

Aids for Dyslexia are Important Supporters of Life and Learning

– Experiences of Finnish People with Dyslexia

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Received: August 15, 2015 Accepted: Nov. 26, 2015 Published: November 26, 2015

doi:10.5296/jse.v5i4.8573

URL: <http://dx.doi.org/10.5296/jse.v5i4.8573>

Abstract

The purpose of this study was to analyze the availability and usability of aids for dyslexia according to the experiences of people with dyslexia. This was a qualitative study in which people with dyslexia were asked to participate by filling out a qualitative survey. The analysis followed the principles of qualitative content analysis method. Participants (N=11) were 15-65-year-old Finnish people with diagnosed dyslexia who use aids for dyslexia regularly. The purpose of this study was to answer the following research questions: (1) How do the people with dyslexia describe the importance of the aids for dyslexia in their everyday life and learning?; (2) Which aids for dyslexia do the people with dyslexia consider the most usable and beneficial?; and (3) What challenges have the people with dyslexia faced when using aids for dyslexia? According to the findings, aids for dyslexia were considered irreplaceably important and supported everyday life in numerous ways. The participants reported that they used aids in many areas of life, such as in school, work, and leisure. The most usable aids were computers (especially word processing soft wares), tablets, and smart phones. Most of the participants had used one or more of them. The biggest challenges were the expensiveness of aids and difficulties in learning to use aids. As the knowledge about dyslexia and number of diagnoses increase, new studies on the possible aids and their developmental needs are required. Versatile aids can provide personal help and support the coping of people with dyslexia in many areas of life. Furthermore, the study showed that, based on the participants' experiences, more attention should be paid on the product development of aids for dyslexia in the future.

Keywords: Dyslexia, Reading disorder, Aids for dyslexia, Qualitative survey research

1. Introduction

Dyslexia is a life-long reading disorder (Gavin, 2003; Hultquist, 2008) that was first identified already in the 1880s (see e.g., Brooks & Kempe, 2014). Ever since then the understanding about the disorder has increased considerably. However, despite the wide variety of aids, we know relatively little about the use of aids among people with dyslexia (O'Neill & Gillespie, 2015). The purpose of this study is to describe how people with dyslexia use aids. Knowledge about dyslexia and available aids is important to people with dyslexia and their close ones and other significant people around them. The study analyzed everyday life with dyslexia in school, work, and everyday life environments.

The increasing number of developing aids bring more opportunities to the everyday life of people with dyslexia, and therefore, everyone should have the latest information about various possible aids (Jabobs, 2013). This would ensure the best learning and working opportunities to everyone with dyslexia (Björklund, 2011).

This study wants to highlight how dyslexia may be a drag but not an impediment (Frith, 1999; Vidyasagar & Pammer, 2010). The better the awareness of aids is the easier it will be to find aids that suit the best in one's everyday life (Loi, Wu, & Chen, 2013). Aids can support people with dyslexia at school and in work and leisure comprehensively, and thus, research on aids can have societal importance too (Barden, 2012). In addition, aids can boost one's self-esteem and increase belief in one's learning possibilities (Brante, 2013; Graham, Berninger, & Fan, 2007).

People with dyslexia need help in their everyday contexts from school to home and work. Aids can develop and support activities in various life situations (Doyle & Snowling, 2008). This study wants to give voice to the people with dyslexia: they will tell what kinds of opportunities various aids have given to them and how aids have made their everyday life easier—or whether they have sufficient information about possible aids. The perspective of the study is based on educational sciences and learning, and the purpose is to discuss how to support the coping and success in life in people with dyslexia the best. Not only people with dyslexia themselves but parents and other close ones, teachers, and educators need relevant information about possible aids for dyslexia that can be used in various ways for supporting the development of reading, writing, and learning skills among various learners.

2. Theoretical Background

2.1 Dyslexia

The word “dyslexia” comes from two originally Greek words: “dys” means difficult and “lexia” means word. In other words, dyslexia refers to difficulties with words (Hultquist, 2008), which is the case quite literally. Dyslexia is a reading disorder that which is one of the most common difficulties related to learning. Dyslexia can occur as reading and writing difficulties of various levels (Berninger et al., 2008; Bosse, Tainturier, & Valdois, 2007; Willburger et al., 2008). Currently, dyslexia is defined as mainly genetic, but damages in fetal development can also cause dyslexia. Brain research has noticed that the brain of people with dyslexia activates more slowly and differently than others' brains (e.g., Simos et al., 2002).

Dyslexia is a relatively common disorder; the estimations vary between approximately 5 and 15 % of all people (Pavey, 2007). The actual percentage is difficult to know because not all people with dyslexia have the official diagnosis. Dyslexias include surface dyslexia, semantic dyslexia, phonological dyslexia, and deep dyslexia (see e.g., Ellis, McDougall, & Monk, 1996; Woollams, 2013). The most common difficulties include problems with recognizing double consonants, absence of letters or letters changing places, alike letters (such as b and d), vowel combinations (such as e and ee), and absence of words in sentences when reading or writing, staying on line when reading or reading all letters. Other difficulties include trouble with reading aloud and numbers and mathematical problems, and slow reading pace (e.g., Eden, Stein, Wood, & Wood, 1994).

The strengths of people with dyslexia compensate their weaknesses. Their brains work slightly differently than other people's brains (Tafti, Hameedy, & Banghal, 2009). It is important to realize that while the brains of people with dyslexia have weaker areas, they also have stronger areas that compensate the functioning of the weaker ones (Bacon & Handley, 2014). Moreover, the use of multiple senses can provide new opportunities to people with dyslexia (Brunswick, Martin, & Marzano, 2010) if a stronger sense is actively used, for example, in learning situations.

Studies show that when practicing reading, people with dyslexia have used visual-spatial adjustment. In other words, they have developed their cognitive flexibility that is related to creativity while reading. Indeed, creativity and talent among people with dyslexia has been proven high (see e.g., Everatt, Steffert, & Smythe, 1999) for example in art (Chakravarty, 2009), music (Overy, Nicolson, Fawcett, & Clarke, 2003), and in general (Levy et al., 2003; Logan, 2009).

In Finland, research on dyslexia started only in the 1990s (Haapasalo & Salomäki, 2000). More research is needed in the future, also worldwide (Wong, 2011), because knowledge about the essence (e.g., Goswami, 2000; 2015; Lassus-Sangose, N'gueyn-Morel, & Valdois, 2008; Ramus et al., 2003) and occurrence (Stein, 2001; Ziegler et al., 2010) of dyslexia changes constantly. Furthermore, technological development and digitalization offer new possibilities to people with dyslexia, too (Beacham & Alty, 2006).

In Finland, the municipalities are obliged to arrange basic education to school-aged children free of charge. This also covers the teaching and learning materials, tools, and text books. Students with special needs are entitled to have special aids for learning free of charge as well (Law of Basic Education 628/1998). Providing all students with equal educational opportunities and removing obstacles to learning, especially among the least successful students, have been the leading principles in Finnish educational policy since the 20th century (Mäensivu et al., 2012). All pupils are entitled to special education when necessary. Any student with learning or adjustment problems is entitled to remedial teaching by inclusion or through a special education class in regular schools or in a school for students with special needs (Kupiainen, Hautamäki, & Karjalainen, 2009).

According to the Law (see also Hiltunen, Hyytiäinen, Lindroos, & Matero, 2008), children with handicaps of other special needs have the right to have those measures of support that

their school attendance necessitates for free, including interpretation and assistant services, teaching, special aids, rehabilitation services, guidance, and other measures of support (Lahtinen & Lankinen, 2010).

2.2 Aids for Dyslexia

To cope with difficulties caused by dyslexia, one can employ one's own strengths to develop new optional ways of, for example, learning (Reid, Strnadová, & Cumming, 2013). Aids are important as they support people with dyslexia in tasks that necessitate high-level, challenging skills. Suitable aids for dyslexia are always chosen through an individual selection process because one aid does not provide similar help to others (Firth, Frydenberg, & Greaves, 2008).

A recent publication by Psychology Press called *Assistive Technology for Cognition: A handbook for clinicians and developers* (2015) introduces difficulties related to various cognitive disabilities and suitable technological aids. According to it, these aids form an important mode of support and among which everyone can find suitable ones for themselves (see also Smythe, 2010). Assistive technology (AT) devices range from low-tech (such as whiteboards) to high-tech (such computers and video cameras) and the costs range with the same principle (Mitchell, 2008)). Usually, those with reading difficulties can be assisted with audio books (recorded books that can be listened in cassette, CD, or MP3 and MP4 formats), optical character recognition (OCR) that allows a user scan printed material and have it read aloud via a speech decoder, and speech synthesizers or screen readers that read aloud text on a computer screen (Mitchell, 2008). Writing difficulties can be aided by assistive technologies that can facilitate the actual writing task or that help with spelling, punctuation, grammar, word usage, and organization of texts (Mitchell, 2008).

Indeed, technology is helpful in various ways and can also help reading and writing (Jacobs, 2013; Regtvoort & van der Leij, 2007), problem-solving and, for example, solving of complex mathematical tasks (Magnan & Ecalte, 2006). Gavin (2003) emphasizes the importance of computers and various technologies in language learning, writing, and visual formations. According to Gavin (2003), the development of technological aids also develops learners' possibilities to enrich their learning and introduce new ways of learning (see also e.g., Berninger et al., 2015).

Today, already small children can use computers and families have at least one computer at home. Internet provides abundant information about how to use computers as the aid for dyslexia (Belson, Hartmann, & Sherman, 2013; Hughes, Herrington, McDonald, & Rhodes, 2011). However, new research on aids for dyslexia is needed to increase awareness and show needs of development (Alty & Beacham, 2006) and to know about the actual experiences of using aids by the actual users, which is the purpose of this stud.

3. Method

The purpose of this study was to answer the following research questions:

- (1) How do the people with dyslexia describe the importance of the aids for dyslexia in

their everyday life and learning?

(2) Which aids for dyslexia do the people with dyslexia consider the most usable and beneficial?

(3) What challenges have the people with dyslexia faced when using aids for dyslexia?

To answer the questions, a qualitative survey approach was chosen because the purpose was to highlight the participants' own experiences of using aids for dyslexia. Altogether, 11 Finnish people with dyslexia (aged 15-65) were recruited in the study by Researcher Veijola; first among her network with people with dyslexia (e.g., Facebook groups "Learning difficulties and different learning" and "Aids Central – For learning, work, activities") and then by snow ball technique. Each participant was diagnosed with dyslexia. Since dyslexia is a disorder of wide spectrum, the diagnoses among participants can vary considerably. Indeed, the individual differences among the participants in this study were large. One of the participant was under-aged (under 18 years old), who could participate in the study with parents' permission.

In this study, the questionnaire had to be carefully designed so that it would be easy for people with dyslexia to answer the questions. For example, it would be necessary to allow the respondents to answer to the questions in order he or she finds the most convenient (Tuomi, 2007). Usually, the easiest questions are presented first followed by the more difficult ones. The respondents should also have plenty of time to read the questions and write their answers (Sapsford, 2006).

The questionnaire included the following sections. The first section asked the participants' background information (age) and reason for using aids. This was followed by a question "How important aids are to you in your life and learning?" with three answer options: (1) Irreplaceably important; (2) important, and (3) I can cope without them. Then, the respondents are asked to give reasons and describe freely about their experiences of using aids.

The second section asks about the aids. The respondents were asked to tell which aids they use regularly and list them. The questionnaire included also a list of aids that was to help the respondents to answer. Another question in this section asked about situations in which a specific aid had been helpful.

The third section covered the challenges of using aids and future prospects. It included four questions that asked about situations in which aids have not helped or been available, information provided about aids and guidance for learning to use aids, challenges and difficulties in using aids, and future expectations of using aids and the development of aids.

The list of aids at the end of the questionnaire covered all possible aids for dyslexia presented in related literature. The participants could mark all aids they had used and, if an aid was not mentioned in the list, they could write it down. This was to guarantee that any aids that were considered important would be included in results.

The answers were analyzed with the qualitative content analyzing method (Creswell, 2009).

It was considered a suitable method because the number of participants was relatively low and because the purpose was to analyze personal experiences and descriptions. As the questionnaire was designed so that it would cover the themes presented in the research questions, it was natural to base analysis to these themes as well. The answers were categorized according to the descriptions of which aids the participants used or preferred using, their experiences of the benefits of aids, and their experiences of difficulties in finding, using, or learning about aids. Common themes were identified from their answers, but also differences in user experiences are highlighted in the results. As the purpose was also to give voice to people with dyslexia, the results section includes quotations from the data. To ensure the anonymity of participants, they are only referred to with a randomly given number (e.g., Participant no. 1) without information about age or gender.

Questions about the usability, availability, and difficulties with aids for dyslexia were to bring out various experiences widely. The answers showed that, in this sense, the questions worked well, and that the data were relevant for the purposes of the study.

The analysis of the study was guided by the supervisor of the research, Prof. Määttä. When reporting the study, Dr. Äärelä, who is also a special education teacher, and Ass. Prof. Uusiautti, who is an expert of research in positive development and well-being, were consulted.

4. Results

4.1 The Importance of Aids for Dyslexia

The participants of this research considered aids important or extremely important in many ways. First of all, their reading and writing had become easier, as described in the following excerpt:

[I use aids] to direct my attention to things I want. For example, the pen for highlighting helps pay attention to important sections and ignore irrelevant things. Aids make me feel that studying is easier when using aids. I would even describe aids as mental support. (Participant no. 5)

Using aids promotes correct spelling. This is how aids help people with dyslexia cope with writing assignments.

I use aids to make my work easier, for example, aids for literal assignments. My experiences of using aids are good and writing and reading have not been totally painfully difficult. (Participant no. 7)

Correct spelling is important to make a good impression about one's abilities and skills. In addition, trust in one's own skills becomes strengthened. Naturally, learning happens also without aids, but according to the interviewees' experiences, aids made studying easier and faster.

Aids are not imperative to studying but make it easier. For example, a computer makes writing faster, so you save time. (Participant no. 5)

The participants told that they used aids in their everyday life and that they were an important part of their lives. The mental support provided by aids was considered positive. The feeling of being able to handle daily chores, such as going to bank or grocery store, boosted self-esteem.

[I use the aids] *in every possible ways. I have good experiences of using aids.* (Participant no. 10)

Everyday situations. Work. Social coping. (Participant no. 8)

4.2 The Usability of Aids for Dyslexia

According to the data, technical aids for dyslexia were the most essential ones and frequently used by the participants. Every one of them reported that they used technical aids in everyday life. In addition, they used various aids that made reading, writing, math learning, and coping with daily tasks easier. The most important technical aids were computers, iPads, and smart phones.

Computers helped studying considerably and word processors were described as important parts of studying. Computers assisted in learning situations and, for example, in taking exams.

I have used computers as aids when taking exams. I have also used extra time [in exams]. Aids have made my working easier, especially computes, because aids have helped me to organize my thoughts into entities. Extra time has enabled me to reach higher scored and given the feeling of controlling time. (Participant no. 1)

It is faster to write with a computer because one does not have to think about how to write every letter but just push the buttons on computer. Moreover, one's handwriting is not a problem, which is often the case among people with dyslexia as their handwriting tend to be difficult to read and unclear (see also e.g., Borella et al., 2011; Sumner, Connelly, & Barnett, 2013). When time is not spend in forming nice-looking letters, one can concentrate in producing text, correct spelling, and the structure.

Computer – e.g., in situations where you have to write difficult words. I have searched them in order to know how they are spelled. Handwriting is laborious, easier with a computer. (large fonts, line spacing, etc.). Word processors – when writing essays etc., it easily finds your errors and they are easy to correct. (Participant no. 3)

Many of the research participant considered word processors irreplaceably important as they help to notice spelling mistakes.

Spelling checker and word processor etc. to correct mistakes. Word processors make easy to correct mistakes. (Participant no. 9)

It would be difficult to imagine life without a computer, and especially word processor is priceless. (Participant no. 2)

Computers can be used widely. In addition to word processing, they can help structuring texts

and finding information. Information found in the internet is more varied and stimulating than books. Pictures, colors, and voices maintain motivation (see e.g., Hugill, 2005). Technology enriches learning (Gavin, 2003) and talking internet pages can be valuable for people with low reading skills (Ingvar, 2008). Therefore, computers can motivate people with dyslexia to learn as they offer a learning environment without papers and pencils (cf., Bradley et al., 1993). In addition, learners get immediate information about their errors. Exercises and information search can be designed according to personal needs.

The computer has helped so that searching for things and information is more interesting than reading from a book. (Participant no. 4)

The participants also used tablets and would, for example, carry tablets with them. They used tablets in the same way than other people but had found other usable functions too. Tablets could be used for recording and listening of teaching. The participants also mentioned Livescribe 3, which is a pen that you can use for writing notes in a special notebook and for recording notes.

iPad Mini to recording and listening... It is more difficult to understand the concepts of grammar when you read about them than when you listen to them. (Participant no. 11)

The participants mentioned also that they use cellphones and smart phones as aids for dyslexia. There are various kinds of applications available that can be useful in learning and work, such as recorder, camera, alarms, and many other practical applications. People who write slowly may not be able to write notes fast enough, but they can take a picture of a slide and write notes later at home at their own pace.

I have used my cellphone to record for example English words and listened to them afterward. I have also repeated words after hearing them. The camera (in my phone) has helped me when I have drawn a picture of things I have learned and the relations between these things. By looking at the picture, it has been possible to remember the chart when needed. (Participant no. 1).

Cellphones [--] help coping with ordinary days. Especially my smart phone has been really helpful as you do not have to write down everything but you can e.g. take a picture of an important slide at the lesson. (Participant no. 2)

Other technical aids mentioned in the data included navigators. People with dyslexia have often difficulties in visual perception which can make navigation or reading a map troublesome. They easily mix up cardinal points and turns into left or right. Navigators were considered extremely helpful in these cases.

Navigators help in everyday life coping. Without a navigator I would be lost all the time; my sense of direction is non-existent. (Participant no. 2)

In addition, the participants mentioned other than technical aids for dyslexia that they used to make their everyday lives easier. These aids included rulers, markers, and stress balls. A ruler is one of simplest aids for reading. It helps moving from line to another which prevents the reader from jumping from line to line and helps perceiving the text better.

A reading ruler helps me stay on the right line when I read a text. (Participant no. 4)

Likewise, markers helped them to highlight important parts of the text and thus made remembering these sections easier.

I use markers to highlight the essential sections from a text. The central points have been easy to remember when they are clearly highlighted in the text. (Participant no. 1)

Some participants reported that they used stress balls while reading. Those people with dyslexia who suffer from restlessness can find playing with a stress ball relieving. It gives them continuous sensory stimuli through touching which can enhance concentration and attention.

The stress ball helps relieving the agitation caused by writing and reading. (Participant no. 6)

The participants had also been using calculators, abacuses, and fraction illustrators when learning mathematics. They were found especially helpful for understanding and solving written math problems. Other important daily aids were reported to be egg timers that help perceiving the passage of time, ear plugs and hearing protectors that help concentration, and bar code readers that help paying bills via online bank accounts. One of the participants mentioned how using a wrist watch in one's left arm also helps distinguishing between left and right.

4.3 The Challenges of Using Aids for Dyslexia

Even though the participants had positive experiences of using aids for dyslexia, they also described situations where aids had not been beneficial. In addition, their personal experiences varied. Some aids were found useful in many ways but still they did not help everyone in similar situations. This was described for example in the following manner:

The aids have not helped me with the slowness of my reading, learning foreign languages, filling out forms, and learning something by heart. (Participant no. 3)

However, many of the participants realized that one of the reasons for facing challenges was simply the lack of practicing. One can learn to use aids fluently only by training to use in their everyday situations. In addition, they would need some help when starting to use an aid because it may not be easy at first.

I have also used for example reading transparencies but they have not helped me much. Moreover, I receive talking books from Celia but I have found using them quite clumsy. (Participant no. 3)

The participants surfaced that it is not always easy to find suitable aids and that familiarizing with them and using them takes time. Sometimes finding a suitable aid is not successful but requires testing and comparing between different aids. Directions to use aids are sometimes lacking. Indeed, a general challenge is to develop aids that are simple enough to learn and use as a natural part of everyday life.

I hope that aids would develop more and that they would be regarded as a part of studies, not

separate “aids”. Aids should be available for everyone suffering from learning difficulties. We need more informing about aids in order to provide all possible help for those without knowledge and those interested in aids! (Participant no. 5)

In addition to difficulties in using aids, high prices were mentioned. If aids for dyslexia are too expensive, people cannot afford to buy them to make their daily life easier.

The electric word pen is still too expensive. In HERO, which is a union for learners with special needs, I was taught about using iPad. You have to rehearse several times to find right icons from the iPad. (Participant no. 11)

Many participant told that they had found help for learning how to use aids from, for example, centers for medical aids, where they can receive concrete guidance. This was considered very important because if they were supposed to use aids as a part of their everyday life, sufficient instructions and practicing are needed to guarantee fluent use of aids.

Furthermore, the participants of this study wished that aids for dyslexia would be further developed. Current aids do not yet meet all their needs. According to the personal experiences reported by the participants, many aids should be developed to be multi-sensory. Eventually, one of the major challenges was lack of informing about possible aids; without information, it is difficult to find and start using suitable aids.

5. Conclusions

The study showed that the people with dyslexia used aids in versatile ways. The most usable aids were reported to be the multi-sensory ones also because people’s personal ways of using aids differed considerably. An important finding was that most of the participants had found aids beneficial for their learning and coping with everyday chores. Aids were described as important or downright irreplaceable parts of studying, working, and leisure. Still, more information is needed about various kinds of aids so that the people with dyslexia could choose the most suitable ones for their own use.

The selection of an aid is based on each people’s personal needs, which means that people with dyslexia used different aids in several different ways. However, computers and word processors as well as many other technical aids were considered the most common and important aids. Assumedly, the technological solutions will be important in the future as well.

Many of the participants mentioned that aids are not necessarily easily available and that many of the aids are, at least at the beginning, difficult to use. Especially technical aids can be hard to learn. In addition, the participants considered the prices of aids too high and not everyone had the possibility to acquire them. The third challenge was that not all aids were considered helpful and, thus, aids for dyslexia should be further developed. The experiences varied as some of the participants of this study had not have any trouble with using aids.

6. Discussion

6.1 Evaluation of the Study

This study leaned on voluntary participants thoughts about aids for dyslexia. Recruiting them

in the study was done by highlighting the confidentiality and ethical perspectives (Murray, Pushor, & Renihan, 2012). It was also considered important to recruit participants who used aids for dyslexia and who would be able to answer the questions by writing. Although the answers included several spelling mistakes, they were understandable. However, it is difficult to evaluate how honestly and carefully the participants had answered the questions. The data were of high quality as the participants had answered all questions and their answers included versatile descriptions of aids and how they used them, including the difficulties and challenges of using aids. The data could have been complemented by interviews that would have allowed also those people with dyslexia who would have difficulties in reading the questions and answering them. This study did not give voice to the people with dyslexia, who do not use aids, consider them useless, or are not aware of aids (Tsalach, 2013). However, as the purpose was to learn about experiences of using aids for dyslexia, the selection of participants among those who reported using aids regularly was considered relevant. Still, the research theme is sensitive (cf., Sarivaara, Määttä, & Uusiautti, 2013), and people with dyslexia may find it difficult to talk about their disorder. In this study, they could participate by answering the questionnaire anonymously.

6.2 Further Implications

Aids are important for people with dyslexia as they can make everyday life easier and lay the foundation for accessibility. Even though we know more about dyslexia, there are still prejudices that lead to faulty thoughts about the disorder and may discourage people with dyslexia. For example, already the word “disorder” may cause negative connotations. Raising awareness of dyslexia helps people understand the phenomenon better. Availability and flexibility of aids will decrease prejudices.

The study showed that product development of aids is necessary. Equality in education and work is impossible without aids that meet personal needs and learning styles (see also Liu, Wu, & Chen, 2013; Mitchell, 2008). Information about dyslexia increases constantly and thus the chances to promote the opportunities of people with dyslexia to live a balanced life among people without dyslexia.

The importance of home for children with dyslexia is extremely high. Parents who are equipped with sufficient information about dyslexia and various aids can help their children live and cope with their disorder. They know also their children’s strengths and weaknesses the best, and therefore can support the children’s self-esteem and self-appreciation. It is crucial to receive information about dyslexia already in early childhood when the learning disabilities can be spotted. Various organizations already provide relevant information, such as British Dyslexia Association (BDA), International Dyslexia Association (IDA), and European Dyslexia Association (EDA) (Gavin, 2003).

When people know about their learning disability, they can pay attention to it, for example, by acquiring and using suitable aids. The right diagnosis can be a great relief: it finally explains the difference between one’s own and other’s learning and other cognitive activity. Lack of diagnoses can become a societal problem. If many people with dyslexia are not diagnosed right, the estimation of the number of people suffering from dyslexia remains

indicative. Thus, the proper support and funding for product development can also remain insufficient.

The younger one receives the information about aids for dyslexia, the easier it is for him or her to test and start using them. This was crystallized by one of the participants of this study:

I did not start to familiarize with aids until I was diagnosed with dyslexia in high school. I assume that if my problem was noticed earlier, I would have benefitted from aids already at basic school much more. (Participant no. 2)

It is worth noticing that learning aids are commonly used by others than people with dyslexia too. Ordinary school children use computers, tablets, and smart phones. On the one hand, technological solutions make everyday life easier but using them also requires a lot of practicing and knowledge about how to use them with various learners. As shown in the findings of this study, technology provided new ways to learn and cope with reading and writing tasks in a meaningful, easier way than before.

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