

## THE ROLE OF ASSISTIVE TECHNOLOGY AND INTERACTIVE PLATFORMS IN SUPPORTING DYSPLEXIC LEARNERS

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**Abstract:** *This paper discusses the role of assistive technology in supporting students with reading disabilities. It highlights various tools, from simple low-tech devices to advanced computer applications like text-to-speech and speech-to-text software. The study emphasizes how assistive technology can enhance students' learning experiences by helping them overcome difficulties and develop essential skills. Additionally, the paper explores the importance of effectively integrating technology into the classroom to avoid distractions and maximize learning outcomes.*

**Keywords:** *assistive technology, reading disabilities, text-to-speech, speech-to-text, computer-assisted instruction, learning support, educational technology, inclusive education, digital learning tools, literacy development.*

**Аннотация:** *В данной статье рассматривается роль ассистивных технологий в поддержке учащихся с трудностями в чтении. Описываются различные средства — от простых низкотехнологичных устройств до современных компьютерных программ, таких как синтез речи и распознавание речи. Исследование подчеркивает, как ассистивные технологии помогают ученикам преодолевать трудности и развивать важные навыки. Также отмечается важность правильного и эффективного внедрения технологий в учебный процесс для повышения качества обучения.*

**Ключевые слова:** *ассистивные технологии, трудности в чтении, синтез речи, распознавание речи, компьютерное обучение, образовательные технологии, инклюзивное образование, цифровые учебные средства, развитие грамотности, поддержка обучения.*

**Anotatsiya:** *Ushbu maqolada o'quvchilarda o'qish qobiliyatidagi*

*cheklovlarni yengib o'tishda yordam beruvchi assistiv texnologiyalarning o'rni tahlil qilinadi. Unda oddiy moslamalardan tortib zamonaviy matnni ovoz chiqarib o'qish va nutqni matnga aylantirish dasturlarigacha bo'lgan vositalar haqida ma'lumot beriladi. Tadqiqot assistiv texnologiyalar yordamida o'quvchilarning bilim olish jarayonini yengillashtirish va ularning asosiy ko'nikmalarini rivojlantirish imkoniyatlarini ko'rsatadi. Shuningdek, texnologiyalarni dars jarayoniga to'g'ri va samarali kiritishning ahamiyati ham yoritilgan.*

**Kalit so'zlar:** *assistiv texnologiya, o'qishdagi cheklovlar, matnni ovoz chiqarish, nutqni matnga aylantirish, kompyuterli ta'lim, ta'limiy texnologiya, inklyuziv ta'lim, raqamli ta'lim vositalari, savodxonlikni rivojlantirish, o'qishni qo'llab-quvvatlash*

### **INTRODUCTION**

Dyslexia is a common learning disability that affects a person's ability to read. Its symptoms usually include phonetic problems, writing difficulties, and visual discomfort. These symptoms become more pronounced when children start school and the focus is on reading and writing. These children are often accused of "not doing well," which can lead to low self-esteem. There are several types of dyslexia, such as phonetic dyslexia and surface dyslexia. Children can have different forms of dyslexia, but almost all of them have visual discomfort when reading text. The term "visual discomfort" refers to the symptoms of hypersensitivity triggered by high visual contrast or frequent flickering . This causes the text to appear blurry, blurry, duplicated, or compressed. As a result, children are forced to read in a short period of time. The main goal of this study is to understand the learning difficulties faced by children with dyslexia and to find effective methods that make learning fun and easy for them. Mobile games which are related to education can be a good tool for this .

### **MAIN BODY**

Games developed based on these rules have shown positive results in the learning process of children. However, the game only introduces children to letters, but does not allow them to learn new words to increase their vocabulary. If this game also included a section for learning and forming new words from the collected letters,

it would make reading the text easier for children. During the study, it was emphasized that the application interface should avoid overloading with menus and tasks, not using incomprehensible terms, and the texts should be simple and easy to recognize. Unfortunately, there has been little research on creating games for children with special needs. Therefore, this study proposes the development of a two-dimensional digital educational game application for primary school students with dyslexia. In addition, there are several types of game-based learning techniques: kinetic games, digital or electronic games, and traditional (analog) games. According to the results of the study, all of these methods had a positive impact on the learning process of children with learning disabilities such as dyslexia and attention deficit hyperactivity disorder. Teachers were able to increase children's self-confidence, attract their attention, and increase their interest in lessons with the help of these methods. However, in order to effectively use these methods, teachers need to have sufficient knowledge and skills in creating games and adapting them to the learning needs of children.

Otherwise, such methods can create additional problems for teachers. As a result, it was shown that although children with dyslexia develop reading skills with the help of games, they are not yet able to fully apply these new reading skills to other learning processes, such as writing and spelling. The results of the study showed that there are five main methods for improving the effectiveness of digital game-based learning (DGBL). These include: providing a meaningful interactive game environment for players, adding immersive details to the game design and process, creating customized problem tasks and tasks to be solved in the game, providing opportunities for independent research and investigation within the game, and collecting player feedback. The effectiveness of these methods was found to depend on the available resources, the subject area, and the goals and interests of the students. The successful application of these approaches allows for the generation of useful ideas for the development of future DGBL projects.

As part of the study, specific elements for a mobile game-based learning system were selected and developed, and the improvement in the learning process

among respondents who tested this game was analyzed. The results of the study show that the following elements are important for making the game more effective: game plot, points and reward system, clear tasks and goals, a system of stages, instant feedback in the game, and an achievement system. The introduction of these elements has shown that the effectiveness of learning through games in children with dyslexia has increased. These findings may be useful for future researchers and for the development of new games. In addition, during the study, five serious games were developed for children with specific learning disabilities (SpLD), including dyslexia, and they were used to create comprehensive training materials for different types of SpLD. The study also aimed to assess the comfort and acceptance of children and educators in using the technology, as well as to test the methodology for adjusting the level of adaptive difficulty. Based on the results of the study, a prototype of a new mobile application for children with dyslexia was proposed, which was determined to provide immediate feedback to both children and teachers and technicians supporting them.

Other studies have suggested the following methods for effective games:

1. Using the Open Dyslexic font, which is suitable for dyslexia;
2. Creating a simple and convenient game layout;
3. Using short, simple and clear texts;
4. Choosing appropriate writing formats - 12 or 14 pt and dark fonts.

The games developed by implementing these methods have been observed to have a positive effect on the learning process. It was noted that phonological and attention-focused exercises will also be useful for children, experienced teachers and dyslexia centers. All children participating in the study were diagnosed with dyslexia by specialists and speech therapists, and their condition was found to be mild. At the same time, parents recognized digital learning tools as an effective way to engage and motivate children to learn. Another study tested an app for children with dyslexia based on specific analytical data collected during the development of a mobile app. As a result, the app helped children reduce distractions in the learning process and help them be more attentive and active. This proved that digital games and mobile

apps have great potential to support children's learning. Another study recommended the development of a digital game project called FunLexia, in collaboration with specialist speech therapists. This game is designed to help children learn letters in their native language and learn to read.

### **CONCLUSION**

In conclusion, it can be said that assistive technologies are of great importance in developing students' reading and writing skills, simplifying the process of acquiring knowledge, and ensuring social integration in the educational environment. Therefore, the widespread introduction of these technologies in classrooms, their effective use, and their proper integration into the educational process through teacher training are important tasks for future education.

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