

Assistive technology for students with ADHD

Vilis Z.M. (ITMO)

Scientific supervisor – Nakonechnaya O.V. (ITMO)

Introduction. Nowadays there is a significant rise in neurodiversity and mental disorder awareness^[1]. With more people being open about their experiences and struggles, more assistive technology is invented and implemented. However, that does not negate the fact that plenty of these inventions and innovations are not actively used by people who can directly benefit from them for whatever reason. The goal of this research is to shed light on some of the recent developments in the world of assistive tech, that can, potentially, better the lives of not only diagnosed neurodivergent students, but also those who suspect they might be such, or even just people who might struggle with some of the things mentioned below to a certain extent.

Main part. A method that has been gathering attention recently is Bionic Reading. This technique is based on a belief that a human brain only needs to read a few letters of each word in a text to comprehend it^[2], so a Bionic Reading extension or website will help with formatting any text accordingly by highlighting the first couple of letters in every word in it. Even though large-scale studies are yet to be conducted, some people with various forms of attention deficits have shared their experience with the technique, saying that it helped them focus on what they were reading and retain that information afterwards^[3].

For people with ADHD, listening comprehension can be a spectrum^[4]: for some it is a superior way to gain information, while others struggle with it significantly. For the former group, audiobooks and text-to-speech technologies may be implemented. These types of assistive technologies are beneficial for people who have hyperactive tendencies and high listening comprehension^[5] (for example, for those individuals who struggle with focusing on reading a book sitting down but can listen to a book or a lecture while exercising, commuting, or doing household chores). While there is some stigma connected to the listening of audiobooks as a main way to interact with literature, studies show that listening and reading a book affect the same area of the brain^[6], so actually the form in which a student chooses to acquire information and knowledge should be picked by the student themselves based on their support needs, comprehension skills and personal preferences.

On the other end of the spectrum are students with low listening comprehension – for them an unrecorded live lecture without an accompanying handout may be a very uncomfortable and frustrating experience. This is why more students should have access to speech-to-text technology that would turn spoken word into a text they can read while listening to a lecture – sort of like real-time subtitles. While this type of assistive technology is rapidly improving, there are still plenty of room to grow, for example, an AI program trained to discern specific scientific terminology from various areas of research could be of significant help for students in academia, whose speech-to-text devices struggle with noticing and correctly spelling such terms.

It is also important to mention assistive technology that helps with executive dysfunction common in students with ADHD. People with executive dysfunction are less likely to meet deadlines, start and finish tasks and may struggle with self-monitoring and regulating^[7]. Some solutions include interactive timetables and lists, time management tools like the pomodoro technique, habit trackers, digital reminder systems, and resources for self-regulation (e.g. check-in mobile apps). Implementing these could help students with their executive functioning as well as lessen their anxiety about both the academic and personal aspects of their lives.

Undoubtedly, while it is important to focus on lived experiences of people with ADHD, testing and popularizing these types of assistive technology devices can be beneficial for all students who struggle with various university activities mentioned above, be that due to a different mental illness, stress, burnout, or other predisposition. Additionally, not many people choose to receive an official ADHD diagnosis for various reasons, which include not being able to find or afford a specialist, not wanting to receive a disability status or for different personal reasons. That is why in my opinion it is important to test such assistive technology on a group of people who are willing and interested, regardless of whether they have an official diagnosis of any sort or not. While some of the aforementioned high-tech devices are not yet accessible to all university students, it is still possible to test some of the more low-tech solutions. For example, have a group of people read Bionic text and give their feedback, or test the retention of text on two groups, with one having listened to an audiobook, and the other having read an excerpt of the same book. The ultimate goal of employing these test groups and speaking about the research would be to share information about accessible assistive technology with students and professors, lessen the shame and stigma surrounding the use of assistive technology while studying and reiterate the importance of taking care of and paying attention to one's mental health.

Conclusion. In conclusion, there is a significant number of innovations made in the field of assistive technology for students with ADHD. Implementation of these technologies will help those who struggle with ADHD symptoms, but still strive to excel in academia^[8].

Sources:

- 1) <https://uptimize.com/neurodiversity-gaining-mainstream-traction/>
- 2) <https://www.sciencealert.com/word-jumble-meme-first-last-letters-cambridge-typoglycaemia>
- 3) <https://www.theguardian.com/commentisfree/2022/may/27/bionic-reading-adhd-speed-reader>
- 4) <https://pubmed.ncbi.nlm.nih.gov/12831231/>
- 5) <https://www.libbylife.com/2023-06-08-the-benefits-of-audiobooks-plus-what-to-listen-to-next>
- 6) <https://www.jneurosci.org/content/39/39/7722>
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