# HÁSKÓLI ÍSLANDS

## Hugvísindasvið

# Dyslexia and Academic Success

*What enables dyslexic students to advance to higher education?*

**Ritgerð til MA-prófs í enskukennslu**

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# Ágrip

Markmið rannsóknarinnar var að skilgreina hvaða sameiginlegu þættir gera nemendum með dyslexíu kleift að stunda Háskólanám. Níu einstaklingar voru teknir í viðtal, sem áttu það sameiginlegt að hafa náð góðum árangri í framhaldsskólum og stunda nám við Háskóla Reykjavíkur (HR). Rannsóknin beindist að reynslu viðmælenda af framhaldskólanámi og þá sérstaklega námi í erlendum tungumálum. Einnig var tekið viðtal við kennara sem kennir námskeið um dyslexíu, til að fá víðtækari sýn á umfjöllunarefnið. Niðurstöður rannsóknarinnar gáfu almennt til kynna að þátttakendur hefðu fengið stuðning sem gerði þeim kleift að stunda nám á háskólastigi. Einnig sýndu niðurstöður að þátttakendur í rannsókninni voru gæddir ákveðnum persónueinkennum sem hjálpuðu þeim við að ná árangri í námi, en þau voru dugnaður, þolinmæði og þroski. Hvatning og sjálfsálit voru einnig mikilvægir þættir. Aðrar niðurstöður gáfu til kynna að nemendurnir áttu í erfiðleikum með tungumálanám, þá sérstaklega ensku, en nokkrir af viðmælendunum sögðu að þeim þætti enska erfiðasta greinin í framhaldsskóla. Þrátt fyrir að enska var talin erfið, þótti nemendum hún almennt mikilvæg, og sumir kusu að fara utan í þeim tilgangi að læra tungumálið.

# Abstract

The focus of the study was to identify what common features enables dyslexic students to achieve higher education. This was done by interviewing nine dyslexic students that had successfully achieved higher education and were currently studying at Reykjavík University (HR). The study also focused on upper secondary school experience of the students, with a emphasis on foreign language learning. A teacher of a dyslexia course was also interviewed to get a broader experience on the topic. The findings of the research was that the participants commonly indicated that they had received support that helped them achieve higher education. Another finding of the study was that the participants all had characteristics that helped them become successful; perseverance and maturity. Motivation and self-esteem was also reported to help these students. Other findings were that the participants found foreign language learning difficult. English was reported to be especially difficult, as few of the participants claimed that they thought English was the most difficult subject in secondary school. English was found to be considered important tool by the participants as some of them had gone to language schools or moved abroad just to learn the language.

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## 1. Introduction

Dyslexia is the most common and internationally acknowledged learning disability in the world (Nijakowska, 2010). It is found in all written languages both in alphabetic languages like English and Italian, and logographic languages like Japanese (Nijakowska, 2010).

In the broadest sense, dyslexia refers to the difficulty to read and write which normal intelligent children experience, despite being exposed to a suitable education (Bryant and Bradley, 1985). Tunmer and Greaney (2010) add that dyslexia is a life time disorder that is affected by a deficit in phonological skills, which amongst other, causes a difficulty in tying letters and sounds together, resulting in a poor reading and writing ability. The difficulty in reading often causes the dyslexic students to read less than their classmates or in some cases to stagnate at a primitive reading level. Because reading and writing are such fundamental skills in schooling, dyslexic students often experience a drop in their confidence in their academic aptitude leading to low self-esteem compared to their peers (Ingesson, 2007). Researchers have reported that self-esteem and academic success are interconnected, meaning that low self-esteem tends to lead to academic failure and vice versa (Lawrence, 2006).

Dyslexia seems to affect 10 percent of all readers (Ministry of Education, Science and Culture, 2007; OECD, 2001). Yet, only 3.8 percent of students in the two largest universities in Reykjavík are dyslexic (The University of Iceland (3.5 %) and the Reykjavik University (4.8 %)). These numbers indicate that dyslexic students are underrepresented in tertiary education, possibly because many of them have already dropped out of school. In Iceland, upper secondary schools are obligated by law to assist dyslexic students, by providing necessary aids and support. The low representation of dyslexic students at university indicates that they need more support than what they are being offered at the moment.

In 2004, Michael Dal and co (2005), conducted a survey on dyslexia and foreign language teachers in Iceland. The survey reports that a majority of foreign languages teachers in Iceland feel they don't have the knowledge to help dyslexic students in their studies.

Students in Iceland are also required to learn three to four foreign languages before they can enter into a university, which is more than students in our neighbouring countries. For dyslexic students, this is an immense barrier as studies report that dyslexic students have difficulty in learning foreign languages (Nijakowska, 2010). Furthermore, the English language has started to play an ever increasing role in Icelandic society, especially in education (Arnbjörnsdóttir, 2007). Dyslexic students have reported to find English especially difficult because of is orthographic complexity (Helmuth, 2001).

The current study focuses on the approximately 4% of Icelandic university students, the dyslexic students. The study reports results of interviews with nine dyslexic students that have managed to advance to higher education. The interviews were meant to examine if there were any common features, and then what those common feature were, that the students felt had helped them to achieve academic success despite their disability.

This paper consists of six chapters, including this introduction. The next chapter is a literature review that discusses studies on reading development, dyslexia, self-esteem, the framework for dyslexic students in Iceland, foreign language learning, and auxiliary aid for dyslexic students. The third chapter describes how the study was conducted. The chapter includes two pilot studies, sampling of the participants, ethics, and other information about the participants. The fourth chapter describes the themes that emerged from the interviews. Chapter five discusses and examines these themes further. The final chapter offers the conclusions.
The goal of this thesis is to examine whether any common factors can be identified that characterize dyslexic students who have gone on to university studies despite their disability.

## 2. Review of Literature

## 2.1 Reading

This chapter discusses reading as it is both an essential skill in the modern world and how dyslexia manifests in the reading development. The first sections of the chapter will focus on the reading development and the last section will present the relationship between reading and dyslexia, and how dyslexia affects reading development.

### 2.1.1 Reading development

Reading is a mandatory skill to be a functional member in today's society. Modern society relies heavily on the skill to get written information, weather it is for leisure or work. Schooling depends on the skill, as reading is the foundation in which other subjects are based. Good reading skills can be seen as a corner stone for academic success (Høien, Lundberg, 2000).

Language acquisition; how to listen, comprehend and speak, is naturally given to a child. The child receives it without any self-aware effort (Høien & Lundberg, 2000). Reading on the other hand, is a skill that has to be taught and learned (Rutter, 1978) and most of us have forgotten how difficult it was to figure out how to translate patterns into words, thoughts, and ideas. In the most basic sense, reading is an ability to decode symbols in order to receive meaning (Nijakowska, 2010). But when dug deeper, reading is a complicated skill that builds on a number of decoding and comprehension processes (Rutter, 1978).

In order to provide a brief overview of the process, it is helpful to look to how a child learns how to read. In the book *Dyslexia from Theory to Intervention*, Høien and Lundberg (2000) describe the reading development in a model which divides the developmental process into four sequenced stages (see figure 1), which is an exaggeration on how it really happens. In reality it is not so sequenced,  but rather flows between the stages (Høien & Lundberg, 2000). However, the exaggerated progress provides a helpful look on how the skill is acquired.
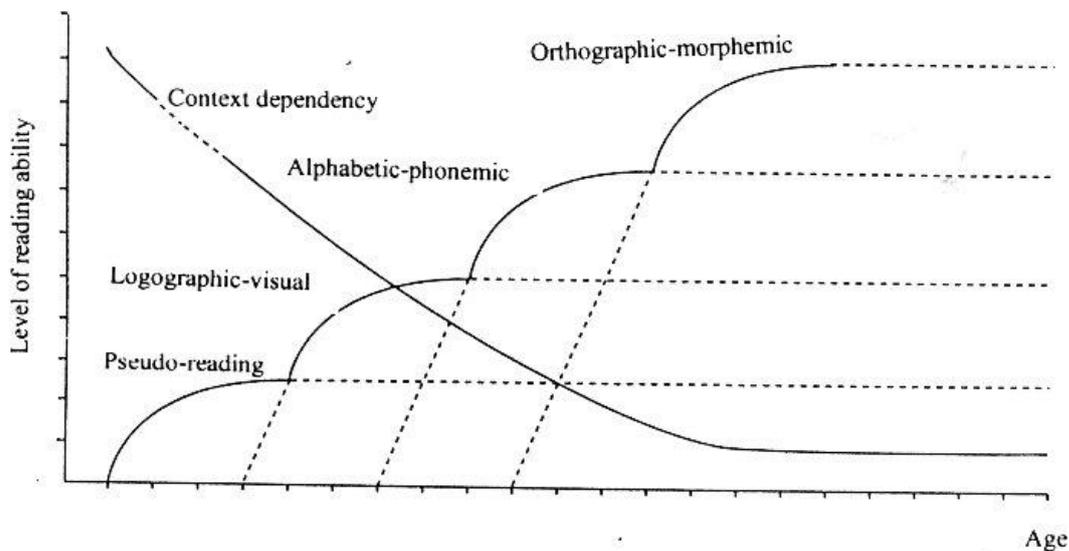
Figure 1: Høien and Lundberg's model of reading development

from Høien & Lundberg, 2000 p. 24

### 2.1.1.1 Pre-conditions:

The first two stages in Høien and Lundberg's model of reading development happen before the child learns to decode, and deal with how the child uses its environment to gain information on what is written. The latter two stages deal with two different types of decoding.

Before the child can start on these stages, Høien and Lundberg claim that some pre-conditions have to be in place (2000). A great part of the foundation is made from the spoken language that the child already knows and understands (Høien & Lundberg, 2000). Although the child is still in the progress of learning its native language when it starts to learn to read, it has acquired enough to know the most basic words, grammar, and syntax (Høien & Lundberg, 2000). The child also has to have at least a weak notion of what reading is about, a notion parents often provide when reading for a child (Høien & Lundberg, 2000).

### 2.1.1.2 Pseudo-reading

According to Høien and Lundberg, the first stage in the process of learning to read is the *pseudo-reading stage* where the child learns to read the environment; company logos, pictures etc. in order to get information on what the text is about

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(Høien & Lundberg, 2000). A good example of pseudo-reading was found in a study conducted in a Swedish speaking preschool in Finland and children were asked to read a milk carton which had the word milk written both in Swedish (mjölk) and in Finnish (maita). The children knew what the label said, and responded in their native language that it said "mjölk". When the carton was turned to show the Finnish version maita, and the same question was asked, the children replied: "I've already told you, mjölk". The study shows that children start using clues from the environment, such as pictures and logos, to read. In this stage, children might know the first letter in their name or even recognise their name, but they do that without knowing how to decode the alphabetic signs.

### 2.1.1.3 Logographic - visual

The next stage according to Høien and Lundberg's model is *the logographic stage* in which the child learns to identify words as interdependent and isolate them from other words. It is best described as the stage where the child starts to connect the visual traits of the words to the actual word. The children still have not grasped the alphabetical principle, but nevertheless can learn to recognise many words. Learning the names of the letters can greatly assist the child in identifying words. Although the sounds do not give an exact information on the letters they produce, they provide a valuable clue to which word is being used. For example, the child may recognise the word *camel*, as it is five letters long and has to bumps in the middle of the word (m). Thus, it can be said that the child learns to recognise words as pictures - similar to how different signs in Chinese ideograms represent different words. Researchers claim that this stage is important as it lays a foundation for the fourth stage, the orthographic stage, which will be discussed later.

### 2.1.1.4 Alphabetic - phonemic

The third stage in the model is the *Alphabetic-phonetic stage* which provides a radical change in how the child deals with written words as they start to decode the signs on the page. In this stage, the phonological skills of the child play a major role as the child assigns sounds of the language with the letters. The phonological skills

determine how successful the child will be at decoding (Stuart, 1995) and will be further discussed in chapter 2.2.2.

The child is also required to learn distinct sounds of the letters in relation to other letters around it; how one sequence of letters produces a different sound then the letter when it stands alone or in another sequence. For example: We can look at how the phoneme /f/ is spelled differently in though, compared to in fish. This can be very difficult to the new readers, as a language may have, more or less, twenty six letter to translate an almost infinite number of sounds (Høien & Lundberg, 2000).

Firth (1985) claims that the child's attempts to spell can be very helpful at this stage as it teaches the child to attend individual sounds, isolate them and to manipulate letters (Firth 1985).

The alphabetic stage is the core of the reading development process and provides the reader with the ability to decode words that the reader has never seen before. This method is therefore necessary, but also costly, as the reader uses a lot of his mental capacity in decoding the words, letter for letter, instead of devoting it to perform advance interpretation and draw conclusion of the text.

Because it is so demanding in memory and cognitive processing, it is more efficient for the reader to move on to the next stage, but with enough practise that progress happens automatically. As the child reads, it will encounter the same words over and over. Each time the child sees a specific word, it builds up a mental image of the word (Høien & Lundberg, 2000). Frequency of how often the child sees the word determines if it will be able to recognize the word on sight, without having to sound the word out. A higher number of sighted words (words that are recognized on sight) causes higher automaticity when reading, which is a hallmark of a good reader (Høien & Lundberg, 2000). When the child has enough of these words it can move onto the orthographic stage.


**2.1.1.5 Orthographic - morphemic**

The final stage is the *Orthographic stage*, which is sometimes called 'whole-word reading' stage. Here the child realises patterns in words and starts to use its 'sight vocabulary' to decode words as morphemes rather than letters. When the child encounters the word *treefrog*, it will automatically recognise that the word can be split into two known parts: tree and frog, thus quickly realising the phonological identity of

the word. The child will also use this strategy when encountering words with pre- and suffixes. In the word *bewitched* the child will repackage it as *be-witch-ed*. This strategy allows the reader a new way of decoding, which will allow the reader to go through the text at a greater pace and become fully automatic. This strategy also gives the reader more cognitive freedom to think about what is being read and construct ideas while reading.

Like any other skill, reading takes time and practise to become good at. Høien and Lundberg provide us with a four step model on how we learn to read. Although most adults use the last stage when reading, it is important to note that the stages that have already been completed are not forgotten and still serve a purpose. A good reader is able to switch smoothly between stages while reading, for example when encountering a new word or when embarking on a different type of text than the reader is used to (Høien & Lundberg, 2000).

**2.1.2 Dyslexia and reading**

It might not be surprising that difficulties may arise in a complex skill like reading. The reader has to make fine distinction between symbols that make up the word in a blink of an eye (Rutter, 1978). One of these difficulties is commonly known as dyslexia. Høien and Lundberg's model fits well together with Rutter's explanation on how dyslexic students stagnate on different stages in reading development which can easily be entered to the stages provided by Høien and Lundberg.

Dyslexia can be traced to a deficit in phonological skills which, amongst others, hinders the reader's ability to tie sounds and symbols together (discussed in more detail in chapter (2.2.2). Therefore, the dyslexic student often struggles with the phonemic stage (the 3rd stage in Høien & Lundberg's model). Reading instructions are mostly focused on phonetic-based methods in decoding words, where the reader decodes the words letter by letter. In many cases, decoding consumes much of the dyslexic student's cognitive capacity which leaves little left for comprehension (Høien & Lundberg, 2000; Samuels, Hiebert & Rasinski, 2010).

Firth (1985) claims that dyslexic students stagnate in different stages, producing different types of dyslexics. If a dyslexic student stagnates in the

*logographic stage*, he becomes a phonological dyslexic, characterised by a difficulty in tying sounds together with words. A stagnation in the *phonemic stage* will produce an orthographic dyslexic, characterised by his inability to spell, which hinders the acquisition of rapid and accurate word recognition.

Høien and Lundberg claim that it is common to find a dyslexic student still in the logographic stage (2nd stage) while his peers have moved to fruitful decoding strategies. Well established logographic strategies allow the reader to recognise a certain number of words, which often allows the dyslexic reader to hide his disability, only to make matters worse in the future (Høien & Lundberg, 2000).

Because of how difficult and frustrating it is for the dyslexic reader to read, it often causes them avoid reading. Like any other skill, reading is dependent on practise to become better at it. This was referenced by Stanovich as the *Matthew effect of dyslexia*, the effect where the rich get richer, while the poor get poorer (Nijakowska, 2010). This seems to be the case for dyslexic readers. While their peers continue to read and grow in the skill, the dyslexics avoid it. The lack of practise causes dyslexic readers to stagnate.

The section looked at a reading model provided by Høien and Lundberg and how the deficit in phonological skills of dyslexic readers influences the normal reading development. The next section will look closer at what dyslexia is.

## 2.2 Dyslexia

The following section gives an overview of the complex nature of dyslexia and the difficulty in defining it. This is followed by a discussion on its affect in academic success.

### 2.2.1 What is Dyslexia?

Dyslexia is both the most common and internationally acknowledged learning disability in the world (Nijakowska, 2010). It is found in all written languages in the world, both in alphabetical languages like English and Italian, and logographic languages like Japanese.

In the broadest sense, dyslexia refers to the difficulty to learn to read and write that normally intelligent children experience, even though they are exposed to suitable education (Bryant and Bradley, 1985). Dyslexia does not just affect children, as it is a lifetime disorder and cannot be outgrown (Nijakowska, 2010).

Dyslexia has been reported to affect 5 to 17.5% of all readers (Démonet, Taylor and Chaix, 2004). Research on dyslexia shows that the frequency of dyslexia varies between languages due to the orthography, but the variation is also caused by problems with the definition of dyslexia (Démonet, Taylor and Chaix, 2004).

## 2.2.2 Defining Dyslexia

Defining the term dyslexia has proved problematic. This is evident in how many have attempted to define it and how many definitions are being used to describe the disorder. Dyslexia is being defined differently in different countries (Nijakowska, 2010).

The problem with the definition has been addressed by multiple scholars. It is caused by the complexity of the disorder and its diverse nature, as well as how the disorder manifests differently as it is affected by the environment of the afflicted person, such as his or her culture, language, education. (Rutter, 1978; Nijakowska, 2010). A correct definition is important, because a wrong definition runs the risks that the disorder will either be neglected or inflated (Tunmer and Greaney, 2010).

Two definitions are widely used (Nijakowska, 2010). The definitions of the *Orton's Dyslexia society* and the *International Dyslexia Association*. The definitions used by these societies have undergone several changes over the years but their current definitions are given bellow.

Orton's definition:

Dyslexia is one of several distinct learning disabilities. It is a specific language-based disorder of constitutional origin characterised by difficulties in single-word decoding, usually reflecting insufficient phonological processing abilities. These difficulties in single word decoding are often unexpected in relation to age and other cognitive and academic abilities: they are not the result of generalised developmental disability or sensory impairment. Dyslexia

is manifest by variable difficulty with different forms of language, often including, in addition to problems of reading, a conspicuous problem with acquiring proficiency in writing and spelling (Orton Dyslexia Society, 1994).

The definition of the International Dyslexia Association:

Their current definition was adopted by the International Dyslexia Association Board of Directors, Nov. 12, 2002. This definition is based on the Orton's definition and is also used by the National Institute of Child Health and Human Development (NICHD).

Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and / or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

International Dyslexia Association, 2015

Although the definitions are similar, the Orton's definition is more language oriented than the IDA's. Both definitions deal with the origin of the deficit in the phonological abilities to decode. The definitions above are similar in comparison to other definitions that sometimes have contrary statements (Catts, Hamhi & Adlof, 2012).

In 2010, Tunmer and Greaney presented a helpful description on how they define dyslexia in four components which they state that all definitions must have. These components are:

1) Persistent learning difficulties in literacy learning;
2) Occur in normal intelligent children;
3) Despite receiving suitable education;

4) Caused by a deficit in the phonological skills.

Below I have summarized their article into the four components that they give in their article.

Their first component is that the definition of dyslexia has to refer to persistent difficulties in literacy learning. (Tunmer and Greaney, 2010). Dyslexia is not acquired like some reading deficits, that is, deficits that are acquired because of a brain injury, disease, or because of a removal of an ability that the person once had. Dyslexia is rather developed, meaning a deficit that the person is born with and continues to live with (Nijakowska, 2010).

The second component is that dyslexia has to manifest in otherwise fully functional and developing persons (Tunmer and Greaney, 2010). The person with dyslexia has to understand texts when they are read out loud but show severe difficulties when reading texts. Tunmer and Greaney argue that the definition of dyslexia has to be considered in persons that don't have other analogous problems that could affect reading such as "severe attentional problems, mental retardation, oral language impairment, emotional disturbance and/or behavioural difficulties, deficits in hearing or visual acuity, neurological disorders such as autism or childhood schizophrenia, or chronically poor health." (Tunmer and Greaney, 2010). Numerous studies have reported that dyslexia is a disorder which has nothing to do with intelligence (Nijakowska, 2010).

Thirdly, the person with dyslexia has to have received high quality instruction and still display fractured reading ability. If dyslexia is a genetic based deficit, it cannot be subjected to poor or inadequate teaching.
Tunmer and Greaney point to research on dyslexic students that received remedial teaching while they were beginning to read. The research was conducted on first and second grade readers in 1996 by Vellutino. The results of the study showed that 67% of the children that were considered poor readers could, if provided with the best available assistance, be helped to become 'normal' readers. Other research that has been conducted in the same field shows similar findings and suggests that most of the children that are considered poor readers can alter the curve of becoming stagnant in their reading ability. With high quality remedial teaching activated to follow the normal readers curve, a poor reader can become a developed reader (Høien & Lundberg, 2000). These findings also show that at risk children often

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experience problems at the start due to consistently applying an ineffective learning strategy. However, with appropriate intervention strategies, many students with persistent reading difficulties can be taught to use strategies in a more efficient manner (Tunmer and Greaney, 2010). Tunmer and Greaney suggest that the term has been applied to cases that it should not have been, and conclude that poor readers are often labelled dyslexic because of inadequate reading instruction in earlier schooling. This has inflated the definition (Tunmer and Greaney, 2010).

Tunmer and Greaney's final condition for defining dyslexia is that dyslexia is mainly caused by deficits in phonological processing skills. This has been called the *phonological deficit hypothesis,* and has been the dominant explanation for dyslexia in the last four decades (Elliot and Grigorenko, 2014). According to Tunmer and Greaney (2010), Phonological processing skill include:

encoding phonological information (phonetic perception); gaining access to and performing mental operations on phonological information (phonological awareness); retrieving phonological information from semantic memory (lexical retrieval); retaining phonological information in working memory (short-term verbal recall); and translating letters and letter patterns into phonological forms (phonological recoding). (p. 238).

Phonological/phonetic awareness has sometimes been used as an umbrella term for the different aspects described by Tunmer and Greaney (Elliot and Grigorenko, 2014). For what remains of this study however, the term 'phonological skills' will be employed as an umbrella term for phonological or phonetic awareness.

The phonological skills are at the heart of language learning as they deal with processing sounds of the language (Tunmer and Greaney, 2010). We saw in chapter 2.1.1. 3 - alphabetic phonemic stage, how important phonological skills are when decoding words. But phonological skills carry multiple other linguistic operations as is made clear in the different elements that are listed above by Tunmer and Greaney.

Tunmer and Greaney conditions apply to the larger part of the definitions used by the International Dyslexia Society and the Orton's definition (Tunmer and Greaney, 2010). They added that dyslexia is a life-time disorder and apply restrictions on the use of term dyslexia, in order to prevent the term to be overused.

### 2.2.3 Dyslexia and academic success

In recent years, researchers have started to focus more and more on the psychological aspect of dyslexia. Although in origin, dyslexia is neurological and affects the students' ability to read, that inability often transfers to a psychological disorder because reading is such a fundamental ability in schooling and can therefore easily transfer to students' sense of un-achievement at school (Humphrey, 2002). The section below introduces a few researches that touch on the interplay between dyslexia, self-esteem, and academic success.

Self-esteem is defined by Gurney as: "the relative degree of worthiness, or acceptability, which people perceive their self-concept to possess" (Gurney, 1988, p.13). Researchers have now shown that a student's academic success and achievements are influenced by his or her self-esteem (Lawrence, 2006). Self-esteem and achievements are reciprocal as poor achievements can lower self-esteem and low self-esteem can lead to poor achievements. Some have claimed that achievements are the most important factor in determining self-esteem (Hamachek, 1995).

Ingesson (2007) found that a dyslexic student faces an enormous danger when the student becomes conscious of the achievements and starts to compare his or her own achievements with other peers in his or her school. Ingesson's research reports that during that time there is a risk of a dramatic drop in the dyslexic student's self-esteem (Ingesson, 2007).

In 2002, Humphrey and Mullins interviewed pupils about their education and their self-esteem. Their findings indicate that dyslexia had contributed to their low self-esteem, as many of the dyslexic students described themselves as "stupid, lazy or thick" (Humphrey and Mullins, 2002 p .8).

In addition, they found that students with dyslexia tend have poor internal locus of control. Internal locus of control is a concept developed by Rotter (1966) to describe weather people tend to ascribe the success and failures to external or internal causes. Humphrey and Mullins found that dyslexic students attribute success to external factors rather than internal factors, but failure to internal factors and not external. That is to say, when dyslexic students are successful, they give credit to their teachers, they believe that the test was easier than normal or other external factors. But when those students fail, they blame themselves for not having the

abilities to succeed, for example not being intelligent enough. This suggests that learners with dyslexia tend to have a very poor 'internal locus of control', as it seems that they don't think that they are in control over their own success (Humphrey and Mullins, 2002). On the other hand, the study reported that when a student from the control group failed, they did not blame their ability to learn, but rather that they were not interested enough and that they could have done better, but were too lazy, and thus protect their self-esteem while the dyslexic student damages it (Humphrey and Mullins, 2002).

Furthermore, Reiff et al. (1997) found a common determiner when he researched highly successful adults. All of them had a high internal locus of control, which means that they felt they were largely in control of their own success.

Terras (2009) found that dyslexic students had lower academic self-esteem than global self-esteem. The finding suggest that the dyslexic student protects his or her self-esteem with his or her strength, like being good in sports and refuses to let his academic self-esteem or his failure at school drag his or her global self-esteem down.

Glizzard (2012) believes self-esteem is important for education as students with high self-esteem can push themselves harder, are more resilient and believe in their own ability to succeed (Glazzard, 2012; Rutter, 1985). In some cases, low self-esteem can lead to behavioural problems or even to depression (Alexander-Passé, 2006). These researches show that there is a connection between self-esteem and academic achievement. Research confirm that students that struggle with dyslexia have lower self-esteem than other students because they see themselves as less successful in academic achievements.

**2.2.3.1 External factors that affect self-esteem**

The section above discussed research that shows that dyslexic students often experience a drop in their self-esteem when comparing themselves to their peers. In 2007, Ingesson researched socio-emotional developments in 75 students with dyslexia between the ages of 14 and 25 and their parents. She found out that external factors such as social support from parents and peers had a positive effect on the students' self-esteem which could protect the students' self-esteem for dropping (Ingesson, 2007).

Ingesson concluded that 83% of the students had good peer relations. These good relations seem to provide some compensation for school failures and difficulties. Many of her samples said that being with friends had been their only source of pleasure in school.

Ingesson found out that if her samples had received good parental support, in where the parents believed in their child's ability to learn and to succeed in their studies, had a really positive effect on the self-esteem of the children. Ingesson, found out that the  students' internal locus of control could be raised if a parent had faith in their child. Thus, making the child more aware that it had control over their own success.

## 2.2.3.2 Internal factors that affects self-esteem

Ingesson (2007) also found that internal factors had a major role to play in protecting the students' self-esteem. Hobbies and interests, such as sports and arts, or having a special talent could prove to be important factors that helped the students' global-esteem. Other important characteristic factors were acceptance of diagnosis, determination, and persistence.

According to Ingesson, internal factors such as persistence and determination were the most important for a positive outcome. Persistence and determination allow the students to push themselves to achieve set goals. Thus influencing a positive self-esteem. Persistence was defined by Ingesson as following: "The tendency to endure despite adversities" (Ingesson, 2007 p.66) and was identified by Ingesson as one of the roots of well-being for the dyslexic by both her subjects and their parents. Persistence indicated that the subject felt it was their responsibility to succeed despite their situation, indicating 'an internal locus of control'.
An internal locus of control and persistence Ingesson thought, developed from their family support.

The findings of Ingesson underline the findings of Goldber, Higgins, Rasking and Herman's (2003) study on successful individuals with learning disabilities. They claim that successful dyslexic students acknowledged their strength and weaknesses and made use of social support available to them. They had prevailed because they

had capitalized on an ability or interest to help them in achieving a higher self-esteem.

Dyslexia is complex disorder that affects multiple areas in the life of the afflicted. Researchers have shown that dyslexic students often experience low self-esteem when they compare their academic achievements to those of their peers. (Ingesson, 2007).

Furthermore, studies have found that dyslexic students with a strong internal locus of control are more resilient to low self-esteem, as they find that they are more in control over their own education and studies reveal a connection between support from friends or family to internal locus of control. As research shows that self-esteem and academic success are interconnected, a dyslexic student with a strong internal locus of control can therefore compensate for his learning disability with, for example, persistent learning, which is caused by strong internal locus of control, and become successful.

## 2.3 Dyslexia in Iceland

This section introduces the number of dyslexic readers in Iceland and compares it to the number of dyslexic readers in the world. The chapter also compares the number of dyslexic students in Iceland to the number of dyslexic students that are registered at a two of the largest universities in Reykjavík. Finally, the chapter looks at upper secondary school regulation regarding dyslexic students.

### 2.3.1 Number of dyslexic students in Iceland

In 2000, PISA (Programme for International Student Assessment) concluded that 4 percent of Icelandic students had a severe reading problem and a further 10 percent had difficulties (OECD, 2001). The results indicates that in a normal classroom of 20 students, one student has a severe problem, while two others have minor reading problems. The frequency of dyslexia was also researched in 35 Icelandic schools. The research showed that 7.3 percent of the students had been diagnosed with dyslexia (Logadóttir, Svavarsdóttir, Magnússon, Sigurðsson and Diðriksdóttir, 2008). Furthermore, the researchers suggested that the number could

be higher, or around 10 percent, as some of the dyslexic students had possibly not been diagnosed.

It is generally believed that dyslexia affects between 5 - 17% of the global population (Démonet, Taylor and Chaix, 2004). The frequency in Iceland is within that range and is similar to the frequency in our neighbouring countries, which is around 10 percent (Ministry of Education¸ Science and Culture, 2007; OECD, 2001).

The researcher made an enquiry into how many dyslexic students attend the Reykjavík University and the University of Iceland. According to the most recent student registrar, 492 students attending the University of Iceland are dyslexic (M. Björnsdóttir, personal communication via email, Mars 27, 2015). According to the university website, 13.848 students are enrolled at the university which means that around 3.5 percent of the students are dyslexic (Háskóli Íslands, 2015).

Around a total of 3500 students attend the Reykjavík University (Jónsson, 2014) and of those, 171 are dyslexic, or around 4.8 percent (L. Harðardóttir, personal communication via email, April 4, 2015).

When the two universities are combined the percentage of dyslexic students that are enrolled is around 3.8 percent. This means either that many of the dyslexic students have not turned in their diagnoses or that many dyslexic students do not make it to the university.


**2.3.2 Upper secondary school regulations regarding dyslexia.**

High schools in Iceland are obligated to follow the *Upper Secondary School Act no.92* that was passed in 2008. Article 34 deals with students with special needs.

In article 34, high schools are regulated to provide students with reading disabilities specialised instructional material, education and facilities in accordance to these students' needs.  It also states that high schools should define in their curriculum guide how they conduct analysis for dyslexia and what measures are made for follow-up and support students that have been screened for dyslexia (Ministry of Education, Science and Culture, 2008).

In 2011, the Ministry of Education, Science and Culture, published The Icelandic National Curriculum Guide for Upper Secondary School. The goal of the national curriculum is to set objectives and shape high schools in accordance with

the educational laws. According to sections 14.5 and 3.1 in the Icelandic National Curriculum Guide for Upper Secondary School (2011), high schools are responsible for supporting students with special needs, such as students with dyslexia. Section 14.5 states that students with disabilities should study with their peers if capable and that these students are entitled to special support based on their confirmed special needs. The curriculum suggest that that can be done either by offering study programs or by giving special support in the other programs in the school. Students should also be provided with special educational materials when possible (Ministry of Education¸ Science and Culture, 2011). According to section 3.1, teachers should take into consideration these students' disabilities when assessing them. The curriculum suggest that they can be supported, for example, by allowing them to use support materials, longer time to complete examination, and be given customised examinations, all in accordance with each individual needs (Ministry of Education¸ Science and Culture, 2011).

Upper secondary schools in Iceland are obligated by law to support dyslexic students in their studies. The national curriculum suggests in what way high schools can support these students but fails to give direct statements on what should be done specifically. The number of dyslexic students that are registered at two of the largest universities in Reykjavík indicates that dyslexic student are more likely to drop out before reaching a university level and thus need more support in upper secondary school. One reason why dyslexic students are not reaching university level maybe due to the high demand on foreign language learning in Iceland. This will be discussed in the next section.

## 2.4 Foreign Language Education in Iceland

The chapter focuses on foreign language education in Iceland, as students in Iceland have to learn 3-4 foreign languages in order to achieve higher education. The chapter also discusses the ever increasing role that English has received in recent years, both here in Iceland as well as globally. Furthermore, the chapter will look at studies that have reported that dyslexic students struggle with foreign language learning, especially in deep orthographic languages like English. In the final section

of the chapter we will look at a survey on dyslexia and foreign language learning which was conducted on 74 foreign language teachers in Iceland.


The need for foreign language learning is ever growing in Iceland. With a population around 300,000 that speak the native language, foreign language learning in Iceland is an essential tool for various international opportunities and serves as a key to foreign culture. Even if an Icelander never leaves his country, the need for a fluency in a foreign language is great for various occupations and studies.
New languages open new opportunities, cultures, and values. In more populous countries, people can be largely unaffected without knowing a single foreign language, but in Iceland that is impossible. Both school authorities and the general public hold foreign language learning in high regards. This is reflective in how many languages are obligatory in compulsory education in Iceland.


   The National Curriculum Guide for Compulsory Schools states that students need to learn Icelandic and two foreign languages: English and one Nordic language in compulsory education (Ministry of Education¸ Science and Culture, 2011, p. 123). Furthermore, according to the national curriculum, students should be, by the completion of compulsory education, at level three on the scale of *the Common European Framework of Reference for languages* in both English and one Nordic language. This means that students are able to understand, without difficulty, spoken language and written text, and are able to communicate both orally and in print on various topics both formally and casually (Ministry of Education, Science and Culture, 2011). For many years the requirements to finish upper secondary school have included learning an additional 3rd foreign language with an enhanced skill in the existing languages (Eiríksdóttir, 2011). In the new national curriculum for upper secondary school, the policy regarding foreign language learning has been changed as upper secondary schools are given more individual freedom in deciding their own requirements for graduation in foreign language learning (Eirkísdóttir, 2011; Ministry of Education, Science and Culture, 2011).

   Although the new policy relaxes the obligations regarding the third foreign language, Icelandic students still hold foreign language learning in high regard. In

light of the new language policy, Eiríksdóttir (2011) researched the views of first year students regarding foreign language learning in a certain high school in Iceland. She found that students are positive regarding learning a third language, as a majority of students said that they would choose learning a third language weather it was compulsory or not.

Although there have only been few years since the new policy, it seems as the new policy has allowed teaching of new foreign languages to be introduced, as more and more students choose Spanish as their 3rd language (Eiríksdóttir, 2011; Statistics Iceland, 2011). According to the Statistics Iceland, upper secondary school students are also choosing more diverse languages that are considered rare in Iceland such as Russian and Japanese (Statistics Iceland, 2011).

### 2.4.1 The importance of the English language

In Iceland, English stands out in terms of importance and accessibility. When compared to other foreign languages, Icelandic students receive far more input from English than the other languages. The importance of proficient English cannot be understated as English has become the dominant language for international business and academia (Dal, Arnbak and Brandstätter, 2005).

In recent decades, English has been increasingly used by more and more speakers (Crystal, 2003). During the last century, English crossed an extraordinary threshold, which only one language, Latin, has achieved before, as it is spoken by more speakers as a second language on a day-to day basis than a first language (Knutsson, 2004). In 2000, it was estimated that 1.5 billion people spoke English and that number is increasing as English continues to be the most widely taught language in the world (Crystal, 2003).

The reason for the increase is that English has become the dominant language in various international fields such as business, science, and education, trough technology that has brought societies closer together (Crystal, 2003). For example, majority of the material on the Internet is in English (Crystal, 2003). Therefore, many have concluded that English is a key of the globalization which is incurring and has been in recent decades, as the language has become the most common way to communicate (Crystal, 2003).

English has answered the need for a common language needed in the world community. Global organisation and international businesses, such as the United Nations, The World Bank, UNICEF, and the World Health Organization etc. Where multiple nations and languages come together there needs to be a common ground to be able to communicate and English has increasingly provided the answer (Crystal, 2003).

Similarly, English has become a *Lingua franca* in European universities as universities offer increasingly more courses taught in English (Coleman, 2006). With English courses, Coleman suggest that European universities are both encouraging international students to apply to their universities and also appealing to the local students' demand in becoming internationally qualified in their degree (Coleman, 2006). This is somewhat reflected in that English has become the language in which academic journals are published. Around 70 percent are in English but this figure may reach 80 percent or more in physical science (Crystal, 2003).

With the increasing value of English for academia and international communication, the demand for higher proficiency in English from upper secondary schools is being raised.

**2.4.2 English in Icelandic schools**

School authorities in Iceland acknowledge how valuable proficiency in English is to the students' future (Ministry of Education, Science and Culture, 2011), as do the students themselves (Jeeves, 2013). Like we examined in the section above, English is not only the main language used in international communication and business, but has received a special status in international education. In Iceland, school authorities have been raising the demands of English in the educational system.

The National Curriculum Guide for Compulsory Schools(2011) it states that formal English teaching should start in the 4th grade and Nordic languages should be taught in the 7th grade (Ministry of Education, Science and Culture, 2011). According to The National Curriculum for Upper Secondary School, English is the only foreign language that Icelandic upper secondary schools are obligated to teach (Ministry of Education, Science and Culture, 2011). This was recently changed from students

having had to learn Danish, English and a third foreign language to graduate from upper high school (Eiriksdóttir, 2011).

Similar to other Scandinavian universities, English serves an increasing role in Icelandic Universities. This is somewhat reflective in how much course material is in English. Today, 90 percent of the textbooks used at the University of Iceland are in English (Arnbjörnsdóttir and Ingvarsdóttir, 2012). The reason for the high percentage might be twofold. Like other European universities, The University of Iceland might be appealing to students' demands of becoming internationally compatible, and secondly because of how impractical it is translate textbooks to Icelandic, as the number of Icelandic students in each field are few.

While the need to learn English in Iceland has grown extensively in the last decades, the input that Icelanders receive from the English language has also increased. Some have even suggested that English input in Iceland is so much it is starting to resemble L2 (Arnbjörnsdóttir, 2007).

### 2.4.3 English as L2 in Iceland.

English in Iceland has received a special status because of how much input students get from English pop culture. The average Icelandic teenager is exposed to English input everyday which comes from popular culture such as music, television programs, and videogames (Arnbjörnsdóttir, 2011).

Foreign language acquisition is learned at school while second language acquisition is learned in the targeted culture. Arnbjörnsdóttir (2007) suggest that English is no longer a foreign language in Iceland because of how much input Icelandic students are exposed to. She even suggest that the level of input has allowed the status of English to resemble a second language in Iceland.

On the other hand, the extensive input has caused Icelandic students to overestimate their English ability/level. In Iceland, the English language acquisition is not interactive like in secondary language acquisition, as the output is much more limited when compared to the output in a target language culture. Arnbjörnsdóttir also suggest that because the input so extensively from pop culture, there is a lack of academic English knowledge among Icelandic students. Academic English is important as it is used, for example, at Universities, both here and abroad. This has

caused Icelandic university students to have to focus much of their time on working on strategies to comprehend academic text rather than focusing on their subject. According to an Icelandic university survey, 40 percent of students acknowledge that working with English increases their workload (Arnbjörnsdóttir and Ingvarsdóttir, 2010; Kristjánsson, 2006). They also concluded that a third of the students had difficulty comprehending academic text. This is supported by Berman (2009) who examined reading comprehension of 171 university students in Iceland (Berman, 2009).

With an ever higher demand for proficient English and foreign language skill on Icelandic students to pursue higher education, dyslexic students might find it increasingly complex to advance to academia, as study reveals they often struggle with foreign language learning.

## 2.5 Foreign languages and Dyslexia

This section will discuss and dyslexia and foreign languages. Studies will be introduced that report that dyslexic students have difficulty with foreign language learning.

Many explanations have been proposed in order to account for why some students have difficulty with learning a foreign language. Researchers have found that implications such as low motivation, high levels of anxiety, and a failure to use appropriate learning strategies are causing these difficulties (Nijakowska, 2010). All these implications can surface when dyslexic students try to learn a foreign language, although most researchers agree that fundamentally dyslexic students experience difficulty with foreign language learning because of a deficit in the phonological area which affects multiple area's in all language learning (Nijakowska, 2010). Researchers have found that dyslexic students have a deficit in the phonological area, discussed in chapter 2.2.2. The problems that the dyslexic students encounter when first starting to learn to read are rekindled when they are introduced to a new phonology in the target foreign language. In 1986, Chodkiewicz, underlined this notion when he found that individuals that struggle with reading in their native language are prone to struggle with reading in foreign languages. While good readers apply their competence equally and read well in foreign languages

(Nijakowska, 2010). Kahn-Horwitz et. al (2006), Chodkiewicz suggests that the difficulties with reading and writing in the early stages of learning a new language due to poor phonological skills, hinders the dyslexic student in enjoying the new language. Because of the difficulties, the new language learning becomes difficult and frustrating and the student is demotivated. This can often lead to stagnation and causing the students to perform worse than their peers (Kahn-Horwitz et. al., 2006). Because of the importance of phonological skills for manipulating sounds, not only does a deficit in the skills affect reading ability but multiple areas of language learning such as pronunciation, hearing or even vocabulary acquisition (Nijakowska,2010; Meschyan and Hernandez, 2002).

Other studies have found that foreign language learning builds on native language proficiency (Sparks and Ganschow, 1996). Foreign language learning occurs when students have already acquired their native language and it is learned differently than native language learning (Blay-Vroman, 1989). The foreign language has to be taught and learned while the native language is acquired (Blay-Vroman, 1989). This causes the student to use different methods to learn the target language.

The findings of Sparks and Ganschow in 1996, underline this notion when they compared good and poor foreign language learners. From their research they gathered that those students that had obtained higher grades in foreign language classes, showed remarkably stronger native language skills as well as foreign aptitude, than the students that received lower grades (Sparks and Ganschow, 1996). Furthermore, they found that the aptitude was largely connected to the students' phonological capabilities.

Dyslexic students have difficulty learning foreign languages for the same reason as they have difficulty with literacy: because of a deficit in the phonological skill. Researchers have also found that foreign language learning is based on the native language proficiency, which dyslexic students often lack due to a deficit in these same skills.

The section discusses why dyslexic students often struggle with foreign languages. In the next section we will look at why English has also been found to be extremely difficult for dyslexic students to learn.

### 2.5.1 English and Dyslexia

Given the importance of English in Icelandic society, it is important to discuss how difficult it is for dyslexic students to learn English where the distance between the pronunciation and the orthography is vast (Firth, 2010).

Most languages in the world today are represented alphabetically, although the letters and signs vary from language to language (Firth, 2010). The different letters combine to form words and in most major languages the spelling has been standardized. Because languages develop orally over time, the standardised spelling and the oral development don't always match. Some languages have more letters, resulting in the orthography distinguishing more sounds with more letters; some languages clash more with other languages which can affect the sound of the language and therefore the orthography (Landerla , Wimmera, Frith, 1997). These reasons, amongst many others, have caused languages to separate in how well their orthography corresponds to the sounds in the language. This is called orthographic depth. Shallow orthographies, sometimes called consistent, is when there is much correspondence between the letters and pronunciation. An example of this is Spanish or Italian. A deep or inconsistent, is when there is less correspondence between letters and pronunciation, such as in English (Mcdougall, Brunswick, De Mornay Davies, 2010). Several studies on normal reading development have been conducted which show that consistent orthographies, or shallow, pose less of a barrier for beginning readers than inconsistent orthographies, or deep orthographies. The largest difference being that young readers in consistent orthography have less difficulty with independent word recognition than in inconsistent (Ziegler, Perry, Ma-Wyatt, Ladner and Schulte-Körned,2003).

### 2.5.2 Dyslexia and orthography

Like discussed before in chapter 2.2.1, dyslexia occurs in all languages. Even though the frequency in dyslexia is reported differently, OECD experts claim that the percentage of dyslexia is similar in all countries and languages. The difference is due to the percentage of dyslexic students that are screened for dyslexia, which tends to be more in deep orthographies (Davis, 2005). In the early 1990s, a study in New

Zealand revealed that 10 percent of the population were reported dyslexic in the USA and UK, while 5 to 7 percent of Germans and only 3 percent of Italians were reported dyslexic (Ministry of Education, 2007). When considering logographic countries, Japan was reported with only 1 percent. Logographic language researchers still claim that dyslexia has to do with a deficit in the phonological skills, although it affects the individual later in the reading process (Ho & Bryant, 1997).

Above we can see a clear connection between inconsistent orthographic languages and the frequency of students diagnosed with dyslexia, this frequency could be due to the number of students screened for dyslexia (Davis, 2005). An inconsistent orthography makes it both harder to spell and to read because of the inconsistency in letter-sound correspondence since the phonological rules are easier to learn. Dyslexic children are reported to make more diverse mistakes in inconsistent orthographies, such as English, which might be the reason why they are screened more often (Goswami, 1994).

Even though English can be considered the most important foreign language to learn, it is a difficult language to learn for dyslexic learners, as the orthography is irregular. Reading in English was found much harder than reading other European orthographies according to Seymour, Aro and Erskine in 2003, when they researched how well students, after one year of reading instruction, read, both real words and non-words, in various European countries. While German students read 98 percent of the real words and 94 percent of the non-words correctly and Icelandic students read 94 percent of the real words and 86 percent of the non-words, English students read only 34 percent of the real words and 29 of the non-words (Seymour, Aro and Erskine, 2003). This research and several others find that reading progress is generally faster in consistent orthographies than in inconsistent (Seymour, Aro and Erskine, 2003; Ziegler & Goswami, 2005).

Because reading English tends to be more difficult for normal readers and evidence shows that the reading process is slower in English than other languages, dyslexic students find it often very troublesome to read English. Helmuth (2001) compared dyslexic students and normal control students from England, France and Italy. The study showed that the dyslexic subjects performed equally in comparison to the control group in short-term memory and phonological tasks, however, the Italian

students exceeded the English and French dyslexic students in reading tests (Helmuth, 2001).  A similar study which compared German and English readers found that the German readers performed much better in reading tests than English readers (Landerla, Wimmera and Frith, 1997).

The sections above have discussed the difficulty for dyslexic students to learn foreign languages, especially deep orthographic languages, like English. In the following section we will look at a survey on Icelandic language teachers as they answers various question on dyslexia and language learning.


### 2.5.3 A survey on teachers of foreign languages and dyslexia in Iceland.

In 2004, Dal, Arnbak and Brandstätter (2005) conducted a survey among 148 language teachers at 74 lower secondary schools in Austria, Denmark, and Iceland. Half of the teachers that responded, or 74 teachers, were Icelandic. The survey aimed at getting to know the framework of dyslexia and foreign language learning as teachers were asked to mark how strongly they felt on numerous questions regarding dyslexia and school policies, language learning, support etc.

The summary below  will be focusing on the answers of the Icelandic teachers. The survey was conducted mostly at lower secondary schools (age 10 - 15), and 20 percent of the participants taught students older than 15. Although the survey is mostly built on answers from teachers at lower secondary school it can be somewhat reflective of the situation at upper secondary schools in Iceland.

The first part of the survey asked teachers about how they felt about the school policy regarding dyslexia. Teachers were asked to answer on a scale from 1 to 6 resembling how strongly they felt on various topics.  Below I have divided the scale into two to show the percentage resembling either positive or negative answer.

The results showed that a great majority of teachers, or 74 percent, believe that their school acknowledges that dyslexic students might have problems learning foreign languages. Immediately the question arises, how then does the school approach these students?

Seventy-three percent of the teachers believed that students with severe reading difficulties were integrated into normal English classes in their schools. This

shows that schools in Iceland favour inclusion of students with difficulties. Even though students are included in normal classes, less than half of the teachers, or 47 percent, felt that their school offered individual support to students that experience difficulties learning English. Dal, Arnbak and Brandstätter claim that these results indicate that there is a gap to be filled, as students with difficulties that are integrated in normal classes should be offered individual support.

Furthermore, the result indicated that teachers feel that they are not trained or have the knowledge to challenge these difficulties, as one of the most astonishing results of the survey shows that most language teachers, or 68 percent, had not been offered a course in identifying learning problems in dyslexic students. These result are in line with the current high school teacher training, as a course on dyslexia, *Literacy and dyslexia in language education* (NOK060M), is not obligatory, thus resulting in the inability to meet these students' needs because of a lack of knowledge (Háskóli Íslands, 2015).

Although there are many areas that need improvement, the Icelandic schools are doing well when compared with the other countries at offering compensatory tools to help the dyslexic students. Sixty-one percent of the teachers at the Icelandic schools believed their school was providing compensatory tools while only 38 percent in Denmark and 29 percent in Austria.

In the latter part of the survey, teachers were asked to answer questions on their experience teaching dyslexic students. The results indicate that language teachers are making an effort to help the dyslexic students learn the target language, as most teachers in Iceland said that they took special time to help dyslexic students, or 77 percent. While 70 percent made special material for dyslexic students and 58 percent of the teachers made compensatory tools available to take home, in most cases these were audio books. Furthermore, the survey indicates that most teachers believe that dyslexic students need further aid as all of the 74 teachers agreed that dyslexic students should be offered compensatory tools for foreign language teaching and 92 percent believed that students with dyslexia should be offered remedial training in foreign languages.

Other questions where aimed at language learning. Teachers seemed to agree that dyslexic students have more problems with comprehension and writing than with other language assignments such as pronunciation and learning new

vocabulary. Even though that the general belief amongst teachers is that students have more problems with these parts of the language learning, a 78 percent majority of the teachers disagreed with the statement that dyslexic students should only learn the oral part of languages.

Surprisingly, all of the teachers thought that dyslexic students should not have to learn a foreign language.

The overall results of the survey show that language teachers in Iceland acknowledged that dyslexic students have a problem with foreign language learning, especially when it comes to reading and writing. They strongly feel that these students should be helped to even greater extent but at the same time feel that they are poorly equipped to meet these standards.

As the answers in the survey show, teachers try to help dyslexic students by giving them audio books and special assignments to help them in their studies. The following section will look at auxiliary aids available for dyslexic students.

## 2.6 Assistive tools for dyslexic students

In light of all the difficulties that dyslexic students experience, the last chapter is devoted to Assistive tools (AT) and programs that can help dyslexic students on their way to academic success.

The first part will look at AT and studies that have underlined the importance of AT for a successful study of dyslexic students. The first part will also discuss how learning strategies and learning styles can benefit dyslexic learners.

The next section will introduce two methods that have been found beneficial for dyslexic students. The first method is the Orton Gillingham multisensory approach which has helped multiple students and the second one is the Davis correction.

The last part will look at an alternative way to learn foreign languages, in which dyslexic students are immerged into a language setting in order to grasp the target language.

### 2.6.1 Assistive technology (AT)

Because of the phonological deficit in students with dyslexia, reading and writing are key areas that need to be addressed when it comes to support dyslexic students.  Most of the AT is therefore aimed to assist the students with reading and writing and make the experience more enjoyable and efficient. The long term goal is to enhance the students' ability in these key areas to make them more independent and self-sufficient students.

In recent years, technology has increasingly been able to assist dyslexic students in their studies. Computers play an increasing role in classrooms. For dyslexic students, that comes with a certain benefits as computers can spell check, define words, and fonts can be changed to fit the readers need or even the colour in the background (Keates, 2000). Computers are also reported to encourage another type of communication than the traditional print through social media, such as Facebook and MySpace (Wollman-Bonilla, 2003).

Several studies suggest that the use of computers and other assistive technology to be highly motivating for students, as it introduces new and exciting prospect to the classroom or school (Wanzek et al., 2006; Ferretti, MacArthur & Okolo, 2002).

One of the most prominent AT (assistive technologies) devices are speech- and recognitions synthesisers that are available for computers. The amount of text is no longer limited to what has been recorded on tape or a CD, but almost limitless as a text, under the students' construction, can be read immediately (Zaho, 2007). In more recent years, speech synthesiser (text to speech) and speech recognition (speech to text) technology have become better and more natural. These have been found to greatly assist reading, writing and learning for students with dyslexia (Zaho, 2007). Forgrave (2002), found that students that use speech synthesisers realise their reading errors, as well as it helps students to become more independent readers.

In 2005, Hesselbring and Bausch focused their study on assistive technology (AT), such as synthesisers and reading ability. They found that AT helped students to read in two ways: it helped them decode and comprehend the text better, and it also encouraged students to read more advanced texts (Hasselbring & Bausch, 2005).

Higgins and Raskind (1995) studied how speech recognition software can help students with dyslexia. They conducted the study on 39 students and found that the students improved reading comprehension, decoding skill, and target phonemic awareness. An earlier study made by the same researcher found out that dyslexic students that used speech recognition wrote by average longer and better essays than a control group that was without a speech recognition device (Higgins and Raskind, 1995).

Although research shows that dyslexic students are getting better results with assistive technology, Hesselbring and Bausch (2005) suggest that that students need to be instructed and taught to use AT as they state that "... (Assistive) Technology is not magic; it is simply a tool of education. As with any tool, when used skilfully, it can help achieve spectacular results" (p. 75).

This section has introduced how AT can help dyslexic students. The next section looks at how learning strategies and learning styles can also help dyslexic students in their studies.

### 2.6.2 Learning strategies and learning styles

Wenden and Rubin (1987) define learning strategies as "... any sets of operations, steps, plans, routines used by the learner to facilitate the obtaining, storage, retrieval, and use of information" (p. 19).

Learning strategies can be almost anything that helps a student obtain and retrieve information. The same student can apply various strategies between different subjects. When learning foreign vocabulary the student might write a sentence with the targeted word in it, while in history he might imagine a road with a sign which help him retrieve information. Everyone uses certain strategies when learning, although these strategies are unequally beneficial to the learner. Therefore, the main focus of studies on learning strategies has been identifying how good learners report to learn and how to apply it to other students (Wenden and Rubin, 1987).

In more recent years, studies have also focused on learning styles in which students map out their strengths to apply the best available learning strategies. In the last

years, several models have been created to allow students to identify their learning style. One of those models is called V.A.R.K, which stands for Visual, Aural, Read/write and Kinaesthetic (Fleming and Baume, 2006). As the name implies, students are tested to see with which sense they learn most efficiently and learning strategies are then proposed to support each learning style (Fleming and Baume, 2006; Vilhelmsdóttir, 2007).

Exley (2003) studied whether identifying the student's preferred learning styles would help him in his studies. Exley conducted the study on seven dyslexic students. His findings indicated that when the students had identified the preferred learning style it had a positive result on their performance in various topics, mainly in mathematics and spelling (Exley, 2003).

Others have questioned programs like V.A.R.K, as they have a tendency to label students and therefore restrict their possibility in learning (Claxton, 2009).

Today there exist a number of programs and methods that have been created to help dyslexic student with their studies. We will now look at a similar program as the V.A.R.K which is called *The Orton Gillingham approach* and after that we will look at *the Davis correction*, but both of these methods build on learning strategies and individual learning styles.

### 2.6.2.1 The Orton-Gillingham Approach/Multisensory Approach

The Orton-Gillingham approach is a multisensory approach designed to help students with reading disabilities. The approach is based on the work of Dr. Samuel T. Orton and was later developed into a remedial program by Anna Gillingham (Gillingham & Stillman, 1997). The approach is considered the first to introduce multisensory, visual-auditory kinaesthetic method to teach students with dyslexia to read. Today the approach is one of the best know remedial program for dyslexic individuals.

The Orton-Gillingham Approach is considered the first of its kind to implement and popularize the multisensory, visual-auditory kinaesthetic (V.A.K) approach to teaching students with dyslexia to read. According to *Florida Center for Reading*

*Research*(2006) a normal lesson last about 45 to 60 minutes which consists of seven steps:

(1) review of letters and sounds already learned; (2) introduction of new phonogram (symbol) and its sound; (3) lists of individual words for reading aloud, carefully selected to review previously learned associations; (4) dictation of new and previously learned sounds; (5) dictation of words using only those phonograms and phonemes already taught; (6) dictation of sentences using words made up of phonograms and phonemes previously taught; (7) oral reading from a text controlled for orthography.

(p.2)

Although the Orton Gillingham approach is meant to be a one on one approach where the teacher individualises the seven steps to fit the learner, with different learning styles, language classrooms are more and more adapting the approach (Gillingham & Stillman, 1997).

Several studies have found that the Orton-Gillingham approach can be helpful for dyslexic individuals. Litcher & Roberge (1979) researched 40 students in their first year of schooling. 20 of them were taught using the OG reading and language instructing for three hours a day for a full year. In the end of the year the students were assessed and compared to the control group by using *Metropolitan Achievement Tests (MAT)* and the *Gates MacGinitie (GM) Reading Test.* Litcher & Roberge found the OG based approach to be more effective on all measures than the controlled method (basal reading approach) (Litcher & Roberge, 1979).
Few years later, Joshi et al. (2002) did a similar study, where first year students were taught for 50 minutes per day for a whole year and compared to a control group. The researchers assessed each student's level of phonological awareness, decoding, and reading comprehension both in the beginning and the end of the study using Gates MacGinitie Reading Test (GMRT), the Word Attack subtest from the Woodcock Reading Mastery Test- Revised (WRMT-R), and the Test of Phonological Awareness (TOPA). The researcher concluded that students that received the OG method showed significantly more improvement than the controlled group (Joshi et al., 2002). Other studies have shown that the OG method especially improves phonemic awareness and word attack, but fails to show improvement in all

areas (Hook, 2001; Stoner, 1991). Hook (2001), studied older students, 7-12 years old, while Stoner (1991) studied students on their first three years of schooling. Stoner concluded that the OG method made a significant difference in the first year but less in the following years. The findings support the notion that remedial teaching is most efficient if it is practised for the first years of schooling (Tunmer and Greaney, 2010). A Polish study conducted by Nijakowska (2004) suggests that using a multisensory approach such as the OG improves the dyslexic's ability to connect phonemes to their graphic representations resulting in an improved reading ability (Nijakowska, 2004).

The Orton Gillingham approach has not been used much in Iceland but the Davis Correction is available in Iceland to help dyslexic students.

### 2.6.2.2 The Davis Correction

The Davis Dyslexia Correction or simply the Davis Correction, was founded in 1982, by Ronald Davis. Since then, Davis has published two books on his experience of working with dyslexic students: *The Gift of Dyslexia* and *The Gift of Learning*. As the titles of his books indicate, Ron Davis does not view dyslexia as a disability, but rather a talent (Davis and Braun, 1997). Davis and Braun (1997) claim that dyslexic individuals have certain mental functions in common:

- They can utilise the brain's ability to alter and create perceptions (primary ability).
- They are highly aware of the environment.
- They are more curious than average.
- They think mainly in pictures instead of words.
- They are highly intuitive and perceptive.
- They think and perceive multidimensionally (using all the senses).
- They can experience thought as reality.
- They have vivid imagination.

(p.5)

To underline his hypothesis, he shows that many of the brightest minds of history were dyslexic; Albert Einstein, Leonardo da Vinci, Churchill, Hans Christian Andersen (Davis and Braun, 1997). Davis does not claim that every dyslexic is a genius but rather that their mind works in the same way, which he states is good for their self-esteem.(Davis and Braun, 1997).

Because many dyslexic individuals think in pictures, they have a difficulty in decoding symbols into abstract words, or words that cannot be interpreted into mental pictures. These are words like: and, the, why, etc. These abstract words cause the dyslexic reader a great confusion as he is unable to connect the pictures together and form a sentence or meaning (Davis and Braun, 1997).

In the Davis correction, the dyslexic individuals are taught to capitalize on their talents. This is done by helping the dyslexic student  read with several methods. These methods include:

- Symbol mastery for words: By using playdoh to construct a real image for an abstract words. This also allows the student to use more senses in learning the word, by seeing and touching the word. The word is finally sounded out (Davis and Braun, 1997).
- Spell-reading: This method allows the reader to slow down the reading process to enable him to read correctly. It enables the student to recognise letter groups as words. With time this method causes the reader to read with more confidence which results in greater speed. This is done by sounding out one letter at a time in the right sequence, then finally by sounding the word, after all the letters have been covered (Davis and Braun, 1997).
- Sweep - Sweep - Spell: Train the eyes in moving left to right by for example using a piece of paper to cover the next word (Davis and Braun, 1997). This method also trains the reader to recognise words 'on sight' (Davis and Braun, 1997).

The Davis correction method is based initially on a research project called the Reading Research Council (Davis and Braun, 1997). Several studies on Davis correction have supported that these methods prove positive in helping students with reading. Van Staden et al. (2009) compared two groups of 18 dyslexic students in S-Africa between the ages of 10 to 14. A control group and a group taught with the

Davis Correction for 30 minutes each week for a period of nine months. The study reported that the students that used the DC performed significantly better on tests of word recognition and spelling (van Staden, Tolmie and Badenhorst, 2009). A similar research was conducted by Engelbrecht in 2005 in which he studied twenty students, 10 in a control group and 10 in a Davis Correction group for a period of seven weeks, 2 hours a day. The results indicated a positive effect on both reading and spelling abilities, as well as on their self-esteem (Engelbrecht, 2005).

The previous sections looked at different ways to help dyslexic students in their studies. As dyslexic students have reported to have difficulty in foreign language learning, the final section will look at alternative ways to learn foreign languages, outside of a classroom setting.

### 2.6.3 Alternative ways to learn foreign languages

Because of the difficulty that dyslexic students have with learning a foreign language in a classroom, some have suggested an alternative way, such as language learning abroad,  as learning in a different setting could be beneficial to them. This way they can bypass, to some extent, the written curriculum that provides the basis for foreign language learning in the classroom (Brecht, Davidson & Ginsberg,1995; Lapkin, Hart & Swain, 1995).

Notably, Bertil Hult from Sweden, spent years struggling with dyslexia and learning a foreign language until he moved to London. After only a few months stay he was fluent in English, something that he had believed was impossible for him. He got so inspired by his experience that a few years later he started an educational company, called EF education First, which aims at immersing students into a language situation that compels them to learn the target language. Today the company has grown to be established in 52 countries working with 500 schools (Education First, 2015).

Several studies have shown the advantage of studying a target language in the country where the language is spoken, as students use the target language outside of classroom. Freed, Segalowitz and Dewey (2004) compared 28 college students learning French in three different language learning settings: Regular classroom (AH), Study abroad (SA), and intensive summer immersion program (IM). The study collected oral data in the beginning and the end of the study to test fluency

- this was done in various measures. The results showed that both SA and IM settings demonstrated drastic improvement in oral fluency when compared to AH group. The results also indicated that IM students gained more than SA students, the reason being that the IM students reported that they spoke and wrote French more hours per week than the other two groups, and the SA students were reported to use English more outside of the classroom than the IM students. This was due to the intensity of the IM program which required the students to pledge to use French only during the study: "students signed and were required to respect a strict "French only" language pledge (including e-mail and telephone use)" (Freed et al. 2004, p. 282).

The findings prompts us to ask whether English as a dominant language has decreased opportunities in SA settings provided in other than English speaking countries. Ileleji (2008) concluded from a study of five female students from Japan that went to the United States to study abroad was very beneficial for their English as the students were taken out of their comfort zones. The findings also induce us to ask whether Icelandic students would gain as much from going abroad to learn other languages than English because of high exposure and proficiency in English here in Iceland.

Fewer studies have been made on dyslexia and studying abroad. In 2005, Shames and Alden studied the benefits of 13 college students with various learning disabilities of studying abroad. Their finding suggest that not only did the students increase their knowledge of the target language, but reported that the experience had granted them enthusiasm in their studies. Shames and Alden (2005) also reported that the students became more independent and self-confident.


**2.7 Summary:**

In this chapter we have looked at what dyslexia is and how it affects literacy development, foreign language learning, especially in deep orthographic languages like English, and academic success. The chapter also focused on dyslexia in Iceland as it discussed the number of dyslexic students and regulations in the education system regarding them. Finally, we examined how dyslexic students can be supported with programs such as Orton Gillingham or Davis correction and assistive technology. Another important alternative to examine how students have attained academic success despite dyslexia, is to examine how personality, perseverance and

good internal locus of control may support students. The current study will try to answer the following question:  Are there any common factors that prove to be important for dyslexic students in Iceland who successfully advance to higher education, if so, what are those factors?

## 3. The study

### 3.1 Introduction

The aim of the study was to find common factors that dyslexic students believe have aided them in achieving academic success. The study also focused on foreign language studies of the students, as research has reported that dyslexic students find foreign language learning difficult (discussed in chapter 2). To attain these common factors, dyslexic students at universities were interviewed to get an in-depth experience of the participants. Furthermore, a dyslexic teacher was interview to get a broader experience on these factors.

The current study is a qualitative study with nine dyslexic participants. The students had all successfully advanced to higher education from upper secondary schools in Iceland. The participants were interviewed and asked questions regarding their secondary school experiences and which factors were important in their success. Before the interviews, two pilot studies were conducted. The interviews were analyzed and common themes identified.

This chapter describes the pilot studies, participants, methods, and the themes that were identified. In the chapter we will also look at the alterations made to the interview after the pilot studies. The chapter considers how the researcher assessed participants for the research and what were the mandatory characteristics of the participants for them to take part in the study. Furthermore, the location, format, and execution of the interviews are described. Finally the chapter describes how the interviews were analyzed, and which themes emerged from them.

### 3.2 Pilot studies

Prior to the actual study, two pilot studies were conducted. One interview was with an experienced teacher who had worked for many years with dyslexic students, the other interview was with a dyslexic student. The interview with the expert was conducted with the aim to get an experienced view, which could summarize common themes and experiences of dyslexic students.  The second pilot study was conducted on a dyslexic student in order to receive feedback on how the interview was conducted, as well as sharpen the prepared questions before they were used in the study.

### 3.2.1 Pilot study with a dyslexia expert

Erna has worked with dyslexic students for over fifteen years, in a comprehensive school in Reykjavík (CR). In CR, Erna teaches a course for dyslexic students which she designed. In the course, Erna tries to helps the students and guides them in their studies. She also interviews each dyslexic student on a regular bases to find out how they are doing and in what way she can help them. She is the author of a book about dyslexia. In the book she briefly describes dyslexia and gives basic information on what might help dyslexic students (Vilhelmsdóttir, 2007). Given all the knowledge and experience that Erna has working with dyslexic students in Iceland, it seemed mandatory for the study to interview her.

Before the interview, the researcher had examined her book and the outlines of the dyslexia course which she teaches, to prepare questions for the interview. The questions that were used for support in the interview can be seen in Appendix B. The questions focused on her experience helping dyslexic students. The interview took place at CR and lasted for 120 minutes. During the interview, Erna spoke on how she started working with dyslexic students, the changes in the Icelandic society regarding dyslexia, and ways she supports dyslexic students in CR. Furthermore she spoke on what she considers dyslexia and gave many examples from her experience working with dyslexic students. Because she has often given lectures on the subject the interview was both very focused but also open.

The pilot interview was very beneficial for the study  as an interview with someone that had been working for so long with dyslexic students. Both for new information that the researcher had not come across before, such as the high school laws regarding dyslexia; and V.A.R.K, a system to introduce learning styles (discussed in chapter 2.6). The interview was also beneficial for the general outline of the themes for the study.

### 3.2.2 Pilot interview with a dyslexic students

For the second pilot study, the researcher interviewed a dyslexic person who was the researcher's friend. This was important as one of the aims with the pilot study was to get feedback from the participant. It was assumed that the participant would feel more comfortable giving a feedback to the researcher if the participant already knew him.

The interview was conducted in Icelandic and lasted for 45 minutes. In the end of the interview the participant was asked to describe how she felt during the interview and if she could give comments on where the researcher needed to make adjustments.

Major problems appeared in the pilot-interviews it seemed to be very unfocused. The participant was giving too much information on  irrelevant information. It was important before any actual interviewing took place that researcher could direct the interview in order to try to get the participant to talk about what was being focused on. To focus the interview some questions needed to be altered. Few of the questions were too broad and were consequently narrowed. In some cases, the questions needed to be broken down into two or more questions. In other cases, the participant complained about the complexity of questions and suggested that it would be better to rephrase some of the question into an easier language.

For example questions on the student's interests and what do they want to do in the future were abandoned and other questions such as "what are your strengths?" were introduced or "since your diagnoses have you altered your educational plans?"

The participant also commented on minor issues, for example that speaking for such a long time dries the throat and a glass of water would be very helpful with making the participants become less tired from speaking. This would result in a longer duration which might mean that the researcher would get more out of each interview.

In the interview, the researcher was too focused on in what sequence the participant answered the questions, he stopped the interview to pause the recorder when switching chapters which interrupted the flow of the interview. To make the

interview flow better, the researcher only recorded whole sessions and was more relaxed in what sequence the questions were answered. The researcher had a list of the questions and marked which question had been answered or on what he needed the participant to elaborate on. The researcher also introduced a grand tour question. Del Siegel (2002) defines a grand tour questions as "questions that are open ended questions that allow the interviewee to set the direction of the interview. The interviewer then follows the leads that the interviewee provides. The interviewer can always return to his or her pre-planned interview questions after the leads have been followed." The researcher started each interview by asking the participants: "How would you describe your dyslexia?"

Overall the interview went really well and proved to be a useful exercise for the researcher. The next section will look at how the researcher recruited participants for the study.

## 3.3 Sampling

"Qualitative research depends on samples that are selected purposefully. The researcher chooses individuals and context by asking: 'what kind of characteristics of individuals am I looking for?'" (Lichtman, 2010).

In order to get the appropriate data from the samples, the researcher had to select the samples purposefully. To research common factors that characterize dyslexic students who have gone on to university studies, despite their disability, all the samples in the study had to be dyslexic and had to have finished high-school education in Iceland.

Dyslexia is a delicate disability where that information is both personal and hidden from the researcher. Schools and other public institutions cannot give personal data about their students. So another method had to be used in order to access the interviewers with dyslexia. To attain samples, the researcher used *the snowball sampling method* (Lichtman, 2010).

By using the method, the researcher asks participants or volunteers to help find or gain access to other samples. The method is the most widely employed method in qualitative sampling (Lichtman, 2010). In the case of this research, the researcher did not pick the samples directly, but instead got help from the Reykjavik

University (HR) to help him with the sampling. This was carried out by sending an email to all the dyslexic students at the University. Because the university is prohibited from giving out personal information, the only way to get participants for the study, was for the dyslexic students to directly contact the researcher.

This was very beneficial as some saturation had already been made by university in two ways. According to their website, only 70 percent of those who applied get accepted into the school (http://www.ru.is/haskolinn/hnotskurn/folk). All the participants had already been accepted into the university when the interviews were taken and could therefore all be regarded as successful students.

Furthermore, all the students had to turn in a new dyslexia diagnoses when they started the university. Hence, all the students which were on the email list had recently been diagnosed, or re-diagnosed with dyslexia.


Two emails were sent to the qualified participants. The first email was sent out to give information about the researcher, the study, and the requirements to take part in the research. The requirements were twofold: that the participants had to have been diagnosed with dyslexia, and had to have finished high school education in Iceland.

All in all, eighteen responded to the first email. Of those that responded, only nine were interviewed. Various reasons were behind the failure of the respondents to the first email to be interviewed. The most common reason was that the interviews were taken during a period of two weeks when many of the students were in their final exams, therefore many didn't have time for the interview. Two did not fulfil the requirements of the study as they hadn't finished upper secondary school in Iceland, while others did not respond to the second email, which asked when they could be interviewed.

The researcher decided to start interviewing the nine students available for those two weeks and see if the information became saturating. If not, he would contact the other respondents again, which proved not to be the case in this study. When interviewing the nine participants, the researcher noticed that they were sharing similar experiences and answers, with each interview the information they were providing became saturating. Therefore, the researcher decided not to contact the students that had not been available or hadn't responded to the second email.

**3.4 Participants**

Overall the interviews were 11, two of which were pilot interviews. One was an interview with a dyslexic friend and was therefore consequently not used in the general study.

Of the nine dyslexic participants four were male and five were female. The ratio is somewhat representative for the gender equality in the university (HR) (L. Harðardóttir, personal communication via email, April 4, 2015).

The longest interview was 78 minutes and the shortest was 42 minutes. The average interview was a little under 60 minutes.

The oldest participant was 38 years old and the youngest was 20 years of age. The average age of the participants was 29.7 years old. The average age of the participants in the study reflects the average age at the Reykjavik University (HR) but according to their website it is a little over 29 years (L. Harðardóttir, personal communication via email, April 4, 2015).

The participants came from various backgrounds, and all came from different high schools in Iceland, except two who had been at the same school. Some had been in schools in the country-side although most of the participants attended schools in the capital area, Reykjavík.

The participants came from various fields of study, although most of them were in the academic discipline of business and psychology. Reykjavik University has a relatively small selection of fields that can be studied, which is one reason why there wasn't greater diversity. If the research had been done at another university, for example at  the University of Iceland, it is likely that there would have been more diversity in the fields of studies. One of the reasons why so many participants were currently studying psychology, is that dyslexia is largely connected to that field. Two of the participants gained interest in psychology through information enquiry on dyslexia.

Below is a *Table 1- interviews.* Which gives information about the participants and the interviews:

Table 1 - The Interviews

|   | Name | Age | Sex | Field | Interviews length |
|---|------|-----|-----|-------|-------------------|
| 1 | Jón | 23 | Male | Business | 52 min |
| 2 | Simon | 30 | Male | Business | 82 min |
| 3 | Þorsteinn | 31 | Male | Law | 45 min |
| 4 | Þórdís | 38 | Female | Psychology | 78 min |
| 5 | Margrét | 31 | Female | Psychology | 64 min |
| 6 | Hrefna | 20 | Female | Business | 48 min |
| 7 | Hannes | 21 | Male | Computers | 42 min |
| 8 | Ólöf | 36 | Female | Psychology | 50 min |
| 9 | Kristrún | 37 | Female | Psychology | 62 min |
|   |   |   |   |   |   |
| Pilot Study | Una | 25 | Female | Politics | 48 min |
| Teacher of the dyslexia course in CR | Erna | - | Female | - | 110 min |

This section introduced the participants. The next section will discuss how the interviews with the participants discussed in this chapter were conducted.


**3.5 The framework of the interviews**

The interviews were conducted at Reykjavik University (HR) in an interviewing room, which had been reserved for the study. All the participants were currently studying at the university, which made it easy for them to come to the interviewing room after school or in between classes.

The participants were all discussing their learning disability which is a personal matter. It was therefore mandatory to get an interviewing room in which they could speak their mind knowing that no one was listening to the conversation. The room

served beneficial as it provided a quiet and stress free environment. As all the participants were native speakers of Icelandic, and more comfortable speaking Icelandic rather than other languages, the interviews were  carried out in Icelandic. Before the interview started the participants were told that they were being recorded, and asked if the interview could be used for the study. The interviews were recorded on an Olympus VN-8600PC digital voice recorder. In addition the researcher took notes  taken while the interview took place.

The interview always started in the same way: the researcher introduced himself and gave a brief explanation of the research which was followed up by a *grand tour question,* asking the subjects to describe their disability.

 The following questions were divided into four part:

- Part 1 - The student: This part asked the participants about information the participant and how dyslexia had affected them, such as when they were diagnosed with dyslexia; if it had changed their plans for the future; to see if they realized their strength and weaknesses.
- Part 2 - The school: Make the student share their upper secondary school experience. Here the questions were focused on what the upper secondary school had done for them as dyslexic individuals.
- Part 3 - Languages: This part asked the participants about foreign language learning experiences. How well they did in language classes compared to other courses or about certain attributes, such as how well they did in reading, spelling, pronunciation, etc.
- Part 4 - Other: This part was aimed to make the students suggest what might be done for students with dyslexia to enable them to reach university.

The questions that were used for support in the interviews can be seen in Appendix A.

The researcher tried to conduct the interview as naturally as possible. Rather than having them answer a question followed by another question, the researcher allowed them to speak their mind with minimal interference, trying to maintain a steady flow, even if the participant started to go into another question or other fields in the study. The participants were sometimes asked to clarify and elaborate more on

a specific matter or when they had gone too far off topic they were politely directed back to the question at hand. By the end of the interview, the researcher had marked which questions the participant had answered so if there were any questions that had been left out he could ask them those questions at the end of the interview.

Many were working along with their studies and in some cases were publicly known persons. One was a member of parliament.

Because of that, and various other reasons, it was important to hide their identity. Therefore, the participants' names have been changed. When Erna told stories of her students in CR she hid their identity by not mentioning names. In cases where these stories were used in the current study, these names remain hidden. The name of the dyslexic teacher has also been changed to Erna.

## 3.6 Analysis

After the interviews had been conducted, they were written down and translated from Icelandic to English. For each paragraph, a note was created: for example reading or support. These notes were then narrowed down and given different colours and they became themes. Some of the themes emerged because of how frequently they surfaced in the interviews, other themes were responses that answer prepared questions.

Following themes were identified:

1. Coincidental support. The first section discusses coincidental support which has enabled the participants to advance to higher education.
2. Individual characteristics. The section discusses the attributes which have allowed the students to advance to higher education.
3. Self-knowledge and learning strategies. The section deals with how well students have learned to know themselves and in which way they can learn the most efficiently.
4. Assistive tools will be discussed as they allow students to gain independence.
5. Languages. The last part will focus on languages as dyslexic students often experience difficulties in language learning because of their disability in reading. Special attention will be given to foreign languages as they become an immense barrier for dyslexic students in advancing to higher education.

English will be summoned out of the foreign languages because of its importance in Icelandic society, especially in education.


## 3.7 Summary

In the above chapter we looked at the two participants in the pilot studies and the aims with each pilot study. We also looked at the adjustments made after the pilot interviews. Following a brief introduction of the pilot studies we observed how the participants were selected and what were the requirements for the taking part in the research. We also introduced each participant as we took closer look at who they were in regards to their age, field of study etc. The chapter also discussed how the participants resembled the overall population at the university. Finally the chapter discussed where the interviews took place, how they were conducted and analyzed.

## 4. The Interviews

### 4.1 Introduction

This chapter will describe the themes that emerged from the interviews. With each theme, a few examples from the interviews with the participants are given to highlight its importance to the study. The themes that were identified have been categorised into five different categories:

- **Coincidental support** - The section deals with the various support that the dyslexic participants experienced.
- **Individual Characteristics** - The section is devoted to characteristics that the participants had which enabled them to achieve higher education.
- **Self-knowledge & learning strategies** - The section focuses on the strengths of the participants and how they utilised them in their studies.
- **Tools** - The section deals with the tools that the participants used for their studies.
- **Foreign language learning** - The section is devoted to the experiences of the participants on foreign language learning.

### 4.2 Coincidental support

The interview was opened with a question about how participants described their dyslexia. The answer that all the participants gave was not a simple answer but rather how dyslexia had been intertwined with their lives and how it had affected their lives in multiple areas. Although not asked directly, a theme emerged because of the frequency on how often someone had supported them in their studies which made them capable to achieve higher education. What was interesting was that the support was almost never in the form of systematic school support. The theme shows that because there is no structured support, the support that the student receives is left to chance. Majority of the participants in the study had received coincidental support from an individual who helped them in their studies. Sometimes this person was a teacher, but in most cases a family member. In few cases it was a friend that had abetted them in their studies. The interviews also showed that in many cases the

parents were unable to help their children so they paid for support outside of school to advance their child's education. In other cases the students themselves, which were old enough, paid for their own support. Only once could a participant point out a structured support in high school and that was when the participant went to a class for dyslexic students in CR, taught by Erna.

### 4.2.1 Parental support

Most of the students discussed how their parents had supported them in their studies. The most intense case that was encountered in the interviews was the parental support which Simon's mother gave him:

> When I was younger, my mother put me down and made me write all these difficult words, hundreds of times down into one book so I would remember them and recognize them in text... I (also) had to write text after another text which had to be exactly the same, If I made an error I had to rewrite that sentence three times down again. So that's how I learned to read and write, and this just had to be done so I could... I reckon that if it hadn't been for my mother's perseverance I would never had learned how to read.

At one point his grade started to dwindle and to counter the falling grades, his divorced parents made an agreement to help him each day with his homework.

Þórdís said that she has always been in extra classes, long before she was diagnosed. Her mother had concerns for her studies and bought extra classes for her in primary and secondary school. When asked more about her mother Þórdís said that she was very patient when Þórdís was reading. Þórdís claimed that she believed it was due to her mother's patience that she is able to read today. Furthermore, she stated that without her mother she would have never finished high school.

Her mother also helped her throughout high school to write down what she said, she used that to encourage her to study hard and turn her assignments in on time. She often motivated her by saying "If you don't finish reading this before dinner I won't type it for you tonight."

Hrefna's mother is dyslexic so she tried everything to minimize the effect of dyslexia on her child and tried to be as supportive as she could. Hrefna's mother tried to help her with most of her assignments but when the school material got increasingly difficult she had to buy assistance for her daughter.

The most frequent case of a coincidental support was that the participant had parents that helped them in their studies. Erna pointed out in the pilot interview that often the parents of the dyslexic students help them through their studies and pointed out that usually the mothers are more supportive than the fathers. Few students also reported that a teacher had helped them to succeed.

### 4.2.2 Teachers

A few students were lucky enough to have a teacher that took his or her job a step further as to help them in their studies.

Jón remembered one English teacher that always showed him "so much support and understanding". Later he learned that this English teacher had a dyslexic son and had read a lot about dyslexia. When he came across Jón, he decided to help him. "He made special assignments for me, which were good for my level of English... they were not too hard and not too easy." Jón said that he felt "he gained so much from her."

After Hannes had been diagnosed with dyslexia he was put in a special class " the special class was for all the trouble makers ... but I did not belong with them... I belonged with all my friends but I was taken away from them." According to Hannes, being in a special-needs class was very damaging  to his self-esteem because he felt he was a second class student. After the transfer he always felt bad in school. When he had in a special-needs class for a  few years, his Icelandic teacher sat down with him to discuss his future. Hannes said that he wanted to go to a certain high school, but to get into that school he needed an average grade of 8.2. Together they made a plan for how he could achieve this goal. His teacher made material for him that involved his interest, which greatly helped Hannes. After his talk with the teacher he put much more effort into his studies. "What the teacher did for me was he motivated me, that made the greatest impact on me," said Hannes. Today he thanks his

Icelandic teacher that he made it into the high school of his choice.

On the contrary, some had teachers that the students felt were really distant. Erna said that the general rule is that the students are much more approachable than the teachers, especially at the university. "Normally the teacher is the last person that comes to the classroom and the first person that leaves. So if you need assistance you need to send them an email."

Most of the participants also had good friends or classmates that supported them. Similar to the teachers that supported the students, this was not institutional support but individual support.

### 4.2.3 Friends

Most students, in one way or another, got help from their friends and classmates. A common theme was that the teachers were too distant to be approached. In schools that had class formation, the participants would especially rely on their friends or classmates which they were always with rather than teachers that came to teach one course.

Hrefna went to a school which had a class format. "Maybe the school itself did not do so much, but in the school students help each other a lot and study in groups outside of class. This helped me a lot." To further state how important her friends were to Hrefna's education, she said she "would not have be able to finish school without the study group and my helping friends."

Þórdís said the benefit of belonging to a class is that you know everyone well enough to ask for them for help. She would not ask the teacher because she was too shy. "It is much easier to get help for my classmates than the teacher. It raises too much awareness asking the teacher."

Þorsteinn's best friend helped him with his study in secondary school. Together they even started "the first school magazine... I enjoy speaking, so I did the interviews..." After secondary school they started a company together.

Many other students are afraid of asking for help which underlines the necessity of having an organised structure for dyslexic students. Another indication on the necessity is how many of the participants paid for an external support.

**4.2.4 Paid support**

It was interesting to hear that all though everyone had some kind of coincidental support from a family member, a teacher or a friend, seven out of nine students had at some point also received support which was paid for. Mostly it was the participants' parents that paid for the support, but some had more recently gotten to know that they were dyslexic and therefore paid for their support themselves. External support was, more often than not, carried out by a specialist which is very expensive. Some families or individuals might not be in a position to pay for external support. The high frequency of a paid support indicates that parents, as well as individuals, are ready to invest in the future and get the education needed.

Þórdís said that her mother had bought extra classes for her throughout primary and high school. "Even before I had been diagnosed, I took extra classes because I was struggling (with my education)."

Ólöf only recently got to know she was dyslexic. Before she went to the university she went to Davis correction "...(which) teaches you a lot about how dyslexia works and how you can counter it with alternative ways to learn."

Some of the paid support lasted only a few weeks, like the David's correction, while others had special classes all through primary and high school. Few students even went abroad to study in an English language school to improve their English.

Margrét is one of the two students that that didn't pay for a support. At the age of 32, she only learned last year that she had dyslexia. The dyslexia expert that diagnosed her said that he believed that she had already maximised her ability to learn through the methods that she had come up with. "It would be a step back to unlearn these methods to learn new methods."

### 4.2.5 Summary

The section makes it clearly visible that dyslexic students receive both various and unequal support. Because of the lack of structured support in the school, students are left to rely on individuals to help them such as parents, teachers, or friends. The high frequency of participants that have paid for external support also shows the need  for structured support in the schools.

### 4.3 Individual Characteristics

### 4.3.1 Introduction

The participants in this study had several characteristics in common that had helped them achieve academic success. These were:  perseverance, maturity, high self-esteem and motivation.

### 4.3.2 Perseverance

The students weren't specifically asked about how difficult it was for them to study, but in the interviews, the theme perseverance, was one of the first to emerge because of its frequency. It was interesting to hear the participants tell the researcher how much more time they use for their studies in comparison to their peers.
Below are few examples of how the participants described their perseverance, which has been categorised into three different aspects.

### 1) More time and effort used to read:

"When I read a book, it takes me maybe four times longer than a normal student. But I just have to do it, so I just use four times as much time to do it and that is what has gotten me here (university). Now I am finishing my B.A. thesis and I have spent a lot of time  writing it... It takes so much time, I think most people would have quit by now, because this takes so much effort and time", Jón said.

Simon has struggled with reading for a long time. He reckons that he "uses as much energy reading as working out at the gym." When he was younger he had to force himself to read and he knows that he would never have learned how to read or write if it wasn't for his mother's perseverance.

## 2) Notes and tools used for comprehension:

Margrét has to read the same text over and over and take notes to remember the context of what she is reading:

"I have to read the same text three to four times to remember the context. Which I do, but it takes a lot of time and effort... I find it easier to learn things by hearing, so audio books help me when I combine them with reading the book, or having it in front of me ...To remember what I have read, I take notes or write a small paragraph describing what I have just read."

Simon describes how he forces himself to learn:

To succeed in these classes I just have to go home and write these classes down. I have to write them down like formulas and I know that I have to go over the same thing over and over again to be able to recall and remember it later. So I t do that... I find it really helpful to write things down, to remember them, and even if I have to write them down three or four times to remember them, I do that. I highlight sentences to help me remember and then I read again, for the third time... Because it is highlighted in some colour, maybe green for example, I know what it says because of the colour.

## 3) More work to achieve same level as their peers:

Hrefna had to study hard for many years in schools prior to the university. Now, as she studies at university, she believes she has benefited from being used to heavy workload:

"Throughout primary school and high school I always had to put more effort into my studies than the other students. When I came to university I had gotten used to putting more effort (than the other students) into studying."

She realised that other students were failing in the university because they could not cope with workload that she had gotten used to. Although Hrefna is doing well at the university, she still reckons that she spends about twice the amount of time to learn something compared to her peers.

In the interview Simon described what he has to do in order to get an average grade:

"To get 70% (grade) I think I have work three times as hard as it would take a 'regular' student to get a 70. For me, four years of schooling is eternity, but you need to take one step at a time to be able to finish it."

Perseverance and the hard work of the dyslexic students described here above shows how mature the students have to be to succeed. They can't cave under the workload and they need more time for their studies.


### 4.3.3 Maturity

Maturity became an interesting theme of the character which the successful dyslexic participants had. Although, in some cases, they were not willing to accept that they needed to work harder than their peers and quit. This was underlined by one of the participants, Kristrún. "I think that students, when they are in high-school, don't want to work harder than everyone else. They won't accept that they need to and they quit." Furthermore, she added that she knows for a fact that this is the case because she once had a student advisor telling her that she just needed to work harder in order to graduate. "The student advisor has to present this better, to strengthen the student rather than de-motivate them. The student counsellor has to give the student the opportunity to spend more time finishing high school than the 'average' student requires..."

Throughout the interviews it became more and more evident that the students which were interviewed had the maturity to accept that they needed more time to study and were willing to take more time in their studies. Some had learned it by bitter experience, similar to what Kristrún described. "...I went to a high school that expected me to finish in four years, which was maybe not the right thing for me and I quit two years into my studies."

Like many of the participants, Margrét went to the same school as her friends. Her motive was not to study but rather to socialize which resulted in educational failure. "(In) the first high school I went to I wasn't really thinking about my education, I think I went to the high school more for socializing..." She added that she "didn't take

school seriously... I didn't have the discipline nor the maturity to stay in school to study so after one semester, I quit."

A few of the participants were advised to take a longer time for their study which they did. Þórdís decided to slow down her studies and graduated after five years. This was not because she was failing classes, but to minimize the challenge of each class or each semester.

While at university, Simon is taking two classes instead of three per semester. Even though he thinks school in one of the worst places that he can think of. "I have learned that it takes me longer to study, so I just have to deal with that. One way to dealing with that is taking fewer classes... I am on the brink of finishing my studies and that is a great achievement for me." Since he has started the university he hasn't failed a single class.

When asked if Jón had any advice for dyslexic students he said: "It is alright to go through high school at your own speed, instead of trying and maybe failing ... that can lead to discouragement or maybe (to the student) quitting."

In the pilot interview, with Erna spoke about a course for dyslexic students which she created in her school. In the class Erna has noticed that some of the students are not mature enough to use the course to their advantage."We can see that if we get older students they are a better material for the course, they are more mature and they know that they are in need of this help. It is harder for us to get the younger students to come to class and realize that they can benefit greatly from the course, something the older students have realized... They are also more focused on their studies rather than the social life at school."
One of the participants in the study actually went to Erna's class when he was still young, and he agrees what Erna said about the course."I sometimes felt I was at an AA meeting. When I was attending the course, I spoke badly of it and didn't care for it at all. Thinking back, however, I appreciate it (because today I realise that) this group was really good for me", said Simon.

The students which were interviewed did not just have to show maturity in the time they spent on their studies, but also on practical factors in classes. Simon said that "dyslexic students need to work hard to pass. You got these cards in your hands,

there is nothing you can do about it but give it your best, work really hard, harder than anybody else, and hope that you will somehow succeed."

Þórdís said that she finds it best to sit in the front of class, where there are no computer screens in front of her to distract her. She asks a lot of questions even though she knows that it is silly to be always asking.

Clearly maturity helps in accepting more work and longer time to study to experience academic success. Motivation can also be a positive factor in helping students to achieve academic success.

### 4.3.4 Motivation

Motivation proved to be a key component for educational success. In the pilot interview, Erna shared a story on how important motivation is to academic success. She used to teach two friends which were doing really badly in the school and nothing seemed to work for them. After one semester, they changed schools and went to a technical college. There they blossomed because they found something that they were interested in. Erna says that one of the objects of the dyslexic course is for the students to find what they like and try to intertwine it into their education.

Hannes connected in his interview, how well he did in school, to the motivation he received. He remembers that he chose Russian history, even though there was a lot of reading material. Hannes said that if the subject interests him, he becomes motivated to read and then he finds it much easier to read than when the reading material that doesn't interest him. Through the motivation of one of his teacher's, he went into one of the best high schools in Iceland, where he became an active member in his grade. Being with the same class throughout high school helped him because he wanted to be on par with his friends and be with them all the way through high school. "It motivated me to study hard and keep my grades high."

Hrefna was motivated by how her school was structured. She studied at a high-school in Iceland, which is structured differently than other high schools in the country. Instead of studying multiple subjects and taking an exam in the end of the semester, the students study one subject for four weeks and then move on to the next subject. In the end of the four weeks, you get one week leave if they pass.

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Hrefna said that this was very motivating for her. "You don't relax and study hard for four weeks and then you have one week off to relax... You want to get a week off, so you work constantly." Hrefna also mentioned that it is easier to study if the teacher connects the material to the students' interests so that the students can connect with what is being taught which makes it is easier to remember.

According to few of the participants, working in a group was a great way to motivate them to study even harder. Þorsteinn and Simon made the assumption that it was more challenging to work in a group because neither of them wanted to be responsible for failing or slowing their peers down.

When asked for advice for dyslexic students, Þorsteinn was quick to answer: "Be active, both socially and educationally... Be where your interest are. If you read what you want to know, you remember it and your thirst for knowledge continues."

Simon has been working for some years at the same company. His motivation for his education is looking at the opportunities which his education will grant him. Although he dislikes school, he looks to the rewards which he will benefit from education."I do much better at work than at school, but education is just what it takes to get somewhere in life. I think, and I believe it today, that education is beneficial. Before, this motivation was just missing... Motivation can help you so much to push yourself further. Today I am motivated by the fact that I am finishing my studies even though I have a few classes left ... A few years ago I never would have thought I'd graduate from university."

Contrary to the other experiences, Margrét says that she is really interested in what she is learning, but is surprised how little difference it has made for her studies. When asked if interest helps in her studies, Margrét said that "…it helps. But not as much as I thought. I have heard of people coming back to school and being really interested in what they are studying to find it so easy to remember everything. I thought that it would help me more, because I am really interested in what I am studying, but it doesn't help that much."

The participants in the study reported that maturity and motivation are essential in academic success. Furthermore, studies show that academic success and self-esteem are intertwined (discussed in chapter 2.2.3). The participants in the study highlighted this notion.

### 4.3.5 Self-esteem

Often the participants said that being diagnosed helped them  realized that they were not stupid. Þórdís was one of those participants. "I was relieved to know that I was not stupid... the numbers even showed that I was highly intelligent, which I always thought I wasn't."

After she was diagnosed she went to the University of Iceland to study psychology. She thought it was too difficult for her and never thought she would be able to graduate. "I became discouraged and the material was too difficult so after only three moths I decided to quit." After that she started working for a company where everything worked out well for her. "Somehow I always manage to work my way up the corporate latter quite quickly in the companies I worked for." There she regained her self-esteem and re-entered into university.

Þórdís believes that it is important to take special care when teaching dyslexic students because they are more fragile than other students because they have often been disappointed in their studies. Furthermore she says that dyslexic students need to be encouraged in order to advance to higher education. Þórdís elaborated: "students need to know that they can learn... With  low self-esteem it is difficult, even impossible to learn, because you don't believe you can."

Jón claimed that he is able to block incidents from his memory to protect his self-esteem. "I know that I am really good at blocking something that has happened ...like sometimes when I was reading out loud in classes and I read something terribly wrong, I just blocked it, it is erased from my memory." Most of the participants had to deal, at some point, with  low self-esteem but were now, seemingly more confident.

Erna said that one of the most important objectives of the course is building the students' self-esteem. A decent number of classes are devoted to focus on that. Erna claims that the students need "to realize that there is a connection between thoughts and feelings... When they feel bad it affects their ability to learn."

Furthermore Erna said that students that have bad self-esteem behave worse and they start to get negative attention, start skipping school. "If they don't show up in one class they feel bad and the next class after that they feel guilty and it affects their ability to learn... so that's maybe two classes out the window or even more... If they

feel that they have lost out too much material they start to become desperate, and that effects their stress level."

When asked if all dyslexic students deal with a low self-esteem, she said not. "No, but it is very common. It depends a lot on what kind of support they got in their primary school. I still see this varies from which school they come from.- One of the things I have noticed is that I still haven't seen the number of boys being marked as lazy decline." Erna says that is one of the hardest things that she encounters. When students are labelled lazy or stupid. "It is so hard to undo those labels and make the students stop believing that they are what they have been labelled as. In our classes we put a lot of effort to make them believe that they can study and find their own path to learn."

### 4.3.6 Summary

In the sections above, characteristics that helped dyslexic students achieve higher education have been identified and discussed. The characteristics the participants had were similar to how Erna identified successful dyslexic students.

- They are more resilient, they are not so easily shaken, so if they fail a course at least they will continue.
- They attend all their classes, which is really important, especially because many of them have such a hard time reading.
- They seek assistance and are not afraid to ask the teacher permission to get extra time during tests for example.
- They are hard workers.
- They use the time that they are given for assignments.
- They learn how they can make their studying as easy as possible.

(Erna, CR)

### 4.4 Self-knowledge & learning strategies

All the participants were asked about their learning strategies. Interestingly, almost all the participants had mapped out their strengths and weaknesses and the most efficient way for them to study, from which a theme was created. Some of the

participants' learning strategies were extravagant and it was obvious that they were using their strength to learn to the fullest.

Ólöf says that "she can visualise things in her mind and take them apart, look at different layers." When learning, Ólöf finds it helpful to write things down. By doing that, she slows down the intake process which helps her remember what she is studying. When she learns a foreign word, she cuts the word down into three different words helping her remember, especially when she can connect pictures to those three words. She also finds that this helps her to spell the words.

What is extravagant about Ólöf's methods is how she organises what she learns:

> I remember much more from what I hear than from what I read, so I try to attend as many lectures as I can. When I'm studying I am always somewhere in my mind and I organize what I am learning to a place where I have been before. I make pictures or even videos of what I am learning which I can later recall. So in one room I have physics and in one corner of that room I have the periodic table in another corner I have a modulus for the ratio between Celsius and Kelvin etc...  Today I do this automatically, even when I am just reading a novel, I am organizing what I am reading into some compartment in my mind. I think this is because I am so good with forms and structures so when I get new information I make a small place for it in my mind.

Another participant, Margrét, has a really good photographic memory. She believes that it enables her to improve her spelling and vocabulary. She uses pictures a lot when she studies and builds mind maps to remember things. When listening to the teacher she tries to remember their clothes or gestures which helps her later to remember what they were saying during their lectures. She uses these "mind" pictures as sparks. Sometimes she can also remember and recall the teachers' words from "the rhythm of the lecturer.  Afterwards I puzzle the right words into the rhythm."

When asked about how they learn, four of the participants said that they used photographic memory. They claimed that they remembered better what they saw, than through other senses. Few said that they are much better learning from what they hear, than what they see. While one said that he learned best when he could

use all his senses. Notably, all the participants had figured out in what way they learned with the most efficiency, all except one.

Hannes, said that he was still trying to find which way suited him the best when he was learning. Although he claimed he didn't know what suited him the best, he still used learning strategies. "I try to figure out what are the main points I have to know, then I work my way into the specifics about the topic."

Majority of the students had also learned practical ways to learn. Something that Erna said was seldom the case with dyslexic students:

> Though they are bad at reading they don't seem to be very practical in how they read. So I try to teach them that. I tell them that when you go to the cinema you already expect what you are going to see, and you can do that with reading too. You can guess what you are reading about by looking at the pictures and the headlines etc. This helps them to get the main outline at first, the most important information first, and then they can build around the main information to fortify it. You don't just read and read and read, but you should stop and ask: 'what have I just been reading?'. Normally they complain a lot that they don't remember what they are reading about. So this is one way of remembering what they have read.

In the interviews, many of the participants responded that it would be very beneficial for dyslexic students to know what is the best way for them to learn.

> Þórdís said: "Have a mandatory appointment with a student counsellor or other experts after you turn in the dyslexia diagnoses where options are made available and learning strategies introduced."

> Ólöf: "Help each students to map their dyslexia and what works for them."

> Kristrún: "Everyone learns in their own way... there has to be a focus on getting to know how the individual learns, then teachers need to exploit that knowledge... both the teacher and the student need to know what methods are (best) used for them to learn."

Erna in CR, claimed that one of the key aspects for academic success is that the dyslexic student realises what is the best way for him or her to learn. In the dyslexic course, she gives the students time to map out how they learn in the most efficient

way and makes them take tests to realise their strengths and weaknesses. It wasn't always like that though. "Once I taught students learning strategies and I thought that if I can teach the students how to learn they would be in a good place. Soon I found out that this was just garbage... The main thing for them is to find their own way to study... that is a big key for them."

The section above discusses how knowing your strengths and weaknesses can help with choosing an efficient learning style with the right learning strategies. Tools can also greatly assist dyslexic students. The next section is devoted to what the participants said about assistive tools available for dyslexic students.

## 4.5 Tools

### 4.5.1 Introduction

Students were asked about the assistive tools that they used and how they used them. There are many tools that are available to help dyslexic students in their studies. Introduction to the assistive tools can be very important to allow students to become independent learners. It was therefore quite surprising to hear that most of the participants did not use tools that are available to dyslexic students. Interestingly, the tools that they used were mostly aimed for exams.

Out of the nine students, seven of them used basic tools, such as audio books, for their studies, while two used more advanced tools.

### 4.5.2 Assistive Tools

In the interviews, the participants were asked what tools they used for their studies. It was quite surprising to hear that most of the students didn't use any tools. If the students used tools, it was mostly audio readers or some basic tools to help them read. Most of them hadn't been properly introduced to most of the tools available. In many cases, tools were only available for them in their exams.

Below is a *Table 2 - Assistive tools of the participants*, that shows which students used which tools:

## Table 2 - Assistive tools of the participants

| | |
|---|---|
| Hannes | He has sometimes uses audio-books and yellow paper, but doesn't really like them. Nothing more has been introduced |
| Jón | Doesn't use anything |
| Þorsteinn | "I use my iPad when I read, which I think is helpful. I can put a line in there to help me know where I am in the text." |
| Margrét | It has only been one year since she was diagnosed, so she has not looked into it yet. She gets larger font on her exam papers. |
| Þórdís | She uses highlighters to colour what is important. She has also tired audio reader, but doesn't like it. Nothing more has been introduced to her. |
| Ólöf | She uses a computer reader when she has to read long texts and uses yellow paper in exams. |
| Hrefna | She uses colour glasses, it helps her reading, especially when she reads long texts. She doesn't like audio-books. |

Most of the students said that it would help them a lot if the classes were recorded. Margrét elaborated and said: "the best tool I ever got, was being a distance student... I could pause and go back and forward to take notes on the lecture." Most of them find it impossible to listen and take notes in class. Furthermore, many

participants reported that they use videos and lectures which are available online, for example on YouTube or foreign university websites, in their studies.

Two of the students were exceptions from the other students as they used more advanced assistive tools. One of them was Simon which had gone to Erna's dyslexic course. In the course, they get an expert from Hljóðbókasafn Íslands who uses a number of tools and knows about the tools that can help dyslexic students. "When he comes here, he takes pictures (on his phone) of the school and the class he teaches so everything he does is recorded into pictures instead of words... He shows them what tools they can use which are in their environment: their computers and phones, and how they can use them. He also uses a pen which writes and reads what has been written."

Simon spoke about the importance of such classes as he said that one of the best thing about Erna's class is that "almost everything we thought would be beneficial for us we could try... if it did not help us, then at least we tried, so we could do some searching for what was beneficial to us."

Kristrún didn't go to a dyslexia course, but went to an Adult Education Program were she got a speech synthesizer for her computer and for every book she had to use she got an audio book along with it. She took it upon herself to study about more tools that are available for dyslexic students. When she started at university (HR), she noticed that there were very few materials available for dyslexic students at the university, even though the university is supposed to offer more services to their students than other universities. She contacted the rector and a student counsellor and together they are working on a program for dyslexic students at the university. Now, when a dyslexic student applies for the university, they get to know what program and which tools are available to them.

"Today you can apply to get write on a computer in exams and use a spell checker, you can apply to get a dictaphone to record classes, you can get a teacher to read over the exam for you, both in Icelandic and English. These are all my ideas, and I have worked hard to make them  available. I am also the first person that got permission to write my BA thesis in Icelandic. The school will provide someone to translate it and I have also been allowed to write some assignments in Icelandic.. Here (at HR) we make sure that being

dyslexic is not a license to skip something or do less work than others, but you get information and help to achieve your goals."

Kristrún is a mother and has a dyslexic son. When he was diagnosed she went to a meeting with the headmaster of the school. The headmaster informed her that her son would be able to get the same tools as in most other schools: "a coloured paper and longer time for the exams and then that subject was dealt with. I remember that I thought, 'great, but what has he got to do with extra time if he hasn't been able to study the whole semester?' I would rather have shorter time for the exam and get proper support from the school."

### 4.5.3  Summary

In the last section the participants were asked about tools that the participants used  Most of the participants revealed that they used none or only basic assistive tools for their studies. A lack of introduction might be the reason why not more students use the tools available, as they don't know about them and no one teaches them to use the tools. This will be further discussed  in chapter 5.

## 4.6 Foreign language learning

### 4.6.1 Introduction

In this section we will look at what the participants in the study said about foreign language learning with a special emphasis on English. Language classes often become great obstacles for dyslexic students to achieve higher education because they rely so much on the skills that dyslexic students are poor in. This section will also look at alternative ways that some of the participants utilized to learn foreign languages.

In the beginning of the section we will look at two minor themes: reading and spelling, which the participants identified and discussed. These became minor themes as much has already been studied about dyslexia in terms of reading and spelling.

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### 4.6.2 Reading

In the study, most of the participants had difficulties with reading. This is a common denominator for dyslexic students. Many of the participants said that they had difficulties when learning to read and were much older than their peers when they were finally able to make use of the reading. Below are few examples from the interviews.

Hrefna: "I learned how to read when I was about 12 years old."

Simon argued that he would not have been able to read, if there hadn't been people that pushed him so hard. "I read my first book when I entered high school. I wasn't completely able to read until then." Most of the students avoided reading, similar to Simon. A few participants mentioned that they had only read few books in their lifetime. Þorsteinn has only read one book, from cover to cover, his whole life, and that was a book that he got an audio book to help him read it. He says his mind starts to drift when he's reading, but " with an audio book I find it much easier to keep my mind occupied with the reading material."

All of the participants said that initially they were slow readers. Two out of nine said that they have managed to alter that and now consider themselves average or good readers. Although one of them (Margrét), said that she can read fast and accurately, she struggles with comprehension and thus doesn't get much out of reading. For that reason, she has to read the same material a few times, before she can comprehend it. Another one, Kristrún, said that today she has become so good at reading that she now she reads for pleasure.

Kristrún: "I don't have a problem reading, I read for fun...  At first I had problems with reading, when I was younger, but when I got it, I got it. Now I read really fast and everywhere, and I love it."

The other participants said that they still struggled with reading, most of them are slow readers and find it difficult to acquire meaning from the text. Another problem that dyslexic students often have is spelling.

### 4.6.3 Spelling

Dyslexic students have often been reported to have problems when it comes to spelling. In the interviews, spelling problems were not as frequent as the reading problems. Especially amongst the participants that claimed that they had photographic memory and therefore didn't encounter spelling problems. They rather said that they have to be extra careful when learning to spell new words to spell them right the first few times as it is difficult for them to re-learn how to spell a word correctly if they spell it incorrectly to start with.

"Spelling is easy for me, because I have a photographic memory so I remember the words (that I see) and how they are spelled... Some words I always write wrong, if I have remembered them wrong, and somehow cannot correct them, " says Margrét.

It was quite common that the participants said that spelling was hard for them but through exercise they've gotten much better. Simon said that this progress was too time consuming. "Dyslexic students can learn spelling, but it takes so much effort and time, which is maybe better spent elsewhere so I decided to quit these exercises and spend my time on something else instead."

In many cases the participants said that spell checkers have helped them to improve their spelling, especially in English.

### 4.6.4 Foreign Languages

Because language classes are often dependent on literacy skills that dyslexic students have difficulty with, language classes can be extremely difficult for these students. Because of how many foreign languages Icelandic students have to learn on their way to higher education, it was mandatory to ask questions about foreign language learning. Often, the participants didn't know what it is about the languages, but said that they were somehow not as good as other students at learning them.

I think language classes are the hardest classes that I have to take", said Kristrún. "I don't know what it is, it is not even the grammar which is supposed to be just patterns and mathematical that's is hard for me. Somehow I just don't have the

sense for languages... In general I just have problem with languages, I am not good at any language. Sure I can speak Icelandic and read Icelandic and sure I can do the same in English but I find languages very difficult."

When asked what Þórdís thinks is so hard about languages, she doesn't know. She says it's the same for all languages and doesn't really understand it. But somehow languages are just blocked for her until a light goes on, like happened in New York. (See 4.6.4).

In another case, a student had given up learning foreign languages. He only wanted to pass in order to graduate and advance to higher education. He learned how the classes were built up and strategized how he would be able to succeed in them.

"I always thought at start of the course (semester) what I had to learn to succeed in the class", said Simon. "In Spanish and Danish you normally needed to learn the grammar because there was so much value put on grammar in the course evaluation. So I just learned the grammar. If the oral exam was 10 % I just said F*** it, I am not going to chase 10% and waste time on learning that. I just learn the grammar which is always maybe 40% and then I guess the rest. And this is the way I got through these languages."

When I asked him further about his languages studies, about why he learned the languages, he replied:

"I learned these languages for the exam, nothing more. Normally dyslexic students are much better in the oral part and are maybe much better in the language itself (than what is being tested), but the evaluation is so grammar oriented. So I went the other way, learned all the grammar rules. For me the goal was getting through the class to go to a higher level in education, to a university but not learning the language - that was not the goal. I don't enjoy languages so I just did this instead. This was much easier and more time efficient... but of course this is not logical, of course you are supposed to learn the actual language."

In this case, the language classes are clearly missing what they are intended to do and have rather become stumbling blocks for the students rather than language

classes. The student would be better off learning something else or focusing on learning one language.

It is difficult to say which students should be allowed to choose what languages they learn and who don't. A few of the participants said that they had problems when learning foreign languages in classrooms. The next section will discuss alternative ways in foreign language learning.


### 4.6.5 Alternative ways to learning languages for dyslexic students

There were a few participants that said that they cannot learn languages in classrooms. In the pilot interview, the interviewee said that she had a hard time learning languages, until she moved abroad, then she could learn. Similarly, Hrefna said that the English language opened up for her in New York. Two boys that were interviewed told the same story about their language learning.

Hannes said that his teacher learned Spanish in a certain way so all the students had to learn it that way. He said that when he moved to Sweden he learned Swedish by talking, which he thought was the best way for him to learn languages. He used both Danish and Icelandic when starting to learn Swedish which helped him a lot.

"I would like to go somewhere... to an English speaking country to be learn English. I think that would help me a lot, and I would be really quick to learn it", said Jón. "It is also good to connect the audio and visual which you do when you are in some place, maybe talking about some dark haired girl in the coffee shop instead of reading about it. Then I would be using two senses instead of one."

Kristrún is still struggling with speaking English, and feels the only way she can learn English is by going to an English speaking country: "So that's how I am going to deal with that. I am only going to speak English and try to write English. But If I manage to learn how to speak it properly than it will be a big success. I am not so afraid that I won't be able to write it, because you can always find people to write something down for you or correct it. I could record it and make someone write it down for me, but I will have to manage to learn how to speak so I can communicate in English."

One way to learn languages is to go abroad to study them. In many cases the students went specifically to English speaking countries to learn the target language. The section below will discuss what the participants in the study thought about English and the experience of learning a deep orthographic language.


### 4.6.6 English

Given the status of English in Icelandic society and the difficulty for dyslexic students to learn deep orthographic languages, it was essential to ask the participants about their views on learning English.

The study revealed that many of the participants had difficulties learning English. Few even stated that English was the most difficult subject in school. Six out of nine students thought that English was the most difficult language to learn. In many cases, students felt that they were learning two languages when they were learning English, because of the English orthography. Another common reason was that the participants said that the level of English is much higher than level of other languages that students need to learn.

Hrefna showed remarkable perseverance when studying English as she failed five times in English. "English is somehow really hard for me. When I was in (high school) I failed in English courses five times. But I kept being stubborn and in the end I managed to pass them. When I graduated, my English teacher came to me and thanked me for not giving up."

Today she takes extra English classes outside of school as she wants to go to Australia to study. Next year she is going to take the TOEFL exam and if she passes it she will go to Australia.

The interviews showed that students consider learning English a mandatory requirement for their future. The level of English is high in universities in Iceland as most of the reading material is in English as well as some lectures (see chapter 2.4). A high level of acquired English also opens up many possibilities for studying abroad, which some of the participants were looking at, after they finished their studies in HR. In many jobs an advanced level of English proficiency is required. One of the

participants wanted more flexibility in language options, as she would have wanted to learn more English at the expense of other languages.

"I know that English is a key to the future", said Kristrún, "both for more knowledge and studies and for options abroad after studying. I know that languages are good and students that find it easy to learn languages should learn languages. But for people like me to learn German and Danish, that is nonsense. I would have benefitted much more learning only English and Icelandic than having to learn all four languages. So I would say the schools need more flexibility, what better way to serve the students' needs?"

The participants showed the importance of learning good English through their determination to learn it. Of the six participants that were having difficulty learning English, three of students went abroad to study English or are planning to. All of them think it is necessary that they go to a country in which the target language is spoken in order to learn it. They feel they cannot learn languages from a book and claim that they have to learn it through the environment.

Þorsteinn: "I went to English school in the UK, and I learned English. Still today I find that I am lacking a good foundation for the language, especially for the grammar."

Hrefna: "I went to a language school in New York to help me learn it." She says that after that somehow the English language opened up for her.

Kristrún: "I have thought about this a lot, I think I have to learn better English if I want to continue my studies. So my family and I have decided to go to California for me to learn English, and only learn English."

Those who were struggling with English often said that it was because the orthography of the language was so difficult. That is to say, that the spoken and written language differs so significantly that they felt they were learning two languages instead of one.

Jón: "I have always thought English is difficult. Especially the spelling in English because it is so irregular. German suits me better because of it is so grammar based, similar to Icelandic."

Kristrún: "I find spelling really difficult especially in English. Because it seemingly doesn't follow any rules... I don't have a photographic memory because if I had, I would have been able to write it... I find I spell words correctly that are written like they are said (sound)...so I know this is a big problem for me when writing English."

Ólöf: "The only problem I have with English is the spelling. But I am good at listening and speaking English."

In the pilot interview, Erna was asked how dyslexic students cope with English, she replied:

"Many of my students have failed in English. English has often been a barrier for students to graduate and for many it is the hardest class for them to pass. English is really hard for them because it is written differently from how it is spoken. One of my dyslexic students once said to me: 'I look at English as two different languages: spoken and written. And you have to learn them both', and that helped him."

### 4.6.7 Summary

As seen in the section above, foreign languages can clearly be stumbling blocks for students embarking on higher education. Foreign language learning is difficult because it builds on skills that the students have difficulties with: reading and writing. Nevertheless, foreign language learning, especially English, is viewed as a necessity by the participants. Few of the participants claimed English as one of the most difficult subjects but because of its importance in Icelandic society and educational settings went abroad in order to learn it.

### 4.7 Summary of results

The aim of the study was to find elements that proved to be important for dyslexic students to achieve higher education. From the themes that emerged the following results are proposed:

- Coincidental support: The study showed that the majority of the dyslexic students that managed to advance to higher education, had at some point

received coincidental support, support which was not provided by the education system. Notably, seven out of nine had paid for external support.

- Characteristics: The study reported that students had to show characteristics of perseverance and maturity to achieve higher education. Most students spent much more time learning than their peers, resulting in students having to extend their studies and graduating later than their classmates.

- Learning strategies: Of the participants, all except one had good notion on their strength and weaknesses. Most of them could apply that knowledge and had mapped out how they learn in the most efficient way possible.

- The study reported that all the students had at some point had difficulty in reading and writing.

- Self-esteem and motivation proved to be beneficial to students' success.

- Foreign Languages: The majority of the participants found foreign language learning difficult. A decent number of the participants said that they couldn't learn a language in a classroom and found it was easier to learn the target language in the country where it is spoken.

- English: Many of the participants complained about the orthography of English and viewed English as one of the most difficult subjects in school. One third of the participants had moved or will move abroad in order to learn English, which shows how important the participants' view of the English language is. It also highlights the notion that some find it more difficult to learn foreign languages in a classroom setting.

- Assistive tools: Only two of the nine students had received introduction on which tools were available or instructions on how they might be used. Furthermore, the assistive tools that were provided by schools for screened

dyslexic students were found to be focused on helping students in their exams rather than learning.

## 5. Discussion

### 5.1 Introduction

In this chapter we will discuss in more detail the themes of the study and their connection to the students successfully emerging to higher education. The themes will be discussed with an emphasis on a solution which already exists. The results of the study where following: Coincidental support, perseverance and maturity; awareness of learning styles and helpful strategies; high motivation and self-esteem; problems with foreign language learning, especially reading and writing, and alternative ways to overcome them, with a focus on English as a foreign language;, and minimal use of assistive tools.

### 5.2 Support

In the two largest universities in Reykjavík, less than 4 percent of students are dyslexic. This ratio should be around 10 percent (see chapter 2.3). This indicates that there is a lack of support for dyslexic students prior to going on to higher education.

All the participants in the study had at some point received a support for their studies. Most frequently from parents but also from friends or even teachers. The study reported that most dyslexics, or 7 out of 9, had at some point received an external support, which was paid for by themselves or by their parents. The high frequency of a paid support indicates that Icelandic high schools lack that a systematic support. It also shows that parents don't feel that they are equipped to help their dyslexic children themselves underlining the need for a structured support in schools. External support is in most cases  very expensive and is not in every individual's budget to pay for.

The results also prompt us to ask questions about what happens to students that don't receive any support. They don't have supportive parents nor do the parents have finances to allow external support. The students could also not be fortunate enough to have friends, classmates, or teachers that support them in their studies. Some might even be too shy to ask for assistance. It is worth mentioning that many of the participants in the study could not listen and take notes at the same time. It

would be easy for teachers to conclude that these students are lazy, a label which Erna in CR says is too often given to dyslexic students.

Furthermore, Kristrún who is currently studying psychology, said that it wasn't only the schools' fault, but that the psychologists that make the diagnoses were also responsible as they don't translate the results of the diagnoses clear enough for the schools to do anything with them. A student needs more than a diagnoses, he needs a plan and instructions on what is the best way for him to learn. When her son was diagnosed with dyslexia she insisted that the school and the psychologist worked together to help her son. The psychologist proposed techniques that would help her son and the school tried those techniques. She said that it didn't take long to see what suited her son, but by doing this her son was being helped and the teacher was involved in the process.

The participants in the research seemed to share the same story Kristrún described regarding how the school system supports dyslexic cases. Many had learned to accept that this was the way to deal with the dyslexia: more time during exams. That, of course, helps the students, but as Kristrún says, it is much more important to help students in their studies rather than their exams. Seemingly, the first step in the process is to improve the connection between schools and psychologists that screen the students.

The section above shows various support which the participants received which helped them to advance to higher education, this underlines the necessity to have a structured support within upper secondary schools, which is capable of help these students, such as the dyslexic class in CR. The course also ensures that teachers know about these students and how to support them in their studies.

## 5.3 Teachers
One of the findings in the research was that students found it easier to approach other students, their friends and classmates, rather than their teachers. The findings might not be surprising because there is a tendency to start asking the one who is closest to you. This is not necessarily bad. But if the reason why students are not asking their teachers is that they are not approachable or as Margrét said:

"Normally the teacher is the last person that comes to the classroom and the first person that leaves... So if you need assistance you need to send them an email." Then there is a problem which needs to be addressed.

Teachers in Icelandic high-schools seem to be vulnerable when it comes to helping dyslexic students. In 2005, Michael Dal et al. investigated teachers and dyslexic students. Their findings concluded that teachers here in Iceland are un-equipped when it comes to teach dyslexic students. They don't know what to do or how to approach them (see chapter 2.5.3). Still today, a course that teaches student teachers about dyslexia is not mandatory. (Student teachers are briefly introduced to the disability in another course which is mandatory). The results indicate that there is need for all teachers to receive education about dyslexia and other learning disabilities.

The gap between teachers and students, especially dyslexic students, needs to be closed. Students need to be able to communicate with teachers and share with them how they study with the most efficiency, their strengths and weaknesses, to enable the teacher to give them the appropriate assignments. Because dyslexia is so diverse, the best way for dyslexic students to receive the help they need, is for the students to tell the teacher what way he or she finds best to learn.

In CR, Erna assists the dyslexic students in writing a letter before each semester to all the teachers that will be teaching each dyslexic student. In the letter, the teacher is told of the student's strengths and weaknesses and what they have found is a good way for them to learn.

In another high school in Reykjavík, the teachers teach fewer classes, but once a week they have a special class which is reserved for the students to approach the teacher in the students' learning area. This is another way for teachers to become more approachable.

## 5.4 Perseverance & Maturity

All the participants in the study said that they needed more time for their studying than their peers. In some incidents students believed they were using up to three times more time than the average student. Because of how much time their

studies consumed, some had reduced the number of courses they took each semester. This is highly advisable because failing a course risks affecting the students' self-esteem. When students are younger, they are not always willing to admit they need longer time for their studies. In many cases, the participants in the study were not mature enough to accept this, thus failed in the first year in high school and dropped out. Later, they became mature enough to undertake measures to ensure that they could finish. One participant, for example, is going to complete his bachelor's degree in five years, even though he thinks school is the worst place that he can think of. He knows he needs more time to be successful. Today he is really pleased, as he is graduating after this semester, without failing a single course.

It cannot be presumed that all dyslexic students are mature enough when they enter high school and that they will accept to take longer time for their studies. The interviews indicated that a majority of younger students don't choose a school based on the support they get for their dyslexia, but rather on their social expectations. In many cases, students want to go to the same high school as their friends and follow the same pace as their friends and peers.

For this reason, it is important that all high schools have more systematic support to enable all dyslexic students to go to the schools that they prefer. In cases where schools are close to each other, they could host a dyslexic course together.

Whatever their intention, students should get the proper support they need for their studies. The study reported that many participants, especially when they were younger followed their friends when choosing a upper secondary school and not the school that has the best support for their disabilities, this underlines the necessity of all high schools to have structured support. Furthermore, dyslexic students need to get structured support in order to choose the right pace for their studies, especially when they are young and not mature enough to know what is best for their education.

## 5.5 Motivation

Motivation can be an effective way to ensure that students work hard in their education. In the dyslexic course in CR, students were given support as well as encouraged to seek what they want to do in life. Erna in CR, said that many students

don't know what they want to do when entering high school, so they try to find out with the dyslexic students what they are good at and what they enjoy doing and use that as a motivation to study.

Teachers that have been trained to teach dyslexic students have more knowledge on how to help dyslexic students. One way in doing so is motivating them, like the Hannes' teacher (see chapter 4.3.4).


## 5.6 Self-esteem

Students' self-esteem is often fragile in students with dyslexia. Erna in CR says that she often has students struggling with low self-esteem after years of educational struggles and sometimes failures. Erna and the participants confirm that having a low self-esteem makes studying even harder if not impossible. A student with a low self-esteem is more likely to drop out of school because the student believes, that he or she won't be able to finish his or her studies (Ingesson, 2007).

Erna has realised the importance of strengthening these areas and devotes many classes to raise students' self-esteem. Erna says that there is a direct connation between feelings and the ability to study. That is the reason she and Davis (chapter 2.6), try to reinforce the students belief in themselves: that they are gifted and have their individual strengths like everyone else.

Since Erna started the dyslexic course she has gathered data on how the dyslexic students that attend her classes are doing. Compared to other students at the school, she has seen that the students that attend her course are more likely to finish their studies in high schools than other students at the school, dyslexic or not. When asked if it was because of the dyslexic course, she modestly replied that she "did not know".


## 5.7 Learning strategies

All the participants had mapped out what was the best way for them to learn, with one exception. They used various learning strategies when studying, as well as the participants knew their strengths and weaknesses and used that knowledge to be

efficient learners . After Margrét was assessed by a psychologist, she was told that she had already maximized her ability to learn with the methods that she had created herself, and it would be a step back to unlearn them to exchange for new methods. Although they knew the best way for them to learn, it was quite obvious that many had learned these ways themselves. The participants often recommended, when asked about advising dyslexic students that are now in high schools, to learn in a way the students learn most efficiently.

Erna in CR, said that mapping out learning strategies that work for the students is one of the key elements  to enable the dyslexic student to advance to higher education and also to become independent learner. She recommended that all students, dyslexic or not, to take an exam called the V.A.R.K, in order to see  what way they find best to learn (discussed in chapter 2.6). In Erna's class, the students take the exam and then when they receive the results of the exam, they make a plan for the student to try various methods proposed by the program, to see if the results are the appropriate for them.

The program is free for everyone to use and can be found online here:

*http://vark-learn.com/*


## 5.8 Tools

Most of the participants used none or only basic tools in their studies. The reason was not because they had tried so many tools and found that noting worked for them, but because they didn't know about the tools that are available for dyslexic students. Tools can be very helpful for dyslexic students as they help them in their study as well as they equip them with the possibility to become more independent.

In CR, students are given the perfect environment to test these tools in the dyslexic course. An expert from Hljóðbókasafn Íslands comes each semester with various tools and the students get to try what works for them. He introduces new tools, like the writing and reading pen, as well as how students can use tools that are already in their possession, like tools that are found in their computers and phones. The expert is also dyslexic and has used a number of tools to enhance his abilities over the years. These tools that he introduces are both advanced and very basic. He

shows how phones can be used to record classes or keep a journal by taking a pictures or notes. Computers can read out what you have written, so students can realise their mistakes and correct them. This can also help students to construct better sentences.

Like discussed in chapter 2.6, students need to be introduced to the equipment available and taught how to use it for best results. Therefore, it is highly advisable to get an expert to go over these assistive tools with the students, like in CR.

Susan Barton, founder of *Bright Solutions for Dyslexia*, states that AT is an overlooked solution (Trolio, 2015). She recommends a few devices that look promising in helping dyslexic students in their studies:

- **Dragon Naturally Speaking** is voice recognition software that types in what you speak.
- **The Pulse SmartPen** is a pen that can read what you write on paper. It can also store audio notes which the student can record and attach to the same paper by leaving a special dot.
- **The Intel Reader** is a small camera that takes pictures of normal pages and transfers them into digital audio books, the camera can instantly read the digital page.
- **Kurzweil 3000: The Reading Machine** is combination of a scanner and software which reads books and allows the reader to highlight or write notes. The software also shows the reader definitions of words, synonyms and antonyms.

## 5.9 Foreign languages

Studies report that most dyslexic students struggle with reading and writing and other skills used for language learning because of a phonological deficit (Tunmer and Greaney, 2010). The interviews confirmed this as all of the participants had experienced literacy difficulties. Erna also underlines the statement as she says that if there is any common denominator for dyslexic students,  it is that they are poor readers.

Language learning is mostly taught in Icelandic high schools through the medium of reading, which often makes it harder for dyslexic students to learn foreign languages. Chapter 2, introduced studies that report that students take knowledge from the first language and apply it to the target language (Blay-Vroman, 1989), thus students benefit from having a good grip in their mother tongue as language skills transfer to another learned language. Dyslexic students are often struggling with their mother language which makes it harder for them to learn a new language.

In the interviews, many students complained about how complex English was for them, especially because the great confusion in English spelling. Furthermore, many students said that they thought English was the most difficult subject in school. English has been reported to be especially problematic for dyslexic students because of the deep orthography of the language.

The level of necessary English has become much higher than the level of other foreign languages, due to the standard of English textbooks at Icelandic universities. Whatever the student's field of study is, a high level of English proficiency is almost always required. The students seemed to be aware of this. For example in how the participants view the importance of English.

Three out of the nine students that were interviewed have, or are going to move abroad in order to learn English. Underlining a common theme in the interviews that many dyslexic students find it much more beneficial learning foreign language through interaction. Speaking, listening, and participating in a conversation in the targeted language.

The theme provokes questions if language classes needed to be altered to student's needs. Instead of learning through books, students would need to engage in a more challenging environment, where students would need to use the language to communicate. Another solution could be to allow dyslexic students focus more on English than other languages and allow them to take more English classes instead of other foreign learning classes.

## 5.10 The dyslexia course in CR

The Icelandic National Curriculum Guide for Upper Secondary School states:

An effort should be made to enable students with special needs to study and give them the necessary support that can be supplied, as per regulation concerning students with special needs now in force. This can either be done by offering study programmes for students with disabilities or by giving them special support in the other study programmes of the school.

<div align="right">Ministry of Education, Science and Culture (2011)</div>

Throughout this chapter the necessity of a structured high school assistance has been indicated in various forms. The research points out that students are not receiving the assistance when learning, but only in examination. The only school who is seemingly following the high school curriculum is CR, which has a structured support, in the form of a dyslexia course.

The form is ideal for other schools to follow as it gives space for students to learn about their disabilities, strengths and how they, as individuals, learn. This is then continued by equipping them with the right tools and emotionally prepare them to embark on their studies.

By having the dyslexic course, CR has reduced the numbers of dyslexic students that drop out of school. For a few years, fewer dyslexic students have dropped out of school than other students. One of the best examples of how successful this program is, is through one participant in the research that came through the program in CR. When asked: What do you think can help dyslexic students?  Simon said:

I think classes like I had with Erna can help a lot. It can be quite lonely learning and learning without succeeding, but having a support net like Erna created, helped that a lot. What I think was also so good with that class was that almost everything we thought would be beneficial for us we could try and if it did not help us, then at least we tried, so we could do some searching and find what was beneficial for us.

To hear about others that are struggling with the same thing as you, somehow strengthens you. You are not the only one with learning difficulties and struggling. We shared ideas on what was working for us and what was not working for us. Because of Erna, the other teachers at the school, knew much

more about dyslexia and would not grade us as harshly on spelling and things they knew we were poor in. The teachers knew  which students had dyslexia.

## 5.11 Discussion summary

In the section the results of the study were discussed in multiple themes. The discussion showed that there is:

- A lack of systematic support in upper secondary schools for dyslexic students.
- Icelandic upper secondary school teachers don't have the knowledge to help dyslexic students.
- Dyslexic students need emotional support in the form of motivation to build self-esteem and perseverance.
- Dyslexic students need to be taught learning strategies and individual learning styles to learn in an efficient way.
- Dyslexic students need to be introduced to assistive tools and taught how to use them.

Possible solutions were also discussed on how the educational system in Iceland could improve the landscape in which dyslexics can achieve higher education. Often this solution was represented in a form which already exists in an upper secondary school in Iceland, which was the dyslexia course in CR. The main finding of the study is that dyslexic students who have gone on to higher education have certain characteristics that have aided them in their academic pursuits. These characteristics include the assistance and support of a parent or teacher, personal traits such as awareness of their dyslexia, strengths and weaknesses, and the perseverance and motivation to do what is necessary to compensate for the disability.

## 6. Conclusion

The aim of the study was to identify possible characteristics common of dyslexic students who advanced to higher education. It focused on upper secondary school education in Iceland with an emphasis on foreign language learning, as foreign language learning has been reported to be difficult for dyslexic students. While dyslexia seems to affect 10 percent of all readers, only 3.8 percent make it to university in Iceland. These numbers indicate that dyslexic students are in greater risk of dropping out before qualifying for higher education.

The study was conducted by interviewing nine dyslexic students that had successfully completed upper secondary school and had registered at Reykjavik University. The students were interviewed about their experiences in Icelandic upper secondary school and which factors they believed had helped them through their school experience. A teacher of a dyslexic course in an upper secondary school in Iceland was also interviewed.

The interviews were analyzed and put into different themes. The themes covered multiple aspects on what makes students become successful in academia. The findings of the research are therefore the common features that prove to be important for dyslexic students to successfully advance to higher education. They are as follows:

- Individual support from friends or family and in some cases teachers. As well as paid support to help with each participant's individual needs.
- Perseverance and maturity.
- Knowledge of individual strengths and weaknesses.
- Knowledge of learning strategies that worked efficiently for each individual.
- High self-esteem.
- Motivation.

Other findings reported some features proved to be a barrier:
These features are:
- Foreign languages, especially English.
- Reading and writing.

- Foreign language learning in a classroom setting.

Additionally the study reported that assistive aid is mostly used for exams in Iceland, rather than for educational purposes.

From these factors I conclude that there seems to be little systematic support available and that dyslexic students would benefit from such support in upper secondary school. This is especially true for learning in general, motivation, building character, mapping their strengths and weaknesses, receiving instructions on learning strategies, and assistive tools that work efficiently for them individually. The dyslexic course in CR seems to be an ideal solution as it helps the students with many of the problems that dyslexic students encounter as well as building features that prove to be beneficial for these students to advance to higher education. The study reviled that the participants had common characteristics that allowed them to advance to higher education, these characteristics were: Perseverance, maturity, high self-esteem and motivation.

The strengths of the study is that both an experienced teacher of a dyslexia course was interviewed as well as nine dyslexic students that had already achieved higher education. The interview with the dyslexia course teacher gave immense insight when combined with the views of the dyslexic participants, as the findings from the interviews with the individual dyslexic participants are backed up by the experience of an individual that has worked with multiple dyslexic individuals. When these findings are combined, there is a strong indication that the findings of the study represent the reality of dyslexic students' educational experiences.

The study also has some weaknesses. All the students came from the same university, in which few fields of study are taught. That might have resulted in similar stories and answers. If the study was conducted in another university, it is possible that the answers would have been more diverse. Therefore, a possible weakness of the study is the homogeneity of the students interviewed. A possible study that would further investigate dyslexic students in other universities in Iceland is therefore proposed, as well as a study on dyslexic students that have failed to achieve higher education. Another weakness might be that the findings of the study discuss multiple

themes on what helps dyslexic students who have made it to university. Because the themes are many and cover multiple areas, such as foreign language learning, self-esteem and perseverance of the dyslexic students, the study only manages touch weakly on each issue. Possible studies which focus on each characteristic in more depth is needed. For example, a study can be conducted specifically on dyslexia and foreign language learning in Iceland.

This study focused on interviewees experiences when they were in upper secondary school. Further studies could focus on younger students in Iceland which prove to be important to reach upper secondary school. Another study could focus on how dyslexic students that achieve higher education integrate and cope with university standards.

The study, in which successful dyslexic participants were interviewed, presents us with factors that have enabled the dyslexic participants to go on to higher education. All the participants received support from individuals outside of school system which enabled them to advance to higher education. The support was mostly from parents or friends, but interestingly seven out of nine had also paid for support. The lack of systematic support was evident. Another factor which became evident was that the participants had to show perseverance in their studies. This was evident in how much time was used for studying, which was presumed by one of the participants to be up to three times more than other students. Closely linked to the perseverance that the participants showed was maturity, which the students show in how much time they used, and made available, for their studies by, for example, taking fewer classes each semester. The study reports that most of the participants had mapped out distinctive learning styles and strategies which they used in order for them to study more efficiently. The participants in the study were highly motivated and showed high self-esteem, which has been identified as a contributor to academic success.

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**Appendix A**

Name:

Age:

Gender:

Current study:

***Grand tour question: How would you describe your dyslexia/disability?***

**Part 1: The student**

1.  When were you diagnosed with dyslexia and what affect did that have on you?
2.  Describe briefly how you were diagnosed/screened?
3.  Have you sought council or information after you were diagnosed, if so what?
4.  How did being diagnosed with dyslexia affect your schooling?
5.  Do you feel you have the same opportunities as other students?
6.  Since your diagnoses have you altered your educational plans or future plans, explain how and why?
7.  Do you have some strengths that compensate your disability?
8.  Describe how what you feel is a efficient way for you to learn.

**Part 2: The School**

1.  What upper secondary school did you choose, and why?
2.  In your school, what kind of a class format was there? Do you think that, the format helped you in any way, if so how?
3.  What did your upper secondary school do for dyslexic students?
4.  Did you feel the teacher at your school were approachable?
5.  Did you experience that the teacher had knowledge on dyslexia and how to help dyslexic students?
6.  Was there anything special in what the teachers did, that helped you, or you

felt helped you comprehend or learn in a better?

7. Did you receive more time, different assignments than other students in your upper secondary school?

8. What assistive tools did the school offer you?

9. What assistive tools do you use?

**Part 3: Languages**

1. What languages have you learned?

2. Do you think all languages are as difficult?

3. How do you think you do in the following aspects of language learning:
   - Listening
   - Speech
   - Reading
   - Spelling

4. How do you do in language learning courses compared to other classes/courses?

**Part 4. Other**

1. What would you chance now in upper secondary school, if you would go back in time?

2. What would you advise dyslexic students to do in order to successfully advance to university?

3. Is there something else you would like to say?

**Appendix B**

(Questions for Erna, in CR)

**General**

1. When and why did you start working with dyslexic students?
2. How did the dyslexia course come about?
3. Do you hold lectures on dyslexia for teachers in the school? Or even in other schools?

**Dyslexia**

1. What is your view on dyslexia?
2. Is there a difference between dyslexic students and 'normal' students? If so what is the difference?
3. Is there any common factor that all dyslexic students have, or most?
4. Can you see different patterns of dyslexia?
5. Do all dyslexic students struggle with foreign languages?
6. If dyslexic students have difficulty with language learning, why do they?
7. What elements do dyslexic students that achieve higher education have in common?

**Dyslexic students and CR**

1. When a dyslexic individual comes to you with a new diagnoses, what steps are taken by the school?
2. Can you describe the dyslexia program briefly here in CR, and how it is meant to help and support dyslexic students?
3. What assistive aid are available for dyslexic students in CR?
4. Do dyslexic students normally get extra time for assignments?

**The dyslexia course:**

1. Can you describe briefly what you do in the dyslexia course and what is its aim?
2. In the dyslexia course do you point out things for the dyslexic students to read, if so what?
3. When observing the course schedule, I saw that in the course a few weeks are devoted on self-esteem and other personal problems.  Why?
4. Do all dyslexic students struggle with low self-esteem?
5. Are the dyslexic student in the school, shy about being dyslexic?
6. Do they feel embarrassed to attend a dyslexia course?
7. Does the course always help dyslexic students?

**Upper secondary schools in Iceland:**

1. Are teachers generally ready to teach dyslexic students?
2. What can teachers do to help dyslexic students with their studies?
3. Why is it important to have a support net for dyslexic students in upper secondary schools?
4. Is there anything that upper secondary school in Iceland can do better regarding dyslexic students?