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Dyslexia and children's English language learning in a Mexican elementary school: A crowdsourced intervention study

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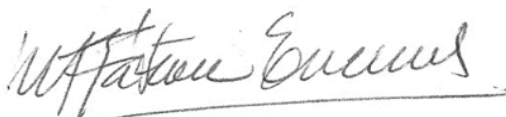
Dyslexia and children's English language learning in a Mexican elementary school: A crowdsourced intervention study

This investigation has been read by the members of the Committee for

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And is considered worthy of approval in partial fulfillment of the requirements for the degree of

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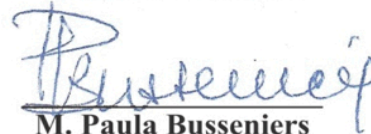
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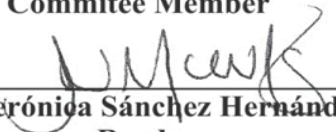
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ABSTRACT

‘Dyslexia and children’s English language learning in a Mexican elementary school: A crowdsourced intervention study’

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Puebla, Pue. México. December 2015.

The aim of this thesis was to explore and identify methods and strategies that can help elementary students in their foreign language learning process in a private school in Puebla, Mexico. This was a qualitative study which used a pretest – intervention – posttest design to detect change in 2nd elementary dyslexic students’ performance associated with the use of materials and teaching methods obtained through crowdsourcing. The participants were selected using a particular test for elementary students that helped this study to remain undisclosed due to the topic’s particularities.

This study explored different perspectives of dyslexia as well as successful stories of dyslexics in order to implement the interventions. The central part of this study was focused on the assumption that dyslexia is genetically originated and that it is a condition, not a disease, not a disability. The results were obtained after ten different interventions that were analyzed and registered using a researcher journal. The study includes a reflexive account about pedagogical and theoretical implications followed by recommendations, limitations and possibilities for further research.

The results of this research indicate that although there is sufficient information about dyslexia in elementary education in Mexico, there is no protocol to identify dyslexia or adequate approaches to use with dyslexic English elementary school students (Ruiz-

López, Moysén, Trejo-Oviedo, 2010). Thus, this study intends to raise English teachers awareness about the different approaches and strategies they can use to enhance their students' performance in foreign language acquisition.

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DEDICATIONS

First of all, I would like to mention my nephew Matthew. I began my Masters Program because of him. His early departure made me want to do something in his honor; something that could transcend and I did not have a better way than to follow my teaching path and to take it to the next level.

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I would also like to dedicate this work to my two very understanding sons, who listened to all my findings and results with admirable patience and rooted for me through each and every letter of this present work. They became my teachers in many ways. I thank them for teaching me how to improve my technological skills, for teaching me how to free myself from ghosts of hesitation and for teaching me how to be happy just for the fact of being alive.

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CHAPTER 1: INTRODUCTION

1.0 Introduction

1.1 Purpose

1.2 Significance

1.3 Context

1.4 Background of the researcher

1.5 Location

1.6 Aims and objectives

1.7 Research questions

1.8 Summary

1.0 Introduction

This study intends to explore teaching methods and strategies that can help dyslexics during their learning process. Dyslexia is a controversial topic, which has generated an ongoing debate. Even though there are numerous studies on dyslexia (among others Barden, 2011; Baschera, 2011; Gustavsson, 2013; Mascheretti et al, 2013; Ruiz-López et al, 2010; Shaywitz, 2005; West, 2009 and 2014; Wolf, 2014), very little has been said on classroom strategies for elementary dyslexic foreign language learners, at least in Mexico. This raises the following question: What can we, as English teachers, do to help our dyslexic students while this debate continues? This question was the main motor for this research.

This was a qualitative study which used a pretest – intervention – posttest design to detect change in 2nd elementary dyslexic students' performance associated with the use of materials and teaching methods obtained through crowdsourcing. The information was put into practice with a group of 25-second grade elementary students focusing only on the results of dyslexic students in the classroom. These results were registered in a journal and

concentrated on the evidence of improvement in the dyslexic students' results in different stages taking their term grades as a form of measurement.

1.1 Purpose

This research aims to create an awareness of the different teaching methods and strategies English teachers can use to enhance their dyslexic students' performance in the process of learning a foreign language.

1.2 Significance of the study

Although there is enough research about dyslexia in elementary education in Mexico, there are still no efforts to create awareness among teachers and parents. Furthermore, there is no consensual protocol to identify dyslexia or adequate approaches to use with dyslexic foreign language elementary school students (Ruiz-López, Moysén, & Trejo-Oviedo 2010). Thus, there is a need to disseminate research findings in the educative community in order to raise English teachers awareness about the different approaches they can use to enhance their dyslexic students' English learning in their classrooms.

This work was intended for those elementary school teachers who have to grade two hundred exams by the end of the week, prepare lesson plans and their teaching material besides taking care of a family and who do not find the time to explore what could help them in their classes when confronted with a dyslexic student. These teachers want the best for all their students. This study aimed to provide a useful shortcut for them and therefore a useful implement for dyslexic students. This work is also intended for the student that needs the teacher to read the exam questions for him, who needs a little bit more time to finish a task or who thinks that there might be something wrong with him or her.

Furthermore, it is important to face this situation since the number of dyslexics in elementary school is significant. According to Austin Learning Solutions, dyslexia runs in families; parents with dyslexia are very likely to have children with dyslexia and it is estimated that 1 in 10 people are dyslexic. The Dyslexia Research Trust emphasizes the inheritance component of dyslexia at about 50 % and adds to it the factor of gender. If either a father or a mother is dyslexic, their sons have a 75% chance of being dyslexic, whilst girls have only a 25%. If we take those facts into account, this means that if a dyslexic parent has two children, a boy and a girl, there is a great possibility that at least one of them will be dyslexic and if those children are two boys, the possibility of dyslexia grows in the family.

1.3 Context

The research was contextualized based on different theories that have caused the academic debate mentioned above. The scope of this work did not consider the medical or neurological side of dyslexia but was focused on teaching approaches and strategies, methods, processes and successful results of dyslexic people in general.

The central debate of this topic is basically focused on the definition of dyslexia as a disability or as a condition. On the one hand, Baschera (2011) considers dyslexia a learning disability that gets in the way of developing reading and writing skills, as well as leading to difficulties in the discrimination of sounds. Although this is in part true, in foreign language learning the difficulty is general, not exclusive to dyslexics. Through my experience I have noticed that dyslexic students who are learning another language tend to have good pronunciation if it does not involve the written word. However, at this point, I was not able to support this with any reference. On the other hand, there is evidence that more and

stronger neural connections in dyslexic brains help enhance the quality of visual mental representations and creativity in thinking (Barden, 2011).

Thus, to contribute to the debate, the terms and central concepts to the study are: dyslexia, the disability perspective, the condition perspective, dyslexia in the Mexican context and crowdsourcing reviewed and discussed in detail in the following chapter.

1.4 Background of the researcher

Although I have a bachelor's degree in hotel management, I have been an English teacher for over 30 years. The levels taught range from A1 to B2 according to the Common European Framework as well as private tutoring students for the TOEFL test. I have also taught various ages starting at 7 years old to 65. I have seen the lack of resources and strategies in regards to dyslexia as well as little understanding from my colleagues, parents and students themselves. I have also put into practice several techniques that have helped dyslexic students but only empirically. Being dyslexic myself and having a son with dyslexia led me to consider this topic as my research and find out some of the current trend in education and language learning and teaching considering dyslexia. We both struggled with teachers that did not know much about dyslexia. As a mother, I did my own research and helped my son with whatever I thought was adequate. My son became a successful young man who has thrived through life. What would have happened in my background if our teachers had had useful resources then?

1.5 Research location

This research took place at a private elementary school in Puebla with a group of selected students from second grade elementary because, according to experts as discussed further on, it is the appropriate age for intervention. The location of the data collection is a private

school in Puebla because it is where I have regular access. A common environment for foreign language learning is one of the most relevant features of this research location.

The present research protected anonymity. This case study was undisclosed due to the sensitive nature of dyslexia. One of the limitations for this study was the fact that a high percentage of parents and school authorities associate dyslexia with some form of retardation or disability. Until now, psychologists have dominated the study of dyslexia and there is a general idea that teachers cannot identify dyslexia even when they are the ones who spend more time with the students.

1.6 Aims and Objectives

The aims for this study were primarily to explore teaching methods and strategies for dyslexics in order to improve dyslexic students' academic production, their general outcomes and their attitudes towards acquiring a foreign language. This study aimed to benefit the participants to recognize and improve their EFL learning process. Another expected outcome for this study was raising a personal awareness about different strategies to use with dyslexic students in my working context.

As subdivisions of the mentioned aims, I conducted the interventions in a class with 25 students. Of those 25, 6 identified as dyslexics were the focus of this study.

The participants were selected using The Hong Kong Behaviour Checklist for Primary Students: Developing a brief dyslexia screening measure (Chan, Connie, Hob, Chung & Suk-han, 2012), which was appropriate for this study (see 3.2). The names of the participants were changed to protect their anonymity. The selected group's grades were considered as data to explore the results after interventions.

1.7 Research questions

After considering this debate and considering that dyslexia is not an “ailment”, the reality is that, regardless of its origin or theory, teachers will have at least one dyslexic student in their classrooms according to Dyslexia International website (2014) and Plume and Warnke (2007) dyslexia happens in at least one in 10 people.

Contemplating this, the present study addressed the following research questions:

RQ1 - Which teaching methods can help the study group of dyslexic students to improve their academic production, their general outcomes and their attitude towards learning in the process of acquiring a second language?

RQ2 - What learning strategies can help the study group of elementary dyslexic students?

1.8 Summary

Dyslexic students tend to be resistant to conventional teaching methods, but if there is appropriate specific intervention, students with dyslexia can become great achievers (Barden, 2011). Evidence shows, sadly, that there are secondary affective consequences of dyslexia derived from the perception of teachers, parents and the individual themselves that make dyslexics feel underachieving in their education. This perception of failure and frustration can last for all their lives unless there is appropriate intervention from teachers and parents to help them overcome the so-called deficiencies, which are actually different ways of thinking and acquiring skills but dyslexics have to live in a society where the written word forms a central part of every aspect of modern life.

It has become common today to acknowledge the central role of writing in all school activities. According to Smith, Jiménez and Martínez-León's (2003), the most important feature of the use of written language in Mexico has to do with an overall concern for correctness of form, spelling, accent marks, punctuation and the quality of

students' handwriting. Thus, the content of *what* students create when they write is not commonly the focal point in elementary education in Mexico. Therefore, because of the importance of writing and the learning features broadly associated with (but not limited to) dyslexics, this study was designed to help teachers mold their teaching to accommodate the wide varieties of learners found in a typical classroom including dyslexic students.

In the subsequent chapters we will explore the literature consulted for this study along with the methodology used for the research, information about materials, research methodology and the findings of this case study. Finally a discussion chapter summarizes the most important results along with observation patterns and generalizations considering implications and the significance of the results.

CHAPTER 2: LITERATURE REVIEW

2.0 Context

2.1 Dyslexia: Disability or Condition?

2.1.1 Definition of dyslexia

2.1.2 The disability perspective

2.1.3 The condition perspective

2.1.4 Discussion

2.2 Dyslexia in the Mexican context

2.3 Successful stories of dyslexics

2.4 Summary

2.0 Context

The research was contextualized based on different theories. The scope of this work did not consider the medical or neurological condition of dyslexia but was focused on teaching approaches and strategies, methods, processes and successful results of dyslexics in general. The words used in the present work may lead to think that this was a quantitative experimental study but it was more related to a pedagogical approach using a sociocultural perspective.

This study's main purpose, discussed in Chapter 1, as well as my own experience as a dyslexic, has led me to this study. I found out that I was dyslexic when I was around 12 thanks to one of my teachers who observed my struggling learning process in school. Reading for me was one of the most difficult skills among other problems. This teacher was so interested in my progress that she guided me through a reading method that finally helped me understand what I was reading. She helped me solve a problem under her guidance and I worked in collaboration with more capable people (Vygotsky, 1978). I was not taken to a psychologist. It only took a little interest from one of my teachers.

I have worked as a teacher a great part of my life and met many dyslexic students who I have tried to help and sometimes succeeded using common sense, patience and empirical practice. However, I was interested in going further, adopting a more pedagogical sociocultural perspective.

So, this study draws from a sociocultural theory and the concept of scaffolding, which was introduced by Vygotsky (1978). From it, it is understood that teachers should give tasks that students cannot do on their own, but which they can do with support. Educators should provide just enough assistance so that students learn to complete the tasks independently. The problem is that not all the children learn in the same way or have the exact same characteristics. This work focuses its attention on dyslexics and how to scaffold their progress.

2.1 Dyslexia: Disability or Condition?

Before analyzing the controversy that prevails in regards to dyslexia, it is important to consider some facts about dyslexia. Dyslexics have in general an average or above average IQ, and though they could have an adequate education and ordinary social background, they tend to have difficulties in some areas, mainly with their reading and writing skills (Patterson, 2011).

Dyslexia is recurrent in Western world languages, including English, French, German, or Spanish. It is estimated that about 5 to 7% of the Western world population suffers from minor or major forms of dyslexia (Baschera, 2011). This means that the causes are not mainly external but that a person is born dyslexic and will be dyslexic throughout his or her life. It is characterized by difficulties with phonological processing, rapid

naming, working memory, processing speed, and the automatic development of skills that may not match up to the individual's other cognitive abilities (Barden, 2011).

According to Davis, cited in Baschera (2011), dyslexic individuals experience perceptual disorientations in the way they experience time, vision, hearing, and coordination. Dyslexia also involves difficulties in the discrimination of sounds and visual confusions creating a transposition of letters. Some examples in Spanish could be *chorcolata* instead of *corcholata*, *cocholate* instead of *chocolate*, *viridio* instead of *vidrio*. There are indeed, according to Baschera, distinctive difficulties in dyslexic students related to the order of words in writing. This can influence the judgment of teachers and evaluators about the quality of writing causing a distraction in the reader from the actual message, mainly because the reader or the evaluator pay more attention to how something is written rather than to the content of what is written. This presents problems when the student has to write in a particular style and there is a lack of focused tutoring considering the dyslexic student's needs. Dyslexic students are oblivious to those mistakes and feel satisfied with the results. What is more, they tend to overdo in their school assignments to pair up with the rest of the "normal" students and this fact is rarely taken into consideration when assignments are graded.

In respect to dyslexia and English learning specifically, we need to consider all the often-contradictory spelling patterns that exist in this language which present a challenge to the unskilled reader. Early detection can lead to early actions in regards to dyslexia. Some experts concur that the best assessment is around third grade elementary (Shaywitz & Shaywitz, 2014), while others consider that the best time to detect dyslexia is when formal achievement testing begins, generally in first or second grade (Motamedi, B., 2015).

In addition to this, and according to a recent case study related to dyslexia and foreign language learning at Lineaus University, (Gustavsson, S., 2013) dyslexic students often encounter considerable difficulties. Phonological processing, poor working memory, poor auditory discrimination and slow speed of information processing are some of the most important constraints in a foreign language-learning environment for dyslexic students.

The previous studies, opinions and claims marked a departure point for the following topics, which will be helpful to have a clearer idea about dyslexia for this present research.

2.1.1 Definition of dyslexia

In order to understand what dyslexia is, we must have a general definition for it. There are many different definitions of dyslexia and I was interested in finding one that could embrace the different manifestations of dyslexia. First of all, some literature refers to dyslexia as *developmental dyslexia*, which is different from *acquired dyslexia*, which occurs as the result of brain injury after learning to read. In this work, the term that I will use from now on will be dyslexia, associated with developmental dyslexia, whose origin could be congenital or hereditary. Some general concepts that are relevant for this present work are offered in the following paragraphs.

According to Snowling (2013) dyslexia is a neurodevelopmental disorder with a genetic basis that cannot be easily diagnosed; it is more common in boys than girls. The author also indicates that dyslexia is related to word decoding, which causes problems with spelling and reading fluency.

Most of the authors recognize the difficulty of defining dyslexia, which leads to the inevitability of mentioning the title of an article of a prominent researcher in dyslexia, ‘Can

there be a single definition of dyslexia?’ (Miles, 1995). The title as such gives us an idea of the complexity, not of dyslexia, but of its general definition. In her abstract, the author asserts that the concept cannot be summed up in a single formula. Consequently, instead of struggling with a definition, a ‘description’ may be a better term to use. She adds to it by saying that there is confusion as to how the word is actually used in practice, and this has affected research in general.

In conclusion, when defining dyslexia we have to consider different definitions. All these definitions agree on several traits such as: difficulty on reading and writing skills, the fact it affects the learning process and does not necessarily relate to the level of intelligence.

Furthermore, there is a current debate that considers fundamentally two perspectives: The disability perspective and the condition perspective.

2.1.2 The disability perspective

A number of researchers have suggested that a range of behavioral and social problems including stress, demotivation, low confidence and low self-esteem, often accompanies the academic difficulties related to dyslexia. For instance, Baschera (2011) considers dyslexia a learning disability that affects the development of reading and writing skills.

Miles (1995) shares in her article the definition of dyslexia according to The Orton Dyslexia Society Research Committee and it reads as follows:

Dyslexia is one of the several distinct learning disabilities. It is a specific language based disorder of constitutional origin characterized by difficulties in single word coding usually reflecting insufficient phonological processing abilities. The difficulties in single word decoding are often unexpected in relation to age and other

cognitive and academic abilities; they are not the result of generalized developmental disability or sensory impairment. Dyslexia is manifested 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).

In another influential work we can gather that:

Dyslexia is defined as a distinctive impairment in literacy acquisition. Reading and spelling performance are beyond the chronological age and intelligence quotient (IQ). Deficiencies in reading accuracy, speed, and comprehension, and a great number of different spelling errors are typical characteristics. About 6% of all students are affected by dyslexia. The disorder is caused by genetic factors that involve deficits in phonological information processing. Diagnostic investigation includes a clinical psychiatric check-up and psychological test that assesses IQ and reading and spelling performance. (Plume & Warnke, 2007, pp 322-327)

Artigas (1999) mentions in his work that biological aspects of dyslexia were minimized during the 60's and psychoanalytical approaches considered dyslexia closely related to neurotic or psychotic conditions, to oedipal conflicts, and that the difficulty of reading in dyslexics, according to this line of thinking, was related to emotional problems.

A study, conducted by Narimani *et al* in 2009, concluded that different theories of failure in school and poor brain functioning have declared a direct relationship between delinquent behavior and learning disorders. This same study analyzed several cases, which focus on the relationship between dyslexia and Attention Deficit Hyperactivity Disorder (ADHD). The same study shows that dyslexic children had problems related to lack of

attention and behavior disorders. It mentions, based on other studies that one out of three dyslexic children suffer from aggression, confliction, autism, and inability to control urination, besides sleeping disorders.

According to this previous study, dyslexics have very low emotional intelligence, they cannot easily express the quality of relations, understand people's emotions, sympathize with others or identify one's own feelings as well as others and they also cannot easily apply their emotions to make wise decisions in the daily life. Additionally, it states that dyslexics tend to have several socio-emotional problems that include poor self-conception, not tolerating failure, social anxiety, avoidance of assignments and poor and slow self-management skills.

This study also considers that behavioral problems in dyslexics can be "cured" with an emphasis on education and improving aspects of emotional intelligence and, what is most fascinating, this treatment can even *increase* creativity.

Facchetti *et al.* (2002) state that there are several studies that have provided evidence for a phonological deficit in developmental dyslexia as well as a multimodal temporal processing deficit. In fact, they add, "dyslexics show both auditory and visual abnormalities, which could result from a more general problem in the perceptual selection of stimuli" (2002, p. 185-191).

The theories and perspectives reviewed in this section support the notions that dyslexia is a disorder. Not only is dyslexia regarded as a disorder, as reviewed above, but it is also linked to a wide range of physical, behavioral and psychological problems. However, there is another theoretical perspective that takes a different viewpoint on dyslexia. The ideas and theories associated with this perspective are reviewed in the following section.

2.1.3 The condition perspective

The condition perspective is mainly connected to genetics. Dyslexics are born dyslexics due to genetics. Following this perspective are many authors who agree that dyslexics have special individualities that make dyslexics learn in a different way.

According to Warnke (1999), working in this condition perspective, dyslexia is thought to be connected to specific features in cognitive processing related to biological maturation of the central nervous system that interact with non-biological learning conditions, and that it is not related to mental age, gross neurological deficits, emotional disturbances or poor schooling. The author mentions that the origin of dyslexia is not known with certainty, but there are strong theories that could help discover its causes.

In general, it is agreed that the same problems dyslexics find in their own language in reading and writing are also found in the process of learning another language. Crombie (2000) led a study taking a multisensory approach to the learning of a modern foreign language with good results. The author mentions that there is a considerable variability in dyslexic students' patterns of difficulties. This author also states that learning another language could bring many benefits along with negative effects. The latter are related mainly to motivation associated to a feeling of failure due to the extreme effort needed by dyslexics in this matter.

Wolf, in her article on the International Dyslexia Association webpage (June, 2014) discusses several insights to help the reader understand more about dyslexia. The author mentions that the history of dyslexia "has been punctuated by very different explanations. Each hypothesis was based on efforts to provide the one true explanation for why dyslexic children have difficulty learning to read and that with each new effort to explain dyslexia, there was a new name given to the phenomenon". The author justifies that "this could be

explained by the underlying complexity of the brain circuit (i.e. neurological connections) itself which make it difficult to pinpoint sources for conditions and disorders”.

In addition to this complexity, there is the fact that the brain can and does make different reading circuits. In dyslexia, she adds, there could be a quite different reading circuit in some children that is genetically based and that the right hemisphere does what should be left hemisphere tasks. Wolf (2014) states that differences in perspective in any field are healthy and the basis for the development of knowledge in any field. The author concludes by saying that “children with dyslexia are best helped with an accurate assessment and an explanation for their difficulties with reading acquisition and that no individuals with dyslexia should ever think that they are less intelligent or lazy or not working to their potential”. The author also mentions “the fact that the construct of dyslexia, like reading itself, is so complex does not mean that we need to return to older, more general terminology like reading disability or reading disorders to explain it” Wolf, M. Marcus Aurelius and the Continuing Dyslexia Debate: (<https://eida.org/marcus-aurelius-and-the-continuing-dyslexia-debate/>) para. 5: (June, 2014)

Although these controversies exist, there is hope that the general point of view will be leaning towards a counter-argument to the dominant psycho-medical deficit discourse. If parents and teachers follow this new trend led strongly by one of the most prominent advocates of dyslexics: Thomas West, dyslexic students could find themselves at the forefront of academic thinking and research rather than being disadvantaged and marginalized by educational and wider cultures which privilege reading and writing over other forms of communication and learning (Barden, 2011).

Merkle (2014) states that dyslexia is a genetic brain difference that causes difficulty with language despite intelligence, motivation or education. This is the central assumption

in this study: 1. Dyslexia is genetically originated and 2. Dyslexia is a difference, not a disease, not a disability.

Lastly, West (2009) believes that the varied peculiarities associated with the different terms of dyslexia are significantly complex. Dyslexia, he asserts, refers most precisely to the condition of children of average or superior intelligence who are either unable to read or find reading particularly difficult. West believes that dyslexics can achieve success not in spite of but precisely because of their apparent disability.

2.1.4 Discussion about dyslexia perspectives

From this last condition perspective of dyslexia, students do not have a disability, a deficiency, impairment, a disease or a pathological condition. Dyslexia is a condition. These students can be part of the mainstream education but they need, as every student does, special attention to make sure that they live up to their potential and what they do not need is to be stigmatized or considered disabled or inferior in any way. Some people still think that dyslexia is a disability and the topic cannot be easily discussed in schools mainly because of this general misinformation. Hence, if we as teachers know more about dyslexia, we will be more informed to discuss this issue in schools with parents, authorities or with other colleagues.

There is a wide scope in the different perspectives related to dyslexia: teachers, neurologists, psychologists, parents and dyslexics themselves. Therefore, there is an undeniable need for future collective work, which could promote more understanding of dyslexia, better assessment and more comprehensive interventions.

Through different studies such as autopsy, brain imaging, neurophysiological and neuropsychological testing, there is strong evidence that dyslexia can also be determined by heritable cognitive components of reading and spelling processing. Experimental research

has obtained evidence of brain structure and cognitive skills related to the central nervous systems of auditory-phonological and visual information processing. This biological theory states that dyslexia is caused by the interaction of genetic or non-genetic factors and environmental factors, such as the opportunity for learning or the quality of teaching (Mascheretti *et al* 2013).

There is also a theory based on genetics described by the pioneers of dyslexia at the beginning of the 20th century. The evidence is still anecdotal but has a strong hypothesis proposing that dyslexia could be determined by important heritable factors (Van Bergen *et al*, 2012). However, the mode of inheritance has not yet been conclusively defined. These authors support the observation that dyslexia tends to run in families. There is a ratio of children with at least one dyslexic parent of 33% to 66% of possibility of inheritance in contrast to a 6%-16% ratio of children from non-dyslexic parents.

In the same vein, the Dyslexia Research Trust emphasizes the inheritance component of dyslexia at about 50 % and adds to it the factor of gender. If either a father or a mother is dyslexic, their sons have a 75% chance of being dyslexic, whilst girls have only a 25%.

Another prominent author, Sidenberg (2011), discusses the disparate impairments associated with dyslexia. As mentioned in previous paragraphs, the origins of dyslexia are poorly documented not because there are not serious studies about it, but because the results of those studies throw incongruent results that cannot work as a strong basis for the origins of dyslexia. More facts are needed and under the actual taboo circumstances of dyslexia, this conclusion could take decades to arrive. The cited author also mentions a strong evidence of mainly left-hemisphere subcortical anomalies in accordance to the neurophysiological theory. He proposes a speculative sketch to illustrate the type of

multilevel theory needed for a study that could throw stronger results. He finishes his speculative sketch with the sentence “For some unknown reason, the processing of lower temporal frequency auditory information is particularly vulnerable.” (Sidenberg, 2011, p.2)

Although this previous information is particularly important for scientists, the focus of this work is more pedagogical and therefore I will not go in depth into these studies. Considering those facts, it is difficult to arrive at a simple conclusion regarding the origins of dyslexia. Bearing in mind Sidenberg’s (2011, p. 2) words: “for some unknown reason”... just confirms the need for more research in this matter.

The general misinformation about dyslexia is probably due to the fact that not even experts seem to agree on the causes, diagnosis or strategies to help dyslexics. Considering the causes and consequences of this disagreement, personally I have a problem with some experts that believe that dyslexia can be diagnosed as a sickness, because one cannot take a pill or go to therapy and consider oneself “cured”. From my point of view, a person cannot say I have dyslexia, but rather I am dyslexic. If the first assertion were taken as an accurate statement, then dyslexics might as well take medicine or go through treatment and become relieved of the indicators of dyslexia.

From my perspective, there are two general directions, one that views dyslexics as “patients” and the other that considers them as human beings that acquire knowledge in a slightly different way. Relevant to this last consideration we must take into account important ways to support young dyslexic students in order to give them the right tools to achieve success in their learning process, which include, for this context, the acquisition of a foreign language. In my praxis, I have seen students succeed when learning English if several conditions exist, and one of the most important is motivation.

Facoetti, *et al.* (2002), mentioned in previous paragraphs, maintain that there are several studies that have provided evidence for a phonological deficit in developmental dyslexia as well as a multimodal temporal processing deficit. The essence of that assertion takes us to believe that there is actually a deficit and an abnormality in dyslexics. I agree with it to a certain point, in which there is evidence that dyslexics process stimuli differently, but multimodal processing and selection of stimuli could facilitate dyslexic children's foreign language learning in accordance to many successful dyslexics who became writers and journalists in their native language and also in a foreign language (The Yale Center for Dyslexia and Creativity, 2014).

The approach that we give to dyslexia is crucial because it can have a great impact on education, teachers, parents, students and dyslexics' well-being. From my point of view, there are effective ways to develop academically in foreign language learning and in any area if a person is dyslexic without the use of drugs.

One of the problems of considering dyslexics a medical problem is precisely that it increases stress, lowers the student's confidence and self-esteem because it is labeling their characteristics as a deficit and an abnormality.

Another interesting study related to foreign language learning and dyslexia mentions that many smart and intellectually capable children face specific learning difficulties in the presence of other symptoms such as incoordination, left-right confusions or poor sequencing. This article is naturally referring to problems in dyslexic children. It then continues by saying that these children suffer from dyslexia, the most frequent learning disability in children which persists throughout life (Erkan, Kizilaslan & Dogru, 2012). The terms that I find in the previous statement upsetting are "suffer" and "disability". If we use the word suffer, it is assumed that dyslexia is, once more, as stated

before, a disease. The word disability confuses me more and takes me again to the academic debate that has been persistent all through this study.

Another study called *Coexisting problem behaviour in severe dyslexia*, from Dahle *et al.* (2011), says that there is a need for solid knowledge to be able to identify pupils with dyslexia and coexisting problems as early as possible. The study shows that there seems to be a delinquent behavior in participants with reading disabilities. I agree with this study in regards to the existing relation to dyslexia and low self-esteem consequences. That is why dyslexia has to be dealt with along with behavioral problems and this is when the intervention of psychologists can be beneficial.

According to Badian (1992), dyslexics' success is achievable through considerable counseling. He says that through a program of identification and appropriate instruction, dyslexics can achieve a high degree of literacy and social skills. Dyslexics are talkative but with a tendency to use jargon. They can also be clumsy and show a lack of attention. Some can become shy and introverted, unable to display affection and have poor social perception with a tendency to depression. There are also signs of having poor peer relationships and they have difficulty accepting criticism.

In regards to these last insights we need to consider that schools are social environments that help students develop skills for the future. If parents, as well as teachers, surpass the stigma of disability in dyslexia and become well informed in regards to it, dyslexics can have the support needed and become successful in many ways, exceeding the average expectations.

2.2 Dyslexia in the Mexican context

In Mexico, unfortunately, dyslexia has not been seriously considered in educational programs and though our government is trying to instill quality in education, the fact is that

the topic has not been given the importance that it deserves. The so-called *escuelas inclusivas* are a good example of this, but their main focus is disabled children. In addition, Ruiz-López *et al.* (2010), in their work titled *Escala para identificación de indicadores de dislexia en adolescentes de educación media y media superior* conclude that teachers in Mexico generally do not know how to help a dyslexic student to learn.

As a mere example of the latter, a section of the National English Program in Basic Education (NEPBE) in the Academic Support for English Language Teachers - Cycle 1 (<http://www.sepbcs.gob.mx/>), advises teachers to introduce students to written texts and non-verbal language in order for them to have a knowledge of the writing system in English. One of the exercises it proposes is the written form of proper names. This demonstrates the little importance given to dyslexics when learning a second language because it takes them to writing at a very early age. This last recommendation is thought for students of around 6 to 8 years old.

In a general translation from the original Spanish to English of specific sections that refer to the aims for this program, it considers that students: reflect on the writing system functioning, get familiarized with different types of texts, explore children's literature, use linguistic and non-linguistic resources to give information about themselves and about their environment and in the section of materials of that program, printed resources are considered as crucial because of their influence in learning a second language.

In regards to this, I am of two minds about the fact that educational programs are exposing young learners to read and write in English at a very early age. On the one hand, it is important for young students to know that there is a difference in English and Spanish in regards to spelling and phonology. But on the other hand, the importance given to grades is questionable. It is true that this program also offers this academic support as a guide and

that teachers must adapt, change, simplify or expand them according to their planning, characteristics of their students, different variables and conditions that influence the organization of work in class. Nevertheless, there is a need for further study and consideration in regards to second language acquisition in young dyslexic learners now that our educational system considers English as a mandatory subject in all schools throughout the nation.

Lately the Mexican educational system is asking schools, both private and public, to try as many different approaches as possible to ensure the students' successful permanence in school. Since 2010, *LAS NORMAS GENERALES DE CONTROL ESCOLAR* (GENERAL REGULATIONS OF SCHOOLING CONTROL) from Secretaría de Educación Pública (SEP) ban expelling students, mainly because students are minors and have rights. This will make schools try as many strategies as possible in order to help the student that has some kind of problem.

While this debate continues and Mexico's Educational System does not consider dyslexia, something needs to be done in the classrooms. If the child is lucky then parents, teachers and peers will intervene positively with his/her learning process, but what if she or he is not that fortunate?

2.3 Successful stories of dyslexics

Not everything that is related to school is negative for dyslexics, and what has been said so far does not consider overprotecting dyslexics. Individuals with dyslexia frequently display outstanding strengths; they are creative, visual thinkers. Their unique abilities often make them successful in art, science and technical fields.

The success with dyslexics depends on not mistaking their reading, writing and space orientation difficulties for a lack of ability or interest. If a different approach is

provided according to their needs then they can easily succeed. In the United States, Texas has become an example for other states and countries. Texas law mandates extensive programs for dyslexic learners and all schools are required to have a dyslexia specialist (Schachter, 1990).

Dyslexics became successful when early in their lives someone has been supportive and encouraging and when they have found an area in which they can succeed. In some cases, strengths are obvious and self-esteem has been kept intact, but most strengths of dyslexia are subtle and less obvious. There is a tendency of adult successful dyslexics to help others. Some have become teachers, counselors, mentors and others are true examples in their areas of success (Ryan, 2004).

Throughout my own praxis I have had many students that were unfortunately labeled as lazy and were even expelled from their schools. Behind apparent laziness there is always a reason. Not one child wants or strives to be lazy. Some of those reasons are related to dyslexia. Two of those students, somehow, after struggling in several schools finally finished high school and got a bachelor's degree. Currently, one of them is a very famous photographer and the other holds a doctoral degree in physics from Oxford. Was it really necessary to call those students lazy? Was it necessary to expel them from their school, not from one, but from several different institutions?

Some famous and talented people, who are suspected to have had dyslexia, include Albert Einstein, Thomas Edison, Leonardo da Vinci, Winston Churchill, George Patton and William Butler Yeats as mentioned by West in Waddington & Jacob (1996).

Sir Richard Charles Nicholas Branson is a dyslexic English businessman and investor. He is the head of the Virgin Group, which comprises more than 400 companies.

He explained that his dyslexia has been a motivator in building his company as well as giving him a “business edge”.

In the field of computer graphics and simulation, dyslexic artists, scientists and technologists are often leading innovators. An example of this are the top code breakers, who can crack complex problems **because** of their dyslexia and this condition was announced as “Britain’s secret weapon in the spy war” by the British electronic intelligence agency called The Government Communications Headquarters (GCHQ). Dyslexics are considered puzzling extremes in talent. Schools almost never teach or test what dyslexics are good at, but life does (West, 2014).

The renowned author, main advocate of dyslexia, Thomas West, is also dyslexic. He has given conferences in seventeen countries around the world about the topic. He uses phrases like “thinking like Einstein”, “big picture thinking”, “out of the box thinkers”, “see what others cannot see”, and “an unwrapped gift” when referring to dyslexia.

The list of successful stories is fortunately long and this is very inspiring and enlightening. Through these lines, success was present for dyslexic people. These people were children. Their stories and their learning processes could also give us viewpoints for our dyslexic students.

2.4 SUMMARY

Teachers are responsible for students’ learning. What can we do, as teachers, if we have one, two or more dyslexic students in the classroom? Do we have to wait until the academic debate comes to an agreement? The student needs help. Without considering causes, definitions or debates there are teaching methods that can help these students. Even if the teacher has only a slight suspicion that a student is dyslexic, these ideas can enhance the students’ results.

How can parents and teachers help? The main interest for this study is EFL for young dyslexic learners. Thus, this study explores problems and solutions in regards to English learning and dyslexia.

Over the course of this study, a lack of interest, information or knowledge about dyslexia in Mexico became more evident. I had already lived the unfortunate experience of having students' parents telling me about my absence of credentials to suggest that their child might be dyslexic. Dyslexia is not a disease; it is a different way of arriving at the same place than the rest. In order to identify dyslexia there must be a consensus in the matter and there is not one yet, unfortunately.

In this chapter I have provided the theoretical foundations for my study. I gave a general definition of dyslexia. This was followed by a discussion of the current thinking on this condition framed in the two major contrasting branches of the thinking of dyslexia - i) as a disability and ii) as a condition, much like the other conditions that teachers have to take into considerations when planning instruction. I have established my position in the debate as that of the latter. The next chapter describes the methodology based on the framework constructed in this chapter used for this study.

CHAPTER 3: RESEARCH METHODS

3.0 Introduction

3.1 Research Design

3.1.1 Pretest-Intervention-Posttest Design

3.1.2 Document Review

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3.3 Data Handling

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3.7 Summary

3.0 Introduction

This chapter describes the methods used to collect data for this study in order to answer the research questions posed in Chapter 1. Correspondingly, the data was analyzed using a specific approach to my inquiries observing changes in the students' performance associated with the use of different strategies and teaching methods (Dimitrov & Rumrill, 2003). This work fits into the broad area of educational research because it aims to improve education and at the same time intends to contribute to knowledge.

This research was *undisclosed* in response to the academic debate mentioned previously as well as to the sensitive nature of the subject. The main idea for this work was to look for studies and research in the literature on dyslexia in addition to social media support to find out what different didactic materials and methods can help dyslexic students to enhance their performance in the process of learning a foreign language in elementary schools in my particular context. Once I had sufficient material, the goal became to put it to the test and see if those findings made a difference in my dyslexic students' performance.

Dyslexic students' beliefs, reactions, comments and accomplishments were considered in a researcher's journal. To provide materials for the observations made in the journal, a pretest – interventions – posttest design was used to measure a change (if any) in the students' performance associated with the use of different didactic materials and teaching methods in combination with an information-rich participant approach that consisted in selecting from a pool of potential cases the ones that most accurately represented the features I was interested in (Patton, 2003; Marshall & Rossman, 2006), in my case, dyslexic students. This information-rich participant approach in qualitative methods was convenient for this study because it uses detailed descriptions of situations, actions, people, relations, and observed behaviors along with straight quotes from individuals about their experiences, attitudes, beliefs, and thoughts (Patton, 1990).

3.1 Research Design

This study used three different data collection strategies: a pretest-intervention-posttest design, document review and crowdsourcing.

3.1.1 Pretest-Intervention-Posttest Design

A pretest-intervention-posttest design was used for comparing groups and to measure the degree of change as the result of interventions. It consists of a baseline measurement – the pretest, an intervention, in which additional data can be gathered via qualitative methods (e.g., researcher diaries, participant diaries, observations, interviews) followed by a posttest. The pretest and the posttest are then compared and analyzed to determine the level of change as a result of the intervention.

Advantages and disadvantages

Using this design, education researchers can find a way to monitor the effect of a new teaching method in a group of children. We can determine if there is a change in behavior or in results after an intervention. Another advantage involves the possibility of extension considering more than one intervention in the same study. It allows making many comparisons at different stages. At the same time, one of the disadvantages is that there is no true way to prove that the intervention or interventions were the sole factor responsible for the changes measured in the posttest, or if observable changes resulted from other variables.

Applications

This design is mainly used in medical, psychological, and educational research. An example of the application of this design in education is the one associated with testing out a new teaching method.

Suitability for the study

This design is suitable for my study because the objective of it was to explore the effectiveness of various didactic materials and teaching methods for dyslexic students in a typical group in the research location.

Besides using a pretest-intervention-posttest approach and an information-rich participant approach, a document review approach was also used (Marshall & Rossman, 2006) to help answer Research Question 2, which is related to teaching methods that could help improve dyslexic students' academic production, their general outcomes and their attitude towards learning in the process of acquiring a foreign language. I included the document review approach for teaching methods because in my research context the

methodology is already settled with little possibility of changing anything from the established program. By using this combination of a pretest – intervention – posttest design with an information-rich participant approach and document review a more complete and thorough study was achieved. Thus these approaches are not mutually exclusive, each approach serves a slightly different purpose. Because research and evaluations often serve multiple purposes, more than one qualitative sampling strategy was necessary. The underlying principle that is common to all these strategies is selecting information-rich cases.

3.1.2 Document Review

Document review is a way of collecting data by reviewing existing documents. The documents may be internal to a program or organization or they may be external. Documents may be hard copy or electronic and may include existing literature, reports, program logs, performance ratings, funding proposals, meeting minutes, newsletters, and marketing materials (Marshall & Rossman, 2006). In my case I used existing literature.

Advantages and disadvantages

Some of the advantages are that it is relatively inexpensive. It is also a good source of background information and provides a behind-the-scenes look at programs that may not be directly observable and it may bring up issues not noted by other means. It is unobtrusive and nonreactive because it can be done without disturbing the setting in any way (Marshall & Rossman, 2006). Some of the disadvantages are that the information may be inapplicable, disorganized, unavailable or out of date. It can also be biased because of selective choice of information and this could be

incomplete or inaccurate. It can also be time consuming to collect, review, and analyze numerous documents (Lusthaus, Adrien, Anderson & Carden, 1999).

Applications

This form of collecting data can help us find information about history, philosophy, and operation of the subject we are evaluating. It can also help us to better understand it and can help formulate questions for interviews, questionnaires, or focus groups and to develop an observation guide. It is used for education but litigation cases use this the most.

Suitability for the study

This method is also suitable for my study because another objective of it was to explore different ways to help dyslexic students to perform better at school. The collection of data is necessary to have an ample panorama of what can bring success to these types of learners.

3.1.3 Crowdsourcing

Crowdsourcing is a type of participative online activity in which an individual, an institution, a non-profit organization, or a company recommends to a group of individuals of varying knowledge, heterogeneity, and number in which the crowd participates bringing their work, money, knowledge and/or experience entailing mutual benefit (Estellés & González, 2012).

Advantages and disadvantages

One of the advantages is that we can gather the most updated information in regards to any topic. Additionally, opinions of experts and from people that have experience or who are closely related to the topic of interest are easily accessible. Crowdsourcing provides researchers with the ability to gather a large amount of

data. Furthermore, using crowdsourcing, researchers can collect data from populations and demographics they may not have had access to locally improving the validity and value of their work. It is a cheap way to gather information that could generate good results because of the updated information and the access to a wider group of experts (Laemmermann, 2012).

The disadvantages entangled the possibility that the information provided might not be applied to the target context. This information is usually disorganized and time consuming. It can also be biased because of selective choice of information and this could be incomplete or inaccurate. However, when varied sources are used, these flaws become minuscule.

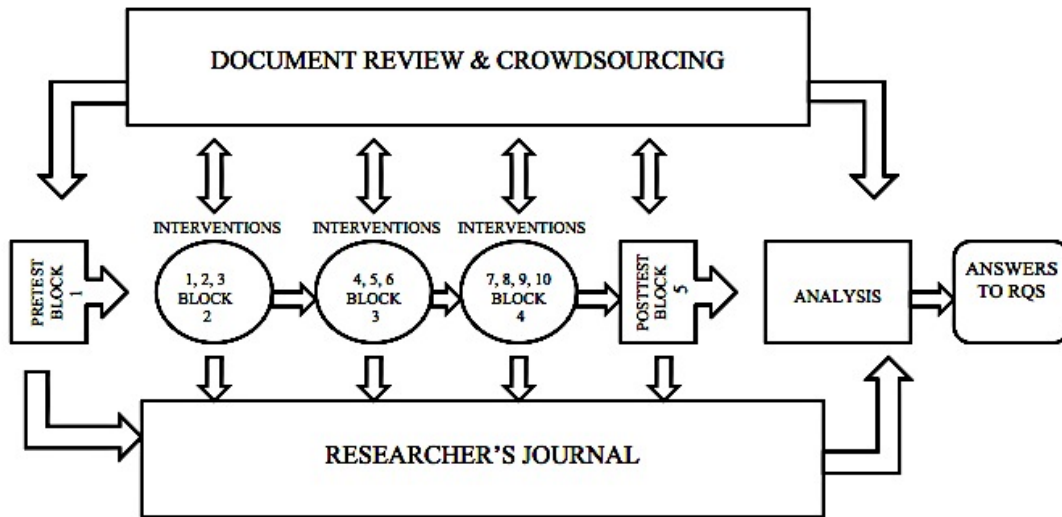
Applications

This type of data collection is innovative and can have numerous applications. It is highly used in science, manufacturing, biotechnology and medicine as well as in astronomy, journalism and politics. It is a form of having handy collective intelligence.

Suitability for the study

Although there is enough literature review to support this study's findings, the printed available versions found were not the latest and most modern theories in regards to dyslexia. Crowdsourcing material supported this study's perspective of dyslexia as a condition not as a disability and it became a less expensive way to obtain current information about methodology and didactic material.

Figure 3.1 Research design



3.2 Participants

It is commonly known that the manifestation of obvious reading difficulties could give us a suggestion of dyslexia. It is also thought that a teacher can observe a child’s behavior in relation to literacy problems and cognitive aspects in the classroom that suggest that a child could be dyslexic. But in order to validate the detection of it, a special test with unique characteristics for this undisclosed case study was needed. I considered the most common and recognized tests for dyslexic children, but the right one had to avoid direct involvement from the participant due to the fact that I worked with young learners in this alternative study. Davis’s test (1992) seemed a good choice for this type of study; however by a direct suggestion in an e-mail from Thomas West referring to this kind of work, in thesis dissertations we need to rely on “generally accepted criteria” (Oct.23, 2014), hence, another test had to be found.

The choice was placed on *The Hong Kong Behaviour Checklist for Primary Students: Developing a brief dyslexia screening measure*, (Chan, Connie, Hob, Chung &

Suk-han, 2012) for several reasons. It is intended for primary students; it does not include the direct participation of the student; it is academically recognized and has a generally accepted criteria. The use of a checklist can help teachers in early detection and can help with the necessary referrals for a follow up assessment. This checklist includes the assessment of some of the following characteristics: recognition of words when reading or writing, dictation problems, spelling mistakes, adding or missing words in sentences, a need to hear a message several times, etc.

So, the participants were selected as a research group based on two main factors: 1. The results obtained from *The Hong Kong Behaviour Checklist* to help me identify the ones who were potential dyslexics, and 2. Physical evidence in the classroom that showed imminent signs of dyslexia: letter reversals such as "d" for "b", word reversals such as "tip" for "pit", inversions such as "felt" and "left" to name a few.

The participants' names were registered using a special code as in student 1, student 2, and so on (S1, S2, S3...) to fully protect their anonymity. By the end of Block 2, close observations of different data showed one more participant who was not identified previously due to her chameleonesque expertise in disguising the condition, very common in dyslexics. This participant was registered as SXP as in Student Extra Participant.

3.3 Data Handling

In order to have meaningful and useful data, the information for this study was gathered and recorded in a systematic manner. I used the grades of the participants' academic periods that in my context are called "Blocks" as my system of collection. These different Blocks gave me the essential accuracy, integrity and validation to an appropriate data handling because they were dependable and meaningful.

3.3.1 Research Journal

A research journal is useful in qualitative studies because it helps the research keep a detailed account of the process as it unfolds and monitors the development of the study (Creswell, 2008). Therefore, the main and constant instrument throughout the present study was the journal, where I gathered academic information in regards to participants' comments, as well as their feelings and reactions. This simple information tool allowed me to identify differences in performance and spontaneous comments in relation to the participants' reactions to different strategies. In a total of a ten-month period approximately, the evidence recorded in the journal became an invaluable source of information. Besides providing a basis for comparison for each student's progress through the intervention period, it also provided a means of comparing levels of progress between students. It offered a context for reflection and gave me an indication of the participants' progress over different periods of time. It also helped to outline what strategies, materials or methods were useful and which were not (The journal entries can be seen in Chapter 4).

Entries were introduced every time an intervention took place as well as at every end of each "Block". If the participants made any comment during the intervention, a specific entry was also introduced because that meant that it had, in some way, been memorable for them (see appendix A).

3.3.2 Pre and Post Measurements

Other instruments used to collect information as part of this research were the participants' grades in each of the five "Blocks" (Fig. 3.1 above). Each of those blocks was approximately one and a half months long. To provide the benchmark for the posttest measurement, Block 1 was taken as the basis of the study (Dimitrov & Rumrill, 2003).

The information gathered through literature and crowdsourcing was put into practice with a group of 23-second grade elementary students focusing only on the results of dyslexic students in the classroom. In other words, all students participated but only the difference of results in dyslexic students were registered. When Block 1 ended, these students' results were registered as a pre-test in the journal. These results focused on the evidence of improvement in the dyslexic students' results in different stages (Blocks) taking their term grades as a form of measurement.

The fifth term (Block 5) was the posttest. These results were compared to the pretest (Block 1). The findings showed improvement in the students' performance and not all results were related to only a number but to a general progress in the class performance. This meant that using certain intervention strategies can help dyslexic students (discussed further in Chapter 4).

3.3.3 Intervention Activities

To be able to conduct intervention activities, information in relation to helpful material for dyslexic students was collected using literature review and crowdsourcing (see Appendix B).

The compilation of researched material was then put into action as interventions, and final results (grades) of the second, third and fourth terms (Block 2, 3 and 4) were registered.

During Block 2 individual exercises were applied in which the students had to:

- a. Use clay to form letters and words to learn spelling using their kinesthetic skills and subsequently a "vocabulary test" with no academic validity and managed as a review activity for the whole group was applied. (Table 4.1)

- b. Find specific things in a group of pictures. Yellow paper was used for printing because it is believed to be a convenient color for dyslexics. (Table 4.2)
- c. Watch a video of word spelling and another “vocabulary test” was applied for audiovisual skills information (Table 4.3).

During Block 3, the intervention involved:

- a. Handing exams to the participants first, which was translated as more time for them to complete their exams.
- b. Giving more specific and personalized instructions.
- c. Seating arrangements, which were strategically thought out as well: the participants were very close to the board and to the teacher, avoiding noisy areas in the classroom. (Table 4.4)

During Block 4, interventions were related mostly to colors:

- a. Highlighters were introduced to all the class.
- b. The use of different colors to write in their workbooks, which are printed in black and white.
- c. The teacher and the students used different colors on the whiteboard.
- d. Introduction of what I called “magic eyes”, which are yellow shades to be used at any time by any student. (Table 4. 5)
- e. The use of technology for practice exercises using the dyslexia font.

My role as a researcher during this study was passive, allowing the children to react to the intervention freely. The observations included changes in the students’ performance and in their grades as well as changes in their learning attitudes; whether the student felt confident, demonstrated positive attitude and felt at ease.

3.4 Data analysis

This section intends to provide the readers with a layout, this study’s interventions analyses. In the present study, data analyses were conducted in five phases, the first which was the pretest, three periods of various interventions and the last, which became the posttest that compared the main variables of interest to identify potential change. These variables were the results of the participants’ grade averages during the interventions. This

study uses a type of action research because every collection of data was followed by a period of analysis and reflection on that data (Tables 4.1-4.7). This period conditioned the next phase of data collection, which helped to address the original research problem in reference to methods and strategies that could help dyslexic students at this age in the process of acquiring a foreign language (Oliver, 2014).

Qualitative data analysis is an interactive and reflexive process that begins when data are collected rather than after data collection has ceased (Stake 1995). In this study, data consisted of manual transcriptions of participants' natural comments of the exercises as well as my own observations in reaction to the exercises and the results obtained from the "vocabulary tests" applied after the different interventions (Tables 4.1 and 4.3) No specific transcription conventions were used since the analysis was concerned with what was said and not so much with how interaction developed, nor with what specific words individuals made use of.

As a next step, I started category construction as Merriam (1998) suggests: jotting down notes, comments and observations in the journal in reference to "vocabulary tests" because I could not keep them, as they are part of the students' notebooks/portfolios.

Qualitative methods often incorporate the acquisition of data, which cannot be adapted to pre-existing categories (Dey, 1993). Therefore, I had to design my own categories in relation to the different interventions. There were comparisons of the data taken from the participants' different results and reactions to see if they met my expectations of general improvement.

The pretest results were included in the journal following the subsequent order. This present random order (Table 4.6) resulted due to the different adjustments that had to be

made in regards to the final selection and was not changed to preserve each participants' place in this study in accordance to the indicators of intensity of dyslexia.

Because this study was undisclosed, which was certainly one of its limitations, most of the analysis of the different data was qualitative and based on my journal entries, the children's comments, their external behavior as well as the results of the pre-tests and post-tests.

3.5 Assumptions of the Study

An assumption is a realistic expectation of what we believe to be right. It is a principle accepted as true based on logic or reasons but that has not been proven or verified. Based on general beliefs I attempted to discover a correlation in dyslexia matters in elementary students in regards to their English learning process. Therefore, this study is based on the following assumptions: dyslexia is not a disease, dyslexia is not a disability, dyslexic children can learn another language and finally there are materials and activities, which can help students with dyslexia.

These common-sense assumptions provided a basis to develop and influence this research along with evidence to support the general outcome.

3.6 Limitations of the Study

The limitations of the present study were mostly related to the undisclosed procedural reasons that apparently could decrease credibility of the research findings. These methodological limitations resulted from some factors related to the undisclosed nature of the topic, as it had to be an undisclosed study. Nevertheless, the study was conducted in a serious manner based on strong sources to avoid lack of reliability.

It is important for the reader to consider that I contemplate my low experience level as a researcher as another limitation for this study. This work had great support from

several experienced mentors that were able to guide me through my study and find logic within my research process.

3.7 Summary

This chapter presented a summary of the main stages of the present study design, the participant selection process and interventions were described as well as the results obtained. Finally, a data analysis outline and procedure was offered. In the next chapter I will present my findings and answer the research questions of this present research.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.0 Introduction

4.1 Research Questions

4.2 Results

4.3 Selection process and Interventions

4.3.1 Excerpts of researcher's journal

4.3.2 Intervention 1

4.3.3 Intervention 2

4.3.4 Intervention 3

4.3.5 Interventions 4-6

4.3.6 Interventions 7-9

4.3.7 Intervention 10

4.4 Summary

4.0 Introduction

This chapter presents the findings obtained from the different interventions as well as the comparisons of the pretest initial results with the posttest final results in order to see if there was an impact on the selected group of participants. This chapter also discusses the characteristics of the participants, the different activities used as interventions, the students' reactions and the results of the dyslexic students' academic grades. In order to simplify the discussions, tables and graphs were used to summarize the results.

4.1 Research Questions

The following research questions, presented in Chapter 1, will be examined in this chapter in order to provide evidence of improvement, which supported the questions that interested the present research.

RQ1 - Which teaching methods can help the study group of dyslexic students to improve their academic production, their general outcomes and their attitude towards learning in the process of acquiring a second language?

RQ2 - What learning strategies can help the study group of elementary dyslexic students?

4.2 Results

Teachers are essential to help identify dyslexics in the classroom by observing signs of literacy problems and specific cognitive characteristics (Chan, Ho, Tsang, Lee, & Chung, 2003, 2004). Therefore, it is important to have at least some awareness in regards to the representative signs of dyslexia so teachers can help with a preliminary screening to justify a subsequent assessment. It is generally known that dyslexia is related to problems with copying from the board, dictation problems, mathematics (order of numbers), memory, concentration, sequencing, motor coordination, and spatial orientation along with social emotional adjustments.

There is a general growing international concern associated to dyslexia that has prompted research at different levels: neurobiological, cognitive and behavioral as well as continuing efforts in identifying dyslexia to ensure positive learning experiences and prevention of further problems in dyslexics (Chan, Connie, Hob, Chung & Suk-han, 2012). Some of these studies are represented by Coon, Waguespack, and Polk in their work *Dyslexia screening instrument* (1994); Reid in *Dyslexia: A practitioner's handbook* (2003); Smythe, Everatt and Salter, in their work *International book of dyslexia: A guide to practice and resources*, (2004); and Snowling's *Dyslexia* (2000) to name a few.

However, as mentioned in Chapter 3, the present research needed a special test due to the nature of this present undisclosed study. Considering common characteristics present in dyslexics from various serious research, the choice rested on *The Hong Kong Behaviour Checklist for Primary Students: Developing a brief dyslexia screening measure* (Chan, Connie, Hob, Chung & Suk-han, 2012) which is the result of prior studies and versions and which is currently employed in the public-sector in China especially for first and second graders used as a short dyslexia assessment measure. This test provided the

necessary anonymity that eschewed standing dyslexics out and keeping the rest of the classroom unaffected.

The findings that answer RQ1 are presented using excerpts from the journal as no methods were actually entirely applied, due to the fact that changing teaching methods involved direct participation putting at risk the nature of this undisclosed study. These excerpts from the journal defined which teaching methods could be helpful for dyslexic students according to the different sources consulted. An Information-rich participant approach for qualitative methods was primarily used to answer this research question because it uses detailed descriptions of situations, actions, people, relations, and observed behaviors as well as quotes from the participants in regards to their attitudes, beliefs and thoughts considering the sociocultural perspective for this study.

The collection of data was supported by a document review approach (literature, newsletters and crowdsourcing) because, as mentioned previously, English teaching program was established in my context with little possibility of change. Nevertheless, there were some possible accommodations that included the use of certain teaching methods recommended for younger students in general that could also help young dyslexics because they take some of the pressure off writing and reading and focuses on the oral aspects of the language.

Therefore, in order to answer RQ1 and RQ2, the journal notes based on observation and reflection periods were followed by an explanation of why some teaching strategies and methods can be useful or not, including comparisons in students' performance, learning attitudes, and confidence in order to validate findings. As the reader will notice, no specific transcription conventions were used since the analysis was concerned with what was said

by the participants jotting down notes, comments and observations in the journal in reference to my observations.

4.3 Selection process and interventions

Twelve-second grade elementary students initially showed signs of dyslexia. Subsequently a pre-test was performed using the target students' first academic grades, which were obtained after a period of standard work of around a month and a half. In my context, this period is called Block 1. Interventions were administered according to what was gathered in the literature review and the crowdsourcing material at different intervals: Block 2, Block 3 and Block 4.

During Block 2, some of the students showed less signs of dyslexia probably caused more to immaturity than to the condition itself and were removed from the study, whereas other students were fully confirmed until five dyslexic students were identified in this classroom. There was a final addition to the group of participants. It was a girl who demonstrated good strategies to disguise her condition, commonly done in dyslexics. I had not anticipated the difficulty of choosing the participants and it took me some time to select the final ones. I had to revise the literature several times in order to be more precise.

Three boys and three girls became the participants. All of them were seven years old at the time of the selection. One of the participants complained recurrently of stomachaches, had stress manifestations and missed school frequently. Another of the participants had a sister with the same condition in another grade, which endorses the genetically inherited characteristics of dyslexia. Three of them exhibited shyness while the other three excelled in their oral participation.

4.3.1 Excerpts of researcher's journal

The following excerpts of the journal will explain how participants were selected and the impressions of students and myself related to the activities used as interventions. These excerpts are notable from the rest of the text by using italics.

TEACHER'S EXCERPTS: SEPTEMBER. BLOCK 1.

Observation. Close observation on Ss. 12 Ss showed signs of dyslexia. Using the Hong Kong list helped me tentatively identify seven students. Continuous observation will help me reduce that number (probably).

I concluded that only 5 showed strong signs of dyslexia. The time lapse was around 2 months from the beginning of the school year until the first block test. Results of all 12 students were registered for future references.

The students that were removed from the study had distraction problems. An example of it was S6, smart kid but was talking all the time. S11 had a temper problem confused with frustration more than a personality flaw or personal family problems. S12 when relocated showed less signs of dyslexia and was removed from the study due to hyperactivity factors but not dyslexia.

The decision of what tasks could serve to my purposes laid on the ones that could be disguised as normal everyday VOCABULARY PRACTICE EXERCISES. All activities had different characteristics. Some were visual, others kinesthetic, others were linked to listening practice taking aspects of different methods: The aural and communicative approach and audiolingualism.

The findings that answer RQ2 are presented using tables and graphs to help the reader understand the different stages and interventions taken place during the study. When possible, participants' beliefs, external behaviors, emotions and quotations were also identified and included in the tables in order to support the findings.

The strategies used were activities derived from the methods suggested by authors and crowdsourcing for this specific group of students. In Chapter 5 a more defined answer to this research question will be given as a conclusion.

4.3.2 Intervention 1

According to the crowdsourcing information collected for this study, the simultaneous use of multiple senses including auditory, visual and kinesthetic (multisensory) is thought to enhance memory storage and retrieval (Orton Gillingham approach). Through the same source, The International Dyslexia Association states that dyslexics have to have lots of practice in having their writing hands, eyes, ears and voices working together for conscious organization and retention of their learning.

The first intervention had to do with the use of clay to form words learned in the vocabularies related to the lessons. The entire group participated but only the participants' results were registered. This activity helped the dyslexics engage in kinesthetic practice, which can be helpful to support students' learning through experience. Time was not a limitation to complete the task. Ten words were "dictated" and the majority of the study group had no or little margin of errors. There are distinctive difficulties in dyslexic students related to the order of words in writing (Baschera, 2011) and this "hands on" exercise helped them feel the words with their hands, giving them more time to process them in their brains and making less mistakes when they had to actually write them on paper.

TEACHER'S EXCERPTS. NOVEMBER. Block 2

Intervention 1

The whole group participated on this "hands on" dictation. Clay was distributed to the class and short words from their first lessons of their textbook were dictated. They were asked to form "snakes" in order to save time. There was a clear consolidation for dyslexics' detection through this exercise. Letters were inverted and sometimes the ones that showed more signs of dyslexia didn't even notice this inversion. Some participants made fewer mistakes through this exercise due to the fact that they were working with their hands, forming letters in a "3D" way.

S9 is older (in months) to the rest of the class but slow when completing tasks. S13 started to complain about stomachaches and wanted to miss school.

Anxiety problems. Although she enjoys the class, she feels she cannot handle pressure. After talking to her mom and recommending letting her work on her own regardless of her mistakes in homework, her anxiety lessened. No more stomachaches. S10 has the same problem as his older sister. They miss school a lot. S8 shows a characteristic classic in dyslexics. Wants to be the clown, cannot and is not interested in getting more than 8. His speaking abilities are extraordinary, loves contests where no writing is involved. Task-based learning methods were very useful for this participant. This method offered the opportunity of completing tasks reflecting real life. Playing games and realistic role-playing take away form and structures and developed student's abilities to do things in the target language with a subsequent feedback and language focus. This method offered flexibility because it can be combined with writing and reading tasks as well leading to more motivating activities. This participant could also be benefitted with the communicative approach, because he will engage in more meaningful and authentic use by using communication and interaction with other students.

The following table describes participants' comments and reactions related to Intervention 1.

Table 4.1 *Intervention 1. Clay exercise.* This exercise is related to kinesthetic skills in dyslexics. It seemed to help them to form letters with clay in order to remember the correct spelling. The students made "snakes" of clay to save time for the dictation. Then the teacher dictates words and they have to "write" them. It was interesting to see fewer mistakes than the actual and traditional pencil and paper. The mistakes had to do more with inversion of letters rather than misspelling.

PARTICIPANT	MISTAKES	COMMENTS
S3	NO MISTAKES	THIS IS EASY!
S9	NO MISTAKES	WHEN ARE WE DOING THIS AGAIN?
S13	NO MISTAKES	CAN WE DO IT AGAIN?
S10	3 MISTAKES	-----
S8	1 MISTAKE	IT WAS A "P"! (They had to write the word pot and the subject wrote dot, this comment was to clear that for him/her the letter was a p, not a d)
SXP	2 MISTAKES	-----

This table shows a strategy related to "symbol mastery" (discussed in crowdsourcing) which implied using clay to form words could help dyslexics spell better. The participants in this study had positive results (see Appendix C).

4.3.3 Intervention 2

Crowdsourcing suggests avoiding light text on a dark background, using colored paper instead of white and choosing matt paper to reduce glare. So, all students participated in an exercise in which the color of the paper was changed. There was a notable improvement on the speed of finishing a task related to telling time if the printed-paper was bright yellow and black letters. In order to keep the nature of this undisclosed study, all students did the exercise. There was no direct improvement of their grades in relation to colored paper because the exams in the context of this study are printed in black on white paper; only the crest of the school is in color.

TEACHER'S EXCERPTS: JANUARY. BLOCK 3.

Intervention 2.

Second intervention was related to the use of yellow paper. Some of them asked why we were using yellow paper. The answer was that I had extra yellow paper because it was cheaper. The students' comments while this intervention took place and the contrast in results will be part of a table in order to have a clearer idea of this strategy. After the second intervention a new member was added, now called SXP (student extra participant). Couldn't be identified because of her lack of presence in the class. She doesn't want to be noticed, very quiet. SXP shows another classic characteristic of dyslexic students: She was hiding behind a quiet disguise, copying from friends' work, expert in disguising her condition. She needs spatial strategies in the classroom; more time and close observation benefit her. Her work has improved due to motivational strategies. Right after she was identified and interventions applied, her grades changed, her mom came to say that she is very happy with our work.

The following table shows the results of using yellow paper versus white paper in relation to speed in reading.

Table 4.2 *Intervention 2. Finding Specific Things in a Group Of Pictures*. Photocopies were given to students of “Hidden Pictures puzzles”. Time was measured comparing how long it took for them to find these hidden pictures using first a common photocopy (black and white) and then another exercise using yellow paper printed in black.

PARTICIPANT	TIME ON WHITE PAPER	TIME ON YELLOW PAPER	COMMENTS
S3	12'	10'	Why are we doing this?
S9	14'	9'	Can I use different colors?
S13	12'	9'	Are we getting a sticker if we do it pretty?
S10	15'	13'	-
S8	11'	10'	I can't find the last one
SXP	15'	12'	-----

Although there are different perspectives in regards to the use of colors for dyslexics, this intervention actually shows progress. An explanation for it is that participants could have found the activity interesting and invested more attention to it or it could also have been that yellow and black contrast can actually help dyslexics read faster. Crowdsourcing clarified that a co-occurring condition of visual stress syndrome and dyslexia had to exist in order to benefit from this strategy (see Appendix D).

Figure 4.1 Yellow paper graph results. As depicted in this graph we can see that the use of yellow paper printed in black may be helpful for dyslexics in terms of time needed to complete a task.

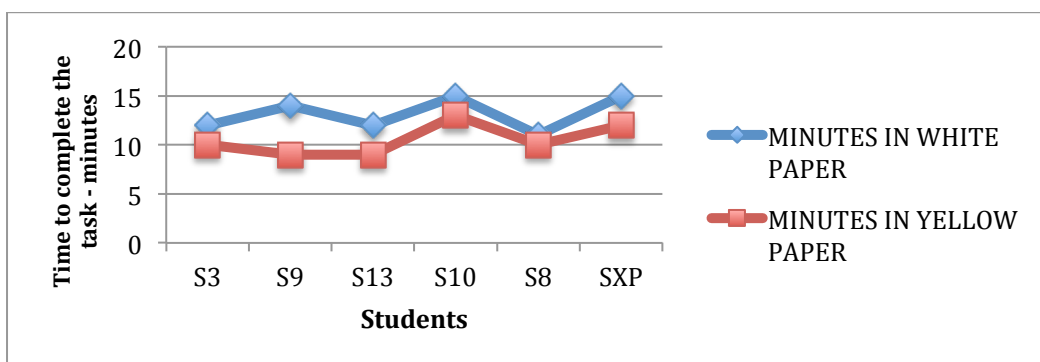


Figure 4.2 Example of yellow paper in contrast with black and white. Crowdsourcing suggested that this contrast of colors helps organize images in dyslexics' brains faster than white paper printed in black. Students were given different pages of the exercise. This illustration is only a sample to demonstrate the difference.



4.3.4 Intervention 3

Crombie (2000) led a study taking a multisensory approach to the learning of a modern foreign language with good results. A video was chosen to test this approach. The video had sound, letters and images and it was related to the alphabet and some vocabulary words. After the students watched the video and repeated the letters and words out loud, they were asked to take dictation in their notebooks. Most of the study group students got better results after this intervention.

TEACHER'S EXCERPTS: JANUARY. BLOCK 3.

Intervention 3.

All the students benefitted from this activity because it was not part of our daily routine and they paid closer attention. TV and students will always be friends and I am taking advantage of this in order to practice the method of aural approach using visual cues and grasping vocabulary and basic grammar through listening and speaking when students have a firm understanding of the spoken language and are mature enough to learn the written word, we can then start teaching students in grammar structures. This intervention would be also related to audiolingualism because students repeat phrases and practice pronunciation and intonation. The advantage of this method is the speed of learning and dyslexics can stay motivated

due to the lack of written work involved. It also aims to stimulate mechanical habit-formation through repetition of basic patterns, which can lead to an eventual fluency.

The following table indicates the participants' grades differences after watching a video using together sound and reading skills.

Table 4.3 *Intervention 3. Watching a Video of Word Spelling.* After the students watched a video related to the alphabet and some vocabulary, they repeated the letters and words out loud and were asked to take dictation in their notebooks.

PARTICIPANT	PRE-VIDEO RESULTS	POST-VIDEO RESULTS
S3	7	7
S9	7	10
S13	8	10
S10	5	7
S8	7	8
SXP	6	8

Using a multisensory approach (Crombie 2000) and recommended as well by crowdsourcing became a helpful strategy for the participants as demonstrated through this intervention (see appendix E).

Figure 4.3 Video intervention graph results. This graphic is very useful in regards to how dyslexics perceive and organize information in their brains. If we show something visually it is more important for them than when they only read something.

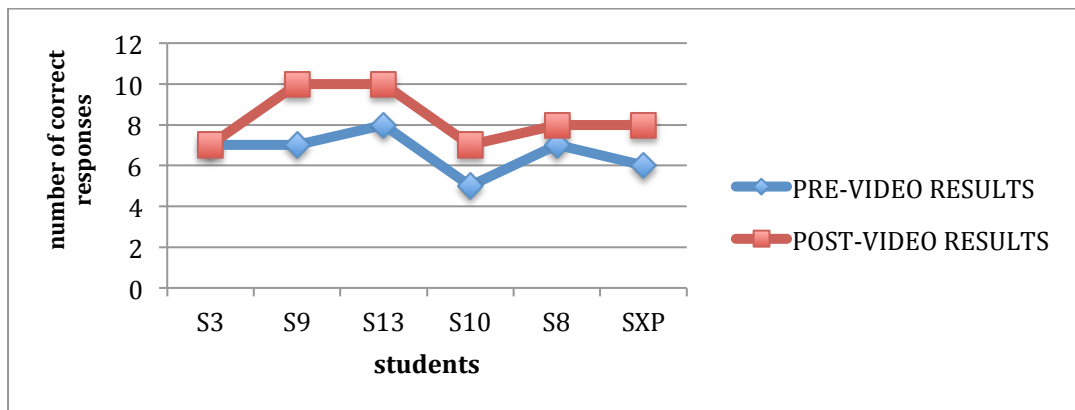


Figure 4.4. Image of video intervention. This image gives an example of the intervention using multisensory approach. Students had to watch the video, listen to letters and words and repeat them. Then, a dictation “quiz” was applied. The students responded to the quiz in their notebooks.



4.3.5 Interventions 4-6

These interventions were done simultaneously due to the fact that all involve two or more actions at the same time and all can be related to time. According to crowdsourcing suggestions in reference to DyslexicAdvantage.com (Fig. 4.5), giving dyslexic students extra time and reading instructions aloud, among other things, can help them understand better core subjects or even instructions in an exam because the content can become overwhelming. Shaywitz (1998) also suggests seating dyslexic students in the front row, closest to the teacher to be able to check their work and be able to help easily.

During these interventions, exams were given first to the study group. They were seated in the front row during class and examinations, more specific and personal instructions were given and their exams were collected last.

TEACHER'S EXCERPTS: MARCH-APRIL. BLOCK 4.

Interventions 4, 5 and 6

S3 benefitted with more explanation and more time for exercises. In class, what helped S13 was moving her to the front giving constant feedback and supervision, this subject showed tremendous progress. She was placed again in the back to see if her spatial situation had really done the trick for her. S13 new place in the back is not working. Her work has suffered tremendously. She was placed again in the very front of the class, right in the middle. Two quizzes show the big difference in

performance related to seating arrangements. The difference could be related to feeling more secure in the front, having the security of teacher's guidance, less noise and distractions. I would use collaborative learning methods with certain limitations considering time and specific tasks for dyslexics that can thrive in giving ideas to the group. Participants in general really benefitted from this intervention. Sitting in the front is giving **S10** a sense of security and has become more self-sufficient. In order to avoid the other students to notice an obvious extra attention sitting strategies were the solution. Teachers generally give exams first to the students seating in the front. When the exam was about to finish I placed myself in the back of the classroom and started to collect those exams first, which gave more time to dyslexics sitting in the front.

Figure 4.5 Poster shared in crowdsourcing from the DyslexicAdvantage.com association. This poster is suggested to be posted in every classroom to create awareness.

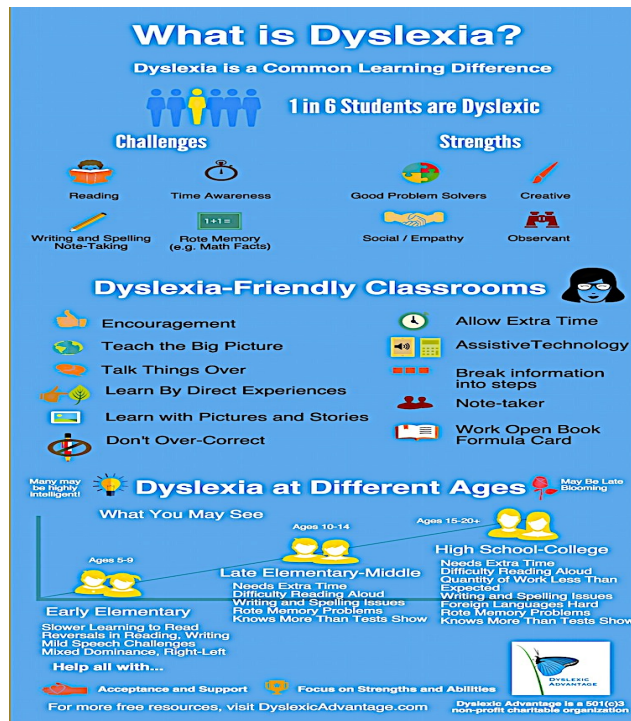
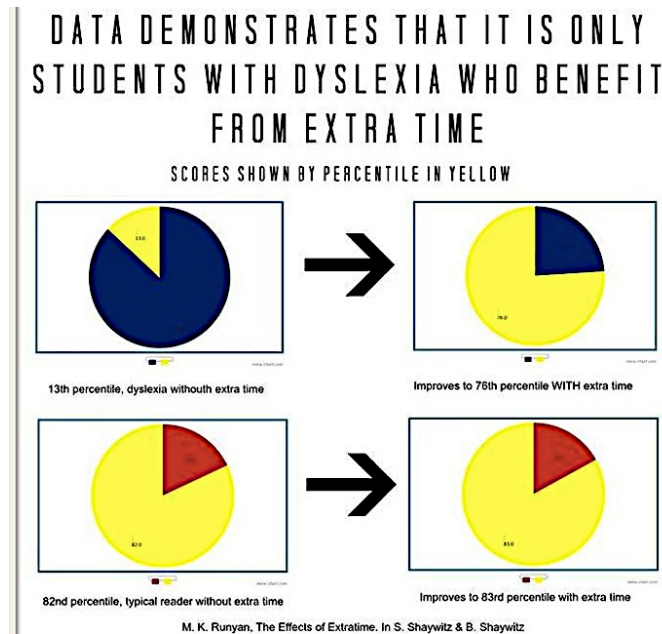


Figure 4.6. Pie charts from Bright Solutions for Dyslexia related to extra time in scores. Bright Solutions for Dyslexia shared these pie charts in crowdsourcing and it shows the impact of extra time on test scores. Research shows that extra time greatly improves the test scores of students with dyslexia, but does not have an impact on the scores of students who are not dyslexic. Dr. Sally Shaywitz quotes this study in *Overcoming Dyslexia*.



One of the most frequent recommendations for teachers found in the document review and crowdsourcing is giving dyslexics more time to complete their tasks as shown in the previous figure. The following table demonstrated the result of three different but simultaneous strategies: time management, instructions and seating arrangements.

Table 4.4 *Interventions 4, 5, 6. Time management, instructions, and spatial arrangements.* During Block 3 exam these strategies were used with the study group: handing exams to the participants first, giving more specific and personal instructions, seating arrangements. There was a general improvement except for two subjects of the study.

PARTICIPANT	BLOCK 2 EXAM	BLOCK 3 EXAM
S3	6.2	8.7
S9	8.2	9.5
S13	7	10
S10	8.2	6.5
S8	10	8.5
SXP	6	8.7

Four out of the six participants benefitted with the use of the recommended strategies. As this was an undisclosed case study I had to follow certain tactics that did not

make it obvious I was following them. I sat the participants at accessible seats for me to reach them for clarifications and handed and collected the exams first and last to give them extra time to complete their exams.

Figure 4.7 Graph results. Interventions related to time, instructions and seating arrangements. The previous table is depicted in a graph. All students benefited from the intervention with the exception of S10. This student misses school frequently and probably these interventions were not helpful for him for that same reason. S8 did not benefit from these interventions at least in exam scores for an unknown reason.

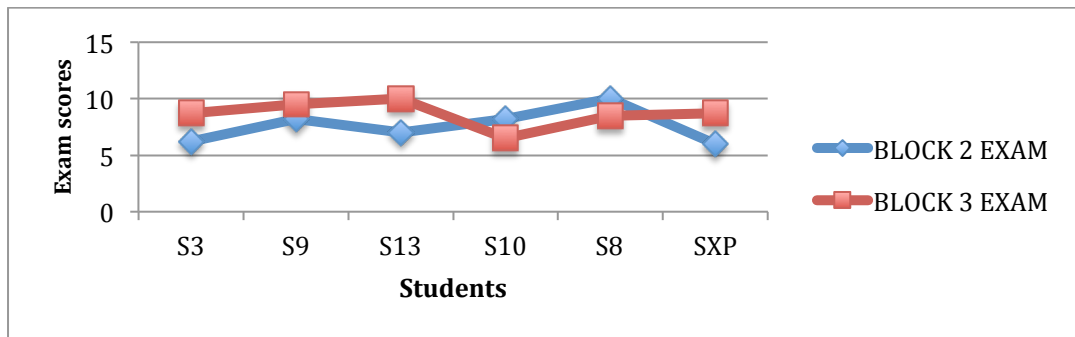


Figure 4.8 Example of a vocabulary quiz result related to seating arrangements. This simple vocabulary quiz shows results from S13 when sitting in the back of the classroom. Green marks belong to the teacher's revision. Blue/red marks belong to a classmate grading. Out of ten questions related to vocabulary, S13 got a grade of 3.

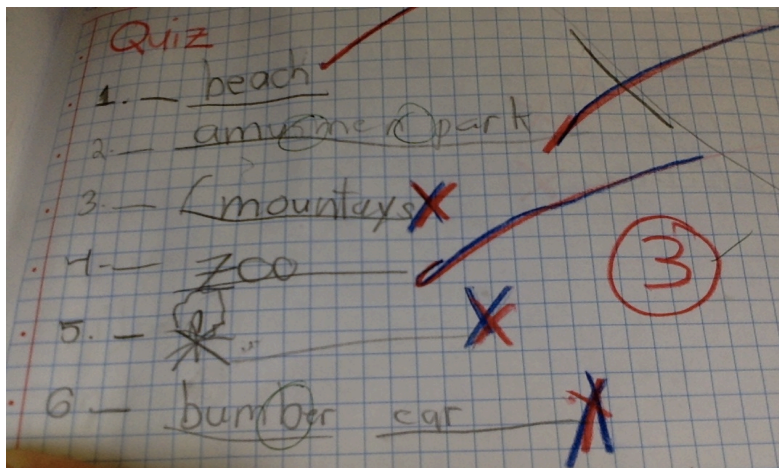
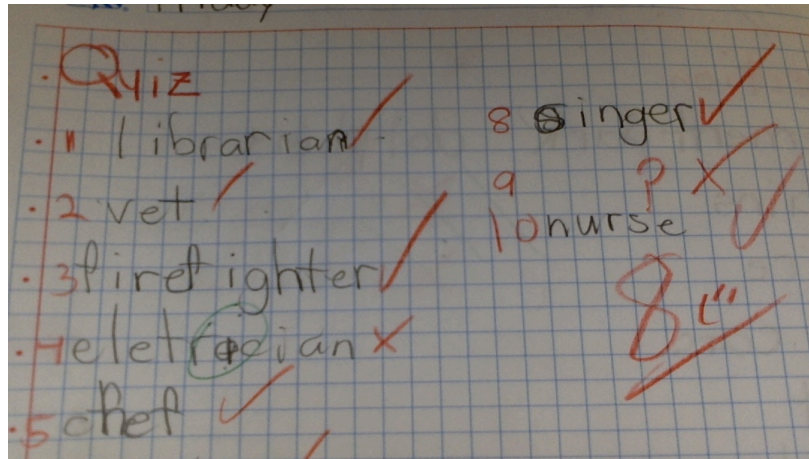


Figure 4.9 Example of a vocabulary quiz result related to seating arrangements after the intervention. S13 was placed again in the very front of the class, right in the middle. These two quizzes show the big difference in performance related to seating arrangements. This time S13 got a grade of 8. The general presentation shows order and more neatness in comparison to Fig. 4.8. The first shown quiz was taken two weeks prior to this second one. The difference could be related to feeling more secure in the front, having the security of teacher's guidance, less noise and distractions.



4.3.6 Interventions 7-9

These three interventions were related to colors. Intervention 7 was the use of “magic eyes”. I used this term for the children but in reality they were yellow tinted glasses. I brought a bunch of them to the class as part of a game. Only the ones with those glasses read parts of a text and used the technique of “stealing the period” for reading. This technique is amply used in my context. When a student is reading and gets to a period, anyone in the class may continue. During this intervention, only the ones wearing the glasses could participate.

Through crowdsourcing (Fig. 4.10) I asked if using tinted glasses could help dyslexics to read faster, as I had heard before from an optometrist and it helped my son in the past as well. Crowdsourcing mentioned that this has to do more with what is called Irlen syndrome, which is also known as Scotopic Sensitivity Syndrome. This syndrome is a perceptual processing disorder, not an optical problem. It is a problem with the brain’s ability to process visual information. This problem tends to run in families and is not

currently identified by other standardized educational or medical tests. Throughout my years of teaching, I have seen as a dyslexic that the letters move around in the paper and makes reading blurry. Using tinted glasses or tinted transparent paper on the actual reading has helped me and could also help dyslexics.

TEACHER'S EXCERPTS: MAY. BLOCK 4.

Intervention 7

The use of "magic eyes" was a distraction for the entire group at first. Only the differences noticed in the study subjects were registered after all the excitement of this gadget subsided. There seems to be an improvement in dyslexics work related to the use of certain shades when reading probably explained to the brightness of white paper. Tinted glasses results:

This intervention was put into practice with a reading exercise from their textbooks. Only the ones wearing glasses could read aloud one at a time. I distributed ten glasses and Ss read in a certain order. If they made a mistake (either getting distracted or pronunciation of an already known word) they had to give the glasses to one of their "neighbors". After that, purposely I left the subjects with their glasses on and all Ss had to copy an exercise from the board. All the students were free to comment on the experience of reading with tinted glasses at any time, but I only took notes of the ones that are part of this study.

There was a general improvement of the reading exercise outcome because all students were excited to be wearing glasses.

SPECIFIC COMMENTS OF THE SUBJECTS

S3 read faster. His comments included: Oh! Se ve mejor!!!!S9 made fewer mistakes. No comments. S13 was a little confused. She could not find the section where we were, but when we copied something from the board she copied faster and with less mistakes. No comments. S10 read faster and better. S8 was eager to read and he did it better than he normally does. His comments were: it's like magic. SXP was also eager to read and read faster than usual.

In general, the subjects agreed that they helped them read better. This intervention caused a great impact on all students and I will keep this activity as part of my usual program. I repeated this same intervention with no records with my other groups and some agreed on its benefit. I suspect there are other dyslexics in these other groups and this exercise got positive comments from them.

Intervention 8

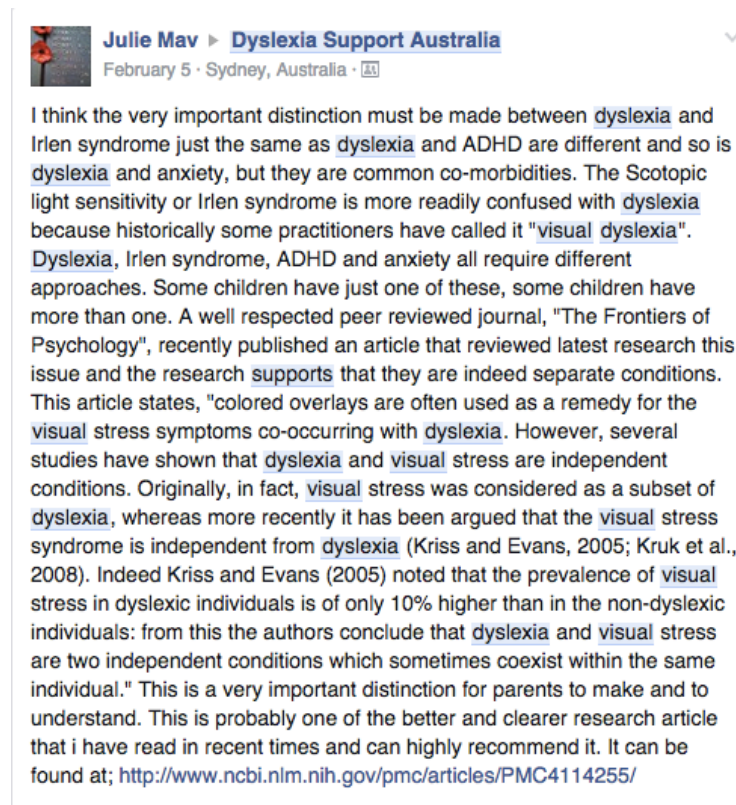
The use of the highlighter in the students' vocabularies in their notebooks helped all subjects to remember spelling of long/difficult words when studying for a quiz.

Intervention 9

Freedom of writing on the board was given and an array of markers of different colors was available for the students. The subjects tend to use red and orange markers when writing on the whiteboard. There is a tendency of avoiding black.

There was a general clearance to use colors in their workbooks when answering the exercises. All students had the liberty to follow the latter due to the undisclosed nature of this study. The subjects of the study showed a preference of using color pens or pencils instead of lead pencil.

Figure 4.10 Crowdsourcing explanation of the possible relation between dyslexia and Irlen Syndrome given by the Facebook page Dyslexia Support Australia. Due to this ample explanation, I decided to consider tinted glasses as one of the interventions.



This intervention was also put into practice with a reading exercise from their textbooks. Only the ones wearing glasses could read aloud one at a time. I distributed ten glasses and students read in a certain order. If they made a mistake (either getting distracted or pronunciation of an already known word) they had to give the glasses to one of their “neighbors”. After that, I purposely left the participants with their glasses on and all my

students had to copy an exercise from the board. All the students were free to comment on the experience of reading with tinted glasses at any time, but I only took notes of the ones that are part of this study. There was a general improvement of the reading exercise outcome because all students were excited to be wearing glasses. In general, the participants agreed that the glasses helped them read better. This intervention caused a great impact on all students and I will keep this activity as part of my usual program.

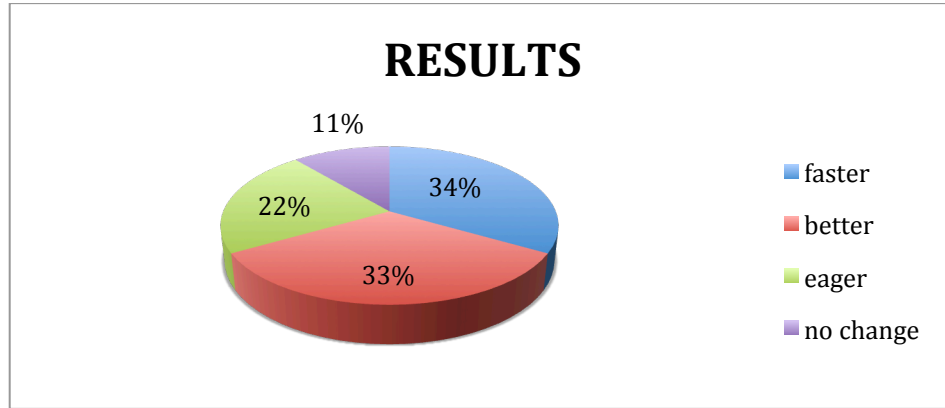
The following table shows the results after the application of this strategy. The fact that it was something “new” to their routine increased the students’ interest and concentration needed for the intervention.

Table 4.5 *Use of tinted glasses*. The use of “magic eyes” (tinted glasses) was a distraction for the entire group at first. Only the differences noticed in the study subjects were registered after all the excitement of this gadget subsided. There seems to be an improvement in dyslexics work related to the use of certain shades when reading probably explained by the brightness of white paper.

PARTICIPANT	OUTCOME	COMMENTS
S3	Read faster	“¡Oh, se ve mejor!”
S9	Read better than usual.	---
S13	Could not find the section where we were easily. Fewer mistakes when copying from the board.	---
S10	Read faster and better	---
S8	Eager to read. Read better than usual.	“Es como magia”
SXP	Eager to read. Faster than usual.	---

It is important to mention again that although this strategy is not aimed for dyslexics, there seems to be a correlation with other conditions. Different comments from crowdsourcing made me decide to use this intervention and corroborate results on my own (see Appendix F).

Figure 4.11 Results from the intervention related to tinted glasses. In general, the subjects read better (made fewer mistakes). There was a general improvement in the production of their reading outcome as it is represented in the following graph.



Intervention 8 was the use of highlighters (which tend to be yellow mostly) to study their vocabulary and its spelling for the following exam. Students were very excited to use a tool that is generally used by grown ups. Intervention 9 included the use of any preferred color in their workbooks and on the whiteboard. Freedom of writing on the board was given and an array of markers of different colors was available for the students. The subjects tend to use red and orange markers when writing on the whiteboard. There is a tendency of avoiding black.

There was general approval to use colors in their workbook when answering the exercises. All students had the liberty to follow the latter due to the undisclosed nature of this study.

The subjects of the study showed a preference to color pens or pencils instead of lead pencil as shown in the following table.

Table 4.6 *Interventions 8, 9. Use of colors*. There were two subjects S3 and S10 that had almost no positive reaction when freedom was given in relation to the use of color markers, pens or pencils in the workbook and on the whiteboard. Both subjects are boys.

PARTICIPANT	ATTITUDES	REACTIONS
S3	Same	----
S9	More participative	Brought highlighters and colors the next day
S13	Excited	Asked mom to buy more colors
S10	Same	Chose the same color for everything
S8	More participative	Decided to work neatly
SXP	Excited	Took more time. Fewer mistakes.

Participants seemed to avoid the black and white combination and were truly excited with the liberty to use different colors. From my own personal experience, dyslexics are easily identified by their own personal style in presentation of different tasks: homework, class projects, and drawings. During this intervention, recommended by crowdsourcing, dyslexics presented neater tasks (see Appendix G).

4.3.7 Intervention 10

A blog was published for the students to practice English at home at the beginning of the school year. During this intervention a special font for dyslexics was used during Block 5. The reading exercises created better results in comprehension and in speed of reading for the study subjects. Multimedia methods can benefit dyslexics' performance enormously because the use of computers can give students the freedom to choose colors, fonts, graphics and diverse activities.

TEACHER'S EXCERPTS: MAY-JUNE. BLOCK 5

Intervention 10

A blog was published for the students to practice English at home at the beginning of the school year relying on the computer-assisted language learning (CALL) method. During this month a special font for dyslexics was used. The reading exercises threw better results in comprehension for the study subjects. Multimedia methods can benefit enormously dyslexics' performance. The use of computers can give students the freedom to choose colors, fonts, graphics and diverse activities. Nowadays there is a massive assortment of language teaching material that can be found in Internet. Schools are allowing more and more access to technology benefiting students through numerous possibilities including researching, preparing more visual presentations using graphs and diagrams, solving interactive grammar, listening and vocabulary exercises.


This will be the end of the interventions for this study. *There was a feature that accompanied all interventions, which will be explained in chapter 5: Changing the perception of themselves as learners. The use of motivation and metacognition was always present (planning how to do a given learning task, checking their comprehension and self-evaluating progress). There is a great amount of activities that can help dyslexics at any level, but if we don't change their perception they will always feel that they are behind. Motivation becomes one of the most important "interventions" that we can have with our students. Metacognition will help them to identify their strong areas, their own strategies. There are differences between one dyslexic to the other, many factors that can make them different, starting from the way they are being educated at home, their own personal environment, therefore it is important for a dyslexic to identify what works for them.*

I also have noticed that active learning method could increase the students' retention and comprehension. Tasks become explicit. Students have the opportunity to provide personal insights and interpretation developing their own answers. Active learning can allow students to experiment with ideas, develop concepts and to integrate them into their own learning process. Games in class reinforce content and skill practice strengthening critical thinking when solving problems.

Suggestopedia can also help dyslexics; we always use music during exams and during specific activities. Students also enjoyed performing. They don't write, they don't read in public. Sometimes they just improvise.

Figure 4.12 Example of the use of a normal font. The following figure is an example of one of the exercises in the blog. This exercise was written using the normal type of font and black and white. We worked in class with this blog and Ss came to the computer to solve the exercise. Only the study subjects' results were registered.

Write the action word for these sentences.

Add the ending -s- if necessary 

1. I _____ (go) to school every day.
2. You _____ (read) a lot of books.
3. He _____ (drink) milk in the morning.
4. We _____ (listen) to music every evening.
5. They _____ (speak) about their day in the evening.

Figure 4.13 Example of the use of the dyslexic font. The following exercise was written using a font for dyslexics and a contrast of orange and black was used. There was a comparison in reading speed and comprehension registering again only the results from the study subjects.

Write the action word for these sentences. Add the ending -s- if necessary.

1. A cat _____ (like) mice.
2. Two cats _____ (like) mice.
3. One cat and one rabbit _____ (live) in the same room.
4. Three friends _____ (go) to the forest every autumn.
5. A real friend _____ (help) you if you need it.

As this was a combination of two different strategies, the results were very positive, although the majority of the participants found the type of letter unattractive probably because it is a completely new font for them.

The following table shows a fifty percent of participants' predilection to the dyslexia font; the fact that it was combined with the use of a colored paper threw positive results.

Table 4. 6 *Intervention 10*. During this last intervention several aspects were present for the conclusion of its results. The performance of reading relates on how well they read, the speed, comprehension and fluency. The range of errors was only measured in comparison to their history in reading matters and the personal preference refers only to their predilection between the shown exercises in figures 4.11 and 4.12.

PARTICIPANT	PERFORMANCE IN READING	ERRORS RANGE	PERSONAL PREDILECTION
S3	Improvement in fluency	Fewer	✓
S9	Improvement in speed	Same	✗
S13	Improvement in fluency and comprehension	Fewer	✓
S10	Improvement in fluency, comprehension and speed.	Fewer	✗
S8	Improvement in speed.	Fewer	✗
SXP	Improvement in fluency, comprehension and speed.	Fewer	✗

The errors present in the participants' reading performance were a good indicator that dyslexics can benefit from the use of this specific font, which is easily downloadable (see Appendix H).

Figure 4.14 Reading results using the dyslexic font. This figure represents the general improvement in reading using the dyslexic font in speed, fluency, and comprehension. The value of 1 represents only one in these three, 2 represents two in those and 3 represents an improvement in speed, fluency as well as in comprehension.

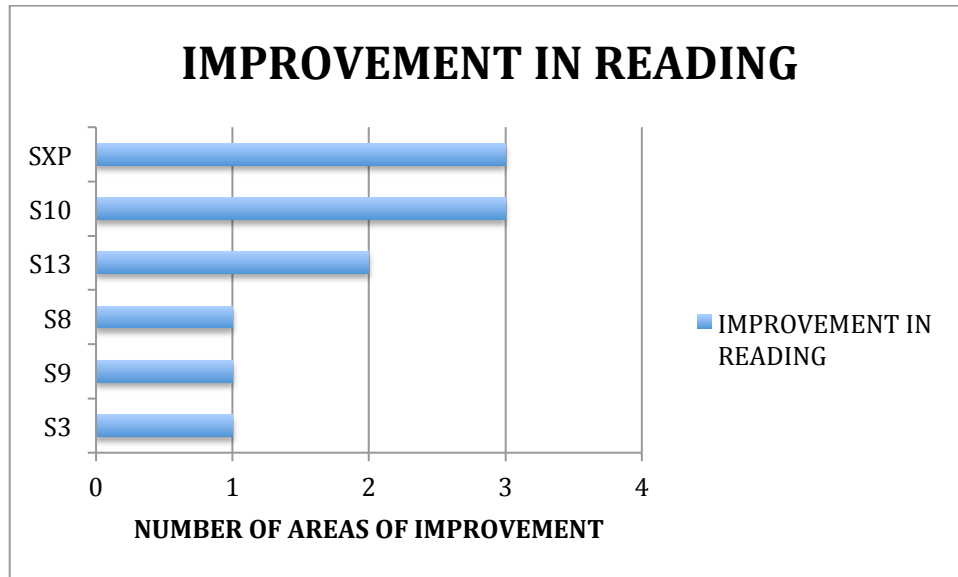


Figure 4.15 Errors in reading using the dyslexic font. This figure represents the errors range during the intervention shown in figures 4.11 and 4.12 where the majority of students made fewer mistakes and only S9 obtained a higher value of error probably due to the subject's eagerness to finish fast.

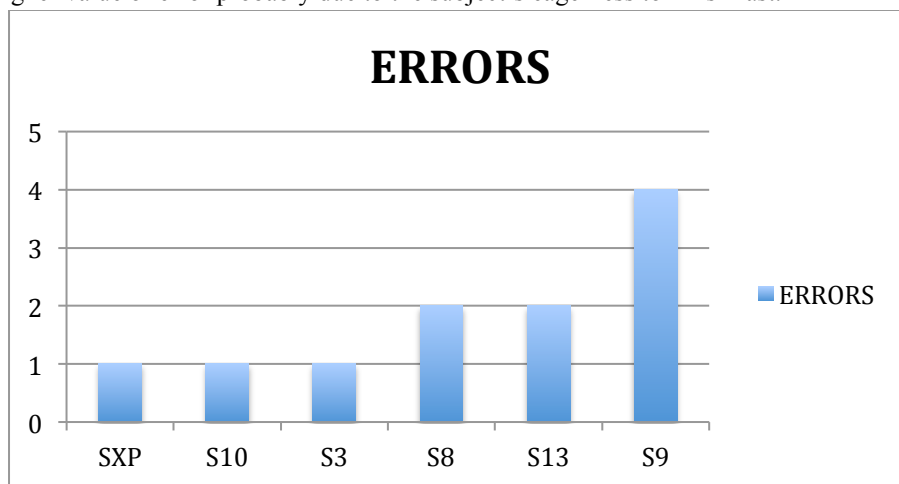
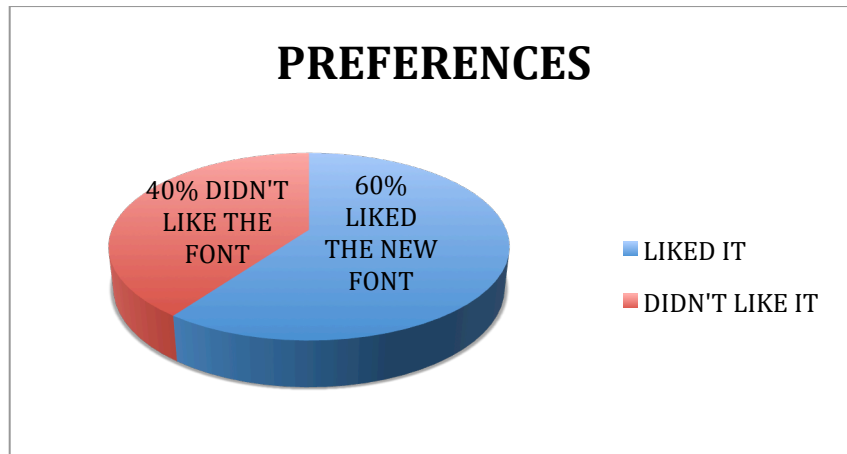


Figure 4.16 Preference of dyslexic font. This figure represents a graphic percentage of the participants' preference of the dyslexic font.



The following table shows the final results of each block in comparison to the posttest. These results show positive outcomes from the interventions, although not all the participants benefitted from them. Other aspects need to be considered for this as explained in the following paragraph.

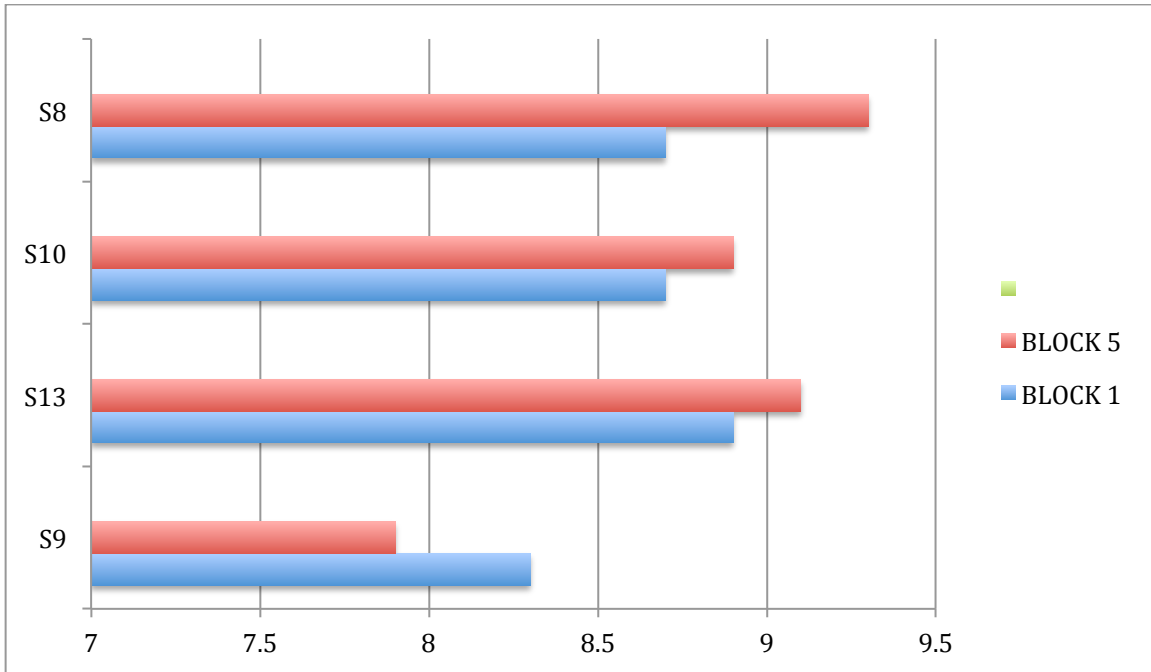
Table 4.7 Results of each of the "Blocks". This table shows the different general results of all the study subjects after the combination of the interventions explained in the study. The interventions were cumulative, once one started, it continued throughout the rest of the school year.

PARTICIPANT	BLOCK 1 PRETEST	BLOCK 2	BLOCK 3	BLOCK 4	BLOCK 5 POSTTEST
S3	9.7	7.6	8.7	9.6	7.5
S9	8.3	8.4	9.5	8.4	7.9
S13	8.9	8.1	10	8.1	9.1
S10	8.7	8.0	6.5	8.2	8.9
S8	8.7	8.8	8.5	9.6	9.3
SXP	6.4	7.0	8.7	9.1	8.4

When the study concluded, participant S3 had to be excluded as part of the study because he did not present the final exam as he went on a trip with his parents and the

school's protocol is to grade them with a 5 under these circumstances. The previous graphs and tables still consider his participation as a reference only.

Figure 4.17 Results in grades of Block 1(pretest) and Block 5 (posttest). This figure represents the results in grades of Block 1(pretest) and Block 5 (posttest). As it is shown, all except for one (S9) demonstrated an improvement after the interventions. It is important to reconsider that this was an undisclosed case and more information would be needed through a more direct study to discover why there was not an improvement in this participant.



4.4 Chapter conclusion

As this study progressed, I could realize that with easy, pertinent, accessible strategies and adaptable teaching methods, a dyslexic student may progress in the process of learning a foreign language. According to Clark (1988) in Waddington, Jacob and Bailey's (1996) work, "Teaching Students with Dyslexia in the Regular Classroom", dyslexia persists in spite of age and maturity but its effects may be lessened by remediation and compensatory techniques.

During this study, I did not change the school's program. However, I did witness a

reasonable improvement in their outcome and more than anything in their own personal perception of being successful independent learners. Simple and effective programs using simultaneous, multisensory methods where learning tasks can be broken down into their simplest components as well as predictable, structured and consistent learning environment, can help a dyslexic student step by step in their learning process (Waddington, Jacob & Bailey, 1996).

The next and final chapter will share some possible contributions of this study that will include theoretical and practical aspects derived from the study's interventions, general recommendations and limitations of this work, along with possibilities for further research and a reflective account of my research process.

CHAPTER 5: SUMMARY

5.0 Chapter overview

5.1 Significance of the findings

5.2 Research question answers

5.3 Research aims

5.3.1 Accomplishments

5.4 Theoretical implications

5.5 Pedagogical implications

5.6 Limitations of the study

5.7 Possibilities for further research

5.8 Reflexive account

5.9 Recommendations and Final thoughts

5.0 Chapter overview

This final chapter will present conclusions and the significance of the findings as well as the theoretical and pedagogical implications of the study, its limitations and possibilities for further research. I will also present a personal reflective account of my research process as well as recommendations and final thoughts.

5.1 Significance of the findings

The significance of the findings is in its aim the improvement of dyslexics through their EFL process and an expected study outcome was the creation of at least some evidence of progress using specific material for dyslexics. This study indicates that it is possible to incorporate strategies and accommodate methods to a traditional class in order to help dyslexics.

The findings indicated as this study progressed that dyslexics are not sick or disabled and therefore dyslexia cannot be cured. Dyslexia is a condition specific to this group of people that makes their learning different and that with certain accommodations that involve little or no extra work for the already tired teacher, besides no economic

consequences to parents or schools, dyslexics can benefit greatly. According to Waddington, Jacob and Bailey (1996) an accommodation is a strategy that changes the academic environment and permits students to really demonstrate what they know without altering the information or the amount of information that the student must learn. Taking that into account, dyslexics can achieve what every other student can within the same program.

Thus, the present study intends to be a resource for teachers who work with a traditional system and have dyslexics in their classroom. It may give them an insight of what dyslexia is and also a way to support dyslexics without having to change the methods and programs in their own schools.

5.2 Research question answers

The research questions that guided this study discussed methods and strategies that can benefit dyslexics in a traditional classroom. In regards to detecting dyslexics in a traditional classroom, my fundamental learning was that, although there is the possibility of following an approved and tested checklist, the process is not an easy task because there are other aspects to consider. Sometimes dyslexia could be accompanied by other conditions as it may be the case of attention deficit disorder. It is crucial to be cautious and informed before arriving to a definite conclusion in what detection entangles. The information found related to methods in assorted sources was rich but not feasible at times, considering the context of this work. Nevertheless, there are teaching methods (justified in Chapter 4) that could be accommodated in order to improve academic production, generate better outcomes and attitudes in dyslexics: The aural approach, audiolingualism, the communicative approach, computer assisted language learning (CALL), task-based learning and suggestopedia or suggestive-accelerative approaches to learning.

These methods are mostly related to the oral aspects of the language taking some of the pressure from writing and reading. Although the educational system cannot be completely changed to benefit only dyslexics, a wide-ranging environment of complementing skills besides reading and writing could help them ease the pressure that they face every day in order to preserve their self-esteem and give them a sense of accomplishment, which will show progress in their general performance.

In regard to strategies, numerous and fun ideas for students (and teachers) were gathered through crowdsourcing and I could witness a general improvement in their outcome and in their own personal perception of being successful independent learners.

5.3 Research aims

Teachers are the front lines when responding to the learning styles of dyslexic students and to help them succeed (Williams & Lynn, 2010). This study's aims were teaching methods and strategies for dyslexics in order to improve dyslexic students' academic production, their general outcomes and their attitude towards learning in the process of acquiring a second language.

This study also aimed to benefit the participants to improve their EFL learning process because the expected study result was an intended evidence of improvement taking their term grades as measurement when using specific material for dyslexics.

These aims were accomplished through different interventions that demonstrated an overall improvement in their learning performance. Dyslexics have enormous potential sometimes hidden in shyness and mistaken self-perception. Teachers in general find dislexia difficult to define due to the differences between one dyslexic and another and language teachers sometimes think that the problems that the student could be having are related to language, not dyslexia. Some teachers do know about dyslexia, but they find

grading dyslexics very difficult because they are not sure how to address the issue. Having more information about dyslexia could lessen these problems.

5.3.1 Accomplishments

One of the main accomplishments of this study was a personal awareness about different techniques to use with dyslexic students in my working context. I was able to witness an improvement in performance with small, simple changes, as were the freedom of choice in colors on the board or in their workbooks. When there is better understanding of what dyslexia is really about and what adjustments teachers can apply in any classroom, dyslexic learners will have a better opportunity to succeed.

Through crowdsourcing I was able to contact the frequently mentioned and prestigious author in this thesis: Thomas G. West. I consider this fact one of this work's accomplishments because it made me feel that there are people from very different strata, countries and professional backgrounds with one common denominator: an interest in dyslexia awareness. Thanks to his information I was able to find guidance in regards to key references, which helped me work without a blindfold.

5.4 Theoretical implications

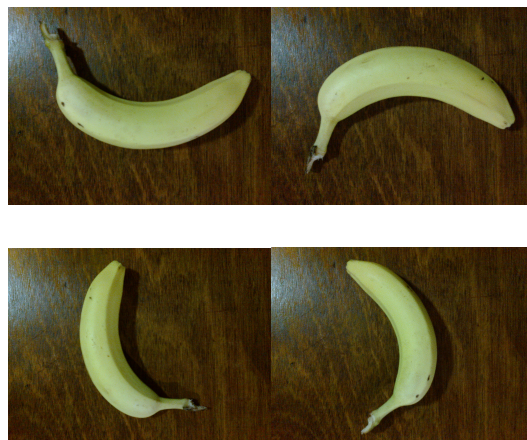
This section provides the implications with respect to this study research questions and how they may impact on existing theories or understanding. As was mentioned in Chapter 2, there is an academic debate in regards to dyslexia. There are several studies that have provided evidence of certain deficits in developmental dyslexia and consider dyslexia a learning disability. This study contradicts those assertions, supported by much evidence and concluding that dyslexia is a condition in which dyslexics process stimuli differently but it is not an illness or a disability. During the process of this study it was evident that the participants were all healthy, intelligent and bright kids who only need a little boost to

succeed. There are many successful dyslexics among scientists, business people, writers or journalists, bringing down most of the theories that believe that dyslexia is a disability. Dyslexics tend to use a multidisciplinary approach to learning or seeing things in a broader context (*The Yale Center for Dyslexia and Creativity*, 2014), which makes them succeed in many of today's working fields.

The way we regard dyslexia is crucial because it can have a great impact on education, teachers, parents, students and their well-being. One of the issues that arose during the process of this study was also the consideration of perspective. During one of the interventions a participant could not see where his mistake was. He had a different perspective. After further thinking, he realized and expressed that it was a p, not a d when writing the word pot (Table 4.1). Perspective was subjective to the individual. Dyslexia comprises the idea of what perspective means.

The best way to explain this is to look at the pictures below. Without considering the direction the banana is facing, it is still a banana. It is a matter of perspective. Dyslexics are not disabled, sick or less intelligent. They have different perspectives of things, and when that involves reading or writing, it becomes an essential matter.

Figure 5.1 Visual Perspectives. It's Still a Banana. This image demonstrates a simple example of how a dyslexic may perceive different perspectives without them being "wrong".



The previous assertion takes me to the topics of self-esteem, changing the perception of dyslexics as learners and motivation. When someone has a different perspective of things than the rest, people seem to think that they are wrong. When this situation happens in a classroom full of 7-year-old students, the matter becomes important. Name calling, giggling, lack of patience and knowledge can affect any student's progress. Although most research indicates that teachers have a significant influence on the improvement of self-esteem in pupils with dyslexia, very little is done in general in schools in Mexico with a strong resistance from parents, teachers and school authorities to acknowledge even the existence of dyslexia.

5.5 Pedagogical implications

This study's stage of interventions showed that it is possible to generate accommodations in methods and compile adequate strategies in regards to problem solving for dyslexics' process in English learning within a traditional classroom.

According to the majority of experts, there are at least two dyslexics in every classroom. A person is born dyslexic and will be dyslexic throughout their lives. The pedagogical implications of dealing with a topic like the present will help these students arrive to their full learning potential by adapting teaching methods and strategies without overwhelming the teacher or the student.

One of the most valid sources used for the interventions for this work was Shaywitz, (1998) who recommended, among other things, a phonological emphasis related to reading, avoiding external interventions that can cost work and money to the family because ultimately the problem has to be faced in the classroom, which is the place where the student spends a great percentage of his/her time. Taking that into account, it is relevant for teachers to be aware that dyslexia is not a problem related to laziness or lack of motivation,

neither to a low level of intelligence. It is important to let the students know that teachers are there to help them.

After analyzing the latest and most important and available literature, evidence shows that elementary dyslexic English students actually face diverse challenges, but they also have enormous advantages when learning this foreign language. Some experts say that dyslexics have the gift of fantasy and the ability to alter and create perceptions. Dyslexics tend to be highly aware of the environment, intuitive and highly curious. Authorities in the matter say that dyslexics can think and perceive multi-dimensionally and that they have a lively imagination, which makes them able to experience thought as reality. Different studies have demonstrated that dyslexia allows people to be highly creative and holistic, identifying patterns, connections and similarities very easily. According to various studies, experts concur that dyslexics have high concentration and can be very driven, ambitious and persistent. They have a tendency for complex thinking because they manage to simultaneously process multiple thoughts. It is thought as well that they do not follow the crowd. Many dyslexics also have the ability of visual, spatial and lateral thinking. All of those characteristics are highly needed in different areas of development and make them fit for the new, modern working environments.

Along these lines, Shaywitz's findings demonstrated that avoiding frustration and a loss of self-esteem are crucial for the learning process of dyslexics – as it is for most students. She also indicates that dyslexic students tend to relate intelligence with reading and writing well, and that affects their confidence. However, if there is an early identification of dyslexia, they can recognize the multidimensional nature of their intelligence avoiding a sense of failure. If students, as well as teachers and parents,

acknowledge their dyslexia, the learners' confidence increases and they are able to differentiate their specific difficulties with their notion of intelligence.

A classroom that is dyslexic friendly has to have a great variety of authentic listening and reading material that can motivate and provide purposeful communicative activities in combination with the best elements of simultaneous methods in the benefit of all students.

There are still some pending questions: What can we do as teachers of English to help dyslexic students during this process? All dyslexic students have individual variations of reading and spelling problems and they require individual accommodations. If the number of students in a classroom is between twenty to twenty-five students, this can somehow be achieved. But the norm in our public Mexican schools is to have very large groups. What can teachers do if they barely have time to control the group's activities? Will they have time to meet dyslexics' requirements? Dyslexics can get completely lost in the classroom. Their voice and needs are often misunderstood and disregarded. Dyslexics tend to have above-average intelligence, how can they show it if our culture assumes that a smart kid is a good reader? Dyslexics are very smart but not very good readers. IQ and reading scores go their separate ways and they do not influence each other.

There is much we can do, and based on the gathered information, experts suggest that one of the most important ways to help them is motivation, as was mentioned in 5.4. Besides this emotional boost, technology is now being considered as a great support for dyslexics. Probably because there is no pressure involved and dyslexic students can try again and again in a safe environment, technology could be a tool to enhance their learning and a way to demonstrate the creative side of dyslexia.

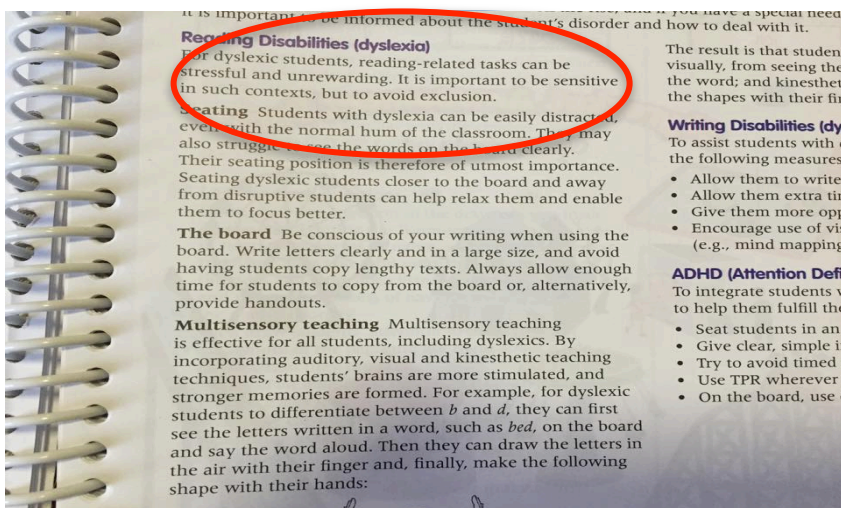
5.6 Limitations of the study

There were numerous limitations for the present study that had to be tackled. The most important limitation was that dyslexia is still considered to be a disability. Due to the unfounded sensitive nature of the topic this study had to be an undisclosed case study to the participants, to the research context and to any interested parties, including the parents.

Another limitation linked to the previous, was the participants' age and the protection of their privacy because they are minors. I could not use interviews, or could not isolate the participants for specific activities. I could not talk to their parents in order to get more information from their child's learning process. I had to rely on my own observations, the literature review, the results from the interventions and the acquisition of information through crowd sourcing.

I found yet another obstacle that was always present during the study because it is the text used in my context. The persistent idea of dyslexia as a disability prevails as we can see in the introduction of the textbook to the teacher in this figure:

Figure 5.2 A limitation for this study. This figure represents one of the obstacles that were present during this study. Although the textbook addresses dyslexia and shares some strategies for the teachers, it does so from the perspective that dyslexia is a disability, misleading teachers through the learning process of their students.



When referring to crowdsourcing there was another limitation because I intended to use Mexican sources but ultimately with no success. There is actually a Facebook page called *Dislexia en México* but the latest entry was from October 19, 2010. When I asked to befriend them, several times, there was no response. It has 70 members. On the other hand, Dyslexia support Australia has current updates from all over the world and befriended me on request. I was able to get most of my crowdsourcing information from this group and any question asked was immediately answered from people around the world and from different contexts. I decided to join this group because it was the first one that accepted me as part of their group. This group has 3,221 members.

Detecting the participants became another of my limitations, not only because this was an undisclosed case, but also because there had to be a test that suited my needs. As suggested by Thomas G. West it had to be one with generally accepted criteria. There were many available tests found in the literature review, through crowdsourcing and West's recommendations. However, they did not meet my undisclosed requirements. In the end, I found a serious study (Chan, Connie, Hob, Chungc, and Suk-han, 2012) with generally accepted criteria that formed the base for the detection of the participants.

5.7 Possibilities for further research

Recognizing the fact that a student is dyslexic will not magically solve this student's problems as stated by Riddick (2009). Uncovering the veil of the dyslexia stigma and to look at it right in the eyes, empowering teachers, parents, authorities and students to go on a firm path will open one of the endless possibilities for future research.

Another possibility for future research could be self-esteem and self-awareness of dyslexics. One comment frequently heard at schools is that dyslexics are bright kids who need to try harder. Ryan (2004) answered this statement by saying that "Ironically, no one

knows exactly how hard he is trying.” In order to get a grade of 7, a dyslexic student needs to work a lot more than the average one.

Another area for further research is to focus on dyslexics’ skills. They may have exaggerated strengths as well as exaggerated weaknesses. Experts believe that a dyslexic student can solve challenging math problems but cannot remember his/her phone number. Sometimes they tend to accomplish tasks that are far beyond the abilities of their peers and then other times they can be confronted with an easy task that becomes impossible for them to solve, creating a mind “roller coaster”, as stated by the aforementioned author.

In regards to dyslexia specifically in México, there is a broad area for future research, from more accurate diagnoses to special examination formats for dyslexic students of all ages. The “*Talleres de Capacitación*” and the “*Consejos Técnicos*” are respectable tactics used in México to improve our development as teachers. However, the material and strategies on them have never included the topic of dyslexia so far, and I have been a teacher for around 30 years. Workshops for teachers are needed to discuss their everyday lives and experiences, not just to follow an agenda that sometimes does not reflect our living reality. It is important to design a national awareness project to promote information about dyslexia. In Puebla, the context for this study, a similar program is taking place related to bullying and something similar can be done in regards to dyslexia.

Dyslexics could also benefit from a similar study of technological support in our country, which will entail great support for dyslexic students pedagogically speaking.

In the near future, this present study will probably give way to more research and to the possibility of having the opportunity to an open study with a selected and willing group of participants.

5.8 Reflexive account

In this section of my thesis I want to share with the reader a short reflection of my personal experiences throughout this study. First, by saying that it was very easy for me to choose a topic for my research because I have always been interested in dyslexia for personal reasons as I mentioned in Chapter 1. Thanks to my tutor's and my thesis seminar professor's support I was able to define it to a doable and practical product for my own personal growth.

Hopefully this work will help other teachers create a "shortcut" when working with a dyslexic student and can save them time and effort which are never enough in a teacher's life. The writing up period became an addiction because of my passion for my work as a teacher as well as for the topic per se. Clocks and watches became useless and I finally understood what my Pilates instructor meant by being "in the zone". Endless hours and corrections are finally printed and a personal satisfaction has filled up the former empty spaces in my professional development.

Although I knew slightly more than most of what the general teachers in my context know about dyslexia, this research has taken me to a new level where I can look at my students through another lens. It has changed many of my previous empirical theories and has provided me with numerous teaching tools. I now have more grounds to help my dyslexic students and this study opened a Pandora's box for my development as a teacher and novice researcher. I find it difficult to finish writing my thesis because I do not want it to end. I still have countless outlines in my mind and graphs to be made and compared. One of our professors once said that we would change as persons after writing our thesis. She was absolutely right.

5.9 Recommendations and Final thoughts

Considering that this present work will probably interest teachers of young learners of English, one of the recommendations that I can now suggest after my research, is to be able to identify in their students some warning signs that could guide their activities if they suspect that there are dyslexics in their classroom: difficulty in interpreting isolated words and reading new words; reading with many mistakes and laboriously; slow reading; more than usual spelling mistakes; difficulty naming shapes; low phonological poor results and multiple choice mistakes even knowing the correct answer.

However, the strongest recommendation that can be given is the fact that any dyslexia further research needs to avoid stigmas and taboos. People need to be well informed in the matter. Parents need to address their children's dyslexia openly at schools knowing that their children's needs will be met by informed professionals (see Appendix I).

When there is a topic that relates to your context and that entangles passion and authentic interest, the task of research becomes a pleasure. After completing this study my final thoughts can be recapped in the following viewpoints:

First, I believe that teachers and parents are the key to success of dyslexic learners because they spend valuable and more time with them.

Second, there is a tendency to assess students regardless of their educational needs. When there is an understanding of the specific educational needs of dyslexics, we can support and make practical adjustments and accommodations.

Third, it is necessary to understand that the perception of failure and frustration in any student can last for all their lives unless there is appropriate intervention from teachers and parents to help them overcome the so called deficiencies which are actually different ways of thinking and acquiring skills.

If this country wants to provide quality in education to our students, there must be some consideration in regards to dyslexic students in general and, in my context, in what refers to second language acquisition. If dyslexics commonly perform worse than the average students when tasks are given on pen and paper, our educational system can give them a way to express and value their superiority in areas like creativity, reasoning, listening comprehension and spatial memory.

There are words that accompany dyslexics sometimes all through their lives: frustration, hard, mistakes, trouble... and teachers must try to see their struggling through their students' eyes in order to sympathize and be able to change those words for success, pride, self-esteem, accomplishment...all in a teacher day's work.

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CROWDSOURCING

The Yale Center for Dyslexia and Creativity Forum. (No longer available)

West, T. G. on Facebook.

Dyslexia Support Australia on Facebook

Dyslexia Group. Increase awareness and understanding.

The International Dyslexia on Facebook

Dyslexic Advantage on Facebook

International Dyslexia Association on Facebook

Dyslexia International

APPENDIX A

Sample of an entry in the researcher's journal where comments were included

Tinted glasses results:

This intervention was put into practice with a reading exercise from their textbooks. Only the ones wearing glasses could read aloud one at a time. I distributed ten glasses and ss read in a certain order. If they made a mistake (either getting distracted or pronunciation of an already known word) they had to give the glasses to one of their "neighbors". After that, purposely I left the subjects with their glasses on and all ss had to copy an exercise from the board. All the students were free to comment on the experience of reading with tinted glasses at any time, but I only took notes of the ones that are part of this study.

There was a general improvement of the reading exercise outcome because all students were excited to be wearing glasses.

SPECIFIC COMMENTS OF THE SUBJECTS

S3 read faster. His comments included: ¡Oh! ¡Se ve mejor!!!!

S9 made less mistakes. No comments.

S13 was a little confused. She could not find the section where we were, but when we copied something from the board she copied faster and with less mistakes. No comments.

S10 read faster and better.

S8 was eager to read and he did it better than he normally does. His comments were: ¡Es como magia!

SXP was also eager to read and read faster than usual.

APPENDIX B

Crowdsourcing. Sample of one of the sources consulted and participated.

Dyslexia Support Australia
Closed Group

Joined ▾ Share ✓ Notifications ⋮

Discussion Members Events Photos Files Search this group

Write Post Add Photo / Video Ask Question Add File

Write something...

PINNED POST

Belinda Dekker
February 7 · Edited

Dyslexia Support Australia
Please read these guidelines before admission to the support group
Dyslexia Support Australia is committed to supporting parents and children whose lives are affected by Dyslexia. This group supports such reputable

MEMBERS 3,221 members (178 new)
+ Add People to Group

Invite by Email

DESCRIPTION
There is no cure for dyslexia, but dyslexic individuals can learn to read and write with appropri... See More

- [Pedro Paramo](#) In Mexico, Heidi. Thanks for your help, I'll check it out ASAP.

23 hours ago · Like · 1




- [Heidi Gregory](#) cool keep in touch and let us know how you get on.

16 hours ago · Like

APPENDIX C

Crowdsourcing information about symbol mastery from where the clay exercise strategy was put to test



Dyslexia Support Australia

and will “experience a profound sense of wellbeing”. Fine tuning involves balancing on one foot and moving the mind around until the participant feels that it is on a point where their body is in perfect balance, then “anchoring” the mind’s eye at this point. Fine tuning is done daily until the orientation point is reliably at its optimum point.

Koosh Ball Therapy:
According to Davis, this exercise is supposed to address coordination and dyspraxia problems. The facilitator stands 6-10 feet away from participant and checks that they are “on point”. Once “oriented”, the participant balances on one foot and has to catch 2 Koosh balls, one in either hand. The facilitator progresses from throwing the balls in sequence, to throwing them simultaneously, to throwing them only to one side of the body, depending on how easily student is able to catch the balls while maintaining balance.

Symbol Mastery:
This involves a multidimensional approach to learning trigger symbols and words, as participants develop and understanding of what the symbol/word looks like (spelling), sounds like (pronunciation) and what it means (picture).

- Uppercase and lowercase letters: the participant makes the letters out of clay and has them positioned and sequenced in the correct order. If mistakes are found, participant is told to make comparisons with examples, so that they can realise their mistakes and correct them. Participant then touches and says the letter of each alphabet in forward and backward order, looking when needed, until they are able to do so without looking. Facilitator then calls out a letter and participant must select the appropriate clay letter and say what letters follow and precede the target the letter. Symbol mastery is achieved when all exercises can be completed easily.

APPENDIX D

Different perspectives in crowdsourcing related to the use of colors for dyslexics

Dyslexia Support Australia

stress in dyslexic individuals is of only 10% higher than in the non-dyslexic individuals: from this the authors conclude that dyslexia and visual stress are two independent conditions which sometimes coexist within the same individual."

Irlen tinted glasses and overlays are NOT an intervention for dyslexia but an intervention for Scotopic Sensitivity. Neither the International Classification of Disease (ICD-10; World Health Organisation) or the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association) list Irlen's as a recognised disorder. Similarly, neither of these widely used diagnostic manuals make any reference to visual-perceptual distortions as a symptom of dyslexia. Current, evidence-based research continues to argue that dyslexia is specific learning disorder which involves difficulties with phonological decoding, and accurate and fluent word recognition (APA, 2013).

If you use coloured lenses as an intervention for dyslexia this will be ineffective. Dyslexia intervention needs to address difficulty in processing the sound of language (phonemic awareness) and relating a symbol to a sound (graphophonemic difficulty). Early effective intervention is essential.

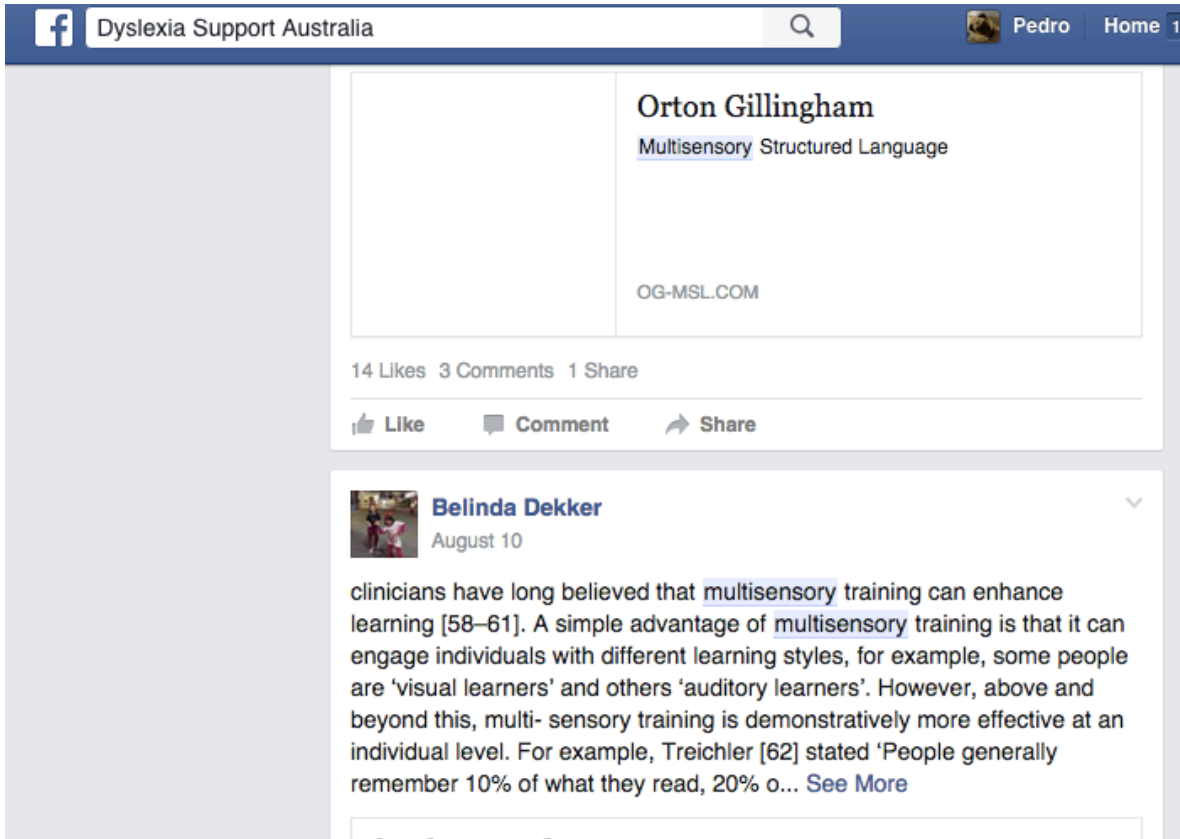
Julie Mav ▸ **Dyslexia Support Australia**
February 5 · Sydney, Australia · 🌐

I think the very important distinction must be made between **dyslexia** and Irlen syndrome just the same as **dyslexia** and ADHD are different and so is **dyslexia** and anxiety, but they are common co-morbidities. The Scotopic light sensitivity or Irlen syndrome is more readily confused with **dyslexia** because historically some practitioners have called it "visual **dyslexia**". **Dyslexia**, Irlen syndrome, ADHD and anxiety all require different approaches. Some children have just one of these, some children have more than one. A well respected peer reviewed journal, "The Frontiers of Psychology", recently published an article that reviewed latest research this issue and the research supports that they are indeed separate conditions. This article states, "colored overlays are often used as a remedy for the **visual** stress symptoms co-occurring with **dyslexia**. However, several studies have shown that **dyslexia** and visual stress are independent conditions. Originally, in fact, **visual** stress was considered as a subset of **dyslexia**, whereas more recently it has been argued that the **visual** stress syndrome is independent from **dyslexia** (Kriss and Evans, 2005; Kruk et al., 2008). Indeed Kriss and Evans (2005) noted that the prevalence of **visual** stress in dyslexic individuals is of only 10% higher than in the non-dyslexic individuals: from this the authors conclude that **dyslexia** and **visual** stress are two independent conditions which sometimes coexist within the same individual." This is a very important distinction for parents to make and to understand. This is probably one of the better and clearer research article that i have read in recent times and can highly recommend it. It can be found at; <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4114255/>

APPENDIX E

Crowdsourcing information regarding auditory learners helped this study with intervention

3



The image is a screenshot of a Facebook post from the page 'Dyslexia Support Australia'. The post is for 'Orton Gillingham Multisensory Structured Language' and includes the website 'OG-MSL.COM'. It has 14 likes, 3 comments, and 1 share. A comment by Belinda Dekker, dated August 10, discusses the benefits of multisensory training for auditory learners, citing research by Treichler [62].

Dyslexia Support Australia Pedro Home 1

Orton Gillingham
Multisensory Structured Language

OG-MSL.COM

14 Likes 3 Comments 1 Share

Like Comment Share

Belinda Dekker August 10

clinicians have long believed that multisensory training can enhance learning [58–61]. A simple advantage of multisensory training is that it can engage individuals with different learning styles, for example, some people are 'visual learners' and others 'auditory learners'. However, above and beyond this, multi- sensory training is demonstratively more effective at an individual level. For example, Treichler [62] stated 'People generally remember 10% of what they read, 20% o... [See More](#)

APPENDIX F

Comments from crowdsourcing related to tinted glasses for this study



extra time benefits



Charlotte Ward

January 27

Have you got coloured lenses to help with reading ? What are your thoughts? Would you recommend them to others?



29 Likes 59 Comments 1 Share



John Hayes Most dyslexics have no visual problems that would benefit from a visual intervention. Most visual dyslexics (where visual problems seeing text are causal for reading difficulties) don't have phonological processing issues that would benefit from multi-sensory instruction. Put both groups together because both have reading difficulties and diagnose both as dyslexic and the confusion begins. It's not all that hard to separate the groups to a first approximation degree. Just ask if someone feels they have visual issues seeing text that makes reading harder or uncomfortable. Dyslexics will report no problems and visual dyslexics can report their specific problems. Here is a simple experiment . Anyone in comments who benefited from tinted glasses unaware they had problems seeing text ? Young visual dyslexics can often be identified by being more fluent reading larger size text where that doesn't help dyslexics at all. - Sometimes dyslexia and visual dyslexia co-exist .
<http://www.dyslexiaglasses.com/visualdyslexiasolution.html>



The Visual Dyslexia Solution

The visual dyslexia solution that really helps visual dyslexics. See Right Dyslexia Glasses are a niche...

DYSLEXIAGLASSES.COM

January 28 at 10:53am · Edited · Like · 1



Kate Lumsden what I think helped my son the most, was balance and co-ordination exercises, but we tried everything..the bullying and self esteem were also a massive part of it.

January 27 at 3:29pm · Like



Jim Mc Carthy Yes I have, I find them good, they take the stress of the white paper away and also the movement of letters for me. So I can read for longer time spans

January 27 at 3:31pm · Like · 1



Kate Giraffe I have a yellow overlay which helps with the glare of the white in between words... Doesn't stop the switching and moving though.... And always need to re-read 😊 a good aid for one aspect of the symptoms 😊

January 27 at 4:00pm · Like



Sarah Chapman Being without my lenses has really shown me how awesome my coloured lenses are. Makes life so much easier! Reading comprehension so much better with them 😊

January 27 at 4:05pm · Edited · Like

January 27 at 5:22pm · Like · 2




Julie Penney I have irlen syndrome and have tinted lenses purple blue and grey combination. They help my dyslexia by stopping the words blurring, remembering what I just read, aids concentration. They are expensive but am lucky to be able to afford them. There should be more help given from the government to help people I think. ✕

January 27 at 5:32pm · Like · 2

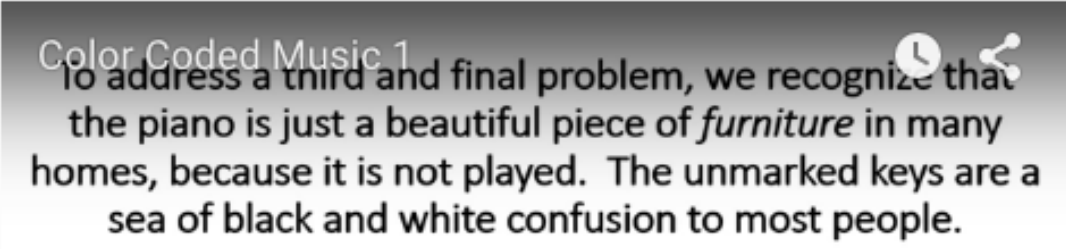
APPENDIX G

Sample of people sharing their experiences in crowdsourcing with the use of colors




Mary Hale
May 19

With permission, I am posting our invention that could be a benefit to people with **dyslexia**. We call it **Color Coded Music**. Please view our short video and tell us what you think. <https://www.youtube.com/watch?v=XtFbcpYZNWA> If you are interested in trying it out there is a free hymn on our website, www.ColorCodedMusic.com We are new and have a very limited inventory, but we do take requests of translating music in the public domain into **Color Coded Music**.



Color Coded Music 1
to address a third and final problem, we recognize that the piano is just a beautiful piece of *furniture* in many homes, because it is not played. The unmarked keys are a sea of black and white confusion to most people.



Katy Shotwell-Barker
August 6, 2014 · Corpus Christi, TX, United States

Thanks for the add I have fought **dyslexia** my whole life I have gone to special classes to help me and so on I worked very hard on it and graduated a year early. Now I'm a mother of three and the battle continues my oldest son ask me all the time how to spell things and I feel horrible when I can't help. I'm terrible with numbers but hae learned if I use different **colors** to write it helps a lot! People make fun of me still because of it however they don't know the truth behind me they don't know my every day struggles they don't know that I try every day to teach my self news ways but I have gotten 10x better then what I used to be.

8 Likes 6 Comments

Like Comment Share

APPENDIX H

Ideas about the new, easily downloadable font called “dyslexie” taken from crowdsourcing



LIKE Comment Share

Send this to friends or post it on your timeline.

 **Jennifer Spoonhour**
April 12

Dyslexia Font: Download for free – Dyslexie Font
The **Dyslexia Font** makes reading easy and enjoyable for people with dyslexia. Experience the ease of reading and download the font for free
DYSLEXIEFONT.COM | BY **DYSLEXIEFONT B.V.**



 **Kimberly Kellhofer Crites**
July 16, 2014 · Hootsuite

Dyslexie versus OpenDyslexic
See Translation

Dyslexia Typeface

OpenDyslexic is a new open sourced font created to increase readability for readers with dyslexia. The typeface includes regular, bold, italic, and bold-italic styles. It is being updated continually and improved based

Dyslexie versus OpenDyslexic
June 11th, 2014 Update: **Dyslexie font** is now FREE for home users. Click here to download). We recently heard a lot of about the now-famous...
NYCDYSLEXIARESEARCH.WORDPRESS.COM

APPENDIX I

Letter to school suggested by a parent through crowdsourcing

The following letter extract was written by one of the parents to the teacher. This letter was a crowdsourced suggestion from Dyslexia support Australia that can give us an idea of how parents need to address their children's dyslexia openly at schools knowing that their children's needs will be met by informed professionals

My daughter is in your year 10 class for Business IGCSE this year.

I hope you don't mind me contacting you directly, I'm not sure if you were made aware before classes started that (name) has dyslexia. She is very intelligent but lacks the processing ability to copy information and comprehend what she reads quickly. It also affects her spelling. Therefore although she is capable it takes her more time to do certain tasks and her spelling in her written work may not be good.

Over the years she has learnt many strategies to help her overcome these weaknesses and I wanted to share them with you so if you see her using these strategies in class or if she asks you for a copy of a power point or information you showed in class you will know why and hopefully you can facilitate for her to use these accommodations and strategies so she can be a more independent learner.

She is a very visual learner and the strategies she has found that help her include:

- Having a copy of any power points or class notes emailed to her or she can provide a USB so when she gets home she can revise and complete any notes that she may have missed in class.
- Using her coloured pens for writing
- Using her phone to take photos of the information written on the white board so she can refer to it when she gets home and complete the task
- Using highlighters
- Changing font to the dyslexic font for reading text. (the school has this font)
- Black print on white is difficult for her to read so if you can use a different colour marker than black when writing on the white board this would help her a lot.