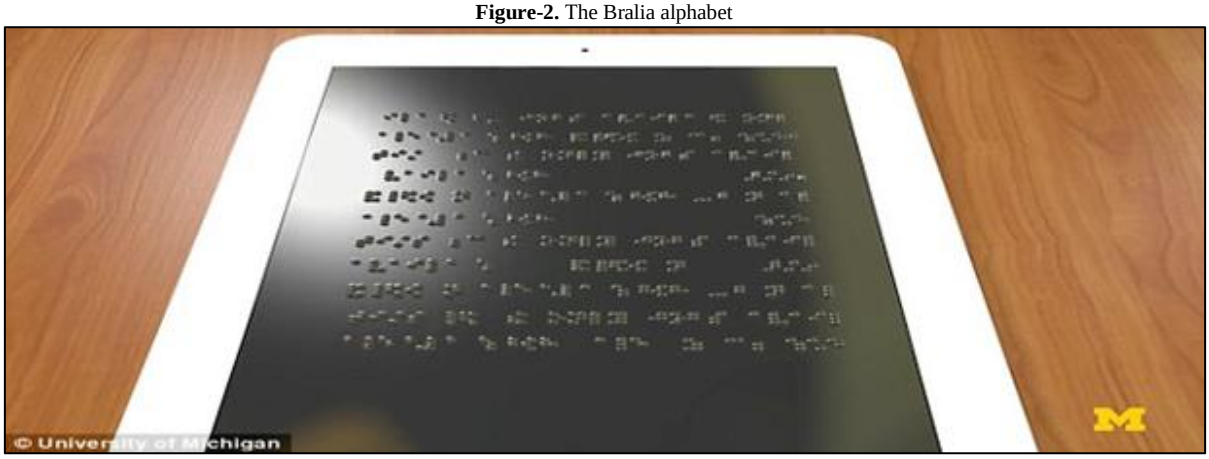
person reaches a higher level of development, "transforming deficiency into talent, defect into ability, weakness into strength, and worthlessness into exceptional value" (Zemtsova, 1973). It is interesting to note Vygotsky's idea that not only children with developmental disabilities but every child in society experiences a sense of insecurity, and overcoming this state is a motivating factor in individual development, with the ultimate goal being the attainment of a social position. Therefore, in the context of an inclusive classroom, the role of the teacher as a mentor and mediator is crucial. Their work minimizes the likelihood of negative outcomes, which could result in antisocial behavior, withdrawal into illness, feelings of worthlessness, and a pervasive lack of self-confidence (Konyukhova, 2016).

Figure-1. Methodological-strategy-of-English-language-learning-for-VIS-Source-authors



Source:https://www.researchgate.net/publication/354426406_Methodological_Experience_in_the_Teaching-Learning_of_the_English_Language_for_Students_with_Visual_Impairment

Figure-2. The Bralia alphabet



Source: http://www.dailymail.co.uk/sciencetech/article-3399018/Braille-Kindle-developed-blind- Tactile-tablet-allow-people-feel-images-text-screen.html

2. Material and Method

If we describe vision as a function of the human body, blindness is the inability to realize this function under conditions in which it is typically exercised. The deterioration of conditions that activate visual function, such as darkness, is an external factor that affects the ability to see. However, the limitation of visual function can also have internal causes. Additionally, as our colleagues from the USA point out, blindness is a complex phenomenon that encompasses various types and degrees of visual impairment. For example, it can include color blindness, inattentive blindness, and others [12]. When dealing with internal factors that restrict the visual function of the body, it is necessary to adapt the external environment to minimize visual problems. In everyone's life, there are barriers, both external and internal, which, when overcome, bring individuals closer to achieving their goals. The success of integration largely depends on the individual themselves, their personal characteristics (internal factors), while external conditions and the process of socializing a special needs child, as well as societal preparation, can positively influence the person's internal state, motivate them, and facilitate the performance of daily tasks.

In cases of reduced visual acuity and profound visual impairments, children may experience difficulties in recognizing objects and images. With partial vision loss, students can easily identify elementary features of objects. In the process of visual recognition of objects and images, the analysis and synthesis processes in visually impaired individuals occur similarly to those with normal vision. They first identify individual features and properties characterizing the object, compare them through mental comparison between the sensory image of interest and the memory image, identify commonalities and differences, refine the synthetic image, and name the object. However,

while children can easily identify and isolate elementary features, they often struggle with denoting and highlighting complex features, as their perception involves visual-spatial synthesis and the formation of a holistic image. It should be specifically noted that with profound visual impairments, the identification of object features during recognition occurs very slowly. The selection of these features and the formation of the image sometimes rely on certain random properties or qualities of the object. This is largely explained by the poverty of direct sensory experience (Abdullayeva, 2022). All of this complicates the processes of recognition and generalization, which are necessary for the development of analytical thinking. This activity is crucial as it forms the basis of the learning process. If it is hindered by slow perception due to the inability to simultaneously perceive objects in their spatial relationships, the child may experience discomfort, fear, and frustration, which, in turn, can negatively affect their emotional motivation and interest in studying. This is particularly evident when there is a need to act within limited time frames. Furthermore, there are several external problems that visually impaired students encounter during classroom activities and independent work, including the inability to work with certain formats of information files (multimedia presentations, PDFs), difficulties in formatting work according to requirements, lack of equipped and configured individual workstations, the need for constant assistance, and more (Ratner, 2006). Features of integrated education.

The development of children is strongly influenced by social factors, including the conditions of upbringing in which the psyche and personality of a child with developmental disabilities are formed. As noted by Zhigoreva M.V., Levchenko I.Yu., adverse upbringing conditions can exacerbate pathological phenomena, while positive social influence to some extent prevents the emergence or reduces the degree of expression of primary disorders and contributes to overcoming existing developmental deviations (LaCosse *et al.*, 2017).

Integrated education implies the mutual penetration of different conditions and means of education, where children with health peculiarities are included in a unified learning environment on equal terms with healthy children. Ratner F.L. defines this process as "joint education of individuals with physical and/or mental disabilities and individuals without such disabilities, using special means, methods, and the involvement of specialist educators". Such an integrated space is currently challenging to organize, but it is already possible to envision and simulate it. For the actual implementation of such a project, all participants in the integrated education process must undergo special training and workshops that contribute to establishing mutual understanding and contacts within the collective. To effectively educate children in inclusive classrooms, a series of medical and psycho-pedagogical measures are also necessary. To substantiate the possibilities of correcting impaired functions, it is important to conduct a medical and psychological analysis of the defect's structure and the causes that led to the impairment, and determine its severity. This article discusses only individual disorders, which refer to the impairment of a specific organ system, such as only visual or only auditory impairment. Nevertheless, even when considering an individual disorder, a systemic analysis of the peculiarities of the psyche formation in children with deviations should take into account the relationship between possible primary, leading, secondary, and tertiary impairments (Abdullayeva, 2021).

The new objectives of education in the 21st century are based on the concept of "free human development," creative initiative, the autonomy of learners, competitiveness, and mobility of future professionals. Preparing blind individuals for life and integrating them into productive relationships is a crucial social task for schools, colleges, and universities. In the current socio-economic situation, the education of children with profound visual impairments requires even greater attention to the scientific and methodological aspects of typhlopedagogy, which are focused on providing conditions for the self-realization of the blind in various spheres of life.

To achieve this goal, various teaching technologies are applied, each with its own features and organizational forms. Communicative technologies have long been integrated into foreign language teaching methodology, where education is based on active interaction among all participants in the learning process, utilizing various means of information, and communication is the leading method. Research-based technologies have gained popularity as well, which require the implementation of the pedagogical model of "learning through discovery." This approach involves collaborative problem-solving situations, where tasks are designed to include problem-solving scenarios or case studies, and the learning methods involve experimentation or simulation. Another important stimulus for engaging in collaborative learning activities is the use of games. It is in game-like situations that children gain valuable practical experience in acquiring knowledge under conditions of reduced stress or its absence.

The overarching role of speech in understanding reality has significant compensatory value and helps children with severe visual impairments to go beyond their limited sensory experience. During their school years, children expand their knowledge through reading books and engaging in communication with teachers and peers.

Sensory forms of cognition are further enhanced through the development of cognitive processes such as logical interpretation of facts, analysis and synthesis, comparison, generalization, systematization, abstraction, mental concretization, judgment, inference, and others. Active cognitive activity and speech help compensate for the limitations of direct sensory experience caused by visual impairment. Students with very low vision or even complete blindness can acquire profound knowledge by utilizing compensatory cognitive abilities. However, it should be emphasized that in order to unleash these potentialities, teachers need to skillfully combine different forms of information and engage as many sensory channels as possible. In the past, practitioners in the field of tiflopedagogy often relied on and justified the use of verbal methods alone, considering speech as the main means of acquiring knowledge. This led to superficial knowledge acquisition, as speech itself does not provide the necessary sensory foundation for words and does not impart the required concreteness to knowledge. To avoid superficial learning, teachers need to combine verbal and visual teaching methods with practical activities for students. The theorists of the active learning approach emphasize that practical activities are the best way to connect children's thinking with sensory perception and active understanding of objects and phenomena in reality. Developing

independent thinking skills should always be associated with active practical activities, especially in the early stages of education. This will help students keep pace with their classmates in the learning process.

3. Results

The involvement of children with visual impairments in the process of learning English in inclusive classrooms can be facilitated through several methodological recommendations. Additionally, there is a list of relevant Internet resources available for visually impaired children through the use of screen adjustments such as color settings, magnification, and audio dubbing.

One of the most popular screen reading programs is JAWS (Job Access With Speech), designed for individuals with low vision using personal computers. Moreover, students can utilize pre-installed (free) screen access programs on computers, smartphones, and tablets. For instance, TalkBack is used on the Android platform, while VoiceOver is used on Mac OS and iOS platforms. These programs provide audio feedback for the text displayed on the screen, assisting the child in independently navigating various educational websites.

To ensure that students with visual impairments do not lag behind their classmates in learning, it is recommended to provide them with a range of Internet resources for additional independent practice at home.

Let's consider a standard lesson plan consisting of seven stages as a model:

Beginning (Organizational stage): This stage involves organizational matters, lesson objectives, language warm-up activities, and setting the students' focus on learning English. The teacher greets the class and discusses unrelated topics to engage the students.

Revision (Knowledge activation stage): This stage aims to activate and review previously learned vocabulary and reinforce lexical units relevant to the topic being studied.

Successful education implies regular monitoring of the effectiveness of the educational process, including group work, following the case-study principle.

To assess the completion of tasks by a visually impaired child, tests available on special online resources can be used. In such cases, the student would need to report the percentage of successfully completed tasks. Additionally, within the lesson's topic, the teacher can assign a similar task to the whole class, allowing them to observe the progress of the visually impaired student.

Let's continue with the remaining stages of the lesson plan:

Presentation (Introduction of new knowledge): This stage may involve a brief lecture by the teacher, individual work of the students, pair or small group work. The objective is to develop dialogical speech skills, reading skills for comprehension and exploration, and listening skills with information extraction.

Practice (Reinforcement of new knowledge): Students work in pairs or small groups to reinforce vocabulary related to the topic. They can listen to audio materials or engage in discussions based on the texts they have read.

Production (Skill and ability development): Students complete a written task from the textbook, aiming to develop their writing skills related to the topic. The visually impaired student also works independently, writing the text in a Braille notebook. The teacher is recommended to ask the student to read their work aloud for assessment, as it might be challenging for the teacher to perceive Braille script.

Giving homework: Based on the exercises completed in class, students are assigned individual tasks to be done at home.Feedback and evaluation: The teacher summarizes the lesson, assesses the students' work during the class, bids them farewell, and wishes them a good day.

Below are informative educational Internet resources with various content that can be used to increase the interest of each child in the learning process, including children with visual impairments. Each of these websites offers numerous additional materials for independent student work and provides teachers with the means to later assess the comprehension and successful completion of tasks. These materials can be used by the teacher during class (at any of the aforementioned stages) or as homework for further topic exploration.

BBC School Radio: [BBC School Radio, 2017]

This website is useful for both teachers and students. The materials are diverse and well-structured. It offers sections suitable for beginners as well as students with advanced language skills. The audio collections include examples of various natural phenomena, objects and instruments, animal and bird sounds. There are also different stories, traditional musical pieces, and more.

Voice of America: [Learning English, 2017]

The materials on this website are accessible and beneficial for both teachers and students. The video and audio resources are categorized based on language proficiency levels and themes, making it easy to navigate and select content based on the desired topics.

These resources provide engaging audio materials and activities that can enhance the language learning experience for students, including those with visual impairments. Teachers can incorporate these resources at different stages of the lesson plan to reinforce vocabulary, listening skills, and cultural understanding.The resource offers a selection of useful applications for the iOS operating system. With their help, you can develop knowledge and skills in English language proficiency. The website also provides applications that teachers can use to facilitate the work of students with visual impairments. For example, there is an application where you can upload the text of assignments from handouts, eliminating the need for the student to ask classmates to read it.

4. Discussion

Additionally, there is an internet resource that offers a collection of grammar and vocabulary tests. In addition to that, the website provides a compilation of videos where students need to listen to words and repeat them after the announcer, thereby practicing the skill of proper pronunciation of English sounds.

Of course, the list of resources provided is not exhaustive. We have selected resources that, in our opinion, best suit the theme of working with blind and visually impaired children in integrated middle school classes. Technologies are evolving, and today more and more websites offer additional settings for the visually impaired. Therefore, teachers can independently update and expand this collection. However, there are some conditions to consider: online resources should contain minimal graphical information such as illustrations, diagrams, and tables since the abundance of images can hinder the student's use of the resource, as current electronic access programs cannot recognize and vocalize images. The online resource should be informative and, if possible, offer tasks aimed at developing all types of speech activities.

Methodological recommendations for teachers to organize lessons for visually impaired students are also provided.

The challenge of working in inclusive classrooms lies in the fact that children with visual impairments may experience difficulties in visual perception, which can slow down their work compared to sighted students. For the most effective work in an inclusive class, solving this problem should be comprehensive. Special methodological materials, interactive lessons, reliance on specific online resources, as well as audio and media materials can assist teachers. To organize an inclusive lesson for a child with visual impairments and their classmates in the most comfortable way, ensuring maximum participation from all students, it is important to create a supportive educational environment and provide each student with the necessary level of independence.

To achieve truly successful results, teachers should focus on creating a comfortable learning environment and provide all students with the necessary degree of autonomy. For this purpose, teachers are recommended to use a set of additional assignments in the form of audio materials and texts based on online resources. Students will need to complete these assignments at home, and then discuss them with their classmates during the lesson within the topic provided by the teacher. By preparing in a calm atmosphere independently, rather than in a stressful situation during the lesson, students will feel more confident, knowing the material. Thus, during the class, the student can engage in similar tasks with other students, participate in pair and group work, and present their findings at the board. Going through the material together with everyone else, a student with visual impairments will feel more confident, which positively affects their comprehension of the material and social integration within the group. Individual assignments are also suggested to enhance the self-esteem of students with visual impairments.

Before reading a textbook passage during the lesson, it is recommended to initiate a small discussion and ask students to talk about scientists, writers, or musicians they are familiar with. It is advisable to specifically address the student with inclusion and ask them to share the material they have prepared, without emphasizing that preparatory work was done at home. This provides the child with an opportunity to take on a leadership role in facilitating the discussion. Based on their presentation, a dialogue can be organized, and the class can ask questions to the student with inclusion. It's important to note that students with visual impairments may require a bit more time to read the text, as the reading speed in Braille is slower than reading with the eyes. Avoid rushing the student and involve them in the discussion once you realize they have finished reading.

We see an advantage in this method in that the teacher has the ability to track and monitor the level of understanding of the material by each student. It is also necessary to consider options for preparing a separate version of assessment tests for the student with inclusion, printed using the Braille system. Additionally, the text can be uploaded to a special application that the student (if they have a laptop or smartphone) could use during the lesson. This application can read out the pre-loaded text of the tasks, which the student with visual impairments can listen to using headphones.

A number of recommendations for organizing the integrated learning process in inclusive classrooms will be useful for teachers who are encountering the education of such children for the first time. It is important to understand that a child with visual impairments is capable of learning on an equal footing with other classmates, provided they receive the necessary educational support through the organization of an inclusive environment. Online resources can help in organizing such an environment, allowing the student with inclusion to pre-align with the topic, prepare for it, and work in the classroom on equal terms with everyone.

New technologies

In January 2017, a project to develop a tablet computer for blind and visually impaired individuals was announced on the well-known startup forum "TechCrunch" dedicated to technological innovations. The "Blitab" tablet, based on the "Android" platform, is equipped with a special dynamic display where text messages can be displayed in Braille code. This technology allows visually impaired and blind people to read books and texts from the internet. The device also features the "Voice Over" technology with universal accessibility functions, enabling computer control through voice commands. There is also consideration for the possibility of displaying images and maps on the display using Braille code. The tablet is promised to be very affordable and more convenient compared to existing devices such as printers and e-readers (O'Hare, 2023).

5. Conclusion

Similar technology is being developed by electronic book manufacturers, such as the company "Kindle". Additionally, well-known computer corporations like "Microsoft" and "Apple" have been conducting research in the

field of intelligent visual analysis and computer vision for many years and have achieved significant success. All "Apple" computers are equipped with software that supports universal accessibility features for individuals with disabilities. "Microsoft" specialists are working on projects in the field of natural language processing, including speech recognition programs and systems for image analysis and captioning. They are seeking ways to enhance the informativeness of verbal descriptions and developing image processing algorithms that can take into account valuable information and minute visual details, such as facial recognition and emotions. Engineers and scientists are striving to teach computers to see what a person can see in an image and describe it as accurately as possible, using voice messages or text [9]. These innovations and technological breakthroughs will enable blind and visually impaired individuals to have practically unlimited access to information resources and facilitate the process of information exchange. Therefore, it is essential for educators and methodologists to pay special attention to technological advancements in this field and begin preparing for the design and adaptation of new methods and systems for inclusive education.

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