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The Dyslexic Issue: Resources for Parents, Teachers, and Related Professionals

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THE DYSLEXIC ISSUE: RESOURCES FOR PARENTS, TEACHERS, AND
RELATED PROFESSIONALS

A Project Report

Presented to

The Graduate Faculty

Central Washington University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Education

By

Shawn D. Murphy

August 2015

ABSTRACT

THE DYSLEXIC ISSUE: RESOURCES FOR PARENTS, TEACHERS, AND RELATED PROFESSIONALS

By

Shawn D. Murphy

August 2015

This handbook and website project gives a thorough explanation of dyslexia, the history of dyslexia, and the latest resources available for parents, teachers, and related professionals who support students with dyslexia. The handbook and webpage will provide parents, teachers, and related professionals information which they may access in order to support students with dyslexia throughout their academic career. These resources will offer much-needed support for parents, teachers, and related professionals in learning how to properly identify the characteristics which are most often associated with dyslexia. Furthermore, they will provide an important myriad of resources for intervention for students with dyslexia for parents, teachers, and related professionals.

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CHAPTER ONE

INTRODUCTION

General Problem

According to SSB 6016, the nine Educational Service District (ESD) in the state of Washington will provide professional development and an annually updated handbook on dyslexia for parents, teachers and related professionals (Benton, McAuliffe, Roach, Honeyford, McDermott, Sweckler, & Delvin, 2009). Currently, The ESD's have provided neither professional development opportunities nor an updated handbook since the year 2011 (ESD 123, personal communication, March 25th, 2015). With dyslexia intervention, it is most critical to provide reading interventions which are specific to remediating dyslexia, and which are evidence-based (Fiester, 2012; Berninger, 2011; Shaywitz, 2003;). Currently students with dyslexia are often only receiving general reading interventions rather than dyslexia-based specific interventions (Fiester, 2012; Shaywitz, 2003). Mandated use of Response to Intervention (RTI) has exacerbated the current situation of students with dyslexia being under-identified and experiencing delays in receiving appropriate special education reading intervention services (Mather & Wendling, 2012 p. 246). Moreover, general reading intervention strategies in the regular education services such as Reading Recovery, used in the Title I Program have been shown to be ineffective in adequately addressing the needs of students with dyslexia (Duff, Hulme, Grainger, Hardwick, Miles, & Snowling, 2014; Fiester, 2012; Shaywitz, 2003). Additionally, even when students with dyslexia initially qualify for special education services, they may no longer qualify for services at the three year re-evaluation period, when they need it the most (M. Para, personal

communication, May 2015). All of these factors combine together to affect current and future students with dyslexia academically, socially, and emotionally.

In 2009, The Washington State Administrative Code (WAC) Revised Code of Washington (RCW) stated there would be a training program implemented through the educational service districts to provide information helping students with dyslexia (Washington State Legislature, 2015). To that end, five school districts received training in reading programs for dyslexia which were evidence-based and multi-sensory (Washington State Legislature, 2015). The results of the pilot program demonstrated a significant increase in their literacy skills (Washington State Legislature, 2015). Following the implementation of these successful pilot programs, the state law specified all school districts would begin implementing these research-based, multi-sensory reading intervention programs to remediate dyslexia (Washington State Legislature, 2015). However, in 2010, the Washington State Legislature cut funding to these vital programs in dyslexia intervention (Potts, 2015). As a result, the ESD's were unable to provide training in multi-sensory, evidence-based dyslexia remediation (Potts, 2015). Consequently, students with dyslexia are currently not receiving the services specified under state law. Moreover, teachers and related professionals are not receiving necessary information and professional development which is critical for the academic success of students with dyslexia.

Background of the Problem

What is dyslexia? The most accepted and recognized definition is one created by the International Dyslexia Association (IDA) which stated:

Dyslexia is a language-based learning disability. Dyslexia refers to a cluster of symptoms result in people having difficulties with specific language skills,

particularly reading. Students with dyslexia often experience difficulties with both oral and written other language skills, such as writing, and pronouncing words and writing. Dyslexia affects individuals throughout their lives; however, its impact can change at different stages in a person's life. It is referred to as a learning disability because dyslexia can make it very difficult for a student to succeed without phonics-based reading instruction is unavailable in most public schools. In its more severe forms, a student with dyslexia may qualify for special education with specially designed instruction, and as appropriate, accommodations (Eida, 2002).

The National Center for Learning Disabilities (NCLD) has a similar and more simplified definition as:

Dyslexia is a specific learning disability in reading in which the student exhibits difficulty with processing, identifying, decoding and spelling letters and words. This neurological and genetic disability often causes the student to have poor reading fluency as well as difficulty with reading aloud (NCLD, 2014).

However, it should be noted low reading scores alone do not constitute a diagnosis of dyslexia because student reading challenges may be attributed to a variety of reasons. Some of these reasons may be low IQ scores, a traumatic brain injury, or lack of exposure to reading or language. (Berninger, 2011). With proper support, most students with dyslexia can become great writers and readers (NCLD, 2014).

About four to 20 percent of the student population nationwide, or one out of five students, have dyslexia (Thompson, 2015; Washburn, 2014; Julian, 2013; Fiester, 2012; The International Dyslexia Association, 2012; Jiménez, de la Cadena, Siegel, O'Shanahan, García, & Rodríguez, 2011; Shaywitz, 2003;). As many as 40% of the school population in

the United States read below grade level and 80% of students who have been diagnosed with SLD have dyslexia (Shaywitz, 2003). In addition, most students with dyslexia have been diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) (Konicarova, 2014; Cassim, Talcott, & Moores, 2014). According to Glazzard (2010), teachers often attribute students' low academic performance to the ADHD, without providing accommodations for the dyslexia.

Impact of Teacher Influence on Self-Esteem of Students with Dyslexia

Studies show teachers have a significant influence on the self-esteem of students with dyslexia (Nalavany & Carawan, 2012; Nalavany, Carawan, & Brown, 2011; Glazzard, 2010; McNulty, 2003). For instance, unfair treatment of students with dyslexia can negatively impact a student's self-esteem throughout his/her life. Some teachers even perceive students with dyslexia as lazy and use sarcasm to degrade them in front of others (Glazzard, 2010; Gwernan-Jones & Burden, 2010; McNulty, 2003). For example, in one study where teachers would label students stupid and lazy, it was reported students with dyslexia recalled having difficulty learning the alphabet, and had not mastered it by second grade (Nalavany & Carawan, 2012; Gibson & Kendall, 2010; McNulty, 2003).

Most students with dyslexia typically achieve a C average in school (Gibson & Kendall, 2010). In a survey of individuals with dyslexia conducted by Gibson and Kendall (2010), students recalled having been told by their primary education teacher they would not receive anything above a C grade because of their lack of motivation in their reading (Gibson & Kendall, 2010). Consider the stories below:

My English teacher told me I would never get above a D to a C in year 10 coming into my GCSEs [General Certificate of General Education], she said she does not

have this capability, she's never going to get above that, so I did everything, I walked away with an A, but I worked solidly (Gibson & Kendall, 2010 p. 190).

I was told in year 9 after my SATS [Student Achievement Test] that I would never get above a C in science, I mean, how can they say that, you know, kids change over the years, but I went to all the lunchtime clubs and after school clubs and because science was quite practical and no other bugger wanted to turn up to any of these classes, you know, I wouldn't get home until 5 o'clock at night, it was literally one to one tutoring, they taught me in a practical way . . . I believe that is why I got where I am (Gibson & Kendall, 2010 p. 189).

Other studies have also noted, teachers may perceive students with dyslexia as lazy and use sarcasm to degrade them in front of their peers (Burns, 2015; Thompson, 2015; Gwernan-Jones & Burden, 2010). The following story described how one student was compelled to work harder to overcome dyslexia due to the comments the student's teacher stated:

I think it is because I really wanted to succeed and get good grades and I found it hard and nobody would listen because the teachers kept saying either I was lazy, my grammar structure was poor, to, she is doing too much, she has to stop, she is absolutely knackered. I think it is my determination to do well and it was trial and error on how do I learn because I knew I didn't learn the same as anyone else, I couldn't even absorb the teacher in the front of the class just speaking (Gibson & Kendall, 2010 p. 190).

Understanding the personal frustrations students with dyslexia face when they are required to read aloud or in front of peers, and refraining from making unfair, as well as

unnecessary, comparisons of student performance can often have a positive impact on the academic performance and self-esteem of students with dyslexia (Hornstra, Denessen, Bakker, van den Bergh, & Voeten, 2015; Gibson & Kendall, 2010; Glazzard, 2010).

Early Signs of Dyslexia

Signs of dyslexia may first begin to emerge at age two or three, when the student begins using complex words, and says such things as “mawn lower” for “lawn mower” and “soldier” for “shoulder”(Shaywitz, 2003). Articulation and language is often, but not always affected by dyslexia (Shaywitz, 2003). There are five speech issues that come with dyslexia and show up in the preschool years. These issues are: difficulty with speech; difficulty learning how to rhyme words; not wanting to look at print; little interest in letters and the alphabet; and poor letter-sound knowledge (Wennås, 2013; Mather & Welding, 2012).

In discussing the issue of dyslexia with Ms. Susan Barton, a dyslexia specialist and founder of Bright Solutions, she stated at about 12 months, most children may say 5 to 10 simple one-syllable words an adult can comprehend (S. Barton, personal communication, May 28, 2015). Most students with dyslexia are later in saying their first words anywhere between the ages of 18 months and two years (S. Barton, personal communication, May 28, 2015). As a whole, students with dyslexia may be late talkers, and often do not begin talking until 18 months, 2 years, or even later (S. Barton, personal communication, May 28, 2015).

Once their oral language has become more sophisticated by adding multi-syllabic words to their vocabulary, students with dyslexia often mix up the sequence of the sounds in a word, such as “tupato” for “potato” (S. Barton, personal communication, May 28, 2015). When they begin to say longer multi-syllabic words, they frequently say the sounds out of

sequence as noted above, such as “mazagine” for “magazine” and “susketti” for “spaghetti” (S. Barton, personal communication, May 28, 2015).

To offer a little background about Susan Barton and Bright Solutions, Susan Barton founded Bright Solutions in 1998. The mission of Bright Solutions is to educate parents and teachers about the causes, symptoms, and research-based solutions for children and adults with dyslexia (Barton, 2015). Ms. Barton’s interest in helping students with dyslexia was first sparked when the school system was not able to successfully teach her nephew how to read. This particular nephew had been receiving specialized instruction in reading in a Special Education Setting--Resource Room setting for 10 years with little academic success. Ms. Barton felt this was unacceptable, and felt she could do something to teach this child how to read. She therefore decided to receive special dyslexia training, went on to privately tutor students and adults for many years, and was successful in helping them to become successful readers at an adult level.

Over the years, Ms. Barton has been contacted by parents who were desperate to know the secret of her success because their children were having academic problems as well. Ms. Barton was surprised at how many parents and teachers lacked the necessary training needed to successfully teach students with dyslexia (Barton, 2015). Bright Solutions was created to address this need and provide a systematic, methodical approach to remediating dyslexia by addressing phonological awareness deficits in a step-by-step manner beginning at the most elemental level and progressing to the 10th grade reading level. Ms. Barton recommends on her website a special screening test be administered to a student prior to determining if the Barton method will be successful with that particular student. If the student fails the screening, then Ms. Barton recommends the student start with Lindamood

Bell's Lindamood Phoneme Sequencing Program for Reading, Spelling, and Speech (LIPS) training, which is even more elemental than the first level of Barton, in that it focuses on teaching of sound-symbol association (e.g., the letter k says kuh). In order to begin the Barton program, a student must know and recognize all alphabet letters as well as their sounds. There are ten levels of Barton. Each level is comprised of a manual of step-by-step, scripted, direct instructions, with accompanying stories and sight word lists, as well as lists of words for the student to decode. Ms. Barton's levels teach the student the various spelling, pronunciation, and decoding rules for the words of the English language. For example, one rule is the catch lunch rule which states that if a short vowel is followed by a consonant, as in the word lunch, then the rule is to use ch at the end. If there is no consonant following the short vowel, then the rule is to use tch. Ms. Barton employs many multi-sensory, Orton-Gillingham techniques throughout her method. Some Orton-Gillingham techniques include using colored tiles and having the child trace sight words on the table. The mission of Bright Solutions is to educate and inform parents and teachers about the latest research and information on dyslexia. (Barton, 2015).

Memory Issues in Dyslexia

Sometimes students incur memory issues, such as difficulty with following multi-step directions, forgetting parts of directions, or mixing up steps to a task (Menghini, 2011). According to Susan Barton, these memory issues would be due to the influence of ADHD co-occurring with dyslexia, and are not to be considered strictly due to dyslexia alone (S. Barton, personal communication, May 28, 2015). However, there is evidence in the existing body of research on dyslexia that demonstrates working memory impairments exist in individuals with dyslexia (Hiscox, Leonavičiūtė, & Humby, 2014; Varvara, Varuzza,

Sorrentino, Vicari, & Menghini, 2014). Recent research provided information on examining concurrently separate Executive Function (EF) regions in students with Developmental Dyslexia (Varvara, Varuzza, Sorrentino, Vicari, & Menghini, 2014). Results of this study revealed insufficiencies in a multitude of characteristics of EF, such as spoonerisms, a type of phonological task in which the evaluator produces two words aloud and the student needs to switch the first letter of both words to make two new words, verbal and visual short-term memory, verbal working memory, and verbal categorical and phonological fluency were evident (Hiscox, Leonavičiūtė, & Humby, 2014; Varvara, Varuzza, Sorrentino, Vicari, & Menghini, 2014; Fiester, 2012). Conversely, visual shifting abilities and special short-term memory were intact (Varvara, Varuzza, Sorrentino, Vicari, & Menghini, 2014).

Speech & Language Issues in Students with Dyslexia

In addition, some students with dyslexia have issues with vocabulary and mixing up words or mislabeling items, such as “ammonia” for “pneumonia” and “pacific” for “specific” (Shaywitz, 2003, S. Barton, personal communication, May 28, 2015). Sounds in which most students with dyslexia have difficulty articulating are /m/, /n/, /r/ /l/ and infrequently the /s/ “sh” and “ch” sounds which can cause a slight lisp (S. Barton, personal communication, May 28, 2015). Stuttering in the preschool years can be one of the markers of dyslexia (S. Barton, personal communication, May 28, 2015). Although this is one of the markers, not everyone with dyslexia stutters (S. Barton, personal communication, May 28, 2015).

Students with dyslexia often have difficulty with word retrieval skills in their conversational speech (S. Barton, personal communication, May 28, 2015). In trying to search for the correct word in conversational speech, students with dyslexia tend to use vague words, such as that thing-a-ma-jig and stuff, as well as filling their conversation with

awkward pauses, such as ummmm and uhhhh (S. Barton, personal communication, May 28, 2015). Furthermore, due to these word retrieval issues they may frequently use circumlocution, describing or defining the particular object they are discussing (e.g., to describe a paper towel, a student may describe it as, ‘you know that thing you wipe your hands on when they are sticky’) (S. Barton, personal communication, May 2015).

A Lack of a Specific Category for Qualifying for Special Education

Most school districts currently lack a specific category of qualifying for assistance with dyslexia; thus students with dyslexia are qualified for assistance under the category of *Learning Disability* or *Reading Disability* (IDEA, 2004). Currently, only 22 states in the United States have a legal and official definition of the diagnosis for dyslexia in their state administrative codes for education (Youman & Mather, 2012). Provision of services for dyslexia varies widely from state to state (Youman & Mather, 2012). For example, in California students with dyslexia who do not qualify for specific learning disability (SLD) would not be eligible to receive special education services in the general education classroom (Youman & Mather, 2012). In contrast, Texas has many laws providing for the instruction of teachers in how to identify and remediate dyslexia (Youman & Mather, 2012).

Problem Statement

Currently, parents, teachers, and related professionals lack up-to-date as well as adequate access to resources on dyslexia. The 2011 Washington State Dyslexic Resource Guide provided by OSPI is in PDF or paper format (L. Potts, personal communication, May 1st, 2015). Therefore, it must be downloaded as a document. To support a wide variety of individuals and the expanse of internet-accessible information, it would be helpful for the resource guide to be offered as an interactive website. Thus, given modern advancements in

technology such as interactive websites, hyperlinks, and video testimonials of individuals who have overcome dyslexia, as well as videos by experts on dyslexia, the paper handbook lacks the ability to provide internet-accessible information for many in today's computerized world. In addition, with the 2011 handbook only accessible in PDF format, it may be more difficult to access web links due to the requirements needed to download the breadth of web information available.

In addition, there exists a gap in what is clearly required by the law, the funding which is supposed to be allotted for services for students with dyslexia, required training for teachers and related professionals who work with students with dyslexia, as well as the actual provision of these services, trainings, and accommodations. Furthermore, if individuals would like to access the 2011 handbook, they are currently limited to downloading only a PDF version or individuals may pay OSPI \$10 plus shipping and handling (OSPI, 2011) for a copy. Moreover, an easy-to-access webpage for individuals to obtain information about dyslexia is currently not in existence. As a result, Kindergarten through sixth grade students with dyslexia are being negatively impacted because parents, teachers, and related professionals are not being provided the most current information about dyslexia, nor are they receiving professional development on dyslexia based on the most current empirical evidence.

This project is important as it will contribute to the body of knowledge on dyslexia for our district and other districts throughout the state of Washington. It may also be useful to schools across the nation as well as teacher education programs where candidates may learn about the needs of students with dyslexia.

By updating the OSPI handbook, providing a list of valuable resources, and developing a website which parents, teachers and related professionals can easily access information on dyslexia, Kindergarten through sixth students can be better supported and up-to-date information can be available through both a handbook and an interactive website for the Washington State Dyslexia Resource Guide. (OSPI, 2011)

Purpose of the Project

The purpose of this project was to provide a proposed update to the 2011 dyslexia handbook and create an interactive website which will be easily accessible to parents, teachers, and related professionals of students in grades Kindergarten through sixth. Specifically, this project will update the 2011 Washington State Dyslexia Resource Guide (OSPI, 2011) and create a resource website that defines and describes dyslexia, theories related to its cause and symptoms, and substantiate the impact dyslexia has on reading, writing, and spelling abilities of students. It will also provide suggestions for treatment for dyslexia, illuminate which treatments are proven to be effective, provide an overview of remediation techniques and accommodations commonly used, and note which techniques have been proven to be effective. Lastly, the project will provide accommodations and websites parents, teachers, and related professionals can use to support students with dyslexia. To best support students with dyslexia, these stakeholders need to be well versed in various types of accommodations and interventions which could be beneficial for students with dyslexia.

To support the purpose of this project, the research and literature were reviewed which included past and current information about dyslexia. Noted case histories of dyslexia date from the first case of word blindness, due to alexia (word blindness), as early as 1676,

(Elliot, 2015; Campbell, 2011) to the post-mortem studies by doctors conducted in the 1800's (Elliot, 2015; Campbell, 2011) and to the latest cutting-edge technology neuroimaging of fMRI (Functional Magnetic Resonance Imaging) used to locate the area of weakness in the brain responsible for dyslexia (Shaywitz, 2003). This project discussed the most widely-used definition of dyslexia provided by the International Dyslexia Association. The prevalence of dyslexia also was discussed, as well as the facts about dyslexia, such as boys and girls suffer from dyslexia equally, it is an inherited condition, one out of five students have dyslexia (Thompson, 2015; Julian, 2013; International Dyslexia Association, 2012; The International Dyslexia Association, 2012), and it can co-exist with ADHD, but is not the cause of ADHD (Konicarovia, 2014).

The resources, culminating in a website provided by this project were designed to best serve parents, teachers and related professionals of Kindergarten through sixth students with dyslexia. These resources consist of information displayed on a colorful, vibrant, and dynamic website, which is pertinent to students with dyslexia, ranging from accommodations which teachers can use in the classroom, providing extra time for test-taking, using a word processor, and using a scribe for multi-sensory programs which have had proven successful in teaching students with dyslexia (Mather & Wendling, 2012; Shaywitz, 2003).

Significance and Scope of the Project

This project has the potential to not only assist in helping Kindergarten through sixth grade students, parents, teachers, and related professionals in the Pasco School District, but also assist those in other school districts throughout the state and nation. In helping parents, teachers, and related professionals to understand dyslexia and the latest techniques, students with dyslexia may be better educated and realize more academic success.

Definitions of Terms

Attention Deficit Hyperactivity Disorder (ADHD): A condition which may include problems with attention, impulsivity, and hyperactivity and is usually first diagnosed in childhood, but persists through adulthood (Mayo, 2015).

Blending: Blending refers to taking the individual sounds within a word and combining them into a whole word 'Say the individual sounds in the word *map* as in /m/ /a/ /p/' (Oudeans, 2003 p. 261).

Cognitive Abilities: This refers to thought processes carried out in the brain which are needed for thinking, emotions, feeling, experiencing, processing, analyzing, communicating, reading, writing, calculating, listening, seeing, and carrying out gross motor and fine motor activities. This encompasses the easiest to the most difficult task involving brain activity (Michelon, 2008).

Dyslexia: Dyslexia is a specific learning disability in reading in which the student exhibits difficulty with processing, identifying, decoding and spelling letters and words. Further, it is a language processing problem which is mostly a phonological processing problem, not a reading problem (Eida, 2002). In addition, the term encompasses visual attention span or visual stress disorders which can be helped with special lenses, colored overlays, and vision therapy.

Grapheme: A grapheme is an essential visual unit in a written language. Graphemes are used to represent sounds in words, but also contains both punctuation marks and numbers (Mather & Wendling, 2012).

Learning disability: A learning disability refers to a condition in which students with normal intelligence have difficulty learning in at least one academic subject. Research

shows 8 to 10 percent of American children under 18 years of age have some type of learning disability (NIH, 2014).

Morpheme: A morpheme is the smallest component of meaning in a language. For example the suffix s means the word is plural (Mather & Wendling, 2012).

Morphological: This refers to the description, identification, and analysis of units of meaning of language and the structure of morphemes (Mather & Wendling, 2012).

Neurobiological: This refers to the nervous system in physiological and anatomically forms (Mather & Wendling, 2012).

Neurolinguistic: This is a branch of speech dealing mainly with how the brain processes human language and brain activity (Wiśniewski, 2007)

Neuro-typical: A neurotypical (NT) student is defined as a one who performs academically and socially within normal limits (Ohl, 2012 pg. 2).

Orthography: Orthography refers to the rules of a language, such as spelling, punctuation, and capitalization rules (Mather & Wendling, 2012).

Orton-Gillingham: Orton-Gillingham is a type of multisensory approach used to teach basic concepts of spelling, writing, and reading and continually build upon mastered skills. Basic skills are a bottom-up approach, and the focus is on the mastery of these specific subskills (Rose & Zirkel, 2007 p. 171).

Phoneme: A phoneme is the verbal sound one makes when vocalizing (Mather & Wendling, 2012).

Phonological Awareness: Phonological Awareness refers to the phonological structure of the word, for example c-a-t spells cat. (Gillon, 2002 p. 4).

Phonology: Phonology refers to the study of the smallest units of sounds in speech, referring to the sound-symbol association and the processing of sounds and symbols in reading. For example, the letter c sounds like /k/. (Mather & Wendling, 2012).

Phonological weakness: Phonological weakness refers to a lack of or an inability to hear and manipulate words into different sounds (Shaywitz, 2003).

Reading Comprehension: Reading Comprehension refers to reading for understanding. Students with dyslexia often read more slowly and inaccurately. They often must think about and process each word in a different way than neuro-typical readers would. (Turnbull, 2015 p. 7).

Reading Recovery: Reading Recovery is a type of reading intervention limited to first grade student in who are having difficulty in reading. Reading recovery students receive individualized, one-on-one instruction in a pull-out model, typically for a period of 30 minutes for 12-20 weeks (Dunn, 2010 p. 25).

Segmenting: Segmenting is a term which refers to the breaking apart words into their individual sounds. For instance, the word map segmented is /m/ /a/ /p/ (Oudeans. 2003 pg. 261).

Special Education Setting--Resource Room: Special Education Setting--Resource Room refers to an intervention for students with mild and moderate disabilities requiring extensive (over 50%) instruction in a special setting. Student schedules for the year may include a mix of Special Education Setting--Resource Room and general education classes, as they can substantially benefit from them. Reading/language arts and mathematics (among other subjects) are commonly taught in a Special Education Setting--Resource Room (Vannest, Hagan-Burke, Parker, & Soares, 2011 p. 221).

Specific Learning Disability: A specific learning disability refers to a condition in which students have normal intelligence, but are performing 2 grade levels below in one or more of these academic areas: reading, writing or math. Students who qualify as specific learning disabled may include students who have dyslexia, students who have developmental aphasia, students who have a brain injury, students who have a perceptual disability, and students with minimal brain dysfunction. Disabilities which do not qualify under this category are the following: visual, hearing, or motor disabilities, emotional disturbance, mental retardation, or environmental, cultural, or economic disadvantage (IDEA, 2015).

Visual attention span skills: Visual attention span skills refer to the amount of visual items that can be processed in a multi-visual field (Lallier, Donnadieu, & Valdois, 2013 p. 99).

Summary

Chapter One discussed the current problem of the lack of funding to provide training as well as the need for an up-to-date resource guide for dyslexia. Additionally, it provided a definition of dyslexia, as well as prevalence, the history of dyslexia, the laws regarding provision of services, and early signs of dyslexia. Further discussion involved the impact of teachers' influence on the self-esteem of students with dyslexia as well as the psychosocial effects students experience when they are not taught strategies for reading and writing (Nalavany, Carawan, & Brown, 2011), and the various approaches to treatment. Some of the various treatment approaches for dyslexia were also discussed, and included the use of specialized schools, private tutoring or learning centers, Reading Recovery and Special

Education Setting--Resource Room services. The impact of RTI and its impact on students with dyslexia was also mentioned.

Another important aspect which Chapter One included was the accommodations and the early signs of dyslexia. Further, it referenced the speech and language and memory issues that some student with dyslexia experience. It also discussed how the proposed updated handbook project will provide assistance to students in kindergarten through 6th grade, as well as their parents, teachers and other professionals involved in their education. Chapter two will provide a review of related literature on dyslexia and information on legislation.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

The review of research and literature in Chapter 2 is focused on learning and reading disabilities, particularly as they relate to dyslexia and the laws which support dyslexia. Reading does not develop naturally in students whereas speaking does (Shaywitz, 2003). Therefore, students need to be specifically taught how to read instead of just learning it from exposure to their environment.

Dyslexia falls under the broad category of a learning disability, which is defined as reading fluency issues which occur among individuals who fall within the normal IQ range (i.e. 85-115 points), and who lack any other existing psychological or physical problems (IDEA, 2004; Fiester, 2012). It should be noted other conditions may coexist with it (Sexton et al., 2012). The Orton Society, a group which is dedicated to the research of dyslexia, described dyslexia as being a genetic, typically hereditary, disorder with a neurological basis, in which the disability negatively impacts the proper acquisition and processing of language skills (Palacios, 2010).

Although some gifted students learn how to read with minimal instruction, students with dyslexia do not learn to read without intensive instruction in reading (Mather & Wendling, 2012). With dyslexia, the teaching of reading must be intentional, specific, and targeted to focus on direct teaching of phonological awareness skills, blending of sounds into words, segmenting words into sounds, and breaking down words into syllables (Shaywitz, 2003). These skills are the essence of decoding, which is a large area of difficulty for students with dyslexia (Mather & Wendling, 2012; Shaywitz, 2003).

The term dyslexia is a literal meaning for difficulty with words, where individuals with dyslexia have issues with decoding abilities, as well as accurate, and/or fluent word identification (Thompson, 2015). Dyslexia is known to be a particular type of learning disability which has a neurobiological origin as its root cause (Fiester, 2012; Mather & Wendling, 2012; Mihandoost & Mihandoost, 2011). Neurobiology is the biological study of the nervous system (Mather & Wendling, 2012). Dyslexia is apparent when fluent and precise reading at the word level develops with great difficulty, or is read inaccurately (Mihandoost & Mihandoost, 2011; Shaywitz, 2003). In dyslexia, the emphasis of the condition is on decoding and recognizing letters at the word level, and this implies the dyslexia is persistent and severe in spite of the fact of the individuals being exposed to proper education techniques, traditional reading programs, and typical intervention in improving literacy skills (Mihandoost & Mihandoost, 2011).

Dyslexia and the law

According to Youman and Mather (2012), at least 22 states in the United States have laws which specifically mandate school districts to provide targeted instruction for individual students with dyslexia. Three of these twenty-two states mandate the Education Service Districts to provide a handbook about dyslexia to inform parents and educators about identification and intervention (Youman & Mather, 2012). For those states which do mention and provide for dyslexia assistance and intervention, legislation focuses on definitions and terminology, early screening, identification, provision of interventions and accommodations, as well as eligibility of services (Youman & Mather, 2012).

The first piece of federal legislation which pertained to disabilities was enacted in 1965 with the Elementary and Secondary Educational Action (ESEA, 2011). Later, federal

law became more specific in its provisions regarding specific disabilities with the advent of Section 504, the Americans with Disabilities Act, and the Individuals with Disabilities Act. If districts are not in compliance with the federal law, then the Office of Civil Rights may force school districts to comply (Maher, 2011).

Following enactment of the federal laws, many states passed laws. According to Youman and Mather (2012), at least 22 states in the United States have laws which specifically mandate school districts to provide targeted instruction for individual students with dyslexia. Three of these twenty-two states mandate the Education Service Districts to provide a handbook about dyslexia to inform parents and educators about identification and intervention (Youman & Mather, 2012). For those states which do mention and provide for dyslexia assistance and intervention, legislation focuses on definitions and terminology, early screening, identification, provision of interventions and accommodations, as well as eligibility of services (Youman & Mather, 2012). Washington State was amongst those states mandating schools to support students with dyslexia. The Washington state legislature passed WAC 392-172A-03055 for students with specific learning disabilities and in 2009, passed RCW 28A.300.530 Individuals with dyslexia-Identification and instruction-Handbooks-Reports and SSB 6026. This law put in place legislation for providing professional development for teachers on dyslexia (Washington State Legislation, 2015).

Federal Legislation

Elementary and Secondary Education Act of 1968 (ESEA).

In 1965, President Lyndon Baines Johnson passed into law the Elementary and Secondary Education Act of 1965 (ESEA). President Johnson passed the law as part of his War on Poverty. He was previously a school teacher and witnessed discrimination in the

schools and believed every child should be entitled to the same type of education. President Johnson believed if a student received highly-qualified teachers, appropriate curriculum, and new facilities, the poor would be better-equipped to combat poverty. One particular program which was funded by this bill was Title I. The bill was amended in 1968, and the law was amended to add Title VII funding bilingual programs (ESEA, 2011).

In April of 2015, Congress attempted to amend the ESEA. Among the 90 different amendments which were discussed, four were recommended by Senator Bill Cassidy of Louisiana. His amendments proposed to fund dyslexia training for parents, teachers, and related professionals through using federal funds. These amendments were denied by a 12-10 vote with the opposition stating it would be unfair for other individuals with disabilities who would not receive this kind of special funding (Decoding Dyslexia, 2015). The committee co-chair, Senator Patty Murray from Washington State requested the wording of the amendment state children with a disability instead of reading children with dyslexia and other specific learning disabilities. Senator Cassidy opposed the wording change.

ADA and Section 504.

The Americans with Disability Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973 was enacted by Congress to protect the civil rights of students as well as provide legal protection to individuals with disabilities, However, there exists a lack of funding for these services. (ADA, 1990). In order to qualify under ADA and Section 504, a student with a disability must qualify under three criteria. First, the student with a disability must have a mental or physical disability that impacts one or more major life events. Next, recorded documentation of the impairment must exist. Finally, the student with a disability must be regarded as having a disability (Maher, 2011). Students with

dyslexia under a 504 plan can receive services when they do not qualify for services under an IEP plan (Fiester, 2012). A 504 plan provides modifications for students with dyslexia in the classroom in order to help them achieve academic success. It is far easier to qualify a student through ADA or Section 504 than through IDEA (Maher, 2011). The 504 plans also provide fewer procedural safeguards than IDEA 2004 for those students with dyslexia who qualify under it (Fiester, 2012; Mather & Welding, 2012). Section 504 states:

No otherwise qualified individual with a disability in the United States...shall, solely by reason of her or his disability, be excluded from the participation in or be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance (Section 504, 1973).

In 2008, amendments were passed which narrowed the interpreted definition of disability. The terms major and substantial changed to being more strictly interpreted. In order for the disability to be deemed that a major life event has been subsequently interrupted, the disability must now be determined to prevent or severely restrict the individual (Maher, 2011). As a result, extensive list of major life events was included into the amendments. Re-defining the word disability has led to more students overall qualifying under ADA and Section 504 (Maher, 2011).

Further, Section 504 requires local education agencies (LEA) to provide academic and non-academic/extracurricular activities for students with disabilities. It also provides for a child find program to properly identify students with disabilities. Additionally, it provides for procedural safeguards for identification, evaluation, and placement. Moreover, it regulates free and appropriate education for students with disabilities (FAPE) (Maher, 2011).

This pertains to students with dyslexia because they are considered to have a disability under Section 504 and the ADA.

PL 94-142 also known as IDEA.

According to Public Law 94-142, otherwise known as *Education of All Handicapped Students Act*, written in 1975, students are mandated by law to receive a free and appropriate public education (FAPE) in the least restrictive environment (LRE) (EAHSA, 1975). This means students with dyslexia should be receiving special education services which the school provides free of charge. According to Mather and Welding (2012), it should be noted dyslexia is not a term commonly used in school settings, and because of this, students who qualify for special services under the law are labeled as either learning disabled (LD) in reading, or specific learning disabled in the area of reading, instead of being labeled as having dyslexia.

Dyslexia is a real disability, made visible by functional brain imaging technology (Mather & Wendling, 2012; Shaywitz, 2003). Thus, a discussion of special education law as it pertains to students with dyslexia, as well as laws pertaining to disabilities, is pertinent. In the 1990's, Congress enacted legislation titled, Goals 2000, which changed special education services from an access-based model to an outcome-based model. Goals 2000 encouraged individual states to adopt content and performance standards, and in doing so, the schools which had developed plans would receive Title I funding, a type of government funding to support students in reading and math from low socio-economic families (Prince et al., 2013; Itkonen, 2007). Public Law 94-142 legislation, which guaranteed special education, including reading instruction, for students who qualify in the least restrictive environment,

was revised in 2004, and this new piece of legislation was re-named IDEA, or *Individuals with Disabilities Education Act* (IDEA, 2004).

Under IDEA, special education teachers are required to demonstrate they are highly qualified, but it is difficult to certify teachers as highly qualified in specific areas, such as a dyslexia specialist (Itkonen, 2007). An example of being highly qualified as it pertains to dyslexia, would be having special credentials in teaching students with dyslexia (Mason-Williams, 2015). Even though this may be what is intended by the law, this requirement is, as of yet, unmet in the state of Washington. Due to the fact that special education is so broad and has to cover so many disabilities, there is not an endorsement program in dyslexia in the state of Washington. The difficulty appears to be in having special education teachers certify as highly qualified in a specific disability category such as dyslexia, when a teacher may have a varying caseload of students each year (Itkonen, 2007). Based on the definition of dyslexia, the criteria discrepancy for special education laws and lack of training in the identification of dyslexia, leaves many students currently underserved (Fiester, 2012; Youman & Mather, 2012).

Federal Enforcement

Office for Civil Rights (OCR).

One division of the U.S. Department of Education is the Office for Civil Rights (OCR). The OCR ensures ADA, Section 504, and IDEA are strictly enforced and that school districts are in full compliance of the law (DOE, 2012). One of the most important responsibilities of the OCR is to eliminate any discrimination of activities based on students having disabilities (Maher, 2011). Moreover, OCR explains procedural safeguards in the regulations as minimum necessary procedures. Furthermore, OCR recommends the LEA's

use of due process procedures in IDEA rather than the ones specified in Section 504 even though OCR receives numerous inquiries and complaints on the subject of elementary and secondary education which involve Section 504 (DOE, 2012).

Washington State Law

On September of 2009, the Washington State legislature passed RCW 28A.300.530 Individuals with dyslexia-Identification and instruction-Handbooks-Reports and SSB 6026 (Washington State Legislature, 2015). These laws require Washington kindergarten through 12th grade educator training programs to enhance the spelling skills, reading and writing skills of students with dyslexia. Furthermore, this training is to be provided by the Superintendent of Public Instruction through the Educational Service Districts in Washington. The Office of the Superintendent of Public Instruction (OSPI) currently provides a dyslexia handbook as a reference for parents, teachers, and related professionals who have students with dyslexia (Washington State Legislature, 2015). However, the current handbook is outdated. Since the funding for the laws was depleted in 2011, an independent nonprofit organization has been asked to implement trainings (Washington State Legislature, 2015). In a recent study, 56% of teachers felt they needed more training and information about working with students with dyslexia (Washburn et al., 2014). Thus, there is clearly a responsibility on the part of the Washington State Legislature to fulfill this need by providing more training and information on dyslexia to teachers in the state of Washington.

RCW 28A.300.530 and SSB 6016 Individuals with dyslexia — Identification and instruction — Handbook — Reports.

In 2009, Washington State Legislature passed RCW 28A.300.530 and SSB 6016 Individuals with dyslexia — Identification and instruction — Handbook — Reports. The law states the following:

(1) Within available resources, the office of the superintendent of public instruction, in consultation with the school districts that participated in the Lorraine Wojahn dyslexia pilot program, and with an international nonprofit organization dedicated to supporting efforts to provide appropriate identification of and instruction for individuals with dyslexia, shall:

(a) Develop an educator training program to enhance the reading, writing, and spelling skills of students with dyslexia. The training program must provide research-based, multisensory literacy intervention professional development in the areas of dyslexia and intervention implementation. The program shall be posted on the web site of the office of the superintendent of public instruction. The training program may be regionally delivered through the educational service districts. The educational service districts may seek assistance from the international nonprofit organization to deliver the training; and

(b) Develop a dyslexia handbook to be used as a reference for teachers and parents of students with dyslexia. The handbook shall be modeled after other state dyslexia handbooks, and shall include guidelines for school districts to follow as they identify and provide services for students with dyslexia. Additionally, the handbook shall provide school districts, and parents and guardians with information regarding the

state's relevant statutes and their relation to federal special education laws. The handbook shall be posted on the web site of the office of the superintendent of public instruction.

(2) Beginning September 1, 2009, and annually thereafter, each educational service district shall report to the office of the superintendent of public instruction the number of individuals who participate in the training developed and offered by the educational service district. The office of the superintendent of public instruction shall report that information to the legislative education committees. [2009 c 546 § 2.]

Notes:

Finding -- Intent -- 2009 c 546: "Dyslexia is a language-based learning disability that affects individuals throughout their lives. Washington state has a long-standing tradition of working to serve its students with dyslexia. Since 2005, the legislature has provided funding for five pilot projects to implement research-based, multisensory literacy intervention for students with dyslexia. Participating schools were required to have a three-tiered reading structure in place, provide professional development training to teachers, assess students, and collect and maintain data on student progress.

The legislature finds that the students receiving intervention support through the dyslexia pilot projects have made substantial and steady academic gains. The legislature intends to sustain this work and expand the implementation to a level of statewide support for students with dyslexia by developing and providing information and training, including a handbook to continue to improve the skills of our students with dyslexia." [2009 c 546 § 1.] (Benton et al., 2009).

The Importance of Literacy in Society Today

The willingness to read and the ability to develop highly refined literacy skills are essential for today's students with dyslexia. This is particularly true for nations which are highly dependent upon students' educational and literary success. In order for these highly literate nations to maintain their growth and development and to remain competitive in an international market, students with dyslexia must achieve a high degree of literacy in reading and in writing skills (Mihandoost & Mihandoost, 2011; Lyon, Shaywitz, & Shaywitz, 2003). In other words, our society is focused and centered on being literate, so that dyslexia remediation becomes critical for obtaining employment and being successful in life. There remain very few employment opportunities in which students with dyslexia do not require literacy skills, and even for simple things such as obtaining insurance or going to the doctor to obtain medical care, one is required to be able to read and write to fill out forms. We are no longer primarily an agrarian society, or even one which commonly employs unskilled workers who are illiterate.

Dyslexia Awareness

Dyslexia is commonly thought of as a singular type of acute reading disability which has bewildered scholars for centuries (Mihandoost & Mihandoost, 2011). Although researchers have been studying dyslexia for over one hundred years, there lacks a unanimous consensus on what officially constitutes the definition of dyslexia, as well as what the underlying cause may be (Youman & Mather, 2012). In the past, research studies were largely based on the work of medical doctors, and the majority of these papers consisted of case studies involving patients who had deficits in reading due to brain injuries, also known

as word blindness (Pickle, 1998). These deficits impacted the subjects' ability to read - which is often called acquired or congenital dyslexia.

The earliest case regarding dyslexia was noted was in the 1600's (Elliot, 2015; Campbell, 2011). In 1679, Prussian doctor Johannes Schmidt described how a patient had lost the ability to read following a stroke (Campbell, 2011). The patient exhibited normal intelligence with the exception of reading (Campbell, 2011). It was determined since the patient had only lost one intelligent faculty among many others, the disability was considered to be a medical concern (Campbell, 2011). Researchers could not determine what the cause was for the inability to read in this patient, so researchers did not conduct any new studies. (Campbell, 2011). This led to no published research on reading difficulties for 200 years (Campbell, 2011). A resurgence of case studies, reports, and articles in 1872, led to more research on reading difficulties (Campbell, 2011). The term Acquired Word-blindness was introduced by Kussmaul in 1877(Campbell, 2011). Acquired Word-blindness described adults who developed reading difficulty after an injury or stroke, but still had average or above average intelligence (Campbell, 2011).

In 1896 researcher Pringle Morgan described a 14 year old boy who displayed signs of word-blindness. The wide variation of students with dyslexia have been researched since the 1800's (Elliot, 2015). This 14 year old student excelled in math, but could not read. Morgan would dictate a sentence, and the boy would misspell all the words with the exception of simple three-letter words. When asked to read from a book, he had difficulty reading many words with the exception of and, the, of, and that. The student also had difficulty with short-term visual memory, displaying a lack of word recognition even with words presented to him within a minute or two. His teacher thus stated the student would be

the smartest student in school, if all academics would have been entirely oral (Mather & Wendling, 2012).

By the end of the nineteenth century, researchers discovered the unusual presentation of complex reading difficulties, known as dyslexia, was not only a genetically acquired condition, but could also be developmental as well (Elliot, 2015). This was found to be not only accurate, but more importantly, supported by several distinct case studies which are the earliest documented cases of dyslexia (Elliot, 2015). Slightly earlier Peyrin, Démonet, N'Guyen-Morel, Le as, Valdois (2011) noted, students with dyslexia are born with a difference or an abnormality in a particular region of the brain. This region becomes underdeveloped and becomes weak from lack of proper stimulation. Over time, the area functions, but because it is weak, processing in the area of the brain becomes less developed (Gamble, 2015). Gamble further noted the brain is differentiated through a mapping process based on both genetic factors, as well as environmental factors; with brain mapping influenced by complex networking and chemical reactions occurring within the brain cells. This series of chemical responses happen because of numerous stimuli from both the environment and hereditary influences (Gamble, 2015). Thus, the hereditary causal part of dyslexia interacts with the incoming stimuli from the environment and how it is processed, thus contributing to both the hereditary and developmental process of how dyslexia originates (Gamble, 2015).

In 2008, researchers discovered there is a region in the brain located in the left inferior temporal lobe which encodes letter strings (Cohen, Dehaene, Vinckier, Jobert, & Montavont, 2008). This region, also known as Visual Word Form Area, or (VWFA), is involved in the rapid, effortless recognition of familiar words, and is responsible for the

process of learning how to read. Due to the VWFA being underdeveloped, the fronto-parietal regions would be used more heavily while learning to read, and this underdevelopment could be the result instead of the cause of developmental dyslexia (Cohen et al., 2008).

Brain Dysfunction and Function

Brain Dysfunction Proposed to be Responsible for Causing Dyslexia

Geshwind and Levitsky (1968), proposed the cause of dyslexia was due to an atypical region of the left hemisphere, noting the fronto-parietal lobe of the brain, the area of the brain responsible for phonological processing, is considered to be essential in the development of reading. Moreover, it controls the fundamental cognitive condition which causes dyslexia (Peyrin, Démonet, N'Guyen-Morel, Le as, Valdois, 2011).

Brain Function & Structures & Dyslexia: fMRI Imaging of Dyslexia

The main areas in the brain responsible for the process of reading include the: visual word form area (VWFA) located in the inferotemporal cortex, the inferior parietal lobe (the angular and supramarginal gyri), and the left-sided fronto-parietal region made up of the inferior frontal gyrus (Cohen & Dehaene, 2004). Functional Magnetic Resonance Imaging (fMRI) studies have discovered there is a difference in these areas of the cerebral cortex in individuals with dyslexia versus those who are neurotypical during phonological processing and reading exercises (Dufor, Serniclaes, Sprenger-Charolles, & Démonet, 2007; Hoeft, Hernandez, Mcmillon, Taylor-Hill, Martindale, Meyler, Keller, Siok, Deutch, Just, Whitfield-Gabrieli, & Gabrieli, 2006; Serniclaes, Sprenger-Charolles, Carre', & Demonet, 2001). Areas which are affected in this process include the part of the brain responsible for articulation and phonology, known as Broca's area, which is located in the left frontal side of the brain (Dufor et al., 2007, Hoeft et al., 2006; Serniclaes et al., 2001). There was a lesser

degree of brain activity visualized during reading tasks in subjects with dyslexia in the left angular gyrus, responsible for the print-to-phonology processing (Chen, Fu, Iversen, Smith, & Matthews, 2002), as well as the left supramarginal gyrus, which is involved in phonological processing (Dufor et al., 2007, Hoeft et al., 2006; Serniclaes et al., 2001).

Phonological Theories of Dyslexia

Dehaene (2009) suggested dyslexia is partly due to a phonological deficit known as the phonological deficit hypothesis (PDH). The phonological deficit hypothesis is one which states there is only one kind of dyslexia, all students with dyslexia have phonological impairments, and these impairments are the cause of dyslexia (Castles & Friedmann, 2014).

Snowling, Goulandris, Bowlby and Howell (1986) first proposed the phonological representations hypothesis, with Brady and Goswami publishing further research corroborating this earlier research (Georgiou, 2010; Goswami, 2000; Brady, 1997; Snowling, Goulandris, Bowlby & Howell, 1986). In 1994, Elbro, Nielsen and Petersen proposed the distinctness hypothesis (Georgiou, 2010; Elbro 1996; Elbro, Neilsen & Petersen, 1994). Ramus (2001) posited the sub-lexical deficit hypothesis (Georgiou, 2010; Szenkovits & Ramus, 2005; Ramus 2001). Each one of these theories of the phonological deficit hypothesis attributes the cause of dyslexia to a neurological basis with a weakness in phonological skills, (e.g. the construction, maintenance, and retrieval of phonological representations at the word level) and is widely accepted among scientists who study dyslexia (Georgiou, 2010).

Effects of Phonology Treatment on the Brain

By completing intensive phonology remediation, students with dyslexia can strengthen this area of the brain, known as the left frontal-parietal network. We have

evidence in which increased brain activity is seen in this region during fMRI studies (Eden, Jones, Cappell, Gareau, Wood, Zeffiro, Dietz, Agnew, & Flowers, 2004; Aylward, Richards, Nagy, Field, Grimme, Richards, Thomson, & Cramer, 2003; Temple, Deutsch, Poldrack, Miller, Tallal, Merzenich, & Gabrieli, 2003; Simos, Fletcher, Bergman, Breier, Foorman, Castillo, Davis, Fitzgerald, & Papanicolaou, 2002). While it is incredible that researchers can use the fMRI to view areas of the brain which are affected by dyslexia and treatment for it, this type of imaging is not yet applicable for individual assessment of students with dyslexia, due to a lack of research in this area (Mather & Wendling, 2012).

Theories of Dyslexia: Phonological Basis for Dyslexia & Visual Attention Span

Considerable research on brain imaging lends evidence to a phonological basis for dyslexia, which states dyslexia is language-based and there are deficiencies in phonological processing in students with dyslexia (Vellutino, Fletcher, Snowling, & Scanlon, 2004). In trying to search for the correct word in conversational speech, students with dyslexia tend to use vague words, such as that thing-a-ma-jig and stuff, as well as filling their conversation with awkward pauses, such as *ummmm* and *uhhhh* (Ramus, Rosen, Dakin, Day, Castellote, & White, S, 2003). This deficit creates issues with phonemic awareness, which refers to manipulating and analyzing phonemes within words and syllables (Ramus et al., 2003). Researchers are now questioning, though, whether there is a link between phonological processing disorders and visual processing skills as they relate to orthographic string processing (Vidyasagar & Pammer, 2010; Whitney & Cornelissen, 2005). Moreover, not all individuals with dyslexia display phonological weaknesses (Castles & Coltheart, 1996; Hanley & Gard, 1995). The acceptance of the phonological deficit hypothesis is refuted by evidence of research which reveals normal skills in nonsense-word reading, but deficiencies

in irregular word reading tasks with phonological skills which are within normal limits (Castles & Coltheart, 1996; Hanley & Gard, 1995).

Proponents of the visual processing theory argue the phonological processing deficit theory does not address other symptoms which commonly occur with dyslexia, such as issues with small motor coordination and balance, problems with visual processing issues, and short-term memory difficulties (Georgiou, 2010).

Some researchers have hypothesized, based upon the diversity of the traits of dyslexia, the condition stems from a manifold of separate and distinct dysfunctions of the brain (Di Betta & Romani, 2005; Valdois, Bosse, & Tainturier, 2004; Wolf & Bowers, 1999). Concurring with this conclusion, and based upon the multi-race memory model predictions (Ans, Carbonnel, & Valdois, 1998), some students with dyslexia had better phonological than visual attention span skills, such as a decrease in the amount of individual features they could process in matched pairs in a visual pattern (Lallier, Donnadieu, & Valdois, 2013; Valdois, Bosse, Ans, Zorman, Carbonnel, & David, 2003); whereas other students with dyslexia displayed the reverse pattern of better visual attention span skills than phonological skills (Dubois et al., 2010; Valdois et al., 2003).

According to one study, when researchers examined visual attention span, phonological awareness, and reading abilities of students, they discovered most of the students with dyslexia had a visual attention span disorder which, for the majority of subjects, was not associated with phonological difficulties (Bosse, Tainturier, & Valdois, 2007). In other words, there seem to be two different sub-types of dyslexia: one which consists of phonological issues, and the other which consists of visual attention issues. Furthermore, the visual attention span deficit seemed to be more prevalent, according to this

particular study. Other research seems to disagree with these conclusions and shows that phonological awareness deficits are more prevalent. It was discovered these difficulties in reading performance in students with dyslexia could be attributed to specific visual attention span issues which were separate and distinct from their phonological awareness skills (Bosse, Tainturier, & Valdois, 2007). In other words, the visual issues seen in some students with dyslexia may occur by themselves without any phonological issues, and vice versa. Thus, this research reveals two different unequivocal bases of dyslexia: one visual and one phonological (Peyrin, Démonet, N'Guyen-Morel, Le as, & Valdois, 2011). Even though there is a dysfunction in the left superior parietal lobe in adults with dyslexia, it has been found this dysfunction is already present in young children, and cannot be solely attributed to reading difficulties experienced throughout life (Nalavany, Carawan, & Brown, 2011; Peyrin, Démonet, N'Guyen-Morel, Le as, Valdois, 2011). In other words, the impairment on the left side of the brain seen in adults with dyslexia is also seen in young children. Therefore, the reading problems experienced by adults with dyslexia are not the only reason why there is an impairment in the brain of adults with dyslexia because this impairment already exists at a young age. In addition individuals with dyslexia who have visual attention span disorder exhibit specific dysfunction in brain activity in the left superior parietal lobule during certain attention demanding tasks (Peyrin, Démonet, N'Guyen-Morel, Le as, Valdois, 2011).

In a study comparing two adults, one typical and one with a phonological deficiency type of dyslexia, normal brain activity was seen in the left superior parietal part of the brain during a reading task (Peyrin, Démonet, N'Guyen-Morel, Le as, Valdois, 2011). This study noted impairment of the left superior parietal region may be typical of the category of students with dyslexia who have a visual attention (VA) span disorder and particularly

involve difficulties with concurrent visual processing (Peyrin, Démonet, N’Guyen-Morel, Leas, Valdois, 2011).

Theories of Reading & Writing Development

Ehri (1995, 1986) offered a stage theory of writing and reading development which proposed qualitatively different phases of learning to spell mainly based on morphological (e.g. the identification, analysis, and description of the structure of morphemes and other units of meaning of language) (Matther & Wendling, 2012) and visual information may be disconnected from numerous explanations. From this theory, a well-known model for learning of reading and writing was developed. In 1985, Frith proposed the theory of associative learning of a specific graphic arrangement in which students learn a specific grapheme, (e.g. the fundamental print unit in a written language; graphemes are used to represent phonemes, but also include both numbers and punctuation marks) (Matther & Wendling, 2012), with an incorrect phoneme, the individual speech sounds of spoken language (Matther & Wendling, 2012; Frith, 1985).

Recent studies on reading and spelling errors discovered students with dyslexia and ADHD have similar errors (Konicarovia, 2014; Re & Cornoldi, 2013). Individuals with dyslexia have deficits in orthographic, (i.e., the writing system of a language, including the spelling, punctuation, and capitalization rules) (Matther & Wendling, 2012), and phonological (i.e., the study of the speech sounds of a language) aspects of language. An example of a phonological skill is the letter c sounds like /k/ (Mather & Wendling, 2012). In contrast, those students with ADHD have deficits in attentional control (Konicarovia, 2014; Re & Cornoldi, 2013).

Visual Theories of Dyslexia: Lenses & Colored Overlays

While dyslexia research has mostly focused on phonological processing, early theorists of dyslexia believed changing the color tint of the text minimized the effects of dyslexia (Kim, Seo, Ha, & Kim, 2015). Research has found the use of color overlays or color-tinted glasses helped reduce the symptoms of eye strain, headaches, and visual-perceptual distortions such as blurring, doubling, patterns, and movement of letters on the page (Kim et al., 2015). These special color-tinted glasses are known as the Irlen glasses, and are available for purchase at www.irlen.com. These glasses are specially designed to incorporate any necessary optometric prescription while blocking out extraneous light and creating a filtering effect of colored overlays may be worn as glasses (N. Murphy, personal communication, April 23, 2015). The tints are specially designed to help create spaces between words and make words not blur together (N. Murphy, personal communication, April 23, 2015).

Patients were asked to select a set of lenses or colored overlays in which reading was easier and allowed for the most comfortable vision while reading. Patients were then asked to read a series of sentences with and without the color-tint in place over the sample of written text (Kim et al, 2015). Patients were also asked to read in different fonts, with different letter spacing and different reading levels depending upon the age of the student (Kim et al, 2015). The words per minute, or WPM, were assessed and results were evaluated (Kim et al, 2015). Results indicated overall reading rate of WPM improved by 20% while wearing the Irlen glasses, and symptoms of eye strain, headaches, and visual-perceptual distortions such as blurring, doubling, patterns, and movement of letters on the page were

non-existent (Kim et al, 2015). Patients read an average of 107 WPM without the glasses and 130 WPM while wearing the glasses (Kim et al, 2015).

Ocular impairments.

Students with dyslexia may also need to be assessed for ocular impairments because visual issues can be complex and contribute to reading issues (Washburn et al. 2014). There are treatable conditions that can help with vision issues, such as addressing eye focus problems; weak eye muscles in need of strengthening; refractive inaccuracies; and motor fusion dysfunction (Gamble, 2015). An optometrist may prescribe vision therapy, and may also check the student's vision to determine if there is a correction needed, or a combination of both (Gamble, 2015). In doing so, the student with dyslexia may improve in the ability to track words and thus improve overall reading abilities (Gamble, 2015). Since dyslexia is a multisensory disability, the decision for treatment should be multidisciplinary. Each member of the student's academic team should be involved (Gamble, 2015). The multidisciplinary team should involve the classroom teacher, the parent, the speech language pathologist, the vision therapist, councilor, psychologist, administrator, and the student where applicable (Gamble, 2015). As part of the multidisciplinary team of a student with dyslexia, it is very important to include the ophthalmologist to screen for any vision irregularities (Gamble, 2015). It is important to realize that vision is a complex process, and students with adequate vision can still have vision difficulties (Gamble, 2015). Also, vision therapy can resolve many issues, such as weak eye muscles, tracking words and focusing issues (Gamble, 2015). Students with any learning disability, such as ADHD, dyslexia, or Attention Deficit Disorder, also known as ADD, should be assessed by an optometrist (Gamble, 2015).

Deep Versus Shallow Orthographies

Reading accuracy is key in discovering dyslexia in languages with deep orthographies (Caravolas, 2007). In languages with deep orthography, such as English, there are about 1,100 possible letters or letter combinations to represent 44 sounds, whereas, in the Spanish language which is considered to be a shallow orthography, there are 37 different letters or letter combinations to represent 41 sounds (Mather & Wendling, 2012). Other key features to distinguish atypical readers from students with dyslexia in languages with deep orthographies are inaccurate or slow reading, persistence of poor phonological skills, and poor spelling (Mather & Wendling, 2012).

Languages with shallow orthographies, such as Spanish, show different characteristics. Typically, students with dyslexia who use shallow orthographies display the characteristic of slow reading, but not inaccurate reading (Davis & Cuentos, 2010). The possibility is strong that phonological difficulties are less noticeable in more shallow orthographic languages. In a study by Schneider, Roth, & Ennemoser in 2000, which looked at phonological awareness deficits, it was proposed phonological awareness deficits in the German language can be addressed and remediated with little effort. Also, a study by Lindgren & Laine (2011) stated Finnish-speaking adults with dyslexia displayed accurate, but delayed manipulation and recognition of sounds in words. Thus, a student learning English, a deep orthographic language, will exhibit more errors in the language, while a student learning German, Finnish or Spanish, low orthographic languages, will take longer to recognize the sound of a letter, but will become more accurate in the language (Mather & Wendling, 2012).

How the Brain Processes Reading

Research revealed the left superior parietal region of the brain may be essential for early reading development (Peyrin, Démonet, N’Guyen-Morel, Le as, & Valdois, 2011). Nearly all words are foreign to early readers; thus recognition of letters in a word requires intense concentration and visual attention at early stages of reading (Peyrin, Démonet, N’Guyen-Morel, Le as, & Valdois, 2011). Typical development of a conceptual representation of complete letter strings may pose a serious challenge for students with dyslexia (Peyrin, Démonet, N’Guyen-Morel, Le as, & Valdois, 2011). This may be due to the fact students with dyslexia have difficulty with processing letters in strings (Peyrin, Démonet, N’Guyen-Morel, Le as, & Valdois, 2011). Attainment of a well-organized word recognition system by early readers may be limited by a dysfunction of the superior parietal lobe in the brain (Peyrin, Démonet, N’Guyen-Morel, Le as, & Valdois, 2011).

Diagnosis of Dyslexia

Assessment of Dyslexia

There are a number of reasons why a student may have low reading abilities, but the cause may not be dyslexic in origin (Mather & Wendling, 2012). Some of these reasons may be a lack of instruction, low cognitive ability, a language disorder, or second-language learning (Mather & Wendling, 2012).

Dyslexia is a very complicated syndrome, because individual students have different conditions which may be a part of their dyslexia which may affect them in distinct and separate ways. Some students with dyslexia have a visual dyslexia; whereas some have phonemic awareness issues. In contrast, some have both visual and phonemic issues. The degrees of severity also vary greatly from mild reading issues to dyslexia which profoundly

impacts student academic ability and literacy skills. One student may be gifted and the dyslexia may be masked, with the student having age-appropriate reading skills with spelling skills which are below grade level. This student may be working harder than his/her peers, hiding the problem, and yet still struggling. In this case, the teachers and parents may be unaware of the student's secret struggle which means that the child may be labeled as lazy or not working up to potential. On the other end of the spectrum, there may be a student who is in fourth grade, who cannot identify the sounds and symbols of the alphabet and cannot read a single sight word. While teachers and parents have recognized the struggles of this student from an early age, and the student has received numerous interventions, none of them have been successful because they have not targeted the dyslexia with specific interventions which focus on the student's phonological awareness deficits and visual attention span deficits.

Hence, assessing each individual student's difficulty on a case-by-case basis is critical to obtaining an accurate diagnosis (Wennås, 2013; Mather & Wendling, 2012). The first step in assessment of dyslexia is the screening process which determines whether the reading fluency issue is due to dyslexia or whether it is due to some other factor (Mather & Wendling, 2012). Once a student is screened, then the formal assessment process of evaluating the student for dyslexia begins. The main areas which need to be evaluated when determining if a student has dyslexia include: phonological awareness, working memory, rapid naming, processing speed, orthographic awareness, and phonological memory (Mather & Wendling, 2012). In addition, related deficits may be assessed by evaluating the student's ability to decode abstract words and real words, fluency of reading, knowledge of letters and sounds, and spelling proficiency (Mather & Wendling, 2012). Moreover, when assessing the student's academic and cognitive strengths, the following areas also need to be

evaluated: reasoning and critical thinking skills, mathematical problem solving or calculation, and general intelligence, as well as receptive and expressive oral language abilities (Mather & Wendling, 2012). In conclusion, it is critical for teachers and related professionals to use a wide variety of specific and targeted diagnostic tools in order to properly diagnose dyslexia.

Evaluation

One of the common issues faced by individuals who have dyslexia is reading breakdown; that is, the rate and precision of reading. Specifically, and most critical to the diagnosis, is the fact reading performance on a standardized test is significantly lower than the norm, in comparison to the individual's educational environment and intelligence quotient, or IQ (Mather & Wendling, 2012; Mihandoost & Mihandoost, 2011; American Psychiatric Association, 2000). In other words, dyslexia is not a factor which can be blamed on low cognitive skills or lack of a proper education, but is instead, a neurobiological process of brain dysfunction in terms of literary achievements of reading, spelling, and writing (Fiester, 2012). Furthermore, individuals who have a background in remediating and diagnosing dyslexia quickly realize the student's reading difficulties are not created by a lack of educational opportunities or inadequate teaching methods (Elliot, 2015). Dejerine, cited in Lyon, Shaywitz, & Shaywitz (2003), defined dyslexia in 1891 as a bewildering reading disability which continues to remain accurate even today when describing this type of learning disability. (Mihandoost & Mihandoost, 2011; Lyons, Shaywitz, & Shaywitz, 2003).

Three-step evaluation process for dyslexia.

According to Dr. Sally Shaywitz (2003), there is a three-step evaluation process to determine if a student has dyslexia. First, the student needs to be evaluated according to

education and age (Shaywitz, 2003). Next, the evaluator needs to obtain evidence that there is a discrepancy between the student's reading ability and IQ, and lastly, the evaluator must obtain information on the student's lack of phonological awareness, as well as the student's ability of normal higher-language functions (Shaywitz, 2003). It is very important to evaluate a student's reading level in comparison to what is expected developmentally as well as educationally (Shaywitz, 2003). This is important so a teacher can determine whether the errors are developmentally appropriate. For example, students can exhibit letter reversals up to age seven or eight.

Fluency is also a critical aspect of reading ability to evaluate when assessing a student for dyslexia (Fiester, 2012; Shaywitz, 2003). According to Shaywitz, a student who can read with good accuracy, but has difficulty with fluency while reading is dyslexic (Shaywitz, 2003).

In order to properly assess students with dyslexia, the school's speech language pathologist should screen a student's phonemic awareness abilities (Fiester, 2012; Shaywitz, 2003). One reliable phonemic awareness test is the Comprehensive Test of Phonological Processing (Gamble, 2015; Mather & Welding, 2012; Shaywitz, 2003). Some examples of skills assessed in this test are phonemic deletion, such as say sold without the first sound (old); replacing sounds, such as say sold, but replace the first letter with the /f/ sound (fold); and using pig latin, such as move the first letter of sold to the end of the word and add ay (oldsay) (Shaywitz, 2003).

Looking for a pattern of findings.

In the classroom, when examining students for traits of dyslexia, the teacher must be aware although there is a definition of dyslexia which exists, each individual student will

exhibit different traits with different levels of severity, making some students easy to diagnose at a fairly early age, whereas others may present with more subtle characteristics, and thus remain unidentified (Washburn et al., 2014; Shaywitz, 2003). When making a diagnosis of dyslexia, schools need to look for a pattern of findings (Shaywitz, 2003). Unfortunately, there is no single standardized test score or particular symptom that allows a diagnosis; detecting dyslexia is a complex process and each case will differ slightly (Shaywitz, 2003). A diagnosis of dyslexia depends on many different signs - mainly educators are looking for delays in reading and writing skills and whether this pattern of delays fits the pattern for dyslexia (Palacios et al., 2010; Shaywitz, 2003).

In every case of dyslexia, researchers seem to agree there will always be some degree of phonological weakness. Students with phonological weakness exhibit difficulties with dividing words into syllables (e.g., dividing bacon into ba – con), associating the sound of a letter with the letter name (e.g., h makes a huh sound) and substituting a letter in a word to create a new word (e.g., say pan, now take the puh out of pan and put a kuh in the beginning; what does it say now?).

Evaluating gifted students.

When evaluating gifted students, there are unique circumstances which need to be considered, such as the fact they may perform very well in certain subjects which means their dyslexia may be overlooked (Mather & Wendling, 2012). On the other hand, their giftedness may also be overlooked because of an inability to perform reading or writing tasks on grade level (Mather & Wendling, 2012). Gifted students typically use their strengths to hide their challenges by using their excellent reasoning and language skills to manipulate problems to understand the basic information, but they may be missing critical details of the problem or

the text (Mather & Wendling, 2012). They may appear to have excellent reading comprehension due to their strengths in vocabulary skills, but in reality, they are skipping words due to their inability to decode words (Uhry & Clark, 2005). When a gifted student misspells or misses words, it is often thought the student is lacking in motivation or being inattentive (Mather & Wendling, 2012).

Evaluating English Language Learners.

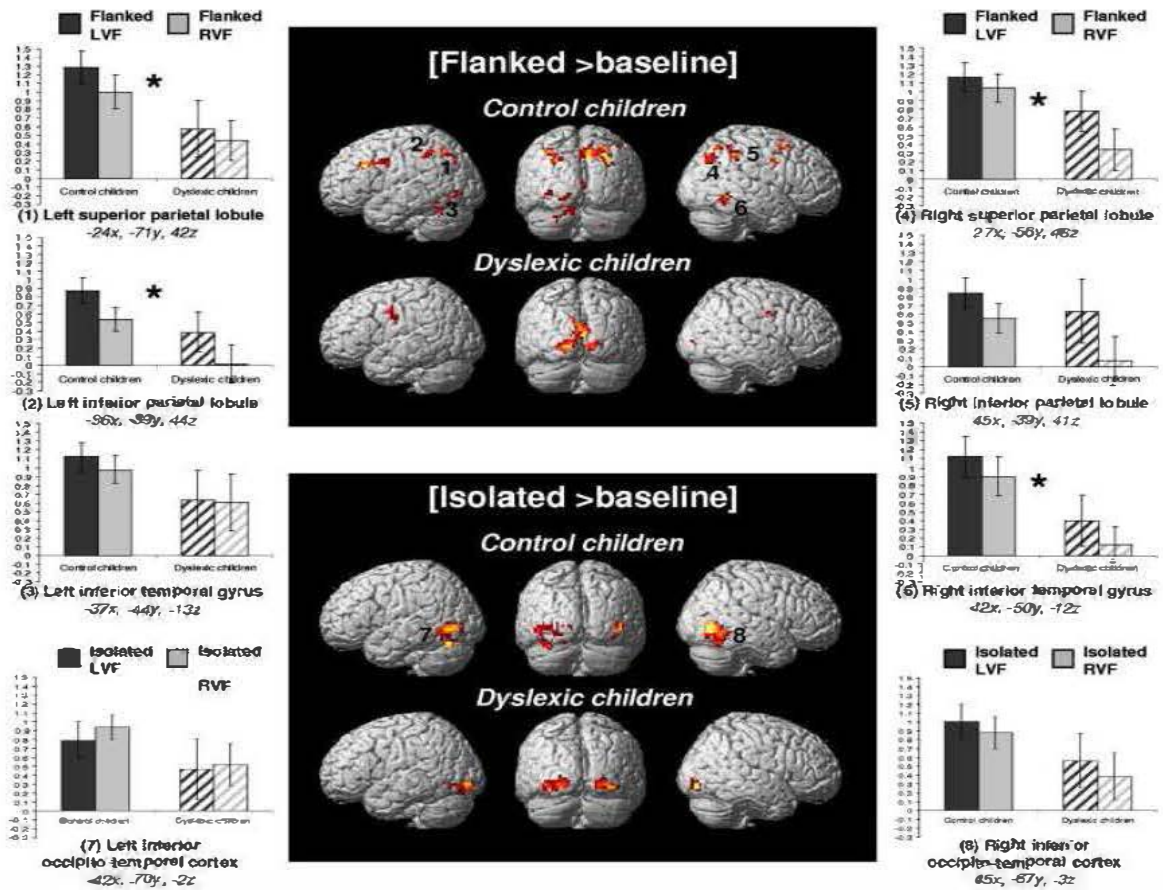
Another population which requires special attention is those who are English language learners. Because of the confounding variable of their difficulty with the English language, their dyslexia may not be readily apparent (Mather & Wendling, 2012). In assessing early English second language learners, there are unique considerations to keep in mind such as the fact their difficulties with learning to read could be mistakenly attributed to their struggles with learning the English language (Mather & Wendling, 2012). An earlier study has shown second language learners obtain remediation for dyslexia two to three years later than students whose first language is English (McCardle, Melee-McCarthy, Cutting, Leos, & D'Emilio, 2005). If a student lacks proficiency in the native language, there may be a disability; whereas if the student is proficient in the native language, but exhibits weaknesses in the second language, dyslexia may not be the culprit (Mather & Wendling, 2012).

Functional Magnetic Resonance Image studies of the brain.

Functional Magnetic Resonance Imaging (fMRI) has changed dyslexia from an invisible disability to a visible one (Shaywitz, 2003). This new imaging now allows researchers to visualize blood flow and activity in the brain while it is processing (Shaywitz, 2003). Studies show when subjects without dyslexia were presented various reading tasks

during an fMRI, the right hemisphere was not as active, whereas the left hemisphere was. In contrast, in an individual with dyslexia, the right hemisphere evidences more brain activity, whereas the left has minimal activity, particularly in the superior parietal lobule (Peyrin et al., 2011; Shaywitz, 2003).

Below is the chart from Peyrin et al., 2011, displaying this data.



In the above chart, the blood-flow in the brain is pictured during a word-reading task during an fMRI. The top image displays flanked stimuli of words presented. The flank procedure refers to a testing technique in which the target word is displayed between two words which are similar in manner to the target word, but are actually the incorrect answer (e.g., the words fat, fast, fist, are presented in a list in which the correct answer would be

fast). In contrast, the bottom image displays isolated words presented (e.g., a word list of single words read by the subject), and various views of the brain are presented to display where the differences occur in the brain activity during reading tasks. The far left image displays the left superior parietal lobule, the left inferior parietal lobe, and the left inferior temporal gyrus, showing decreased activity in the brains of students with dyslexia during reading tasks, while the middle image displays the left inferior occipito-temporal lobe and the right inferior occipito-temporal lobe, showing an unusual pattern of increased activity in this area. The far right image displays the right superior parietal lobule, the right inferior parietal lobule, and the right inferior temporal gyrus, showing decreased cortical (i.e., brain) activity during reading tasks by students with dyslexia in comparison to the control group (Peyrin et al., 2011). In layman's terms, this chart indicates that a student with dyslexia has a problem in the brain, and is unable to process written words efficiently, thus resulting in poor decoding and fluency skills. Decreased brain activity means that there is decreased blood flow in that particular area, and therefore the brain is unable to function properly.

Genetic Influences of Dyslexia

Typically when looking at families, when one parent has dyslexia, there is a 50% chance the offspring will also be affected with dyslexia (Thompson, 2015). There is disagreement, however, in how genetics interact to affect the brain in actually causing dyslexia. Moreover, it is not yet understood why one sibling may be neuro-typical, and another affected with dyslexia.

Elliot (2015) stated estimations varied across studies and tended to be lower in younger students. Dyslexia also varies across languages and differs among socioeconomic status, ethnicity, and schooling (Elliot, 2015; Taylor et al., 2010). Genetic influences appear

to be greater for those with reading difficulties, although it is unclear about the role in the development of reading (Elliot, 2015).

In a study completed on twins and reading ability, researchers discovered twin subjects lacked 100% similarities in their reading abilities. This proves non-genetic factors may also be responsible when it comes to the cause of dyslexia in students. Mather and Welding (2012) stated scientists have come a long way in determining what each gene does, but they also know the genes which are largely responsible for causing dyslexia do not function solely by themselves. Moreover, researchers are also aware that environmental factors may play a role in the way in which adjuvant genes also responsible for causing dyslexia express themselves as well (Mather & Welding, 2012).

Varying Traits of Dyslexia

It may be argued the difficulties associated with dyslexia may be considered perplexing and varied (Wennås, 2013; Georgiou, 2010; Griesbach, 1993) in that there are many different characteristics which are associated with dyslexia for which researchers currently do not have any answers. Each case is highly individualized as well as diverse, and may range from mild to severe. For example, some cases may exhibit letter reversals, whereas others do not. Some cases may encompass visual difficulties, such as words moving on the page, whereas others do not. Some may skip words, but some may not. Some may have difficulty with memorization or following multi-step directions, whereas others do not. Some may have difficulty with breaking apart words into their syllables, whereas others do not (Mather & Wendling, 2012; Shaywitz, 2003).

Treatment of Dyslexia

It has been noted in the research there are three types of reading disabilities: dyslexia, hyperlexia, and a garden-variety reading disability due to a language learning disability (Fajardo, Tavares, Ávila, & Ferrer, 2013; Gough & Tunmer, 1986). Using the Simple View of Reading (SVR) model, developed by Gough and Tunmer in 1986, evaluators of dyslexia can determine whether a student's difficulties lie in decoding, oral language, or in listening comprehension. Those students who can comprehend while text is read to them, but not when they read the text themselves have dyslexia (Gough & Tunmer, 1986), while those students who can read but not comprehend what they have read have inadequate comprehension (Fiester, 2012; Gough & Tunmer, 1986). Those students who have both – cannot read or comprehend text read to them - have mixed reading difficulties, or also might be classified as a garden-variety, slow reader (Gough & Tunmer, 1986). Mixed readers often either lack early linguistic experiences, such as exposure to books and the alphabet or have language disabilities (Tunmer & Greaney, 2010). According to Fiester (2012) and Shaywitz (2003) it is important for all students, but particularly for those suspected of having dyslexia, it is important to start working on phonological awareness at an early age.

Phonological Awareness: Rhyming, Segmenting & Syllables

The first step is to read many rhyming books to students with dyslexia (Shaywitz, 2003). This helps students to recognize parts of words and that some words can sound the same (Shaywitz, 2003). Having students clap or raise their hand when they hear rhyming words can help students build a good foundation for reading (Shaywitz, 2003). The next step is to help students recognize how words can be separated into different parts (Shaywitz, 2003). The first step in this process is to separate a word into its parts, which is called

segmenting (Shaywitz, 2003). Then the student takes the separated words and puts them back together, which is called blending (Oudeans, 2003). An easy way for a classroom teacher to implement this strategy is to begin by having students segment words into syllables by clapping out the syllables in other classmates' names (Shaywitz, 2003).

Segmenting Words into Phonemes

A more difficult task is to segment words into their phonemes (Oudeans, 2003). The teacher starts with the beginning sounds of words, such as what is the first letter you hear in the word *mmmmmmap* (Oudeans, 2003; Shaywitz, 2003). Next the teacher has the student clap out the sounds they hear, such as how many sounds do you hear in the word *see*, *ssss-eee* (Oudeans, 2003; Shaywitz, 2003). The students should clap twice – once for *s* and once for *eee* (Shaywitz, 2003). After mastering this task, the teacher should then have the student blend the word. The teacher should ask the students, “What word do you hear when you hear me say *mmm-aaa-nnn*?” (Oudeans, 2003; Shaywitz, 2003). For students who have difficulty segmenting words, the teacher should use physical objects, such as plastic tokens or squares of colored paper to separate the parts of words. Also the teacher should create jingles, silly stories or rhymes to help make a sound more noticeable such as *lazy lion licks a lollipop*, or *Betty Botter bought a bit of bitter butter, but her batter was too bitter; Betty Botter bought a bit of better butter, and her batter was much better* (Shaywitz, 2003). There is a book by Dr. Seuss titled, “*Fox in Sox*”, which has many tongue twisters and rhyming words which may be helpful for teachers in teaching these skills.

The Alphabet: Letters and Sound Awareness

Once the student has mastered blending and segmenting words, then the teacher can introduce the alphabet. By kindergarten, most students without dyslexia recognize most of

the letters of the alphabet, but not the sounds. Students with dyslexia struggle with identifying letter names, making it very difficult for them to recognize sounds of letters. In teaching students with dyslexia, it is important to realize that there are 44 phonemes, but only 26 letters of the alphabet, meaning that one letter can have more than one sound associated with that letter, thus increasing confusion for students with dyslexia. When first introduced to letter groups, letters, and sound-symbol associations, most students with dyslexia experience difficulties (Leij, 2013; Shaywitz, 2003). This evidence of a struggle should be an initial warning sign of dyslexia, and should not be regarded as typical development of reading by teachers, in the absence of second language learning, low cognition, and lack of exposure to the alphabet and reading (Leij, 2013).

The following chart by Gamble (2015) provided developmental benchmarks as well as instructional strategies which may be used for students Pre-K to third grade and beyond.

<i>Grade Level</i>	<i>Benchmarks</i>	<i>Major Instructional Strategies</i>
Pre-K	<ul style="list-style-type: none"> • Listens to stories • Makes up stories from the illustrations • Is able to repeat some letter sounds 	<ul style="list-style-type: none"> • Story time with emphasis on rhyming • Shared reading • Individual and class story books • Phonological awareness games and activities
Kindergarten (First Half)	<ul style="list-style-type: none"> • Listens to and retells stories in sequence • Deciphers some words by using beginning sounds and illustrations • Demonstrates an understanding of the concepts of print • Is able to repeat most of the letter sounds 	<ul style="list-style-type: none"> • Story time with emphasis on rhyming • Shared reading • Opportunities to retell stories • Individual and class story books • Phonological awareness games • Phonological awareness activities with an emphasis on onsets/rimes and phonemic segmentation • Letter naming activities

<p>Kindergarten (Second Half)</p>	<ul style="list-style-type: none"> • Begins to see the whole picture and is able to summarize stories • Is able to read own writing • Begins to self-correct • Is displaying some fluency with familiar texts • Begins to use word families to decipher unfamiliar words 	<ul style="list-style-type: none"> • Story time with an emphasis on rhyming • Shared reading • Opportunities to retell stories • Phonological awareness games • Phonological awareness activities with an emphasis on onsets/rhymes and phonemic segmentation • Exploration of speech sounds through phonetic activities • Repeated readings
<p>First Grade (First Half)</p>	<ul style="list-style-type: none"> • Has ability to read independently for a few minutes • Is able to recognize various genres • Demonstrates comprehension abilities through discussions • Utilizes higher order thinking skills, i.e. analysis and judgments • Is able to recall specific details of a story • Is able to express the main idea of a story • Begins to use long and short vowels to decode words • Displays greater fluency with familiar texts 	<ul style="list-style-type: none"> • Story time • Shared reading • Guided reading • Opportunities to retell stories • Phonological awareness games • Phonological awareness activities with an emphasis on oddity tasks, blending, phoneme deletion and phonemic segmentation • Multi-model Orton-Gillingham based activities such as Wilson Linguistics or the Project Read programs • Structured phonics activities • Processed speech options such as the FastForWord program • Visualization and Verbalization activities on a regular basis with options for additional time • Reading Recovery options
<p>First Grade (Second Half)</p>	<ul style="list-style-type: none"> • Begins to make predictions based on prior knowledge • Self monitors and self corrects • Displays fluency with familiar and unfamiliar texts • Begins to use a variety of reading strategies to comprehend text • Is able to read independently for greater periods of time, i.e. 15 minutes or more • Begins to read chapter books • Begins to interact with text in an active manner 	<ul style="list-style-type: none"> • Story time • Shared reading • Guided reading • Opportunities to retell stories • Phonological awareness games • Phonological awareness activities with an emphasis on oddity tasks, blending, phoneme deletion and phonemic segmentation • Multi-model Orton-Gillingham based activities such as Wilson Linguistics or the Project Read programs

	<ul style="list-style-type: none"> • Begins to see the question and answer relationships 	<ul style="list-style-type: none"> • Structured phonics activities • Processed speech options such as the FastForWord program • Visualization and Verbalization activities on a regular basis with options for additional time • Reading Recovery options • Reading fluency activities and progress charts • QAR activities • Increased opportunities for independent reading • Integrated reading and writing activities
Second Grade	<ul style="list-style-type: none"> • Is able to make inferences • Is able to use reference material • Is able to read independently for 20 minutes or more • Is able to compare and contrast stories • Interacts with the text in an active manner • Has increased awareness to question and answer relationships • Begins to apply knowledge from print to solving problems 	<ul style="list-style-type: none"> • Story time • Shared reading • Guided reading • Opportunities to retell stories • Phonological awareness games • Phonological awareness activities with an emphasis on oddity tasks, blending, phoneme deletion and phonemic segmentation • Multi-model Orton-Gillingham based activities such as Wilson Linguistics or the Project Read programs • Structured phonics activities • Processed speech options such as the FastForWord program • Visualization and Verbalization activities on a regular basis with options for additional time • Reading fluency activities and progress charts • QAR activities • Increased opportunities for independent reading • Problem based activities
Third Grade and Up	<ul style="list-style-type: none"> • Displays a complete comprehension of text to include sequence, main ideas, inferences and additional higher-order thinking skills • Is able to interact with text in a highly active manner • Is very aware of question and answer relationships 	<ul style="list-style-type: none"> • Guided reading • Multi-model Orton-Gillingham-based activities such as Wilson Linguistics or the Project Read programs • Processed speech options such as the FastForWord program

	<ul style="list-style-type: none"> • Is able to use knowledge from printed resources to solve problems that have multiple solutions 	<ul style="list-style-type: none"> • Visualization and Verbalization activities on a regular basis with options for additional time • Reading fluency activities and progress charts • QAR activities • Increased opportunities for independent reading • Problem based activities • Reciprocal teaching and reading activities • Multiple strategies for reading the content areas • Close Reading strategies
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Various Approaches to Treatment

Specialized Schools for Dyslexia

Parents of students with dyslexia have attempted various approaches in assisting students with remediating dyslexia. One expensive approach is enrolling the student in a specific type of school for students with dyslexia (Beauegard, 2013; Bendak, 2011). In the state of Washington, there is one such school for dyslexic students. The Hamlin Robinson School in Seattle provides an education for 190 students in kindergarten through eighth grade. The tuition for one year of education at Hamlin Robinson is \$19,875 for one student (first through fifth) and \$21,695 for a student who is in sixth through eighth grades (Beauegard, 2013). The difficulty in this approach is the school is located in Seattle; thus any parent wishing to send a student to the school must live in the Seattle area. Also, the cost, relative to annual income is so astronomical many parents have difficulty in affording the tuition costs. Therefore, limiting factors to this approach would be geographical location and cost of the intervention.

Private Tutoring/Learning Centers

Another approach to help overcome dyslexia is accessing private tutoring or learning centers (Earey, 2013). Parents who can afford this service, pay for a private tutor or learning center; for example, parents will enroll the student in Sylvan Learning Center (Earey, 2013). This is often quite costly depending on the severity of the dyslexia, as students typically require frequent (often two times a week to daily) drills to solidify concepts (Earey, 2013). Furthermore, most students with dyslexia often require several years of specialized instruction to overcome this issue (Earey, 2013). Thus, parents could spend thousands of dollars over the course of a student's education to help their student to overcome the dyslexia (Earey, 2013).

Reading Recovery

In contrast, one other way to remediate dyslexia is individualized reading instruction either in the Special Education Setting--Resource Room or in Reading Recovery if available (May, Gray, Sirinides, Goldsworthy, Armijo, Sam, Gillespie, & Tognatta, 2014). A student with dyslexia who qualifies for Special Education Setting--Resource Room generally has a mild to moderate disability in math, reading, writing or a combination of all three subjects. Students with dyslexia in Special Education Setting--Resource Room can have up to 50% of their instruction in the Special Education Setting--Resource Room (Vannest, Hagan-Burke, Parker, & Soares, 2011). It should be noted that Reading Recovery services are provided in first grade only. Funded under Title I, Reading Recovery is not used in the resource room. Reading Recovery is a separate and distinct program from the services provided in the resource room.

Students qualify for Reading Recovery because they are having difficulty with reading in first grade. Typically, it is the lowest 20% of first grade readers in a school (Chapman & Tunmer, 2011). For those students qualifying for Reading Recovery, instruction is individualized in a pull-out model, typically for a period of 30 minutes for 12-20 weeks (Chapman & Tunmer, 2011; Dunn, 2010). The following describes the delivery model of Reading Recovery services. Typically in Reading Recovery services, the student would receive one-on-one instruction under the supervision of a trained Reading Recovery teacher (Chapman & Tunmer, 2011; Dunn, 2010). Usually one or two specialized reading teachers specifically train in the Reading Recovery program, and these teachers often provide the bulk of the instruction to the first grade students. On a daily basis, students in Reading Recovery will be asked to read two to three short, familiar books selected by the Reading Recovery teacher. Initially, these beginner books may only have one word per page and gradually increase in sentence length and complexity. Students are taught basic literacy skills and book awareness, such as how to find the beginning of the book, how to read from right to left, and how to recognize punctuation marks. The Reading Recovery teacher is responsible for tracking student progress, as well as marking errors the child produces while reading. This tracking of errors is referred to as a running record. Running records are useful for making determinations about a student's reading level and reading behavior. For example, a high number of errors made means that a book is considered at frustration level, whereas a low number of errors made on the running record means that the student is functioning independently at that particular reading level. As a part of the teaching method in Reading Recovery, students use magnetic words to sort out words and they write words, phrases, and stories. (Chapman & Tunmer, 2011; Dunn, 2010).

How well does Reading Recovery help students with dyslexia? Although one would expect the answer to be a great deal, actual studies reveal just the opposite (Chapman, Greaney, & Tunmer 2007; Tunmer & Chapman 2004b; Tunmer & Chapman, 2003; Iversen & Tunmer, 1993; Chapman, Tunmer, & Prochnow, 2001). In reality, studies have shown students with dyslexia who have received reading and language intervention using general reading instruction approaches such as Reading Recovery, showed immediate effects in learning letter knowledge and phonemic awareness, but these skills did not transfer to reading and writing (Duff, Hulme, Grainger, Hardwick, Miles, & Snowling, 2014; Fiester, 2012; Chapman & Tunmer, 2011; Shaywitz, 2003). What do these conclusions mean in terms of students with dyslexia who are receiving Reading Recovery services? This means students with dyslexia tend to learn reading strategies in the special educational situation, but are not able to generalize these reading techniques learned in Reading Recovery instruction to reading actual books in the classroom (Chapman & Tunmer, 2011). In other words, it would appear that a systematic, specialized multi-sensory approach to reading which is highly individualized, and targeted on addressing specific phonological awareness deficits and visual attention span deficits, and backed with empirical evidence to remediate dyslexia, is the only effective reading intervention approach for students with dyslexia. Therefore, Reading Recovery does not appear to fulfill this need for students with dyslexia. It would appear that dyslexia requires a different approach than what is currently being offered to the general population of regular education students (Chapman & Tunmer, 2011).

Special Education Setting--Resource Room

Have Special Education Setting--Resource Room services proven to be effective in remediating dyslexia? One of the major drawback to the typical Special Education Setting--

Resource Room model of intervention offered in the traditional public schools is students often do not receive special educational services until the regular education teacher has implemented the list of accommodations provided by the special education teacher (Elliott, 2015). The fact students have to wait for services until accommodations have been put in place further delays the help the student desperately needs, putting the student further behind his or her neurotypical, (peers with normal cognition who demonstrate normal reading skills), same-age peers (Elliott, 2015). In some cases, the student is delayed in receiving reading assistance for an entire year because the special education team wants to determine whether the accommodations are effective in addressing the dyslexia (Elliott, 2015). Because early identification and intervention is critical in remediating dyslexia, the needs of students with dyslexia are being not being well-served by the current special education services model. It would seem that students must experience reading failure and likely embarrassment in front of their peers and teacher due to their poor reading skills prior to being referred for special education services.

Before a student is referred for special services, most schools have a care team intervention process which must be followed. The care team is comprised of a special education teacher, school psychologist, an administrator, teachers, and related professionals (speech language pathologist, occupational therapist, physical therapist, and counselor). The care team offers accommodations which need to be implemented in the classroom. If the accommodations fail to produce the necessary progress, then the student is referred for special services. This process can take a couple months, and sometimes, if the referral is made late in the academic year, the student will not even be seen for special services until the following year (Mather & Wendling, 2012 p. 244)

Response to Intervention

Many schools have implemented another instructional support model called Response-to-Intervention, or RTI. Response to intervention legislation was contained in an amendment to the 2001 reauthorization of the ESEA law, also known as the No Child Left Behind Law of 2001 (Fuchs, Fuchs & Vaughn, 2014). It is a three-tier intervention model which is designed to modify students' learning so they can be successful (Dunn, 2010; Fiester, 2012; Fuchs, Fuchs & Vaughn, 2014). One hundred percent of the students are on Tier 1: Primary Prevention, which means students are instructed in school-wide or classroom instruction. Eighty percent of students are successful with Tier 1 instruction. Ten to 15% of students qualify for Tier 2: Secondary Prevention, which is more intensive, research-based instruction is a supplement to Tier 1 instruction. Five percent of students in a classroom need Tier 3: Tertiary Prevention. Tier 3 is more intensive instruction than Tier 2, and is more individualized instruction still supplements Tier 1 instruction (Printy, & Williams, 2015; Fuchs, Fuchs, & Vaughn, 2014; Fiester, 2012; Dunn, 2010; WABIDA, 2011). Below is a pictorial graph which illustrates the above data, dividing the percentages of students which qualify for the various tiers of support:



Source: Hope of Detroit <http://www.hopeofdetroit.com/response-to-intervention.html>

According to Mather and Wendling (2012), however in some cases RTI is being used to deny students services. Consider the following account:

It has come to the attention of the Office of Special Education Programs (OSEP) that, in some instances Local Education Agencies may be using Response to Intervention Strategies to delay or deny timely initial evaluation for children suspected of having a disability. States and LEAs have an obligation to ensure evaluations of children suspected of having a disability are not delayed or denied because of an RTI strategy (Mather & Wendling, 2012 pg. 246).

RTI is being put into effect in the schools across the nation rather quickly, and it has had a detrimental impact on students with dyslexia, and has lengthened the time it takes for them to be referred for reading intervention (Fiester, 2012; Reynolds & Shaywitz, 2009). Although, the reasons behind the concept of RTI are praiseworthy, the lack of research data to support its efficacy, as well as the lack of support personnel in the schools to properly implement RTI, are problematic (Fiester, 2012; Reynolds & Shaywitz, 2009). Furthermore, there seems to exist an overly confident view among those who pushed for the implementation of RTI, how the real-world challenges would be faced when applying RTI to students with disabilities (Fiester, 2012; Reynolds & Shaywitz, 2009). Some of the problems faced in implementing the RTI model are the challenges in teaching the details of particular programs, how the program relates to the students' needs and culture, the inadequacies in using RTI as means to qualify for a disability or determining the type of disability, and the relevant student-based information needed to implement the most appropriate program for individual student's needs (Fiester, 2012). In addition, the needs of gifted students who have dyslexia are being unmet by RTI (Reynolds & Shaywitz, 2009). RTI programs and practices

which are not fully supported, and insufficiently studied, have been implemented to the detriment of students with disabilities (Reynolds & Shaywitz, 2009). There is a concern among parents and educators that RTI, as a model of diagnosing and treating students with disabilities is not only lacking, but harmful in it prolongs the process of assessment required by special education law, and substituting RTI as a method of treatment (Reynolds & Shaywitz, 2009). As it pertains to dyslexia, RTI can delay appropriate reading intervention for students with dyslexia. (Reynolds & Shaywitz, 2009).

Accommodations for Dyslexia

Most teachers are unaware of the types of accommodations which would be helpful with dyslexia, and are in need of suggestions and further instruction in this area (Elliott, 2015; Thompson, 2014; Washburn 2014). The combination of these factors creates a vacuum in which the student falls through the cracks. The student struggles along until he or she either doesn't graduate or learns coping strategies to survive. In spite of the coping strategies, the student still has to learn how to deal with the underlying issues, such as slow reading and poor word fluency (Fiester, 2012). For example, test-taking can be difficult because the student with dyslexia has to take a longer time to process both the question and the answer. Tests are usually timed, and an individual with dyslexia may not finish a test in time, thus receiving a lower score for not completing the test. Furthermore, the individual with dyslexia may inadvertently misread a word or skip a word while reading in his or her rush to answer the question, resulting in an increase in the number of errors. As students grow to adulthood, this poses problems with finding employment, passing employment screenings, filling out job applications correctly, being accepted into college, receiving acceptable grades in college, and graduating from college (Burns, 2015). For people with

severe dyslexia, finding housing; applying for benefits; receiving any type of governmental aid; reading directions to get somewhere; following a recipe; reading the newspaper, journals, textbooks, books, magazines, or on-line correspondence; and filling out a health history at the doctor's office could all be serious impediments encountered throughout life (Nalavany, 2012; Shaywitz, 2003).

The number of American school-aged children affected by dyslexia in the United States is four to 20 percent, which is a significant number in terms of the entire population of students who have dyslexia (Washburn, 2014; Fiester, 2012; Jiménez, de la Cadena, Siegel, O'Shanahan, García, & Rodríguez, 2011). It has also been documented that over 40 million American adults have some form of dyslexia (Washburn, 2014; Fiester, 2012; Jiménez, de la Cadena, Siegel, O'Shanahan, García, & Rodríguez, 2011). When dyslexia is broken down by race, studies show all races are equally affected by dyslexia (Washburn, 2014; Jiménez et al., 2011). High income students are affected as equally as low-income students (Washburn, 2014; Jiménez et al., 2011). It is equally prevalent in boys as in girls, with an even 50-50 ratio of boys to girls (Washburn, 2014; Jiménez et al., 2011).

Prevalence, ADHD, and Psychosocial Aspects

Students with dyslexia comprise up to 80% of all of the students who are labeled as Specific Learning Disabled (SLD) under the Individuals with Disabilities Education Act in classrooms across the United States (Washburn, Binks-Cantrell, & Joshi, 2014). Lapranik (2015) found the total number of students who entered higher education with a diagnosis of dyslexia in the United Kingdom, increased from 2,337 in the 1994/95 school year to 34,095 in the 2010/2011 term. This was an increase in students with dyslexia from 0.4% of the student population to 3.8% of the student population.

In the United States, it is estimated somewhere between four to 20 percent of the population have dyslexia, depending on how it is defined and diagnosed (Thompson, 2015; Julian, 2013; Fiester, 2012; International Dyslexia Association, 2012; The International Dyslexia Association, 2012). While the International Dyslexia Association lists the incidence at 10-20%, other sources, such as the American Psychiatric Association (2000) and the Diagnostic and Statistical Manual of Mental Disorders (text revision; DSM-IV-TR) report the incidence to be much lower – between five and 10 percent or even as low as four percent (Konicarovia, 2014; Bendak, 2011; Mihandoost & Mihandoost, 2011). This four to 20 percent figure is only an estimate because dyslexia isn't diagnosed in every individual who has it, meaning it is often under-diagnosed or misdiagnosed, masquerading as a different type of disability (Fiester, 2012; The International Dyslexia Association, 2012). As a general rule, the identification of dyslexia in individuals has continued to increase greatly over the past 250 years (Elliot, 2015).

Experiences with Dyslexia and its Social-Emotional Impact

Many students with dyslexia experience difficulties in school, but never try to discover what the problems might be (Shaywitz, 2003). Students who have never been diagnosed with dyslexia work harder than atypical students (Shaywitz, 2003).

One student who was earning his degree in philosophy was quoted:

I have always done well in school... If I didn't get something, I would study it and study it and study it until I did. If it meant staying up much (or even most) of the night, I would put in whatever work was necessary to do well. Until recently, I never thought anything of this. I figured that the problems that made me have to put in so much overtime were the same problems everyone had. No one ever thought I might

have dyslexia. I always did well in school. I was the smart one. I got A's...(Shaywitz, 2003 pg. 153).

Shaywitz (2003) also mentioned the case of one student who evidenced warning signs of dyslexia from an early age. With a family history of dyslexia, the student also displayed speech-language delays, including an articulation disorder (i.e., difficulty in producing specific sounds) (Shaywitz, 2003). In early elementary school, he had such difficulty reading that he would hide under the table when asked to identify letters of the alphabet (Shaywitz, 2003). His classmates then teased and bullied him about his reading disability to the extent that his parents ultimately enrolled him in a private school. (Shaywitz, 2003). At the private school, he grew to have good comprehension skills when given enough time to process the text but on timed tests scored several levels below grade level (Shaywitz, 2003). Due to coping strategies, the student was later able to attend medical school (Shaywitz, 2003). Some of his coping strategies involved using a laptop to complete reports on a word processor; using a ruler to track words while reading; highlighting difficult vocabulary; writing down everything he read, including notes on lectures and his textbooks; recopying his notes until he had a firm grasp of the topic; and studying and taking tests in a quiet environment (Shaywitz, 2003).

Dyslexia and ADHD

In discussing dyslexia, it is important to note it frequently co-occurs with Attention Deficit Hyperactivity Disorder (ADHD), and thus an overview of ADHD becomes relevant to the discussion, diagnosis, and treatment of dyslexia. It is estimated that 30% of students with dyslexia also have ADHD (Konikarova, 2014; Siegel, 2013). Research shows students with a combination of ADHD and dyslexia have a high occurrence of reading and spelling

errors, attentional deficits, various behavioral problems such as involuntary and uncontrolled speech and movements, and high sensitivity to psychosocial stress (Konicarovia, 2014; Fiester, 2012). Both ADHD and dyslexia are highly prevalent in the general population, as well as co-existing in the population of students with ADHD (Konicarovia, 2014; Wietecha, Williams, Shaywitz, Shaywitz, Hooper, Wigal, Dunn, & McBurnett, 2013; Sexton, Gelhorn, Bell, & Classi, 2012; Germano, Gagliano, & Curatolo, 2010). Given the afore-mentioned statistical data, dyslexia may coexist in about 15% of the student population (Konicarovia, 2014; Sexton, et al., 2012; Germano et al., 2010). Approximately 10% of students have ADHD and five to ten percent of all students have dyslexia (Konicarovia, 2014; Sexton, et al., 2012; Germano et al., 2010). The results reveal the urgent need to concentrate on research of specially designed educational programs which are uniquely and specifically focused on remediating the types of reading issues seen in the population of students who have dyslexia along with a comorbid diagnosis of ADHD (Konicarovia, 2014; Wietecha et al., 2013; Sexton, et al., 2012; Germano et al., 2010). In other words, research and reading interventions should focus on not only intervention for dyslexia, but on intervention which targets both ADHD and dyslexia, since they often co-exist.

Spelling errors in dyslexia may be due to attention issues.

One study showed in comparison to typical peers, students with dyslexia had a significantly increased frequency of spelling errors during dictation or text production. They also had increased difficulties with letters and spelling of words (Re & Cornoldi, 2010, 2013; Re, Caeran, & Cornoldi, 2008; Re, Pedron, & Cornoldi, 2007; Goswami, 1999). Kroese in 2000 and Re and Cornoldi in 2013, the researchers proposed these spelling complications are most likely associated with self-regulatory and attentional problems, although, students with

ADHD and dyslexia may have different neurocognitive makeups (Re & Cornoldi, 2013; Kroese, Hynd, Knight, Hiemenz, & Hall, 2000).

Psychosocial Stressors and Dyslexia

As mentioned previously, students with dyslexia and ADHD are extremely susceptible to a number of psychosocial stressors. Some of these psychosocial stressors include such feelings as inadequacies of self-worth, poor self-esteem, and wanting to belong in a group. (Thompson, 2015; Julian, 2013; International Dyslexia Association, 2012; The International Dyslexia Association, 2012). These psychosocial stressors create serious challenges for students with dyslexia who are trying to learn in a normal classroom environment (Koniarova, 2014).

Acceptance of Dyslexia

More recently, there has been an increasing tendency towards a world-wide acceptance of the beliefs and research contributions of neurologists in the field of dyslexia. However, researchers continue to exercise a great deal of restraint, as well as divergence of opinions in their use of the word dyslexia as a neurological condition worthy of study and recognition (Georgiou, 2010).

The *International Dyslexic Association* defines dyslexia in the following manner: Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and /or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and

reduced reading experience that can impede growth of vocabulary and background knowledge (IDA, 2015; Siegel, 2013).

Some traits of dyslexia are more discrete; whereas at the same time other attributes are more apparent and more pronounced (Georgiou 2010; Shaywitz, 2003). It is imperative to understand not every attribute is existent in every person with dyslexia (Georgiou 2010; Shaywitz, 2003). Various symptoms present or absent in any one individual may vary with the severity of dyslexia or the way in which it impacts the individual's academic performance and life-long achievement (Georgiou 2010; Shaywitz, 2003). Furthermore, dyslexia should not be associated with intelligence or lack thereof (Georgiou 2010). Additionally, there appears to be a discrepancy and disagreement as to whether dyslexia is related to visual-attention processing issues or whether it is more of a neurolinguistic, which is a branch of linguistics dealing mainly with the biological basis of the relationship of the human language and brain) (Wiśniewski, 2007), processing issue with visual components (Georgiou, 2010).

Dyslexia Issues

Students with dyslexia are often labeled as Specific Learning Disabled because they have normal intelligence, yet have difficulty with reading (Elliot, 2015; Siegel, 2013). They often have to read more slowly and carefully than their peers, and often have to read something two or three times in order to comprehend the written text (Siegel, 2013). Students with dyslexia often are uncomfortable reading out loud because they have difficulty sounding out multi-syllabic words, and transpose, omit or add letters when they are reading (Siegel, 2013).

Shaywitz (2003) described the following inattentions a student with dyslexia experiences while trying to read:

If you cannot penetrate and decode enough words on a page, reading is like gliding over ice: You never get into the words and of course, their meanings. Why would someone continue to pay attention to words that have no meaning for him? Would you continue to read what a foreign text you cannot decipher is in essence? After a while you would lose attention, start daydreaming, stare out the window, and then give up. Furthermore, the necessity of devoting all his attention to decoding the words on the page makes a dyslexic reader extremely vulnerable to any noise or movements. Reading for him is fragile, and the process can be disrupted any moment. Any little sound draws his attention away from the page is a threat to his ability to maintain his reading. He needs all his attention to try to decipher the printed words.

In contrast, a fluent reader has attention to spare, so room noises are not likely to interfere with his reading. The practical consequences of this fragility are that dyslexic readers often require an extremely quiet room in which to do their reading or to take tests. (Shaywitz, 2003, p. 116).

Students often have multiple spelling errors even after using the computer software program Spell Check on their writing assignments (Siegel, 2013). As they progress in the course of their education and continue on into their adult lives, students will often experience difficulty with mastering foreign languages, and will avoid courses or projects at work which place a heavy emphasis on extensive reading or writing requirements (Siegel, 2013).

Post-Mortem Studies of the Brain

Post-mortem studies on the brains of individuals with dyslexia showed focal abnormalities (i.e., a part of the brain that is not functioning properly) in various areas of the

brain (Galaburda, Sherman, Rosen, Aboitiz, & Geschwind, 1985). Other studies (Eden et al., 2004, Aylward et al., 2003, Temple et al., 2003 and Simos et al., 2002) revealed subjects with dyslexia had a dysfunction in the area of the brain responsible for phonological processing skills. In other words, subjects with dyslexia had impairments in the part of the brain which control phonological processing. Neuroimaging (i.e., fMRI studies) supports the theory of the lack of development in the VWFA region and visual processing. In other words, the part of the brain in which reading is processed is dysfunctional (Eden et al., 2004; Aylward et al., 2003; Temple et al., 2003; & Simos et al., 2002).

The Need for Resources and Training on Dyslexia

Clearly, there is a vast need to provide more resources for parents, teachers, and related professionals in regards to dyslexia (Thompson, 2014). This population is currently being underserved due to the narrow definition of special education laws and the way in which there is no specific category for dyslexia and thus specific provision of services for it. Further, there are limited dyslexia specialists who exist in the state due to a general lack of awareness of the condition and a imperceptions about it being a general reading disability which may benefit from general reading instruction. Also lacking are specific trainings and workshops in dyslexia being offered by the state through the ESD (ESD 123, personal communication, March 25th, 2015; Fiester, 2012). Some agencies, however, such as the International Dyslexia Association, do offer webinars on dyslexia for parents, teachers, and related professionals.

Using Social Media

What types of resources are currently available for dyslexia? Social media is one way in which parents, teachers, and related professionals can hear success stories, encourage each

other, and recommend various treatment programs. One example of social media outreach involves the organization, Decoding Dyslexia, which has a chapter in every state. Each chapter has its own Facebook page and each page is linked to each state. When a chapter sponsors a webinar, it is posted on its Facebook page so every chapter can benefit from the webinar. Webinars offer exciting opportunities for parents, teachers, and related professionals to learn the very latest research, techniques, and methods of instruction in reading instruction in dyslexia. Although these programs do exist online, not every individual knows how to access them. One of the comments from the OSPI representative with whom I spoke in May 2015, was there was a low volume of activity on the Washington State Dyslexic Handbook page (L. Potts, personal communication, May 13, 2015). The representative felt that this was due to the fact that individuals either lacked access to the site or lacked awareness of the site. According to the representative: “What is notable is that folks don’t access the services at the ESDs. We believe this is because there is a communication gap between what people understand and the ease of finding information” (L. Potts, personal communication, May 13, 2015).

Training Availability

When assessing the teaching of reading skills of elementary school teachers, it was determined while most teachers understood basic language concepts, such as counting syllables in a word, as a whole, they lacked understanding poor phonemic awareness was a major contributing factor to dyslexia (Fiester, 2012; Washburn, Joshi, & Binks-Cantrell, 2011). Thus, this research indicated there is a need for teachers to obtain specific training and professional development in how to teach reading skills to students with dyslexia. More training is needed in the areas of understanding the definition of dyslexia, how it affects the

brain, the phonological awareness and visual attention span deficits faced by students with dyslexia and the ways in which these issues can be successfully addressed and remediated.

One of the biggest issues with awareness and training in dyslexia in Washington State is the lack of college programs in dyslexia. Currently, there are no endorsements or masters degrees being offered specifically on dyslexia in the state of Washington. Individuals who wish to pursue a Master's in Education with an endorsement in dyslexia must be accepted at University of Southern Mississippi and Texas and may take on-campus or on-line classes (Dyslexic Therapist, 2015; Dyslexic Training Institute, 2015; Masters of Education Degree in Dyslexia Therapy, 2015). However, an endorsement in another state may not result in an automatic endorsement in Washington State due to lack of reciprocity. Another option is to attend a workshop on dyslexia. Workshops, however, may present barriers for parents, teachers, and related professionals due to costs of workshops, travel issues, language barriers for those whose first language is not English, scheduling issues, time off work required, and hotel/travel costs. For many parents, teacher, and related professionals in the state of Washington, because most workshops on specialty issues such as dyslexia are scheduled in the larger cities, attending a workshop means traveling several hours, staying in a hotel, possibly arranging for childcare, and taking leave from work. For parents, this leave would most likely be unpaid. While this is suitable for some lifestyles, those with families, small children, or other obstacles may find such a task to be difficult, if not cost-prohibitive.

Attending a single workshop could run well into hundreds, if not thousands of dollars, particularly if it was located out of state. For school districts which are already facing economically difficult times, hiring a speaker on dyslexia may be another option. However, this option may not fit with the particular requirements or needs dictated by the

state, and thus there may not be any money allocated for such a topic. Administrators have to broadly serve all populations, and thus in-service topics are usually focused on such topics as classroom management, how to make accommodations for students in the classroom, and improving relationships with colleagues and parents. Additionally, in-service topics must be focused on such things as the latest state assessment and how to improve test scores of students. Attitudes towards dyslexia as being simply a part of the broader spectrum of a learning disability that does not warrant special attention may also direct funding for training away from the issue of dyslexia. Thus, a huge gap exists. There is clearly an unmet need in this area (Cassidy, 2015).

This project plans to fill the unmet need by bringing a host of necessary resources directly to those parents, teachers, and related professionals of students with dyslexia who need it the most in an affordable, easy-to-understand format, which is accessible from the comfort of the home. This website will draw the attention of parents, teachers, and related professionals through its interactive, colorful, and vibrant format.

Summary

Chapter two provides a comprehensive review of the current literature on dyslexia; a brief overview of the federal educational laws pertaining to provision of services for individuals with dyslexia; the occurrence of the syndrome; and various social, emotional, academic, and vocational issues related to dyslexia. Furthermore, a discussion on the different treatment strategies which may be effective in overcoming dyslexia was included.

Neurological bases of dyslexia were discussed in terms of how students with dyslexia process reading in the brain in comparison to neuro-typical individuals. In addition, detail is provided regarding the patterns of brain activity visualized during reading tasks during an

fMRI with neuro-typical subjects versus those with dyslexia. This chapter also discussed how students with dyslexia are being under-served due to a lack of professional development which should be provided through the nine Educational Service Districts in Washington State. Chapter Three will discuss the procedures for the study.

CHAPTER THREE

PROCEDURES OF THE PROJECT

Introduction

The purpose of this project was to update the 2011 Washington State Dyslexic Resource Guide and develop a website where parents, teachers, and related professionals can easily access dyslexia information to assist K-12 students. To provide up-to-date information for parents, teachers, and related professionals on dyslexia, an interactive website was developed and the 2011 Washington State Dyslexic Resource Guide was updated. These resources will not only support each of these stakeholders, but will also provide compliance with the laws in the state of Washington.

Using the Central Washington University Online catalog, I accessed the Academic Search Complete database and researched articles on dyslexia. I then searched the internet for current Washington State laws on dyslexia. Additionally, Dr. Shaywitz's book *Overcoming Dyslexia* (2003) and Dr. Mather and Welding's book *Essentials of Evidence-Based Academic Interventions* (2012) provided further sources of information for this project.

Role of the Researcher

Over the past 19 years in K-6 public education, I taught students with moderate to severe disabilities in both life skills and self-contained classrooms. During this time I provided interventions and support for students with dyslexia as well. I also collaborated with the resource room teacher, colleagues and other professionals. To further my knowledge, I attended trainings, workshops and post graduate coursework regarding reading intervention methods to best support the needs of students as well as evaluate how these

interventions fostered student success. In addition, I served as a speech and language pathologist where I treated students with deficits in phonological awareness skills. Currently, I serve as a library media specialist, reading to and with students in grades K-6 with and without dyslexia. In addition to my professional commitment, my personal interest in this project stems from a family history of dyslexia and as a parent of a child with dyslexia.

Project Development

Because of my professional experience with dyslexia and my desire to help students who were struggling with dyslexia, I developed a keen interest in developing a dyslexia resource guide for our parents, teachers and related professionals. I discovered there was a lack of resources regarding dyslexia in the school libraries' professional development collections throughout the school district. Since the library at which I was employed lacked any resources on dyslexia, a resource guide for the library was needed.

For the purposes of this project, I interviewed various school personnel, such as the school psychologist, speech language pathologist, and the resource room teacher. Each of these professionals stated they had never worked with students with dyslexia. They reported if a parent was concerned about a child having dyslexia, they would test for SLD. With this information, I researched journal articles to discover more about the definition, identification, the prevalence, diagnosis, and treatment of students with dyslexia. I also researched Washington State Law and the legal aspects of special education as it pertains to dyslexia.

Following my investigative research and a review of the literature, I contacted experts in the field of dyslexia, such as Susan Barton from Bright Solutions, Drs. Brock and Fernette Eide from Dyslexic Advantage, Dr. Pierson from the University of Michigan Dyslexia Help, and Drs. Bennett and Sally Shaywitz from Yale University's Center for Study of Learning

and Attention. These individuals referred me to information provided on their websites. Ms. Barton held a telephone conference with me in addition to communicating via e-mail and gave me insight into the phonological aspects of dyslexia. I also contacted Dr. Norman Murphy to obtain information about the Irlen Lenses and gained information about visual aspects of dyslexia. Further I paid particular attention to a number of peer-reviewed journal articles and books on dyslexia which were written by these professionals and other experts as well.

I then researched the state law on dyslexia in Washington State. In searching the Washington State Legislature on-line resource, I discovered information on SSB 6016. This senate bill passed in 2009 states OSPI is required to provide a dyslexia resource guide, an annually updated dyslexia resource guide, and professional development on dyslexia through each ESD in the state of Washington. After reading the law and SSB 6016, I searched for the Washington State Dyslexia Resource Guide and found it was created in 2011. Next, I contacted ESD 123 via telephone regarding their provision of services for professional development on dyslexia. I discovered there had not been a professional development training offered on dyslexia since 2011. I contacted the Director of Research and Policy for OSPI, Kim Brodie, regarding the requirements of the law under SSB 6016, and inquired as to why it was not being implemented. In turn, Kim Brodie directed me to OSPI's Director of Literacy and Professional Learning Integration, Liisa Moilanen Potts. Ms. Potts addressed the lack of funding and encouraged me to update the resource guide with current information, and when it was finished to send it to OSPI.

SSB 6016 specifies the resource guide information may have information provided by other states who have developed resource guides. There are a few states which have dyslexia

resource guides, those states being Texas, Louisiana, Colorado, Mississippi, South Dakota, Washington, Hawaii, and Arkansas. In Texas, each Educational Service District has its own resource guide. Upon searching for other resource guides, a majority were published in a PDF format. The Region Ten Education Service Center in Richardson, Texas included an interactive website so stakeholders could access the information more easily. When I mentioned the idea of an interactive website to Ms. Potts, she stated that she felt it would be an excellent idea for Washington State to have this type of a resource as well.

To best support the OSPI's needs and the wide range of potential readers, an interactive website was developed to serve the needs of all stakeholders. Presenting the resource guide as a PDF format is more time-intensive, in that it requires the reader to scroll to the information needed. In contrast, by offering the interactive website, stakeholders are provided the opportunity to access information more quickly. Another advantage of the interactive website is readers are also given the option to obtain more information through following the hyperlinks (interviews and dyslexic resources) embedded in the information provided. These factors led to the creation of such a site for our state.

Criteria and Project Procedures

As outlined earlier in Chapter 2, there exists a gap in what is clearly required by the law, the funding which is supposed to be allotted for services for students with dyslexia, required training for teachers and related professionals who work with students with dyslexia, and the actual provision of these services, trainings, and accommodations. Therefore, it is clear this project will partially help to fulfill an unmet need for parents, teachers, and related professionals.

The new information that was added to the 2011 Washington State Dyslexic Resource Guide included the following: up-to-date references on dyslexia, information on how dyslexia impacts brain activity and function, phonological awareness strategies, information regarding the Irlen lenses and visual stress, psychosocial issues, updated information on RTI, updated information on the state law regarding dyslexia, and an updated timeline on SSB6016. The website was developed by using the same format as the 2011 Washington State Dyslexic Resource Guide, and incorporated new information as the existing information presented in the guide. This website resource includes videos of famous people with dyslexia, new information which was not in the original PDF document, hyperlinks to the Washington State branch of the International Dyslexic Association, a link to the University of Michigan Dyslexic Help, OSPI's webpage on dyslexia, and information on visual stress and the Irlen lenses. The website resource contains 68 pages, and each page has direct links to all information, as well as a home page or table of contents link to all the information. To access the website a user must have access to Power Point 2013, and must engage the slideshow through clicking on the icon labeled start slideshow. When the user accesses the table of contents, there are hyperlinks to each page, for ease of navigation of the website resource. To navigate back to the table of contents, the user must click on the words table of contents.

With some children at high risk for dyslexia, parents, teachers, and related professionals need opportunities to access information so that students with dyslexia do not fall through the cracks.

There are some children who we know are at high risk for persistent and significant problems in school but who have not fallen far enough behind to meet the formal

criteria for a disabling condition under IDEA. Children with dyslexia may fall into this category because we can often predict the children who are going to have school difficulties at a young age, yet there may not be a significant discrepancy between achievement and intelligence, which is required to classify a student as learning-disabled (Stein & Lounsbury, 2004 pg. 1434).

In order to complete this project, the website development was modeled after The Region Ten Educational Service Center in Richardson, Texas (Dyslexia Handbook, 2015) and incorporated all the information noted in the 2011 Washington State Dyslexic resource Guide. The website was intended to serve as a guideline for school districts to follow when they identify and serve students with dyslexia along with information to better support the needs of parents. Furthermore, the law requires the handbook and trainings to be updated yearly (Benton et al., 2009). ESD training on dyslexia for teachers and parents is required to be provided by law as well. The law allows each ESD to contract out the trainings with a non-profit organization if they so choose. For each training, the ESD is to provide the OSPI with a tally of participants in the trainings, according to specific state law requirements (Potts, 2015; Benton et al., 2009).

To meet the criteria of the state law on dyslexia, in 2011 OSPI partnered with the Washington branch of the International Dyslexic Association (WABIDA) to create a five-day professional development. Also in 2011, as part of the fulfillment of the state law on dyslexia, OSPI contracted with WABIDA to create a state handbook on dyslexia. The legislature provided \$1,265,000 for four years to implement research-based, multisensory literacy intervention for students with dyslexia for the years between 2005 and 2009 (Potts, 2015; Benton et al., 2009). Originally, SSB616 allocated \$145,000 per year. However in

2010, Engrossed Substitute Senate Bill 6444 reduced the funds to \$75,000, and then even further to \$37,000 by December 2010 (Potts, 2015; Benton et al., 2009). Since the year 2010, there has not been any supportive funding from the legislature to supplement trainers to implement professional development trainings, and the handbook revisions have ceased (Potts, 2015).

In the fall of 2014, the Educational Service Districts within the state of Washington reported to OSPI none of the school districts requested professional development training on dyslexia during the 2013-2014 school year (ESD123, personal communication, March 25th, 2015). Upon further research, I contacted a representative from ESD123 and inquired about their dyslexia training schedule, and was informed there were no professional development trainings offered since 2011 (ESD 123, personal communication, March 25th, 2015). Hence, this lack of trainings thusly further underscores the great need for this project.

Given the fact there are currently no trainings or workshops planned by ESD 123, this project was extremely important to the community of parents, teachers, and related professionals of students with dyslexia. As a result, this highly-needed project was deemed to be a valuable resource for the community, in that, with an interactive site of the handbook in which interested parents, teachers, and related professionals would be able to obtain information needed on dyslexia. Interested persons would log on to OSPI or The International Dyslexic Association's websites, and there would be a link to the Washington Dyslexic Handbook. In conclusion, each section of the handbook had a page parents, teachers, and related professionals could access quickly and easily.

In addition to quick access, format and form of the website will be clear and easily accessible. Because information must be easy to understand and not written in technical

jargon, information provided on the website was written in easy-to-understand language and terms which individuals were able to distribute and read. In order to illustrate the information and make it easy to understand, statistics and other information were presented in user-friendly formats. Using fact sheets, the information was created to be easily understandable as well as dynamic, and visually-appealing to the individuals who were searching for information on dyslexia.

Further, the web page contained basic facts about dyslexia. Some of the information included statistical information on demographics, the influence of genetic and environmental factors and predispositions, the prevalence, and statistical distribution of the condition across race, gender, and socioeconomic status. A standard definition of dyslexia was provided, as well as facts and common myths about dyslexia, and well as other reading disabilities which are not classified as dyslexia. Moreover, helpful curriculum such as Barton Reading, Writing, and Spelling, which is proven to work was listed on the site. Additional resources included classroom interventions and accommodations such as time extensions on tests, testing in a quiet room, colored lenses and overlays and the Irlen lenses. Furthermore, links to dyslexia specialists were provided, such as Susan Barton of Bright Solutions and links to articles, as well as links to various state handbooks on dyslexia. In addition, the page included links to videos such as testimonies, and success stories about struggles with dyslexia and overcoming dyslexia. Also featured on the site were lists of famous people with dyslexia such as Jeremy Bonderman. Jeremy Bonderman played baseball for Pasco High School, was rejected by one team due to his dyslexia, and hired by another team, and ended up pitching for the Detroit Tigers in the 4th game of the 2006 World Series. Also included on the list of famous people was Tom Cruise, a famous actor, and Charles Schwab, a famous broker and

investor. Other famous people on the list included Albert Einstein, a famous physicist, Magic Johnson, a hall of fame basketball player, and many others. In conclusion, the web page was created with the intent of being visually attractive as well as engaging to the reader. In an effort to reach a greater number of people in the community, the web page also included various hyper-links to connect the page to other, related sources of information.

Summary

Chapter Three discussed the history of the RCW 28A.300.530 and SSB6016 bill and how, in order to fulfill the requirements of the state law regarding provision of services and resources on dyslexia, the state of Washington needed an updated handbook on dyslexia. The main objective of this project was to make the handbook interactive, and web-based. Consequently, parents teachers, and related professionals could quickly and easily access necessary information on identification, prevalence, and treatment of dyslexia. As a result of providing this resource, parents, teachers, and related professionals could (a) use a checklist to screen students; (b) have quick access to names of tests used in assessment of dyslexia; (c) be supplied with names of local professionals skilled in identification and treatment of dyslexia; (d) be given titles of books and articles for further reading on the subject.

Other helpful resources on the site included links to websites and computer applications related to dyslexia identification and remediation. Some of these computer applications provided compensatory strategies for note-taking, reading, writing, and spelling, and were designed to help students to achieve a higher degree of literacy. The next chapter, Chapter Four, will describe the project, such as the goals of the project, project description, and project implications.

CHAPTER FOUR

THE PROJECT

Introduction

The purpose of the project was twofold: (a) to gather dyslexia resources for parents, teachers, and related professionals to use for students who have dyslexia, and (b) to serve as a supplement to the professional development training handbook as recommended in SSB 6016 and RCW 28A.300.530 Individuals with dyslexia — Identification and instruction — Handbook — Reports (Benton, McAuliffe, Roach, Honeyford, McDermott, Sweckler, & Delvin, 2009). The overarching objective of the website was to inform and educate parents, teachers, and related professionals on the identification and prevalence of dyslexia as well as provide screenings and tests which parents, teachers, and related professionals could use to properly identify students with dyslexia. This was for the stated purpose of early intervention and remediation of dyslexia. A second overarching objective was to provide a list of accommodations to use in the classroom as well as provide remediation resources which could be implemented at home and school. One example of such a resource was the information contained in the Washington State Handbook on Dyslexia.

The target audience for this project was the parents, teachers, and related professionals who have students who have dyslexia in grades Kindergarten through sixth grade. Further, the website resources provided were designed to be beneficial to all parents, teachers, and related professionals who had students with dyslexia. A draft of the website and guide was completed in August of 2015, and it provided hyper-links to other sources, as well as video testimonies. Moreover, lists of interventions, lists of accommodations, and links to specialists in dyslexia were also included. No special training was needed, as

website use will be independent-use, and user-directed. In regards to the module format, a Microsoft PowerPoint Presentation was used.

Regarding the project goals and purpose, the goal was to provide a higher-level quality of services for students who have dyslexia. Because of this project, parents, teachers, and related professionals were better able access the Washington State Handbook of Dyslexia via an interactive website. Regarding advertising and access, the website was advertised through the ESD 123 professional development website, OSPI, and WABIDA, parents, teachers, and related professionals, could access this website for personal educational growth. Regarding the lay-out of the project, the presentation of the website was laid out in the following manner: definition of dyslexia, history of dyslexia, prevalence of dyslexia, how to screen for dyslexia, effective tests for dyslexia, and remediation and accommodations for the classroom teacher.

Project Overview

Project Goals

Goal One: Targeting Parents

The main objective of the project was to create a myriad of resources proven to be effective for identifying and treating students with dyslexia. Some of these resources included: a website which listed specific information on dyslexia, such as a definition, prevalence, issues, the process of diagnosing dyslexia and common tests used in its evaluation, methods used in treatment of dyslexia, famous people with dyslexia, and curriculum which is proven to be efficacious for students with dyslexia. The intended audience for this goal is to inform parents about how to identify and different treatments of dyslexia.

Parents were primarily targeted because they are the student's first teachers, and they are often the first to notice there are delays as well as differences in their child's learning of the alphabet, as well as in their ability to recognize letters and rhyme words. In addition, parents may ask for a referral for special education services when they notice these delays, and may be the student's best advocate for receiving assistance with overcoming dyslexia. Parents may also be involved by being a part of the remediation process at home.

Goal Two: Targeting Teachers and Related Professionals

Next, it was deemed important to target teachers because they are the ones who are familiar with developmental norms for students in grades kindergarten through third grade, and can offer early interventions which can help students with their reading. Teachers can refer to other professionals, such as speech-language pathologists to assess and treat phonological awareness skills. In addition, related professionals who were targeted included: the Special Education Setting--Resource Room teacher, who may be assessing the student's reading level, and may help provide accommodations for the student with dyslexia prior to the referral for services. As well, the Title I teacher may be the first one to observe that the student's issues are not just developmental, and may be the one providing reading intervention for the student with dyslexia.

Additionally, the psychologist may also be involved in testing the child and coordinating the testing and meetings with the parents, teachers, speech language pathologist, and other professionals. Next, the counselor may be involved due to psycho-social issues related to dyslexia. Naturally, the speech language pathologist may be involved with phonological awareness testing and therapy. Also, a vision therapist may be involved in vision therapy. Further, the optometrist may be involved in issues pertaining to vision and

recommendations for lenses if needed; administrators, who may be involved in purchasing decisions of curriculum to benefit students with dyslexia, as well giving their approval of funding for therapy and services needed for students with dyslexia. In addition, administrators may be responsible for allocation of funds for, and arranging for professional development for teachers and related professionals involved with students with dyslexia. These individuals were all stakeholders in this project because of the various ways in which their roles may impact students with dyslexia.

Goal Three: Assisting Students by Increasing Public Awareness of Dyslexia and Compensatory Strategies and Accommodations

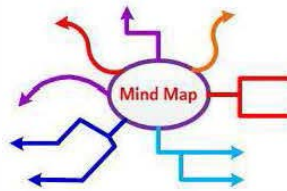
The third goal on assisting students who have dyslexia is learning compensatory strategies, such as Smartpens; alternative tests, such as essay versus multiple choice; audios of literature for assigned reading extra time for test-taking; texts on audio; having a scribe during tests; taking tests in a quiet environment; access to a computer for typing papers to help with spelling errors and homophone errors, as well as letter reversals; computer applications for Ipads; and voice-to-text software, for remediating this particular condition. These compensatory strategies will be listed and sites where the stakeholders can obtain the items provided. Additionally, the purpose of the website on dyslexia was to inform and educate parents and teachers, and related professionals of the etiology, prevalence, and treatment of dyslexia. Primarily, parents, teachers, and related professionals tend to believe the main symptom of dyslexia is the reversal of letters, and while this may be a characteristic of dyslexia, the main characteristic, and the one which is the underlying cause of reading issues in dyslexia is having difficulty with phonemic awareness and/or visual attention span (Mihandoost & Mihandoost, 2011; Shaywitz, 2003).

Compensatory strategies are essential for overcoming dyslexia. Most students with dyslexia have difficulty with word fluency, spelling, and writing (Fiester, 2012). Because students cannot be cured of dyslexia, they therefore need ways to compensate, as well as receive specialized remediation in order to learn how to be effective readers, writers, and spellers. Even with various interventions and accommodations, the effects of dyslexia will remain throughout adulthood (Nalavany, Carawan, & Brown, 2011); thus compensatory strategies are key to the success of students with dyslexia. These modifications should consist of extra time for test-taking; having a scribe during tests; access to a computer for typing papers to help with spelling errors and homophone errors, as well as letter reversals; texts on audio; audios of literature for assigned reading; taking tests in a quiet environment; alternative tests, such as essay versus multiple choice; computer applications for Ipads; voice-to-text software; and Smartpens.

Below is a comprehensive list of compensatory strategies and recommended for students with dyslexia by Dr. Jim Gamble, dyslexia expert for The Madison Institute, TMI Education:

- Students with dyslexia have great difficulty with letters and phonemes without the presence of the whole image of the word. A picture that relates to the word can be helpful. Remember the idea for using flash cards? Consider making your flash cards in the form of a circle with a yellow background and the word printed in a black bold. The human brain recognizes the geometric shape of a circle the quickest and yellow registers the fastest on the retina of the human eye (Based on a couple of studies that I came across a many years ago).

- Scheduling one to one time in order to clarify instructions is a way of appreciating the differences of dyslexic learners and ensuring they are able to progress through the work given.
- Ensure that the instructions that are given to the students are complete. For Example: In math the students are to identify the parallel line segments. The teacher should ask, “Which line segments are parallel to each other?” Not, “Which line segments are parallel?”
- Have students use “Mind Maps” as much as possible. A “Mind Map” is a diagram used to visually organize information. Colors and illustrations are used to personalize the “Mind Map.”



- Whenever possible, assign projects that involve all the senses. The dyslexic student learns best working on projects that involve seeing, listening, discussing and using their hands.
- Integrate movement and other sensory experiences consistently into the daily lessons and classroom routines. Sitting, listening, and writing for long periods of time can be almost impossible for some of the students. Remember the example of students studying their grammar by reading a book while on the move. For example, the students would stop at each period and jump at the beginning of a sentence to denote a capital letter.

- Introduce accommodations in the classroom such as additional time, adjusted length of assignments, and provide opportunities for getting up and moving often.
- Students with dyslexia are often very quick mentally and verbally and will use humor to deflect attention away from their learning problems. Consider allowing them to do stand-up comedy for a couple of minutes on occasion. You may have the next Jim Carrey, Robin Williams, Jay Leno, or Whoopi Goldberg in the classroom. All of whom are dyslexic.
- Recognize that dyslexic students may excel in oral discussions and group projects. Provide as many opportunities in this area as possible.
- Recognize the abilities of dyslexic students to think emotionally, intuitively, creatively, and the ability to see the “big picture.” Incorporate these types of opportunities into class work as much as possible.
- Dyslexic students should be allowed and encouraged to use laptop / tablet computers in the classroom and assistive technologies when appropriate and available.
- Praise the students on what they have accomplished, encouraging them through the next step rather than criticize the lack of work.

Homework

Given the difficulties that dyslexic students may have in class and the fact that they may need to extend much more energy than other students during their classroom time; it is important that we are very careful as to the amount of homework that is assigned.

- Be creative in delivering the task, hooking their interest and make it relevant to what they are learning so they can see the purpose of doing extra work.

- Make sure that you allow sufficient time to explain homework assignments and to bring closure to the lesson. This is important to the students who may require clarification, and translation time.
- Consider announcing the homework assignment during the first half of the lesson so that the students have time to see the relevance, ask any questions, and become more confident.

Goal Four: Increasing Access to Special Education Services for Students with Dyslexia

Given the fact dyslexia is a disability which qualifies for special education accommodations and resources, the school district is obligated to provide this assistance (Leij, 2013). However, students with dyslexia are not being fully served because many do not receive Title I or special education services due to not qualifying for these services (Fiester, 2012). Even when students do qualify for these services, they are ineffective at treating the dyslexia because dyslexia treatment requires specific targeted intervention for dyslexia itself, rather than general reading remediation techniques (Fiester, 2012; Mather & Wendling, 2012, Shaywitz, 2003).

Furthermore, since most school districts do not recognize dyslexia as a separate disability, most students with dyslexia are qualified as specific learning disabled (SLD), which does not provide specific interventions targeting dyslexia (Siegel, 2013; Elliot, 2015). School districts often do not provide curriculums or trainings for parents, teachers and related professionals to meet the needs of students with dyslexia. The main emphasis is on improving general reading scores. In order to qualify as SLD, students need to be qualified by a norm referenced test. This test is a standardized test in which there is a normed sample of typically-developing students. Special education law stipulates that a student must be one

and a half standard deviations below the mean, which would qualify a student for services. Discrepancy between IQ and reading performance must exist, and in addition to that, accommodations must have been previously implemented by the classroom teacher. Moreover, the lack of exposure to reading instruction, as well as second language issues must be ruled out (WAC 392-172A-03045).

According to a Special Education Setting--Resource Room teacher of the Pasco School District, students with dyslexia can qualify for services, receive services for three years, and later, at the time of their three year reevaluation, be retested, and receive test scores that would no longer qualify them for special education services in the area of reading (M. Para, personal communication, May 2015). However, in spite of receiving adequate scores in reading, academically, the material students are required to decode changes in complexity at third grade (M. Para, personal communication, May 2015). This shift in reading is referred to as going from learning to read to reading to learn (M. Para, personal communication, May 2015). This refers to learning how to decode words versus comprehending reading to obtain information (M. Para, personal communication, May 2015). As the student progresses throughout school, the required reading becomes more challenging and students tend to need support (M. Parra, personal communication, May 29, 2015). As a result of these increased challenges, students with dyslexia may not be receiving the proper amount of support at the time in which they need it the most. As stated earlier in the paper, special considerations need to be taken into account for students who are gifted, second-language learners, as well as those who have normal IQ, but do not have a qualifying discrepancy on their test scores (Mather & Wendling 2012). Hence, the current model for diagnosing and treating students with dyslexia is failing to meet their needs.

Goal Five: Providing Information on Links to Helpful Websites and Resources, Colored Lenses and Overlays and Curriculum

In addition to the accommodations already mentioned, links to handbooks about dyslexia from the state of Washington and other states were included in this project. Moreover, information regarding color overlays and colored lenses were also be provided due to the fact research shows certain individuals with dyslexia receive benefit from using colored lenses and colored overlays (Kim et al, 2015). Because parents, teachers, and related professionals may also want to seek out various treatment methods regarding dyslexia, other suggestions for the remediation of dyslexia, such as specific types of recommended curriculum and books to help in treating dyslexia were added as a part of this project.

One of the main goals of this project was to provide a collection of resources in order for parents and teachers to help with the success of students who have issues with dyslexia. The following educational curricula has been proven to be effective in the intervention for students with dyslexia: Orton-Gillingham programs, Davis Dyslexic, Barton Reading Writing and Spelling, Read 180, the Wilson Reading System, Earobics, Language!, Reading Assistance, Starting over, FastForWords, Read Naturally, Retrieval, Automaticity, Vocabulary, Elaboration, Orthography (RAVE-O), Reading Mastery, Readit, Project Read, Open Court, Spell Read P.A.T. and Lindamood Bell programs (See Appendix A) (Gamble, 2015; Mather & Wendling, 2012; Shaywitz, 2003).

Implementing evidence-based reading programs for dyslexia will greatly reduce the number of students who qualify for special services. (Fiester, 2012; Shaywitz, 2003). In a study by Torgesen (2002), an elementary school in Florida implemented an evidence-based

reading intervention program targeting students with dyslexia, and the percentage of students with reading difficulties dropped from 31.8% to 3.7% (Torgesen, 2002).

References included books written by dyslexic experts, such as Shaywitz's *Overcoming Dyslexia: a New and Complete Science-Based Program for Reading Problems at Any Level* and *Essentials of Dyslexia* by Mather and Wendling. Websites with information on Washington States Dyslexic school, Hamlin Robinson School of Dyslexia in Seattle, Washington, The International Association for Dyslexia website, which has the latest information and upcoming workshops on dyslexia, the Washington State Legislation website which has the laws and RCW's from the state of Washington, and websites from other states listing their handbooks on dyslexia. Also included in the reference section are personal communication from Susan Barton, founder of Bright Solutions Dyslexia Inc., Educational Service District 123 personnel; Office of Superintendent of Public Instruction representatives; personal communication from Dr. Gamble, Executive Director of Program Development and Control for TMI Education, Dr. Norman Murphy, co-researcher of the Irlen Lenses for dyslexia, MaryAnn Para, Special Education Setting--Resource Room Teacher at Robert Frost Elementary in Pasco, Washington. Moreover, articles located on the Central Washington University Library (see reference page for complete list of articles) supplied in this project were mostly for the purpose of benefiting elementary school-aged students, but were also deemed suitable for remediation in higher academic grade levels than kindergarten through sixth grade. The reason for selecting this population was due to the fact that early intervention is key to successful academic achievement (Fiester, 2012).

Goal Six: Early Identification

Because research shows early intervention in dyslexia is critical to students' literary success (Elliot, 2015; Leij, 2013; Fiester, 2012), another goal of this project was to provide tools for early identification. One way in which students could be identified early is to educate parents, teachers, and related professionals with information about early screeners, updated information about dyslexia, and ways in which to use different interventions and programs to help work with students with dyslexia. These tools for remediation and identification of dyslexia are most successfully implemented in an individualized, one-to-one instruction, but can be implemented in small group settings as well. Through this project, parents, teachers, and related professionals were provided with a quick checklist of symptoms of dyslexia which they may use initially in order to determine whether there is a concern. Following the initial concern, parents may want to seek out accommodations for their student (Youman & Mather, 2012). Thus, a reference which contains a suggested list of classroom accommodations was also included in this project. These aforementioned accommodations are ones which are required to be implemented prior to a referral being made for a student for special education services.

Goal Seven: Increasing Access to the Washington State Handbook on Dyslexia

Another goal of this project was to ensure the Washington State Dyslexic Resource Guide would be part of the professional development resources located in the school library, and would be available to be loaned to parents, teachers, and related professionals. The handbook was deemed important because it outlines the definition of dyslexia, common indicators of dyslexia, real life experiences with dyslexia, and lists of famous people with dyslexia. Additionally, information on the following was included: Response to Intervention

or RTI; screening and assessing students with dyslexia; instruction and accommodations to use in the classroom; helpful hints for teachers to use in the classroom, supplemental information, such as state and federal law, and legislative history; and a historical perspective on the Washington State Handbook on Dyslexia. Also included is a glossary of terms; frequently used acronyms; a resource page; and reference pages.

Project Implications

Following the completion of this website project, it was projected that school districts would better be able to accurately identify students with dyslexia at a younger age. Additionally, school districts would be able to teach students and families how to better compensate for the syndrome. In addition to more accurately identifying students with dyslexia, parents, teachers, and related professionals would also be informed of the importance of teaching phonemic awareness to students, and using colored overlays and lenses. Furthermore, through this website, parents, teachers, and related professionals would continue to be made aware of multimodality and multisensory approaches such as Orton-Gillingham programs, Wilson, Barton Reading, Writing, and Spelling, and Language! The purpose of focusing on the importance of teaching phonemic awareness is to further the understanding of parents, teachers and related professionals of how it impacts reading. The primary mission of the website was to educate and promote understanding of dyslexia, specifically the definition of dyslexia; the history of dyslexia; the prevalence of dyslexia; how to screen for dyslexia; effective tests for dyslexia; and remediation and accommodations for the classroom teacher. When students with dyslexia learn compensatory strategies for overcoming dyslexia, then there will be fewer students in special education and more time for in-class instruction. As a result, this will increase the amount of successful academic

learners, which in turn means more productive citizens for the community and workforce. Parents, teachers, and related professionals can find the Washington State Dyslexic Resource Guide on OSPI's webpage called About Dyslexia. The web address is <http://www.k12.wa.us/Reading/Dyslexia.aspx>. This page is full of resources to help students with dyslexia, such as resources of families and links to dyslexic organizations which can provide assistance for parents and teachers.

Summary

Chapter four discussed the importance of the website in providing the latest information on dyslexia to parents, teachers, and related professionals. The chapter also discussed accommodations and resources that could be used in the classroom and at home. An updated version of the Washington State Dyslexic Resource Guide will be an excellent resource for all stakeholders.

The Kindergarten through sixth grade students will benefit from the website that was developed through its use by stakeholders. Some items available in the project are testimonials, hyperlinks to other resources, list of accommodations and interventions, and links to dyslexic specialists. The implications of the project were discussed. Moreover, the benefits for a school district, the Orton-Gillingham programs that work best with students with dyslexia, the assessment and treatment of dyslexia were also discussed. The project discussed the history, definition, prevalence, accommodations and remediation in the classroom. Stakeholders will be able to access the updated Washington State Dyslexic Resource Guide handbook and website set forth in the appendices. Chapter 5 will discuss the summary and conclusion of the project and further recommendations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This project created an interactive website resource and updated the 2011 Washington State Dyslexic Resource Guide for parents, teachers, and related professionals who serve students with dyslexia. The need for an updated handbook is significant because the current handbook on dyslexia is out of date and having a web base resource in addition will provide greater access for users. Hence, one of the main reasons for doing this project was to create an interactive website for parents, teachers, and related professionals to easily access information on dyslexia. The interactive website includes hyperlinks to information about dyslexia and video interviews of celebrities who have dyslexia. Further, it was meant to update the 2011 Washington State Dyslexic Resource Guide, provide information regarding dyslexia, afford a better understanding of Washington State law, and increase interventions and support for students with dyslexia.

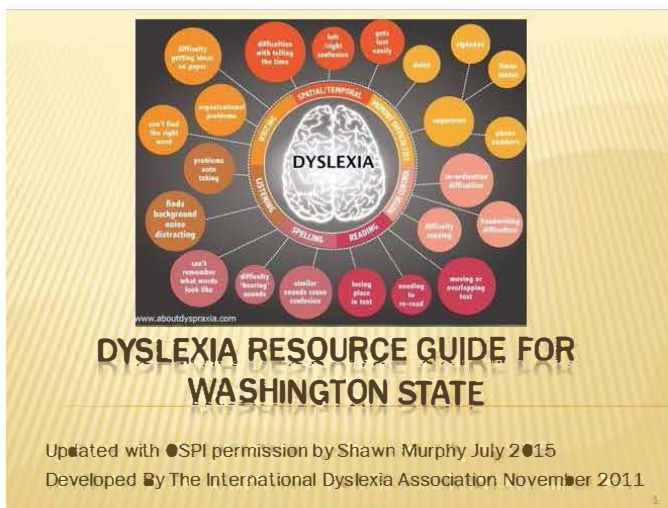


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- [List of appropriate assessments](#)
 - [Colorado Learning Disabilities Questionnaire - CLDQ-R](#)
- [Instruction and Intervention in the Classroom](#)
 - [Principle of Instruction](#)
 - [Essential components of reading](#)
 - [Oral Language Development](#)
 - [Spelling and Written Language](#)
 - [Multisensory approach to spelling](#)
 - [Independent Writing](#)
 - [Paragraphs](#)
 - [Handwriting Language by Hand](#)
- [Supplemental Information](#)
 - [Federal Law](#)
 - [State Law](#)
 - [Legislative History and Dyslexia Resource Guide](#)
 - [Project Timeline](#)
 - [Glossary](#)
 - [Acronyms](#)
 - [References](#)
 - [Resources](#)
 - [Acknowledgements](#)
- [Different Multisensory Approach Programs](#)
- [Developmental Norms and Strategies](#)

Laws such as IDEA, Section 504, and ADA are very effective in providing assistance for students with disabilities such as dyslexia. In addition, the Office for Civil Rights (OCR)

enforces the laws to ensure students with disabilities such as dyslexia, are not discriminated against. Currently, Washington State laws on dyslexia are not being followed due to a lack of funding. Presently, many stakeholders lack information and awareness about how these laws can benefit students with dyslexia. Therefore, many students remain without specialized literacy services to remediate their dyslexia.

Finally, it was meant to provide links to resources, such as covered overlays, essential curriculum, lenses, and website links. Colored overlays and special lenses are important because they filter out white light which may interfere with reading of text. Special curriculum is important for students with dyslexia because they need to have multi-sensory approaches steeped in phonological awareness skills due to abnormalities in their brains in the area of phonological processing skills. Methods which do not use this approach have been deemed ineffective by experts on dyslexia. Therefore, it is imperative for students to be taught using evidence-based programs with qualified, well-trained instructors.

Conclusion

Dyslexia is a complex, hidden disability, and approximately, one out of every five students, or 20%, have dyslexia. Students can have a varying range of severity of dyslexia from mild to profound, and may display signs of visual attention span deficits, phonological awareness deficits, or a combination of both. Dyslexia does not discriminate by ethnicity, sex, or socioeconomic status. Furthermore, students may be diagnosed as early as pre-school or in contrast, their dyslexia may go undetected even throughout their adult life, while they continue to struggle with their reading and writing skills. Moreover, students with dyslexia may develop psychosocial issues of negative self-image due to feelings of academic inadequacies, which can affect them socially. These psychosocial issues and inadequacies

can also carry on throughout their adult lives. Most schools qualify students with dyslexia as Specific Learning Disabled. About 80% of students who are labeled as SLD are dyslexic. Through RTI, students can be identified and receive special services if they qualify under state and federal guidelines. Teachers and related professionals need to be trained on dyslexia in order to provide assistance and serve these students more adequately. In conclusion, parents need to be informed in order to seek the services that are provided by the schools and to better understand the difficulties their child is facing.

This project was created in order to better serve the Kindergarten through sixth grade students with dyslexia by providing up-to-date information that parents, teachers, and related professionals could use to better serve students with dyslexia. It also provided an easier format to access the information by using an interactive site as well as a PDF format. Further, it will increase the awareness of dyslexia in the schools and the importance of having evidence-based, multisensory programs not only in the resource room, but in the regular classroom as well. By providing this information, stakeholders will be better prepared and educated to understand and serve students with dyslexia, therefore improving the academic outcome for students with dyslexia, as well as creating future community leaders who are strong in their literacy skills.

Recommendations

In completing this project, the following recommendations are suggested for the future:

State

- OSPI, ESD's, and WABIDA use the updated handbook and web based resource on dyslexia provided in this project and increase support for parents, teachers, and related professionals.
- OSPI, ESD's, and WABIDA provide an interactive website for parents, teachers, and related professionals to access current information on dyslexia.
- The Washington State Legislature reexamine the possibility of refunding SSB 6016 in order to fully serve students with dyslexia.
- ESD needs to provide training to parents, teachers, and related professionals of students with dyslexia by offering professional development classes on the stated topic of dyslexia assessment and intervention strategies as stated in SSB 6016.

Parents, teachers and related professionals

- Help parents, teachers and related professionals understand the important role they play in the early detection of dyslexia.

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Appendices

Appendix A List of Orton-Gillingham programs

Appendix B Revised Draft of the Washington State Dyslexia Resource Guide

Appendix C Interactive Website

Appendix A:

This is a list of Orton-Gillingham programs separated by what grade level the program would benefit students and if they are software based.

Program	Gr. K-5	Gr. 7-9	Gr. 10-12	Adults	Software Based
ABeCeDarian					
Academy of Reading					✓
Alphabetic Phonics					
Association Method					
Barton					
Fast Forward					✓
Fast Track					
High Point					
Jolly Phonics					
Language!					
Lexercise					
Lexia-Herman					
Lindamood-Bell LiPs					
Mind Play					✓
Nessy Reading					✓
Open Court Reading					
Orton Gillingham Approach					
Phonics First					
Project Read					
Rave-O					
Read Naturally					
Read Well (not Readwell systems)					
Reading Mastery					
Really Great Reading					
Simultaneous Multisensory Teaching (SMT)					
Slingerland					
Sonday System					
Sounds in Syllables					
Spalding Method					
SpellRead					
SRA Early Intervention					
Starting Over					
Read, Write and Type Learning System					
Spire					
Take Flight					
THRASS					
Wilson Reading System					

Appendix B:

This is the draft of the updated 2015 Washington State Dyslexia Resource Guide.



Washington State
**Dyslexia
Resource Guide**



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Washington State Dyslexia Resource Guide

Prepared by

Washington Branch of the International Dyslexia Association (WABIDA) in
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INTRODUCTION

As professionals, educators, families or caregivers working and living with students with specific learning disabilities like dyslexia, we mutually strive to understand the specific needs of our students. We also recognize the gifts and talents that may be unrealized when learning disabilities are not identified or remediated. The Washington Branch of the International Dyslexia Association (WABIDA) is proud to collaborate with the Washington State Office of the Superintendent of Public Instruction (OSPI) in the development of the Dyslexia Resource Guide.

The purpose of the Dyslexia Resource Guide is designed to provide guidance to schools and families in the realm of Dyslexia. With three goals in mind the intent is: 1) Build an understanding of the term dyslexia. 2) Learn how to identify students with Dyslexia. 3) Support teachers and parents in educating students with dyslexia. In addition, it will provide guidance for administrators, educators and caregivers in making the best educational decisions for Washington students with dyslexia.

"I want to lift the barrier of ignorance surrounding dyslexia and replace it with the wonderful comfort of knowledge. I want to empower each and every (educator and) parent to know, first, what is best for your (student or) child and, second, what you can do to ensure that he or she becomes a reader."

*Sally Shaywitz, M.D.
Overcoming Dyslexia*

One in five students, 15-20% of the population, has a learning disability.¹ Of the students with specific learning disabilities receiving special education services, 70-80% have deficits in reading. Dyslexia is the most common cause of reading, writing and spelling difficulties.²

Many Washington teachers are not surprised by this statistic because they see the real world ramifications of it in their classrooms every day. Students continue to struggle to read, despite conventional or intensified instruction. Some students struggle during early reading acquisition. Others do not struggle until the later grades when they face more complex language demands. **Some students with dyslexia include gifted students who can compensate for their reading difficulties, and thus may not ever be properly identified as having dyslexia, but tend to struggle silently and work harder than other students. These students present a challenge in trying to identify and diagnose them because their dyslexia may be "hidden".** Some may be non-English speakers who struggle to read in their native language and/or English Language Learners (ELL) who struggle to read despite having appropriately developed oral English

language (Mather & Wendling, 2012). Many of these struggling readers face challenges because of dyslexia.

The Washington State Dyslexia Resource Guide addresses these questions:

- What exactly is dyslexia?
- How is a student identified as having dyslexia?
- What can we expect when a student has been identified as having dyslexia?
- How can teachers provide effective literacy instruction for students with learning differences?
- What laws support students with dyslexia

¹ [National Center for Learning Disabilities](#) (Fiester, 2012; Jiménez, de la Cadena, Siegel, O'Shanahan, García, & Rodríguez, 2011; Julian, 2013; Thompson, 2015; The International Dyslexia Association, 2012; Shaywitz, 2003; Washburn, 2014).

² [International Dyslexia Association](#)
(Washburn, Binks-Cantrell, & Joshi, 2014)

OVERVIEW

Purpose of The Washington State Dyslexia Resource Guide

This resource guide provides recommended procedures for **parents, teachers, or related professionals** concerning dyslexia in collaboration with Washington State Branch of the International Dyslexia Association (WABIDA) and the Office of Superintendent of Public Instruction (OSPI). This initiative generated a comprehensive guide for districts, schools and educators to streamline procedures, codify ideas, and define terms concerning dyslexia. It may also be helpful to all seeking to understand dyslexia and to learn about the school system's approach to providing services to students with dyslexia.

As an informational guide about Dyslexia, it offers is a starting point and additional resources for administrators and teachers when they suspect a student may have difficulties with listening, speaking, reading and/or writing. The guide will help clarify language related to assessment and identification of these students. It provides guidelines for school districts to follow as they identify and provide services. It also provides school districts and parents with information regarding state statutes pertaining to dyslexia and how they relate to federal laws such as Section 504 of the Rehabilitation Act of 1973³ (Section 504), and the Individuals with Disabilities Education Act (IDEA, 2006).⁴

As a complementing resource to this guide, additional dyslexia related projects are ongoing. In 2011, literacy representatives from nine Washington State Educational Service Districts (ESD's), in collaboration with OSPI and WABIDA, developed the Washington State Dyslexia Training Module in 2011. This module is an educator development program incorporating research based and multi-sensory intervention to build approaches meant to enhance the reading, writing, and spelling skills of students with dyslexia. **Since the year 2010, there has not been any supportive funding from the legislature to supplement trainers to implement professional development trainings, and the handbook revisions have ceased (Potts, 2015).**

Since, Washington is a local control state; school districts have considerable autonomy in making decisions about which diagnostic tools and instructional programs to use.

Choices though, may vary amongst school districts. OSPI does not endorse

specific diagnostic tools or instructional programs and, as a result, the resource guide does not provide recommendations in these cases. The Dyslexia Training Module, however, provides additional detailed information regarding instructional methods in alignment with the International Dyslexia Association and latest scientific based reading research (SBBR). Please consult this document's resource section, where you will find links to a variety of options.

³ [Section 504](#) (Bendak, 2011; Fiester, 2012; Maher, 2011).

⁴ [IDEA](#) (Itkonen, 2007; Prince et al., 2013).

What is Dyslexia?

The term **dyslexia** is used to describe an “unexpected” difficulty with reading or writing. The word *dyslexia* is of Greek origin, with *dys* meaning “trouble with”, and *lexia* meaning “words” (Thompson, 2015). Therefore, dyslexia means “trouble with words”.⁵ Difficulty in reading and writing is unexpected because these students are usually of average to superior intelligence. They are often thought of as bright, creative, imaginative, verbal, and otherwise capable of learning (American Psychiatric Association, 2000; Mather & Wendling, 2012; Mihandoost & Mihandoost, 2011; Shaywitz, 2003). However, these students experience difficulties in learning to read, spell, and express their thoughts in writing. They may also experience difficulties in sequencing, remembering what they have read, listening, following directions, and organizing their thoughts or expressing them clearly. These students may be perceived as lazy or unmotivated and often function significantly below their potential (Glazzard, 2010; Gwernan-Jones & Burden, 2010; McNulty, 2003). Their difficulties cannot be explained by visual or hearing impairments, emotional/behavioral disorders, or lack of conventional instruction.

Throughout history, there have been many different definitions of dyslexia, causing confusion for families or caregivers, students and professionals alike. This inconsistency and confusion has resulted in avoidance of the term dyslexia in favor of terms such as “reading disability” or “learning disability”. OSPI uses the definition adopted by the National Institutes of Health and the International Dyslexia Association (IDA):

Dyslexia is a specific learning disability that is neurological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede the growth of vocabulary and background knowledge.⁶

Within the Washington state's public school system in the State of Washington, students with dyslexia qualify for special education services within the category of Specific Learning Disability (SLD) as defined by the Individuals with Disabilities Education Act (IDEA)⁷ and the Washington Administrative Code (WAC). SLD as outlined in WAC 392-172A-03055 may include “conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia”.⁸ SLD is simply the category under which a student may

qualify for specially designed instruction. Dyslexia is one type of SLD. For a list of tests appropriate for use in determining SLD eligibility, please see the OSPI publication: "Identification of Students with Specific Learning Disabilities". ([OSPI, March 2011](#)) As many as 40% of the school population in the United States read below grade level and 80% of students who have been diagnosed with Specific Learning Disabilities (SLD) have dyslexia (Shaywitz, 2003). In addition, most students with dyslexia have been diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) (Konicarova, 2014; Cassim, Talcott, & Moores, 2014). The exact causes of dyslexia are still not completely clear, but anatomical and brain imagery studies show differences in the way the brain of a person with dyslexia

⁵ Vail, P. 1990; Berninger & Wolf, 2009, ([Thompson, 2015](#)).

⁶ [IDA \(International Dyslexia Association\)](#)

⁷ [IDEA](#)

⁸ [WAC 392-172A-03055](#)

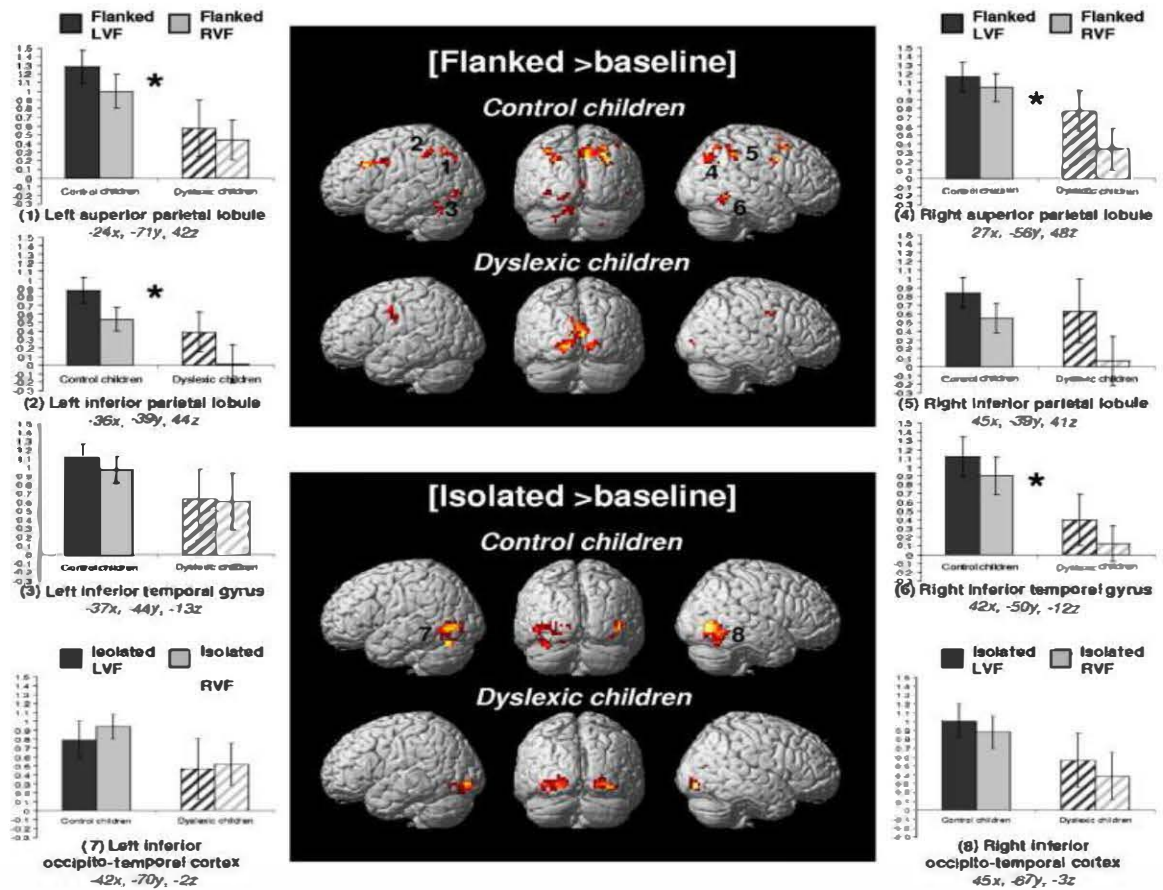
develops and functions.

Dyslexia & the Brain: Visual Word Form Area

In 2008, researchers discovered there is a region in the brain located in the left inferior temporal lobe which encodes letter strings (Cohen, Dehaene, Vinckier, Jobert, & Montavont, 2008). This region, also known as Visual Word Form Area, or (VWFA), is involved in the rapid, effortless recognition of familiar words, and is responsible for the process of learning how to read. Due to the VWFA being underdeveloped, the fronto-parietal regions would be used more heavily while learning to read, and this underdevelopment could be the result instead of the cause of developmental dyslexia (Cohen et al., 2008).

Functional Magnetic Resonance Imaging (fMRI) has changed dyslexia from an invisible disability to a visible one (Shaywitz, 2003). This new imaging now allows researchers to visualize blood flow and activity in the brain while it is processing (Shaywitz, 2003). Studies show when subjects without dyslexia were presented various reading tasks during an fMRI, the right hemisphere was not as active, whereas the left hemisphere was. In contrast, in an individual with dyslexia, the right hemisphere evidences more brain activity, whereas the left has minimal activity, particularly in the superior parietal lobule (Peyrin et al., 2011; Shaywitz, 2003).

Below is the chart from Peyrin et al., 2011, displaying this data.



In the above chart, the blood-flow in the brain is pictured during a word-reading task during an fMRI. The top image displays flanked stimuli of words presented. The flank procedure refers to a testing technique in which the target word is displayed between two words which are similar in manner to the target word, but are actually

the incorrect answer (e.g., the words fat, fast, fist, are presented in a list in which the correct answer would be fast). In contrast, the bottom image displays isolated words presented (e.g., a word list of single words read by the subject), and various views of the brain are presented to display where the differences occur in the brain activity during reading tasks. The far left image displays the left superior parietal lobule, the left inferior parietal lobe, and the left inferior temporal gyrus, showing decreased activity in the brains of students with dyslexia during reading tasks, while the middle image displays the left inferior occipito-temporal lobe and the right inferior occipito-temporal lobe, showing an unusual pattern of increased activity in this area. The far right image displays the right superior parietal lobule, the right inferior parietal lobule, and the right inferior temporal gyrus, showing decreased cortical (i.e., brain) activity during reading tasks by students with dyslexia in comparison to the control group (Peyrin et al., 2011). In layman's terms, this chart indicates that a student with dyslexia has a problem in the brain, and is unable to process written words efficiently, thus resulting in poor decoding and fluency skills. Decreased brain activity means that there is decreased blood flow in that particular area, and therefore the brain is unable to function properly.

While dyslexia research has mostly focused on phonological processing, early theorists of dyslexia believed changing the color tint of the text minimized the effects of dyslexia (Kim et al., 2015). Research has found the use of color overlays or color-tinted glasses helped reduce the symptoms of eye strain, headaches, and visual-perceptual distortions such as blurring, doubling, patterns, and movement of letters on the page (Kim et al., 2015). These special color-tinted glasses are known as the Irlen glasses, and are available for purchase at www.irlen.com. These glasses are specially designed to incorporate any necessary optometric prescription while blocking out extraneous light and creating a filtering effect of colored overlays may be worn as glasses (N. Murphy, personal communication, April 23, 2015). The tints are specially designed to help create spaces between words and make words not blur together (N. Murphy, personal communication, April 23, 2015).

In Kim's (2015) research, patients were asked to select a set of lenses or colored overlays in which reading was easier and allowed for the most comfortable vision while reading. Patients were then asked to read a series of sentences with and without the color-tint in place over the sample of written text (Kim, 2015). Patients were also asked to read in different fonts, with different letter spacing and different reading levels depending upon the age of the student (Kim, 2015). The words per minute, or WPM, were assessed and results were evaluated (Kim, 2015). Results indicated overall reading rate of WPM improved by 20% while wearing the Irlen glasses, and symptoms of eye strain, headaches, and visual-perceptual distortions such as blurring, doubling, patterns, and movement of letters on the page were non-existent (Kim, 2015). Patients read an average of 107 WPM without the glasses and 130 WPM while wearing the glasses (Kim, 2015).

Ocular Impairments

Students with dyslexia may also need to be assessed for ocular impairments because visual issues can be complex and contribute to reading issues (Washburn et al. 2014). There are treatable conditions that can help with vision issues, such as addressing eye focus problems; weak eye muscles in need of strengthening; refractive inaccuracies; and motor fusion dysfunction (Gamble, 2015). An optometrist may prescribe vision therapy, and may also check the student's vision to determine if there is a correction needed, or a combination of both (Gamble, 2015). In doing so, the student with dyslexia may improve in the ability to track words and thus improve overall reading abilities (Gamble, 2015). Since dyslexia is a multisensory disability, the decision for treatment should be multidisciplinary. Each member of the student's academic team should be involved (Gamble, 2015). The multidisciplinary team should involve the classroom teacher, the parent, the speech language pathologist, the vision therapist, councilor, psychologist, administrator, and the student where applicable (Gamble, 2015). As part of the multidisciplinary team of a student with dyslexia, it is very important to include the ophthalmologist to screen for any vision irregularities (Gamble, 2015). It is important to realize that vision is a complex process, and students with adequate vision can still have vision difficulties (Gamble, 2015). Also, vision therapy can resolve many issues, such as weak eye muscles, tracking words and focusing issues (Gamble, 2015). Students with any learning disability, such as ADHD, dyslexia, or Attention Deficit Disorder, also known as ADD, should be assessed by an optometrist (Gamble, 2015).

Moreover, most people with dyslexia have been found to have problems with identifying the separate speech sounds within a word and/or learning how letters represent those sounds, a key factor in their reading difficulties (Frith, 1985;

Matther & Wendling, 2012). Dyslexia is not due to either lack of intelligence or desire to learn; with appropriate teaching methods, people with dyslexia can learn successfully (Elliot, 2014). It is a neurological and genetic disorder. Individuals inherit the genetic links for dyslexia. Chances are that one of the child's parents, grandparents, aunts, or uncles has dyslexia⁹.

Dyslexia is the most common cause of reading, writing, and spelling difficulties (Washburn, Binks-Cantrell, & Joshi, 2014).¹⁰ Studies indicate that 15-20% of the population has a language-based learning disability. Of the students with specific learning disabilities receiving special education services, 70-80% have dyslexia. The number of American school-aged children affected by dyslexia in the United States is four to 20 percent, which is a significant number in terms of the entire population of students who have dyslexia (Fiester, 2012; Jiménez, de la Cadena, Siegel, O'Shanahan, García, & Rodríguez, 2011; Washburn, 2014). It has also been documented that over 40 million American adults have some form of dyslexia (Fiester, 2012; Jiménez, de la Cadena, Siegel, O'Shanahan, García, & Rodríguez, 2011; Washburn, 2014). When dyslexia is broken down by race, studies show all races are equally affected by dyslexia (Jiménez et al., 2011; Washburn, 2014). High income students are affected as equally as low-income students (Jiménez et al., 2011; Washburn, 2014). It is equally prevalent in boys as in girls, with an even 50-50 ratio of boys to girls (Jiménez et al., 2011; Washburn, 2014).

Common Indicators

Each individual with dyslexia exhibits a unique set of characteristics that defines his learning skills (Shaywitz, 2003). No two students are the same. However, there are a number of common indicators of dyslexia that may manifest themselves from a mild to severe degree. These indicators fall into several categories of skills including oral language, reading, spelling, writing, organization, and math. Familiarity with these indicators of difficulty in various categories may help educators and parents understand a student's behaviors. Students with dyslexia may have difficulty with:

Oral language: Students with dyslexia may have a history of delayed language or speech development. Most students with dyslexia say their first words anywhere between the ages of 18 months and two years (S.

Barton, personal communication, May 28, 2015). Students with dyslexia may be late talkers, and often do not begin talking until 18 months, 2 years, or even longer (S. Barton, personal communication, May 28, 2015). They may demonstrate poor articulation skills, trouble retrieving words in connected speech, or problems expressing their ideas clearly. Students with dyslexia may also exhibit poor listening skills and challenges following oral direction. Students with oral language difficulties will have trouble following multistep directions in the classroom, sequencing stories, and/or sharing a personal experience with adequate detail for the listener to understand (Shaywitz, 2003; Mather & Wendling, 2012). In trying to search for the correct word in conversational speech, students with dyslexia tend to use vague words, such as that thing-a-ma-jig and stuff, as well as filling their conversation with awkward pauses, such as ummmm and uhhhh (S. Barton, personal communication, May 28, 2015).

Once their oral language has become more sophisticated by adding multi-syllabic words to their vocabulary, students with dyslexia often mix up the sequence of the sounds in a word, such as “tupato” for “potato” (S. Barton, personal communication, May 28, 2015). When they begin to say longer multi-syllabic words, they frequently say the sounds out of sequence, saying words like “mazagine” for “magazine” and “susgetti” for “spaghetti” (S. Barton, personal communication, May 28, 2015).

Phonological awareness: Phonological awareness is the ability to recognize that words are composed of individual sounds put together in a sequence. Difficulties in phonological awareness skills such as rhyme, perception and sequence of sounds in words, segmenting (breaking words into sounds), and blending (combining sounds to make a whole word) are early indicators of later reading difficulty. Examples include:

- “How many sounds do you hear in the word ‘cat’?”
- “Say ‘baseball’ without ‘base’.”

⁹ [Dyslexia FAQs](#)

¹⁰ [National Center for Learning Disabilities](#) Cortiella, C. 2011 pp.7-10.

- (Washburn, Binks-Cantrell, & Joshi, 2014).

Phonological Awareness



Listening

cat-car

Do these words sound the same?

Alliteration

hop-happy

Do these words begin with the same sound?

Rhyming

boy-toy

Do these two words rhyme?

Blending

c/a/t cat

Can you blend this word back together?

Syllables

wagon = 2

How many syllables are in this word?

Segmentation

hat h/a/t

Can you break this word apart by sounds?

- “Say ‘clamp’ without ‘/k/’.”
- “Change the first sound in ‘mat’ to /s/.”

Detecting and generating rhyme, a crucial **phonological** awareness skill, and understanding of the “alphabetic principle” (letters represent phonemes or sounds) are key components to later reading and spelling success.¹¹

Decoding: There are two main integral parts to reading: decoding, or recognizing the word, and comprehension, determining what the word means (Fiester, 2012;

Shaywitz, 2003). Difficulty automatically associating letters to their corresponding sounds and difficulty sequencing letters or sounds in words, may indicate reading problems. When decoding, students may show confusion between letters or words that look similar (“horse” for “house”). A student will often misread or omit small words in a sentence or passage, delete or change syllables of words (“ducuz” for “because”, “bargage” for “garbage”). Slow, laborious reading may lead to poor recall of what was read and inability to make inferences from the passage.

Spelling: Students with dyslexia almost always have difficulty with spelling. They may omit speech sounds (e.g., “afr” for “after”), write the wrong letters for sounds used (e.g., “tpe” for “trip”), and demonstrate poor recall for familiar, small, frequently used words (e.g. *was, as, when, where, come, been, what, does, said*). Non-phonetic words (e.g. *could, does, sure*) and homonyms (e.g. *their, they're, there*) pose a persistent challenge for these students.

Writing: Many students with dyslexia can be highly verbal with a large vocabulary; however, this may not be evident in their written work. Often these students have good ideas, but are not able to express them coherently in their writing due to poor handwriting, awkward pencil grip, poor letter formation, difficulty spacing letters, and/or letter reversals. The student’s writing does not reflect advanced oral language expression.

Mathematics: Problems in math may be manifested in difficulty learning math vocabulary and/or concepts, limited ability to memorize math facts or

formulas, difficulty discriminating between similar sounding numbers (such as 13 as 30, 15 as 50), and difficulty copying problems or keeping numbers aligned. Students with dyslexia may be slower to learn to tell time or to sequence days of the week, months of the year, and seasons. Frequent calculation errors may also be observed. Additionally, interpretation of language in word problems can present challenges.

Organization of time, materials and space: In addition to weaknesses in reading, writing, and spelling, students with dyslexia may exhibit weak organizational skills such as difficulty remembering homework assignments, disorganized work space, poor time management skills, and a slow laborious work process (these students see the final product, but can't get started). The student may become overwhelmed with too much information. Students with dyslexia often confuse spatial directions and have difficulty learning left and right. They usually require repeated teaching in order to fully grasp concepts. They often demonstrate inconsistent performance in school, work, and other tasks.

¹¹ Moats, L & Dakin, K. 2008, p. 9-24.

Ehri, 2015, p. 293

Social and emotional development: Consistent and persistent struggles in school can lead to significant concerns in a student's social and emotional development.

These students have often experienced repeated failure in the classroom while watching their peers develop skills more quickly and easily. Students with dyslexia may misunderstand messages from others because they are unable to interpret the meaning of non-verbal messages. Language processing difficulties and poor understanding of figurative expressions may lead to very literal interpretations of the message. These students may misinterpret humor, figurative language, or innuendo.

Many students with dyslexia experience difficulties in school, but never try to discover what the problems might be (Shaywitz, 2003). Students who have never been diagnosed with dyslexia work harder than atypical students (Shaywitz, 2003). One student who was earning his degree in philosophy was quoted:

I have always done well in school... If I didn't get something, I would study it and study it and study it until I did. If it meant staying up much (or even most) of the night, I would put in whatever work was necessary to do well. Until recently, I never thought anything of this. I figured that the problems that made me have to put in so much overtime were the same problems everyone had. No one ever thought I might have dyslexia. I always did well in school. I was the smart one. I got A's... (Shaywitz, 2003 pg. 153).

There are a number of indicators that profile a student with dyslexia, but it is also important to identify their strengths. Dr. Sally Shaywitz at Yale University's Center for Study of Learning and Attention calls dyslexia an "encapsulated weakness surrounded by a sea of strengths".¹² Dyslexic students are often described as creative, innovative thinkers with general knowledge, vocabulary, and reasoning skills in the average to above average range. Many of these students think outside the box, come up with novel solutions to problems, and are hands-on learners.

Dyslexia Through the Life Cycle

Dyslexia is a persistent disorder. It is a chronic condition that affects an individual throughout his life. Although poor readers may continue to progress in reading development, the gap between good readers and poor readers remains overtime without intervention. The common indicators discussed above may be observed at various points in a student's growth and development.

As early as preschool, signs of possible dyslexia can be observed. Delayed language development, poor articulation, difficulty pronouncing multisyllabic words, lack of interest in books, and weak listening skills can be associated with later reading difficulties.¹³

As the demands of school increase in the elementary years, a student may develop some skills, but difficulties persist with reading, writing, and spelling. The student may struggle with decoding or sounding out words, recognizing common and important words in reading, and spelling--often leaving out sounds from words. These students may read word by word with limited expression. Written language, an enormously demanding task for any learner, is that much more difficult for a student with dyslexia. These students often have very creative ideas and can share them verbally; however, when faced with the task of writing their thoughts on paper many of these students become overwhelmed. If these students get effective phonological training in Kindergarten and 1st grade, they will have significantly fewer problems in learning to read at grade level than do students who are not identified or helped until 3rd grade.¹⁴

In the intermediate grades a student makes the transition from learning-to-read to reading-to-learn. Difficulties in reading printed words accurately and fluently will significantly impact a student's ability to access the classroom curriculum and increase general knowledge. These challenges continue in middle school and high school as students not only need the core language, reading, and writing skills, but also must learn note-taking skills, notebook organization, schedule compliance, and time management skills for studying independently, and completing work on-time. All this is done in addition to developing coping strategies for dealing with a slow reading rate.¹⁵

In rare instances, a person may not be identified as having dyslexia until college or professional school.¹⁶ These individuals may require accommodations in order to succeed in higher education. Adults with dyslexia often go to great lengths to hide their reading difficulty. They may be poor spellers or unable to write. These individuals are usually competent in oral language and have very good people skills. They can be intuitive, may have an excellent memory, and are often spatially talented. Adults with dyslexia can pursue any profession. People with

dyslexia are engineers, architects, designers, artists, mathematicians, physicists, physicians, and dentists. Examples of individuals with dyslexia who have succeeded in their chosen field include:

¹³ Moats, L & Dakin, K. 2008. p. 9-24 (Gamble, 2015)

¹⁴ Ibid. (Elliot, 2015; Fiester, 2012; Leij, 2013),

¹⁵ Ibid. (Mather & Wendling, 2012).

¹⁶ Ibid. (Siegel, 2011).

Jeremy Bonderman – Major league baseball player.

Tom Cruise – Actor

Albert Einstein – Great Physicist

Magic Johnson – NBA All-Star basketball player

Erin Brokovich - Real-life heroine who exposed a cover-up by a California utility

Steven Spielberg – Director and producer

Danny Glover - Award-winning actor

Whoopi Goldberg - Actor and

comedian Tommy Hilfiger - Fashion designer

Craig McCaw - Founder of McCaw

Cellular Nolan Ryan - Baseball Hall-of-Fame pitcher

Charles Schwab - Founder and Chairman of Charles Schwab & Co

Henry Winkler - Actor, producer, director, and author of the book

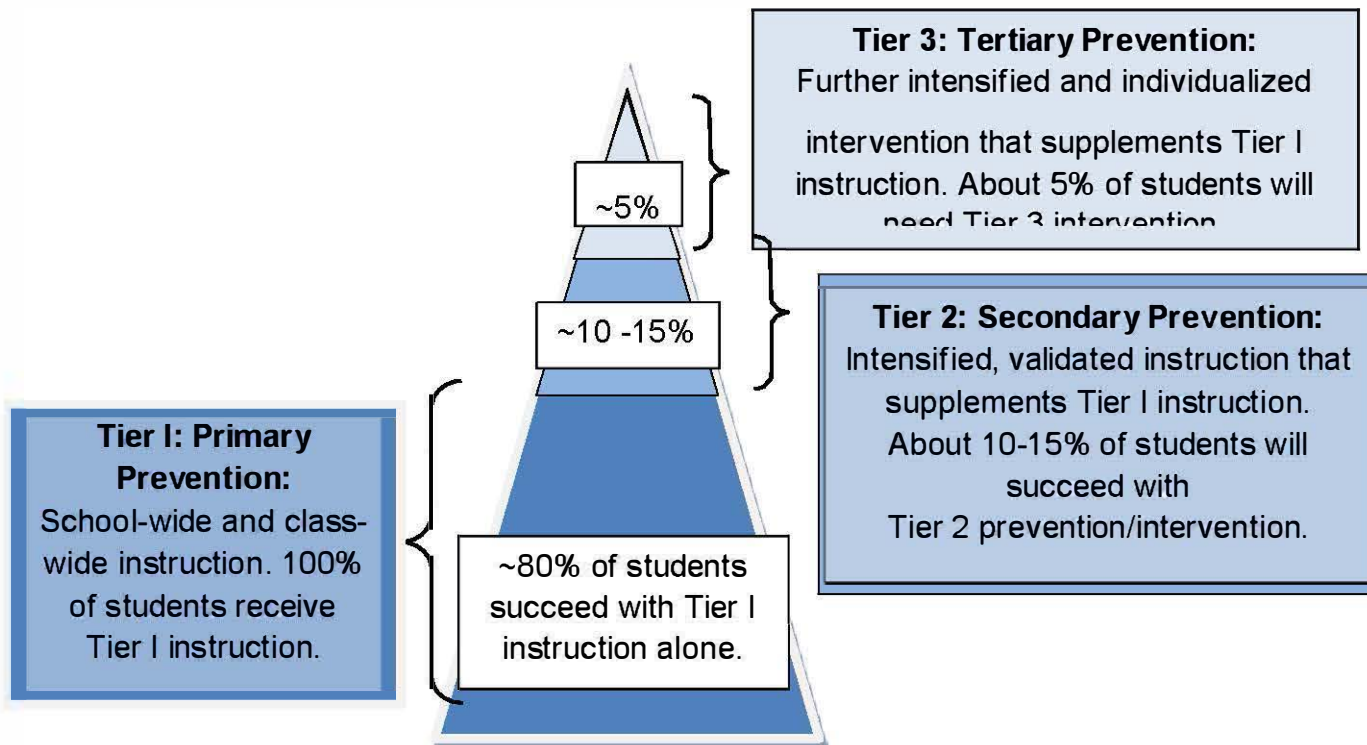
series Hank Zipper: World's Greatest Underachiever.¹⁷

Although there is no “cure” for dyslexia, individuals can succeed in school and as working adults with proper diagnosis, appropriate instruction, hard work, and support from family members, teachers, friends, and others. It is never too late to learn to read, process, and express information more efficiently.

¹⁷ [IDA Fact Sheets on Dyslexia and Related Language Based Learning Differences](#)

RESPONSE TO INTERVENTION (RtI)

Response to Intervention,¹⁸ or RTI, is a tiered instructional approach that is intended to improve learning outcomes for all students, including those with disabilities. It integrates assessment and intervention within a school-wide, multi-level prevention system to maximize student achievement and reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor progress, provide evidence-based interventions, and adjust the intensity and nature of those interventions based on a student's responsiveness. RTI may be used as part of the determination process for identifying students with specific learning disabilities such as dyslexia. For an in depth discussion of RTI please see the National Center on Response to Intervention (NCRTI)¹⁹



¹⁸ [Washington State OSPI RTI](#)

¹⁹ [National Center on Response to Intervention \(NCRTI\) 2010](#) (Dunn, 2010; Fiestler, 2012)

RTI was developed as part of the reauthorization of IDEA in 2006 to place focus on early identification of and early intervention for students with learning disabilities. The intent of Rtl is to improve outcomes for *all* students. Immediate support to students who are at risk for poor learning outcomes is provided as early as Kindergarten.

RTI may be used for special education eligibility for students with specific learning disabilities or Section 504 support (in accordance with federal and state laws).²⁰ In Washington State, school districts may choose to use either RTI or a “discrepancy” model²¹ to determine eligibility for specially designed instruction.

Levels of Instruction

Within a functioning RTI system, all students receive high quality reading instruction through a school-wide multilevel prevention system, as follows:

- Primary prevention level (Tier 1) core instruction
 - All students receive Tier 1 instruction.
 - Screening data are used to evaluate the effectiveness of the core instructional program, and to identify students who may require additional assessment and/or intervention.
- Secondary prevention level (Tier 2)*
 - Supplemental instruction for students not making adequate progress in Tier 1 alone.
 - Progress monitoring is used to determine response to instruction.
- Tertiary prevention level (Tier 3)*
 - Individualized instruction is provided for students who do not respond adequately to Tier 1 and Tier 2 instruction.
 - Progress monitoring is used to determine response.
 - Student *may* qualify for special education.

**Multiple rounds of intervention may be needed for some students.*

²⁰ See State and Federal Law section

<http://www.rtnetwork.org/learn/ld/understanding-the-modern-menu-of-public-education-services-for-struggling-learners-rti-programs-section-504-and-special-education>

²¹ The “discrepancy” model is a method used to identify a learning disability through a combination of cognitive (intellectual) and academic (achievement) testing. The model compares the results of the tests to identify a ‘severe discrepancy’ between cognitive

ability and academic achievement. Each state establishes its own formula for determining when a 'discrepancy' can be considered 'severe'.

Using RTI to Assess Student Progress

RTI uses assessment and data driven instructional decisions for moving students within the multilevel system or identifying disabilities in accordance with state law. An effective RTI system includes scientifically-based, rigorous, systematic, and objective procedures to increase reliable outcomes.

The four types of assessment within RTI are:

- **Universal Screening.** Conducted for all students. Identify students at risk for academic failure.
- **Progress Monitoring.** Conducted for students identified as at risk for poor educational outcomes. Document student growth over time.
- **Diagnostic Assessment.** In the context of RTI, *diagnostic assessment* refers to specific tests, procedures or instruments (diagnostic tools) selected to measure areas of concern. In this context, diagnostic testing does not lead to a *diagnosis* (the identification of a disorder); rather it identifies areas to be addressed through differentiated instruction and targeted intervention.
- **Summative Assessment.** Following instruction and/or intervention, student performance is measured relative to national grade level peers.

According to Mather and Wendling (2012), however in some cases RTI is being used to deny students services. Consider the following account:

It has come to the attention of the Office of Special Education Programs (OSEP) that, in some instances Local Education Agencies may be using Response to Intervention Strategies to delay or deny timely initial evaluation for children suspected of having a disability. States and LEAs have an obligation to ensure evaluations of children suspected of having a disability are not delayed or denied because of an RTI strategy (Mather & Wendling, 2012 pg. 246).

RTI is being put into effect in the schools across the nation rather quickly, and it has had a detrimental impact on students with dyslexia, and has lengthened the time it takes for them to be referred for reading intervention (Fiester, 2012; Reynolds & Shaywitz, 2009). Although, the reasons behind the concept of RTI are praiseworthy, the lack of research data to support its efficacy, as well as the lack of support personnel in the schools to properly implement RTI are problematic (Fiester, 2012;

Reynolds & Shaywitz, 2009). Furthermore, there seems to exist an overly confident view among those who pushed for its implementation of the real-world challenges faced when applying RTI to students with disabilities (Fiester, 2012; Reynolds & Shaywitz, 2009). Some of the problems faced in implementing the RTI model are the challenges in teaching the details of particular programs, how the program relates to the students' needs and culture, the inadequacies in using RTI as means to qualify for a disability or determining the type of disability, and the relevant student-based information needed to implement the most appropriate program for individual student's needs (Fiester, 2012). In addition, the needs of gifted students who have dyslexia are being unmet by RTI (Reynolds & Shaywitz, 2009). RTI programs and practices are not fully supported, and insufficiently studied, have been implemented to the detriment of students with disabilities (Reynolds & Shaywitz, 2009). There is a concern among parents and educators that RTI, as a model of diagnosing and treating students with disabilities is not only lacking, but harmful in it prolongs the process of assessment required by special education law, and substituting RTI as a method of treatment (Reynolds & Shaywitz, 2009). As it pertains to dyslexia, RTI can delay appropriate reading intervention for students with dyslexia. (Reynolds & Shaywitz, 2009).

SCREENING AND ASSESSING STUDENTS WITH DYSLEXIA

Early identification and appropriate instructional planning are critical to student outcomes. At least 70% of students who do not learn to read by age 9 will struggle to catch up to their typically developing peers.²²

There is no single test that can prove or disprove dyslexia; and the disorder can vary from mild to moderate to severe to profound. Testing “is the only way to quantify how far below her potential the child is working.”²³ Assessment is a procedure for collecting data, and is an ongoing process.

Data are collected through a variety of methods using RTI. The use of screening and progress monitoring data helps the teacher develop and monitor an instructional program and quantify whether adequate progress is being made. For students who are not making adequate progress, a comprehensive assessment may be used to determine whether a student would benefit from special education services. RTI is not intended to diagnose dyslexia; rather, it may be used for special education eligibility under the SLD category.

“The best solution to the problem of reading failure is to allocate resources for early identification and prevention.”

J. K. Torgeson, 2000

²² Shaywitz, S. 2003, p. 42

²³ Hal, S.I & Moats, L. 1999, p. 294

As stated earlier, a functioning RTI System consists of 4 main areas:

1. Universal Screening

Universal screening data are used to identify students at risk for poor learning outcomes or academic failure. All students should participate in screening assessments conducted three times per year. Screening data may also help educators evaluate the effectiveness of their instructional program, and may be used to identify students who are at risk for poor learning outcomes. The student's data at benchmark testing periods can be used to validate the effectiveness of intervention.

A **screening assessment** is generally a short, informal test that may assist a parent or educator in determining if a problem exists. It can be used to either determine whether further testing is warranted, or determine whether an individual is likely to be helped by a specific program. A screening can take the form of a checklist that can help focus an assessment or identify specific characteristics. Screening tools must be reliable, valid, and accurate in classifying students as at-risk or not at-risk. Although a screening

assessment does not lead to a formal diagnosis, it can be a useful tool in determining whether formal testing is warranted.

In general, screening instruments, such as academic screening tests, contain a small sample of items from a specific subject (e.g., reading, math or spelling) that assess skills that have been shown to be good barometers of the overall health of a skill.

Because the number of items is small, it does not take a lot of time to do this kind of screening. The results, however, are inconclusive: they do not diagnose the learner's academic strengths and weaknesses in each skill area, but only give a rough estimate of the learner's overall skill levels. Screening instruments, including those for learning disabilities, have most or all of the following characteristics. They are:

- helpful in determining the need for future testing,
- inexpensive,
- quick to administer, score, and interpret,
- appropriate for large numbers of persons, and may sometime be administered in group settings,
- narrow in focus,
- able to provide a superficial assessment of several areas, such as language, motor, or social skills, and
- usable without extensive training of staff.

One such assessment is called Colorado Learning disabilities questionnaire – CLDQ-R.

This can be used by any individual who is concerned with a student's progress

Scoring Instructions: Add up the circled numbers and record the Total Score:

The following cutoffs apply to the CLDQ-R Total Score:

Total Score = 15 or less –

Minimal Risk

Total Score = 16-21 -

Moderate Risk

Total Score = 22 or more -

Significant Risk

(Gamble, 2015)

Statements	Never	Rarely	Sometimes	Frequently	Always
Has difficulty with spelling.	1	2	3	4	5
Has/had difficulty learning letter names.	1	2	3	4	5
Has /had difficulty sounding out words.	1	2	3	4	5
Reads slowly.	1	2	3	4	5
Reads below grade level.	1	2	3	4	5
Requires extra help in school because of problems in reading and spelling.	1	2	3	4	5

According to Dr. Sally Shaywitz (2003), there is a three-step evaluation process to determine if a student has dyslexia. First, the student needs to be evaluated according to education and age (Shaywitz, 2003). Next, the evaluator needs to obtain evidence that there is a discrepancy between the student's reading ability and IQ, and lastly, the evaluator must obtain information on the student's lack of phonological awareness, as well as the student's ability of normal higher-language functions (Shaywitz, 2003). It is very important to evaluate a student's reading level in comparison to what is expected developmentally as well as educationally (Shaywitz, 2003). This is important so a teacher can determine whether the errors are developmentally appropriate. For example, students can exhibit letter reversals up to age seven or eight.

2. Progress Monitoring

Educators use progress monitoring to document student growth over time to determine if the students are learning critical skills at an adequate rate. Curriculum Based Measurements (CBMs) are primarily used as a method for progress monitoring because they are brief, easy to administer and score, and are good predictors of student ability.

Progress monitoring data provide a picture of the student's performance and rate of growth to guide instructional and curricular changes so that every student reaches proficiency on targeted skills.

Progress monitoring may also be used to assess a student's academic performance, to quantify the rate of improvement or responsiveness to instruction, and to evaluate the effectiveness of the instruction.

According to the National Research Center on Learning Disabilities (NRCLD) progress monitoring should do the following:

- Assess the specific skills embodied in state and local academic standards;
- Assess marker variables that have been demonstrated to lead to the ultimate instructional target;
- Be sensitive to small increments of growth over time;
- Be administered efficiently over short periods;
- Be administered repeatedly (using multiple forms), so that scores over time may be compared;
- Result in data that can be summarized in teacher-friendly data displays;
- Be comparable across students;
- Be applicable for monitoring an individual student's progress over time;
- Inform development of instructional strategies and use of appropriate curriculum that addresses the area of need.²⁴

As related to successful identification of Dyslexia, educators are recommended to monitor the following:

Academic Skills	Definition
Word Reading (real and nonsense)	The ability to read phonetically regular and irregular words
Letter-Sound Associations	The knowledge of letters and their corresponding sounds
Reading Comprehension	The ability to understand what one reads
Reading Fluency	The ability to read passages quickly, accurately, and with proper expression
Spelling	The ability to spell phonetically regular and irregular words
Handwriting/Written Expression	The ability to organize and form letters, words and numbers on paper

²⁴ [National Research Center on Learning Disabilities \(NRCLD\)](#)

3. Diagnostic Assessment

In the context of RTI, *diagnostic assessment* refers to specific tests, procedures or instruments (diagnostic tools) selected to measure areas of concern. In this context, diagnostic testing does not lead to a *diagnosis* (the identification of a disorder); rather it identifies skill and/or developmental areas to be addressed through differentiated instruction. Diagnostic assessments may occur at all levels of instruction under RtI.

The following defined cognitive processes may be evaluated in a diagnostic assessment.

Cognitive Processes	Definition
General Verbal Ability	The overall ability to comprehend and use words
Phonological Awareness	The ability to perceive and “play with” sounds within words
Phonological Memory	The ability to store auditory information, especially phonological in nature
Rapid Automatic Naming	The ability to retrieve linguistic information from long-term memory quickly and efficiently
Receptive/Expressive Orthographic Coding	The ability to recognize and retrieve from memory letters and letter sequences
Graphomotor Functions	The ability to physically form letters, words, and numbers

Interpretation

In relation to the listed above, students with dyslexia typically display the following profile:

- The student has **good general verbal ability**.
- The student is **underachieving** in the areas of word reading (especially nonsense word reading), spelling, and/or reading fluency.

Dyslexia may also hinder development of reading comprehension, written expression, and math skills.

- The student demonstrates **cognitive processing weaknesses** related to phonological processing (awareness and/or memory). In addition, individuals with dyslexia may also demonstrate weaknesses related to orthographic coding and rapid naming.

- **Atypical error patterns** are present in the student's academic products. For instance, a student with phonological processing weaknesses may make a sound-based spelling error (e.g., *firt* instead of *third*), whereas a student with orthographic coding weaknesses may make errors related to the retrieval of specific letters and letter sequences from memory (e.g., *foolr* instead of *floor*).

Should results signal a concern in any of these areas, it is suggested a careful and thorough review of the student's developmental and educational histories should be completed. A **differential diagnosis** is also encouraged. A differential diagnosis refers to ruling out other possible reasons for the student's challenges, as well as considering other co-occurring factors such as dysgraphia and Attention Deficit Hyperactivity Disorder (ADHD).

4. Summative Assessment

Following instruction and/or intervention, teachers measure student performance relative to national grade level peers, using tests such as the Washington's State-led assessment Measure of Student Progress (MSP), High School Proficiency Exam (HSPE), norm-referenced tests, and/or other criterion referenced measures. These tests are assessments of learning outcomes. They aim to summarize progress and may be used to identify any weaknesses. Summative assessments are cumulative in nature and are used to determine whether a student has met goals or learning outcomes at the end of a program.

Comprehensive Special Education Assessments: Beyond Rtl

Schools using a discrepancy model rather than Rtl to identify learning disabilities

can use further comprehensive assessments to define a student's learning profile.

A comprehensive special education assessment, administered by a school psychologist, will provide specific information about the extent of the reading difficulties. This information may be used to determine appropriate instructional approaches, to provide recommendations for educational planning, and to assist with the determination of eligibility for either special education services or a Section 504 Accommodation Plan at school. A student with dyslexia may qualify for special education services as a student with a Specific Learning Disability in the area of reading, but a formal diagnosis of dyslexia will not be provided at the school level.

The diagnosis of dyslexia reflects a reading difficulty that is unexpected for a student's intelligence and exposure to teaching strategies. It is a clinical diagnosis generally given by a Learning Disabilities Specialist, Clinical Psychologist, Neuropsychologist, or Educational Psychologist based on a thorough examination of a number of factors including family history, observations of a student's reading and speaking, and tests of reading and language. A diagnostic assessment process should be comprehensive and tailored so that it reflects the nature of the problems of the student. In general, a formal assessment should include the following:

- a case history including medical, academic, developmental, behavioral, family and instructional/classroom information;
- determination of overall cognitive abilities including verbal and nonverbal skills;
- educational tests for basic skills in reading, writing, spelling, written language, and often math, including:
 - vocabulary and syntax, phonological sound and symbol matching,
 - single real and nonsense word decoding,
 - oral and silent reading comprehension,
 - fluency in oral and silent reading,
 - spelling and handwriting, and
 - written language;
- examination of specific cognitive processes including phonological awareness, phonological memory, orthographic coding, and rapid naming; and
- clinical observations.

Post-Assessment Considerations for Students with Dyslexia

After an educational assessment is interpreted, educators and families gain insight into how a student's learning challenges can impede her ability to achieve in a classroom setting. Students with documented learning disabilities are entitled to appropriate accommodations under the Individuals with Disabilities Education Act (IDEA), Public Law 94-192, and Section 504 of the Rehabilitation Act.²⁵ This enables students to more adequately process information, demonstrate their understanding, and be measured on what they know.²⁶

Each academic year, students with documented accommodation plans are reviewed by Section 504 coordinator or the special education team, and the parents or guardians.

Annual accommodation plans are communicated to the student's teachers by school specialists who may include the school psychologist, counselor, special education department, and a speech-language pathologist. As they progress, students are encouraged to become self-advocates for their learning and explain to their teachers and school specialists how adjustments help them achieve. Recommended accommodations provide individualized classroom support and improve academic outcomes.

As students progress through the grades, there are a number of accommodations using assistive technology that can be made, such as the use of software programs that read text out loud, help students with outlining materials, or create graphic organizers that can support secondary students. In addition, students applying to college may submit accommodations on the SAT and the ACT exams, to the College Board for consideration. Extended time limits, a reader, and access to a keyboard are examples of modifications provided during the administration of these college entrance examinations.

²⁵ <http://www.rtinetwork.org/learn/ld/understanding-the-modern-menu-of-public-education-services-for-struggling-learners-rti-programs-section-504-and-special-education>

INSTRUCTION AND INTERVENTION IN THE CLASSROOM

Teaching students with dyslexia requires careful consideration of factors which influence the student's ability to learn to read. Teachers will be most effective when they understand the three components:

1. Principles of instruction of students with dyslexia;
2. Essential components of reading; and
3. Additional elements of literacy including oral language, spelling and writing, and handwriting.

1. Principles of Instruction

Teachers who provide instruction to students with dyslexia and related disabilities should be trained on instructional approaches that are explicit, systematic, sequential, and cumulative. Instruction must address the phonology, morphology, orthography, syntax, semantics, and pragmatics of language.

Students with dyslexia learn best when presented with instruction that is:

- Simultaneous and Multisensory
- Systematic and Cumulative
- Direct
- Synthetic and Analytic

Teacher should be adept at utilizing prescriptive and individualized teaching instructional practices. Daily plans should be based on careful and continuous formal and informal assessments of class and individual needs. At the student level, content should be mastered to a level of automatic function so students can perform the skill with relatively little attention and effort. This requires teacher awareness of student performance and regular review.

Implementing evidence-based reading programs for dyslexia will greatly reduce the number of students who qualify for special services. (Fiester, 2012; Shaywitz, 2003).

In a study by Torgesen (2002), an elementary school in Florida implemented an evidence-based reading intervention program targeting students with dyslexia, and the percentage of students with reading difficulties dropped from 31.8% to 3.7% (Torgesen, 2002).

Simultaneous and Multisensory

Multisensory integration happens at every level of human activity—at work, in play, in sports, and in school. Humans process all types of information using all of our senses.

Multisensory teaching links listening (ear), speaking (voice), reading (eye), and writing (hand) to reinforce learning of language structure. It is the **simultaneous** and **alternative** involvement of visual (seeing text or pictures), auditory (hearing lecture, discussion, or technology), and kinesthetic/tactile (feeling and moving) sensory modalities. It supports the connection of oral language with visual language symbols. When all three sensory pathways are used at the same time, the material is presented in a simultaneous, multisensory way with the strong channels reinforcing the weak.

A reader with dyslexia “can develop awareness of the sound structure of a word by physically forming the word with his lips, tongue and vocal chords.”²⁷

Multisensory integration more completely and explicitly registers linguistic information (phonological and other) in the learner’s working memory by joining new learning to previously established skills. Its power may come from the mediating effect of various sensory and motor experiences on attention and recall. Multisensory experiences with linguistic units may activate more circuitry than uni-sensory (or one) experiences do, during language learning by establishing new neural networks through repeated activation.

Intentional and structured language strategies that access multiple learning styles may activate sensory motor pathways through involvement of fingertips, hand, arm, whole body, and/or vocal speech during reading instruction. As a result they may establish and access necessary circuits for word recognition more easily.

Systematic and Cumulative

Multisensory language instruction follows the logical order of language. It begins with the easiest, most basic elements of language and progresses to more difficult material. Each step builds on those already learned. Concepts are reviewed systematically to strengthen memory.

Struggling learners benefit when the structure of spoken and written language, beginning with phonemes, is represented for them **explicitly, sequentially, directly** and **systematically** in the context of a comprehensive reading program. “It is easier to integrate multiple sources of information during learning when the material is physically integrated, auditorily and visually, than when information is presented to each modality separately.”²⁸ Orton Gillingham based programs combine multisensory teaching of handwriting, spelling, decoding, and reading.

Direct Classroom Instruction

In direct instruction the teacher does not assume that the student will learn any concept through inference alone. The teacher explains what is being taught and guides learning through practice to independence. The direct teaching of all concepts requires continuous student-teacher interaction in a shared and cooperative experience.

²⁷ Shaywitz, S., 2003, p. 81

²⁸ Mousavi, S., Low, R. & Sweller, J. 1995

Synthetic and Analytic

Synthetic instruction presents each concept/skill in isolation (such as teaching individual sounds) and then teaches how the parts work together to form a whole (combining those sounds and letters to spell words).

Analytic instruction begins with the whole and teaches how it can be broken down into component parts as when the student decodes a word, moving from a word unit to sound units.

Research by Foorman (1997, p. 63) showed that students who received research validated, multi-sensory synthetic phonics approach outperformed students receiving a sight word or a combination synthetic-analytic approach.²⁹

2. Essential Components of Reading

According to Reid Lyon of the National Institute for Child Health and Human Development (NICHD), "Reading skill serves as the major foundational skill for all school-based learning. When children do not learn to read, their general knowledge, their spelling and writing abilities and their vocabulary development suffer in kind."³⁰

But what is reading? It has nothing to do with looking. Rather, it depends on the ability to perceive and discriminate symbols and associate them with speech sounds and the structure of language. Reading is the ability to extract meaning from print.

The National Reading Panel (2000) has identified five major areas important to reading that need to be taught:³¹

- Phonological awareness;
- Phonics and the "alphabetic principle";
- Fluency;
- Vocabulary instruction; and
- Comprehension strategies.

²⁹ Foorman, B, et. al. 1997 p. 63-71,

³⁰ Lyon, R., 1998.

³¹ [National Reading Panel, 2000](#)

Phonological Awareness

Phonological awareness is the ability to perceive and manipulate the sounds, word parts, or words in a language.³² These skills are among those most directly related to reading and writing.³³

Activities to help develop **Phonological Awareness**:

- **Rhyming Tasks**- student is taught that rhyming words are words that have the same ending, like ran, fan, and man.
- **Categorization of Phonemes**- student must choose the word that does not belong from three or four spoken words.
- **Identification of Phonemes**- student recognizes the same sound in three or four different spoken words.
- **Phoneme Blending**- student hears a sequence of individual sounds and combines them to give the word.
- **Word and Phrase Segmentation**- student is taught that compound words and phrases have distinct parts.
- **Phoneme Deletion**- student recognizes words when a phoneme has been removed.
- **Phoneme Addition**- student is able to form a new word by adding a phoneme to an existing word.
- **Phoneme Substitution**- student can substitute one phoneme for another to form a new word.

When students are introduced to new sounds, they should practice substituting beginning, ending and medial sounds, for example, *dig-rig-big-bit-bat-but*. As students become more experienced, they may organize words by initial consonants or by vowels. This provides practice in manipulating and sorting letters and sounds.

It is important for student to master phonological awareness before learning the letters of the alphabet (Leij, 2013; Shaywitz, 2003).

Phonics and the “Alphabetic Principle”

Phonics is a method that stresses letter-sound relationships in reading and spelling. It provides tools for decoding unfamiliar words. Automatic letter recognition is the key to automatic word recognition.³⁴ This provides a tool that helps students decode words rather than rely solely on memorization of words.

Understanding of the alphabetic principle emerges with the student’s realization that spoken words are made up of sounds that can be represented in print.³⁵ Further experiences with print and writing move the student to the stage of

complete phonetic representation.

³² Mather & Wendling, 2012 p. 328

³³ Scarborough, H. 1998 p. 91 Moats & Tolman, 2015

³⁴ Adams, M. 1990, p 105

³⁵ Carreker, S. as cited in in Birsh, 2005, p259

Daily practice is the key to success. Students may still be familiarizing themselves with the names of letters, even into third and fourth grades.³⁶

Once the student has mastered blending and segmenting words, then the teacher can introduce the alphabet. By kindergarten, most students without dyslexia recognize most of the letters of the alphabet, but not the sounds. Students with dyslexia struggle with identifying letter names, making it very difficult for them to recognize sounds of letters. In teaching students with dyslexia, it is important to realize that there are 44 phonemes, but only 26 letters of the alphabet, meaning that one letter can have more than one sound associated with that letter, thus increasing confusion for students with dyslexia. When first introduced to letter groups, letters, and sound-symbol associations, most students with dyslexia experience difficulties (Leij, 2013; Shaywitz, 2003). This evidence of a struggle should be an initial warning sign of dyslexia, and should not be regarded as typical development of reading by teachers, in the absence of second language learning, low cognition, and lack of exposure to the alphabet and reading (Leij, 2013).

The sound sequences, letter patterns, and morphemes depend to a large extent on word origin—whether a word is of Anglo-Saxon, Latinate, French, or Greek origin, for example.³⁷ Words connected by meaning are also connected by spelling. For example, the silent *g* in the word *sign* is articulated in the words *signal* and *signature*. Morphology often preserves the spelling of the meaningful parts of words, though pronunciation may vary, as in *define* and *definition* or *doubt* and *dubious*.

Hands on Strategies:

Activities to increase letter and sound knowledge

- Write letters in sand, salt, or rice while naming letter. Naming letters strengthens memory recall through simultaneous multisensory association of the name of the letter with the feel of its formation.
- Trace over large letter patterns with fingers again while naming letter.
- Play alphabet games, such as matching upper to lower case letters.
- Identify beginning letters or ending letters from a list of words or from picture cards.
- Identify sounds and letters in words. For instance, ask “What letter makes the first sound in /car/ or last letter in /hat/?”
- Search for words with the same beginning letter or same

vowel sound in magazines and newspapers.

- Place pictures or words in categories; explain why they fit in a particular category such as beginning sound, ending sound).
- Point out words on road signs, labels and posters in order to build print awareness and vocabulary.

Fluency

A fluent reader makes the words sound natural and more like speaking. Reading is well phrased, paced, and read with ease. Students without fluency may read slowly, haltingly, and at a spasmodic pace. They make decoding or word-calling errors.

Phrasing is poor, with poor intonation and inflection. There is a direct relationship between fluency and comprehension. "Fluency allows readers to attend to the meaning of the text rather than the mechanics of decoding."³⁸ It is the single best indicator of overall reading skill and is commonly used for screening and progress monitoring.

³⁶ Neuhaus, G. 2002

³⁷ Henry, M. 2003

³⁸ Samuels, S. 1979, Adams, M. 1990

Fluent reading requires three key elements – **accurate** reading of connected text at a conversational **rate**, with appropriate **prosody** or expression.³⁹

Accuracy is the ability to recognize or decode words correctly. It requires a strong understanding of the alphabetic principal, the ability to blend sounds together, knowledge of a large bank of high-frequency words and their multiple meanings, and the ability to link decoding with context.

Reading **rate** links both word-level automaticity and the speed and fluidity with which a reader moves through connected text.⁴⁰ It is usually measured in terms of speed – either the number of words read correctly per minute or the length of time it takes for a reader to complete a passage. It is an important measure of reading proficiency to understand what is read and a tool for monitoring progress.

Prosody is a linguistic term to describe the rhythmic and tonal aspects of speech - the “music” of oral language. It includes:

- intonation and modulation,
- variations in pitch,
- rise and fall of the voice,
- stress patterns,
- duration,
- the break or pause, phrasing, in a line, or sentence,
- the arrangement of spoken words alternating stressed and unstressed elements, and;
- use of punctuation to signal something, such as question, surprise, or exclamation.

Prosody and reading comprehension have a reciprocal relationship. Prosody provides evidence that the reader understands what is being read.⁴¹

Students with good prosody read almost every word, skipping only a few words like *and*, *the*, or *of*; read every letter in every word; perceive letters in chunks, not individually; and recognize high frequency letter combinations just like they recognize high frequency words. They perceive letters almost instantly; and break words into syllables with little conscious analysis.

Fluent readers have adequate speed, appropriate phrasing, and intonation. Reading mirrors their oral speech. Fluency is evident when students read books at their independent reading level. They will read accurately and quickly, and if they make mistakes that interrupt meaning they will correct the mistakes.

³⁹ Hudson, R., Mercer, C. & Lane, H. 2000

⁴⁰ Ehri, L & McCormick, S. 1998; Kuhn, M. & Stahl, S. 2000

⁴¹ Kuhn, M & Stahl, S. 2000

Hands-on Strategies:

Instruction for Fluency

Provide the following as part of each lesson:

- Multiple readings of connected text. The most successful fluency intervention, **repeated reading**, is effective because it provides the kind of repeated exposure to words that leads to either the formation of new orthographic images, or increases the efficiency of access to images already formed.¹
- Daily opportunities to listen to stories read with good inflection and prosody.
- Practice naming letters, letter groups, decodable and non-decodable words. This is especially necessary for beginning readers.
- Instruction in decoding and word identification.
- Materials at each student's independent reading level (no more than a 5% to 10% error rate). Avoid the frustration of reading material that is too difficult. When students can read connected text, they should reread materials from their reading lessons or familiar books from independent reading.

The goal is to make reading functions become automatic so that cognitive energy is available for higher order thinking and comprehension.

Read Aloud

Reading aloud to students is one of the most effective ways to build reading skills. There are numerous benefits of reading aloud to students. They will:

- be exposed to new vocabulary;
- expand their world experiences by learning about new places and circumstances;
- hear and begin to understand the difference between words that are spoken and words that are read;
- learn that print has meaning;
- hear how letters and sounds work together (needed when sounding out words);
- have an opportunity for conversation about the story or topic, and build stronger oral language and thinking skills; and
- foster a love of books.

Reading with and to students helps them to see themselves as readers. Reading aloud will focus attention on repeated exposure to vocabulary, will help create better listeners, strengthen auditory recall, and improve following directions.¹ Choose a variety of books for reading aloud, including chapter books and topics that interest the student. Note that student's listening comprehension is at a higher level than their actual reading level.

Reading aloud can be beneficial to students of all ages. The remediating effect of oral reading is not limited to elementary ages and should be incorporated into classroom instructional practices in middle and high school as well. Please see The *Dyslexia Friendly Classroom* section of this resource guide for suggestions of techniques for reading aloud.

Vocabulary

There is a high correlation between vocabulary knowledge and comprehension of written text.⁴² It allows the reader to have a thorough understanding of complicated text.⁴³

Vocabulary knowledge is crucial for:

- comprehension of auditory information and written text, including multiple meanings, synonyms, antonyms, and application of word in context,
- generation of written language,
- overall understanding of global information,
- effective verbal expression, and
- academic success.

Hands-on Strategies:

Activities to Develop Vocabulary

Successful instruction of vocabulary includes:

- a small number of words taught intensively,
- exposure to the words in many contexts, focusing on the meaning of word parts, such as prefixes, suffixes, and roots;
- direct, systematic, and continuous instruction and practice.

Principles of effective vocabulary instruction include:

- providing definitional and contextual information about a word,
- generating information that ties the new word to already known information,

⁴² Anderson & Freebody, 1981

⁴³ Beck et al, 1991

Reading Comprehension

Reading comprehension involves making meaning of printed words efficiently; good readers expend less brain activity.⁴⁴ Intensive intervention that targets specific reading skills rectifies activity in the brain. Intervention returns the brain activity of those with dyslexia to that more like the brain activity of those without dyslexia. To comprehend text well, readers must have:

- enough time to process the text,
- ability to connect the written word with the sounds of spoken language, and;
- meaningful context with retrievable words.

Teaching these processes draws on multiple units or levels of language. These include:

- phonology—speech sounds (phonemes),
- syntax—phrase and sentence structure,
- semantics—phrase and sentence meaning,
- discourse structure—organization of connected sentences, and
- pragmatics—use of language for communication acts.

Strategies In Both Oral And Silent Reading fluency section instructional

approaches Until students are reading without effort, each reading lesson should consist of teacher-directed, explicit, and systematic instruction in:

- phonological awareness,
- applying phonics (alphabetic principle) and morphology to decoding,
- applying background knowledge already learned to unfamiliar words or concepts in material to be read (activating prior knowledge),
- both oral reading and silent reading, with appropriate instructional materials,
- activities to develop oral reading fluency, and
- questioning and discussion to clarify reading comprehension.

The goal of this instruction is also to develop independent readers who can apply what they learn to reading on their own.

The ability for students to remember what they have heard is also an essential skill for reading. A simple two or three step direction requires a conscious effort to retain multiple instructions. Listening and following directions helps increase the ability to recall and remember verbal information. Successful listening comprehension helps to increase reading comprehension.

⁴⁴ Shaywitz, 2003

Additional Elements of Literacy

Oral Language Development

Oral language development is the natural basis for all instruction for all students, especially those with dyslexia. In reading, the visual symbols must be translated into phonetic structures, then into the acoustic structures before traveling to the level of comprehension. A good foundation in speaking and listening improves reading performance.⁴⁵

In language growth, each newly learned skill builds upon previous skills put to functional use as the student gains understanding. Students must learn to understand and use their language when reading, speaking or writing. Oral language development is crucial to literacy development and is a very complex patterning that requires complete sensory integration.

Preschoolers with oral language problems may continue to have language learning problems through the school years. They may be evident in first grade or later as they struggle with reading comprehension.⁴⁶

Oral language is a preparation for written language. "Systematic oral-aural teaching of sentence structures enhances children's ability to comprehend and compose sentences."⁴⁷ Oral language is essential in learning to read and write and is particularly relevant to development of reading comprehension skills.

It is easy to develop oral language in the classroom:

- It requires little or no preparation.
- It can be implemented throughout the day.
- It can serve as a formal lesson or as a sponge activity.

⁴⁵ Healy, J., 1999; Berninger, V. W., Nagy, W., Tanimoto, S., Thompson, R., & Abbott, 2015

⁴⁶ Catts, et al 1999, 2005; Bishop, D. & Adams, C. 1990 (Mather & Welding, 2012; Wennås, 2013).

⁴⁷ Haynes, C & Jennings, T. 2006

Hands-on Activities:

Activities to Develop Oral Language

Some Suggestions:

- Encourage questions, and give answers, modeling the skill of answering.
- Teach about communication, how we share information through speaking, listening and watching.
- Help students to maintain eye contact.
- Cue attention by using consistent cues such as, "It's time to listen."
- Read to the class. This builds attention span, vocabulary, rhythm and phrasing and inflection of the language.
- Use complete sentences and expect the student to do so as well. This develops expressive language, organization of thoughts for oral expression, and encourages use of linguistic structures. These are skills needed for written expression and reading comprehension.
- Provide daily practice in responding to questions in a variety of ways to develop vocabulary and word retrieval skills.
- Develop orally the concept that a topic sentence, body and conclusion are needed for a paragraph.
- Encourage and provide practice in critical listening and thinking skills by asking both concrete and inferential questions.
 - o Help students respond to various kinds of questions: o "What do you like to read?"
 - o Have students describe thoughts, as in "I'm thinking of"
 - o Teach students to sequence through exercises such as "Tell me three things you did last week in the correct order."
 - o Have students explain procedures, as in explain "Explain how to make a sandwich."
- Practice following directions to reinforce auditory perception and recall. Develop the skill by asking students to perform a series of tasks. Begin with one or two step directions. Kindergarten students are usually able to recall and follow three step

directions.

- Build vocabulary in both oral and written work.
- Teach parts of speech orally. “The parts of speech provide the building blocks for teaching students how to write sentences ... Knowledge of the parts of speech plays a valuable role in reading.”

Spelling and Written Language

Spelling is a complex process for students with dyslexia. It is not simply rote memorization that relies totally on visual recall. Writing words is related to sound sequences, letter patterns, and morphemes (base words and affixes). It requires knowledge and use of phonology (speech sounds), morphology (meaning units), and orthography (patterns and rules). Spelling involves knowledge about the sounds of the language; the most frequent and reliable letter patterns, and rules of English orthography, morphology, and word origins.⁴⁸

Influences on Spelling Beyond Phonics

Many factors govern spelling. They include:

- The alphabetic principle and the following six syllable types⁴⁹:
 - Closed syllables,
 - open syllables (vowel at the end of a syllable),
 - vowel consonant e syllables,
 - vowel digraph,
 - consonant –le, and
 - r controlled.

- Vowel sounds and spellings are often governed by their placement in the word

- Some general rules for syllabication are:
 - If the syllable is closed (consonant–vowel–consonant), the vowel sound will be short.
 - Vowels at the end of accented syllables are usually long, as in *baby*, *secret*, *tiger*, *pony*, and *music*.
 - Vowels at the end of an unaccented syllable may have a schwa (reduced vowel sound) as in *away* or *afraid*.
 - Consonant digraphs and trigraphs—*ck*, *dge*, *tch*—occur immediately after a short vowel.
 - The letters *f*, *l*, *s*, and *z* are doubled at the end of a one syllable short vowel word.

- Word origin: Many words in reading texts and students' written productions in the first three grades are one or two-syllable high-frequency words of Anglo-Saxon origin. Many of the words in textbooks and students' written production in the upper grades, however, are of Latinate origin and

tend to have three to five syllables and unaccented schwas, or are of Greek origin with some different spelling-to-sound correspondences and morpheme patterns than words of Anglo-Saxon origin.⁵⁰

⁴⁸ Brady & Moats, 1997

⁴⁹ Moats, 2000

⁵⁰ Balmuth, 2009; Henry, 2003

After learning how to spell base words, students should practice adding prefixes and suffixes. Prefixes give shades of meaning to words and suffixes indicate tense, number (singular or plural), and part of speech. This understanding contributes to both vocabulary and reading skills. Students who understand word parts express themselves with greater precision and facility.

Multisensory Approach to Spelling Instruction

The various multisensory teaching methods use slightly different approaches to spelling instruction. Each method should teach students the common orthographic patterns of English (phonograms) as well as use of affixes and spelling rules.

When encoding, students should be encouraged to:

- repeat the word,
- listen to the sounds in sequence,
- think of each vowel sound in the word and associate it with the letter or letters that spell it,
- repeat the word, and
- recall the sounds of the words in sequence, and then spell the whole word.

Repeating the word helps students hear sounds in sequence and feel the speech production in sequence. Listening for the vowel sounds allows students to address difficult and ambiguous parts of the word first.

Independent Written Composition

Students are ready for written expression of ideas when they can write letters and spell words. Success at all levels requires instruction and guided practice that develop thought patterns and effective written language. Well-planned, structured, sequential, and systematic lessons are necessary for developing writing skills.

Such lessons include:

- teaching and practicing for automatic, fluent handwriting;
- exercises to develop perception and discrimination of the letter or letters that spell sounds;
- practice in spelling regular and ambiguously spelled words;
- formation of complex words by adding prefixes and suffixes to base words;
- daily guided practice in writing phrases and sentences from dictation; and
- modeling, teacher guidance, and practice in constructing well-formed paragraphs.

Paragraphs

Independent paragraph writing requires integration of several tasks. Students must:

- demonstrate the organization of thoughts and retrieve the language for each sentence to produce a cohesive sequence of ideas that express a view or an idea;
- spell correctly; and
- use capitalization and punctuation appropriately.

A good paragraph should have:

- a clear topic sentence that tells the reader what the paragraph will be about;
- a body that gives specific details that support and strengthen the topic sentence; and
- a concluding sentence that provides closure or leads the reader to the next paragraph.

Daily practice with writing sentences leads to construction of clear, well-organized independent paragraphs. Writing multi-paragraph papers provides a structure for note taking and multi-page reports.

Handwriting: Language by Hand

Handwriting is one of the most important skills in learning to express ideas in written language. Students with dyslexia may also have a writing disability. Spelling problems tend to persist beyond the reading problems and are shown to be linked to written composition. Reading problems may resolve in elementary grades but writing problems may persist, requiring explicit instruction in writing and reading-writing integration in grades K – 12.

Dysgraphia is a problem in handwriting in which the ability to retrieve and produce legible letters automatically, effortlessly, and quickly is impaired. Students with dysgraphia may have problems in spelling with or without indicators of dyslexia. They may have problems in executive functions for self-regulating the letter writing, word spelling, and composing process (fluency and quality).

One in ten students, with or without dyslexia, struggles with handwriting and sometimes keyboarding. Often undiagnosed and untreated, dysgraphia is related

to failure to complete written assignments, and difficulty with composition and expressive language. Differences in a brain region associated with working memory during idea generation, may explain why handwriting or spelling (transcription) problems alone are not the reason for their difficulties in composing.

All students can benefit from handwriting instruction that teaches automatic letter formation because the brain uses its limited resources more efficiently when letter formation is automatic. Handwriting instruction:

- Addresses the writing disabilities of those with dyslexia.
- Aids students with dysgraphia by helping them retrieve and produce legible letters automatically, effortlessly and quickly.
- Provides access to a tool for automatic expression.

A close relationship exists between letter production and letter perception. Both motor and visual regions of the brain are involved in handwriting, and handwriting may enhance visual perception and reading.⁵¹

⁵¹ James & Gauthier, 2006; Longcamp, et al. 2003

Hands-on Strategies:

Handwriting Instruction

Studies at the University of Washington have identified the following elements for effective handwriting instruction.

Strategies may include:

- A five minute per day “writers’ warm-up” improves reading performance.
- Students should always name the letter as it is written. This facilitates retrieval and fluency.
- For review, teach for letter retrieval from long-term memory (write the letters that come after and before other letters). This aids recall of alphabetical order and improves the ability to write a series of letters; it transfers to longer compositions.
- Have students write a letter and trace it repeatedly until the next letter is given, rather than writing a long row of the same letter. This will avoid habituation of writing errors.
- Teach letter writing and integrate it with comprehensive writing instruction that includes composing in many genres.
- Always teach for transfer by following letter writing practice with composing.
- Teach self-monitoring and other-monitoring of letter legibility (is the letter recognizable out of word context?) in written compositions.

The juggling act of writing may place greater demands on internal working memory than reading does, but writing externalizes cognition making thought visible via written language to become an object for reflection and repair. As a result, writers gain conscious access via writing to what they are thinking in unconscious implicit memory.

Fluency is also a concern with handwriting. Students must receive purposeful instruction in handwriting to associate sounds to unfamiliar letter shapes. How fluently a student manipulates the writing instrument will affect the speed and flow of written work. Just as fluency in reading correlates with comprehension, fluency in writing contributes to written expression. Automatic and clear handwriting is necessary to express one’s thoughts on paper. Only when the act of handwriting is automatic can the mind focus on expression and meaning.

Manuscript,
Cursive, Touch
Screen, or Keyboard?

Educators continue to debate the best practices for teaching writing.

Both manuscript printing and cursive have advantages. Printing letters transfers to the kinds of letters in books and on monitors. Cursive can increase the speed of writing and reduce reversals. It provides more consistency for those unsure about where to start a letter because all cursive strokes start on the writing line. The key is consistent instruction and practice.

European preschoolers and children in the early grades learn to write in cursive from the outset. Brain research in France⁵² and the United States⁵³ shows that forming letters stroke by stroke, rather than selecting and pressing keys, enhances perception, learning, and memory.

Keyboarding and touch screens can be beneficial to students who struggle with letter formation. University of Washington brain imaging showed that finger sequencing engages the thinking parts of the brain.⁵⁴ A given motor task involving the hand or finger may uniquely activate brain regions associated with the higher level planning and/or control functions as well as those associated with the actual execution of the motor act. The goal is to provide an automatic, legible tool that enhances all aspects of language.

However, printing, cursive, keyboarding, and touch screen use should be taught to *all* students so they can become bilingual by hand in the information age.

⁵² Longchamp & Velay, 1980

⁵³ James & Gauthier, 2006; Stevenson & Just, 2014

⁵⁴ Berninger & Richards, 2002 as cited in Berninger & Wolf, 2009. p.64-65

The Dyslexia Friendly Classroom: Helpful Hints for Teachers

Many teachers of students with reading issues (often dyslexia) are at a loss as to how to help these students within the context of the regular classroom. Students with dyslexia are often overlooked in the regular classroom for several reasons:

- Students with dyslexia can be mildly to severely impaired, with only the severely impaired qualifying for special services. Others take years to qualify and get help, while others are never identified.
- Many students with dyslexia are very bright and compensate well to cover up their areas of deficit.
- Some of these students read fluently, but have trouble with spelling and writing.
- Many students with dyslexia have ADD/ADHD⁵⁵ and their reading, writing, spelling, and/or handwriting issues are masked by their attention problems.
- Many struggle with spelling problems or read slowly but with good comprehension. Since poor spelling and slow reading does not qualify students for Special Education services, issues are not addressed and persist.

Even without direct training in the systematic, explicit, multisensory instruction that is recommended for students with dyslexia, there are many classroom activities teachers can incorporate into their regular instruction that will benefit *all* students.

Reading Strategies

The following activities are centered on teaching the *reading code*, i.e. explicitly teaching how words are put together. All good readers use the phonological (sound), orthographic (patterns and rules), and morphological (meaning) codes while reading. Systematically instructing students in these three codes will improve *all* students' understanding of words, increasing their reading and spelling skills.

In a dyslexia friendly classroom, "even the most vulnerable learners are set up to succeed because they are effectively working within their comfort zones for much of the time and operating from a secure platform of strength and competence."

*Neil Mackay,
The School That I'd Like 2009*

⁵⁵ Attention Deficit Disorder / Attention Deficit Hyperactivity Disorder

Phonological Code:

Connecting the sounds in our language to print

Students need a great deal of practice identifying the sounds and connecting these sounds to letter patterns.

Recommendations:

Assess: Screen students for phonemic awareness issues and letter/sound correspondence skills (phonics).

Teach: Use letter pattern cards to systematically teach students to automatically connect sounds to letter patterns. These card sets teach more patterns than the single letter sounds. Students need to know the sound /ay/, for example, for reading and spelling. There are about seventy common patterns used to write the forty-four sounds that make up English words. The more common letter patterns a student recognizes automatically, the more easily he will be able to decode unknown words.

Orthographic Code:

Letter patterns in English

Good readers more easily identify common letter patterns. One reason for this is that the more a student reads, the more practice that student has recognizing the correct pattern.

Recommendations:

Assess: Give a one minute oral reading test to each student. Note the types of errors a student makes in decoding unknown words and how automatically the student recognizes letter or word patterns.

Teach: Systematically and explicitly teach spelling rules. Use a systematic phonics based, rather than a pattern based (words sorted by patterns) spelling program. Provide students with consistent opportunities to read aloud with guided help focusing on recognizing letter patterns/sounds and word patterns.

Morphological Code:

Understanding that pieces of words have meaning

Using context and meaning to read is often a strength of students with good oral language skills, but if their decoding skills are not strong enough to sustain reading for any length of time students have difficulty creating meaning. Students with dyslexia need explicit instruction in the morphological code. Research especially supports the importance of morphological instruction for older students.

Recommendations:

Assess: During class discussions, frequently ask students to supply the base word of multi-syllabic words. Conversely, when discussing interesting words, especially in math, social studies, or science (think of the word *divide*), have students generate derivatives and assess how easily they can do this. Give a pretest on common prefixes and suffixes by grade level. Check for deep understanding by asking students if "er", for example, has meaning in such words as *corner* and *teacher*, to assess whether the student comprehends whether "er" is actually a suffix with meaning in the word or a phonogram.

Teach: Systematically teach prefixes and suffixes and refer to them when decoding and discussing vocabulary. Teach Latin roots and Greek combining forms with their meanings, and practice generating words made of several roots. Involve students in word investigations in as many ways as possible, including looking for interesting words in their reading and using their word knowledge to generate derivatives.

Strategies for In-Class Work and Homework

Problems with reading, handwriting, and spelling make in-class work or homework hard to complete for students with dyslexia. Therefore, learning through discussion is beneficial to them. When asked to read, these students benefit from choral reading, partner reading, following along as the teacher reads, or being asked to read independently only at their reading level in order to learn information through reading.

Many of these students have attention issues and, understandably, will not sustain independent silent reading, especially if asked to read independently above their reading level.

Students with dyslexia often have problems with remembering and following directions. Listening and writing (note taking) may be difficult for them. The following suggestions may be helpful:

- Give a direction and ask the student to repeat it back before starting a task.
- Break down tasks into manageable parts.
- Model what to do when giving directions for each part, rather than explaining what to do all at once.
- Provide directions and information both verbally and visually in written form.

Integration with the Daily School Routine

Schools work hard to help students at all academic levels. In addition to regular classroom learning environments, schools often have resource rooms for students in special education and remedial reading small groups to help students who are working below their grade level. Every school structures and schedules their support services differently. Parents and teachers should explore what resources are in place at their school and understand the purpose of the program as well as the skills a student will be working on.

Students with dyslexia often need many more repetition to master the same material as those without dyslexia. Additional accommodations may be necessary. These may include:

- Allowing more time on a task to learn a skill.
- Receiving extra help outside of class, coordinated with what is being taught in the classroom. Helping students finish in-class work or homework in this time is not as important as working on the underlying skills of reading and spelling at the student's level. Additional practice on needed skills is how progress can best be accelerated.

The following chart by Gamble (2015) provides developmental benchmarks as well as instructional strategies which may be used for students Pre-K to third grade and beyond.

<i>Grade Level</i>	<i>Benchmarks</i>	<i>Major Instructional Strategies</i>
Pre-K	<ul style="list-style-type: none"> • Listens to stories • Makes up stories from the illustrations • Is able to repeat some letter sounds 	<ul style="list-style-type: none"> • Story time with emphasis on rhyming • Shared reading • Individual and class story books • Phonological awareness games and activities
Kindergarten (First Half)	<ul style="list-style-type: none"> • Listens to and retells stories in sequence • Deciphers some words by using beginning sounds and illustrations • Demonstrates an understanding of the concepts of print • Is able to repeat most of the letter sounds 	<ul style="list-style-type: none"> • Story time with emphasis on rhyming • Shared reading • Opportunities to retell stories • Individual and class story books • Phonological awareness games • Phonological awareness activities with an emphasis on onsets/rimes and phonemic segmentation • Letter naming activities
Kindergarten (Second Half)	<ul style="list-style-type: none"> • Begins to see the whole picture and is able to summarize stories • Is able to read own writing • Begins to self-correct • Is displaying some fluency with familiar texts • Begins to use word families to decipher unfamiliar words 	<ul style="list-style-type: none"> • Story time with an emphasis on rhyming • Shared reading • Opportunities to retell stories • Phonological awareness games • Phonological awareness activities with an emphasis on onsets/rhymes and phonemic segmentation • Exploration of speech sounds through phonetic activities • Repeated readings
First Grade (First Half)	<ul style="list-style-type: none"> • Has ability to read independently for a few minutes • Is able to recognize various genres • Demonstrates comprehension abilities through discussions 	<ul style="list-style-type: none"> • Story time • Shared reading • Guided reading • Opportunities to retell stories • Phonological awareness games

	<ul style="list-style-type: none"> • Utilizes higher order thinking skills, i.e. analysis and judgments • Is able to recall specific details of a story • Is able to express the main idea of a story • Begins to use long and short vowels to decode words • Displays greater fluency with familiar texts 	<ul style="list-style-type: none"> • Phonological awareness activities with an emphasis on oddity tasks, blending, phoneme deletion and phonemic segmentation • Multi-model Orton-Gillingham based activities such as Wilson Linguistics or the Project Read programs • Structured phonics activities • Processed speech options such as the FastForWord program • Visualization and Verbalization activities on a regular basis with options for additional time • Reading Recovery options
First Grade (Second Half)	<ul style="list-style-type: none"> • Begins to make predictions based on prior knowledge • Self monitors and self corrects • Displays fluency with familiar and unfamiliar texts • Begins to use a variety of reading strategies to comprehend text • Is able to read independently for greater periods of time, i.e. 15 minutes or more • Begins to read chapter books • Begins to interact with text in an active manner • Begins to see the question and answer relationships 	<ul style="list-style-type: none"> • Story time • Shared reading • Guided reading • Opportunities to retell stories • Phonological awareness games • Phonological awareness activities with an emphasis on oddity tasks, blending, phoneme deletion and phonemic segmentation • Multi-model Orton-Gillingham based activities such as Wilson Linguistics or the Project Read programs • Structured phonics activities • Processed speech options such as the FastForWord program • Visualization and Verbalization activities on a regular basis with options for additional time • Reading Recovery options • Reading fluency activities and progress charts • QAR activities • Increased opportunities for independent reading • Integrated reading and writing activities
Second Grade	<ul style="list-style-type: none"> • Is able to make inferences • Is able to use reference material • Is able to read independently for 20 minutes or more 	<ul style="list-style-type: none"> • Story time • Shared reading • Guided reading • Opportunities to retell stories

	<ul style="list-style-type: none"> • Is able to compare and contrast stories • Interacts with the text in an active manner • Has increased awareness to question and answer relationships • Begins to apply knowledge from print to solving problems 	<ul style="list-style-type: none"> • Phonological awareness games • Phonological awareness activities with an emphasis on oddity tasks, blending, phoneme deletion and phonemic segmentation • Multi-model Orton-Gillingham based activities such as Wilson Linguistics or the Project Read programs • Structured phonics activities • Processed speech options such as the FastForWord program • Visualization and Verbalization activities on a regular basis with options for additional time • Reading fluency activities and progress charts • QAR activities • Increased opportunities for independent reading • Problem based activities
<p>Third Grade and Up</p>	<ul style="list-style-type: none"> • Displays a complete comprehension of text to include sequence, main ideas, inferences and additional higher-order thinking skills • Is able to interact with text in a highly active manner • Is very aware of question and answer relationships • Is able to use knowledge from printed resources to solve problems that have multiple solutions 	<ul style="list-style-type: none"> • Guided reading • Multi-model Orton-Gillingham-based activities such as Wilson Linguistics or the Project Read programs • Processed speech options such as the FastForWord program • Visualization and Verbalization activities on a regular basis with options for additional time • Reading fluency activities and progress charts • QAR activities • Increased opportunities for independent reading • Problem based activities • Reciprocal teaching and reading activities • Multiple strategies for reading the content areas • Close Reading strategies

Useful Classroom Modifications⁵⁶

There is no doubt that students with dyslexia can be well taught in the regular classroom. However, they can benefit from extra work at their instructional skill level and with some accommodations. Because these students struggle in their processing of single words, they often become very tired at school, especially during reading and writing tasks. There are many classroom accommodations and modifications that can make learning easier and less tiring for students with dyslexia. These accommodations and modifications should not take the place of teaching these students to be efficient readers, spellers, and writers; rather they will allow the students to best take information into their brains for quick processing.

Seating Arrangement: With this accommodation, all students are seated so they face the board. Students with dyslexia should not be looking over their shoulders as they copy from the board. Rows work well and students can sit in rows with a desk partner. A horseshoe-shaped desk arrangement also works.

Writing: Have students with dyslexia say a sentence aloud before they write it. This will help them get their thoughts on paper quickly (before forgetting) and with semi-accurate spelling.

Students who struggle with letter formation should sit near the teacher for monitoring. While teaching students how to write their letters properly must happen in separate lessons, students with dyslexia should not be allowed to practice making their letters incorrectly because inefficient letter formation ultimately slows down sentence writing.

Keyboarding: Do not jump to keyboarding as the solution for poor handwriting. "Although computer keyboards may make it easier to produce letters, evidence shows that children write longer compositions and write them faster by pen than by keyboard."⁵⁷

When writing for duration of time, for example in paragraph writing, have students use a recording device to dictate (capture) their thoughts. They can then play back and write their thoughts down.

Reading: Use recorded books as a scaffold. Students can follow in their own text.

This may help move these students through text.

⁵⁶ For specific teaching techniques, refer to the Instruction and Intervention in the Classroom Section.

⁵⁷ Berninger & Wolf, 2009, pg 133

Spelling:

- Teach spelling as suggested in the Instruction and Intervention in the Classroom section. Reading and writing skills both improve when spelling improves.
- Goods spellers visualize in their "mind's eye" the spelling of words. Teach students with dyslexia to use their ears to hear the sequence of sounds and their "mind's eye" to visualize words, especially words they need to spell every day (such as *they* and *because*) or words that are hard to decode.

Spelling and Reading: Very few words need to be taught by sight or memory.

Instead, sound through words and look at all letter and meaning patterns in each word. Teach students to blend. This strategy (sounding out a word) is the most efficient for word identification.⁵⁸

General Accommodations

- Break assignments into small steps and provide examples.
- Provide more time for assignments and tests.
- Use graphic organizers, calendars/ student planners, written schedules to support organization.

Check student work frequently. Nothing is more discouraging to a student than doing something incorrectly overtime and having to go back and relearn a skill.

Specific Accommodations for Students with Section 504 Plans

Students with dyslexia may be eligible for additional accommodations under Section

504. Accommodations may include:

- extended time on tests,
- a designated note taker,
- computer support for writing,
- books on tape,
- reducing distractions,
- use of multi-sensory instructional methods (i.e. visual graphs and charts, to accompany oral presentation)
- supplemental instructions, and
- modified test delivery.⁵⁹

Please refer to The State and Federal Laws section for more information.

⁵⁸ Snow, 1998

⁵⁹ For a list of sample accommodations see: A Parent & Educator Guide to Free Appropriate Public Education Under Section 504 of the Rehabilitation Act of 1973

SUPPLEMENTAL INFORMATION

Federal and State Law

The principal federal law ensuring free appropriate education for children with disabilities is the Individuals with Disabilities Education Act (IDEA), which was initially passed in 1975 and reauthorized in 2006. IDEA provides for free testing, entitles eligible disabled students to Free Appropriate Public Education (FAPE), specifies the requirements for FAPE, and provides federal funds to states to provide special education and related services. IDEA covers students at the preschool, elementary, and secondary levels (ages 3 through 21, or high school graduation, whichever comes first). Disabilities covered under IDEA include Specific Learning Disabilities (SLD); dyslexia is included as a condition under this category of disability.

“Specific Learning Disability (SLD) means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia, that adversely affects a student’s educational performance.” (IDEA)

At the state level, regulations governing special education issued and followed by the OSPI are included in Chapter 392-172A of the Washington Administrative Code (WAC). These regulations specify how the state carries out the requirements of IDEA.

Section 504 of the Rehabilitation Act of 1973 protects the civil rights of individuals with disabilities. Section 504 prohibits discrimination on the basis of disability in any program that receives federal funds, including public schools. Section 504 is broader than IDEA, and may cover elementary and secondary students who are not eligible for services under IDEA. College students can also receive accommodations under Section 504.

State law also prohibits discrimination based on disability in Washington public schools. These laws and regulations are located in chapter 28A.642 of the Revised Code of Washington (RCW) and chapter 392-190 of the Washington Administrative Code (WAC).

Referral and Testing

Under IDEA, either a child's parent or a public agency (e.g., a school) may initiate a request for an initial evaluation to determine if the child has a disability. The federal law establishes that the initial evaluation must be completed within 60 days of receiving parental consent for the evaluation. The evaluation must "consist of procedures to determine if the child is a child with a disability... and to determine the educational needs of the child."

IDEA specifies that "screening of a student by a teacher or specialist to determine appropriate instructional strategies for curriculum implementation shall not be considered to be an evaluation for eligibility for special education and related services." Evaluation assessments must be administered in mode of communication (e.g., in the child's native language) and form that is most likely to yield accurate information.

According to the United States Department of Education (USDOE) states must not require the use of a "severe discrepancy between intellectual ability and achievement" to determine whether a child has a specific learning disability. The 2006 reauthorization of IDEA allows for the optional use of the Response to Intervention (RtI) approach to determine whether a child has a specific learning disability.

In Washington state, schools may use either a discrepancy model or RtI (as stated in the district's policies and procedures) to identify students with a specific learning disability (ld) which includes dyslexia. "RtI is a tiered approach to educational intervention; the most common is a 3-tiered model. Tier 1 provides high quality reading instruction to all students, with careful progress monitoring by teachers in the classrooms. Tier 2 is the same high quality instruction but with increased intensity for those not progressing well enough. If students do not progress with this more intensive instruction, they are identified for Tier 3, which is targeted special education intervention. Tier 3 students would have full evaluations and the establishment of an Individualized Education Program (IEP)."

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IDEA and state regulations provide a way to protect the rights of students who are entitled to, but denied accommodations. Parents must be notified of any school district decisions affecting a student's special education program after a decision is made, but *before* the decision is implemented. Office of Special Education Programs has determined that RtI may not be used to delay or deny a referral to special education.⁶¹

⁶⁰ [NIH - National Institute of Child Health and Human Development, *Learning Disabilities*](#)

⁶¹ [Office of Special Education Programs RtI memo](#)

Section 504

Section 504 of the Rehabilitation Act of 1973 is a federal civil rights law designed to eliminate disability discrimination in programs and activities that receive federal funds, including public schools. Section 504 requires each school district to provide a "free appropriate public education" (FAPE) to each qualified student with a disability who is in the school district's jurisdiction, regardless of the nature or severity of the disability. Under Section 504, FAPE consists of the provision of regular or special education and related aids and services designed to meet the student's individual educational needs as adequately as the needs of nondisabled students are met. Denying a student with a disability a free appropriate public education constitutes disability discrimination.

For further information on Section 504, please refer to the following publications by the

U.S. Department of Education Office for Civil Rights:

- "Student Placement in Elementary and Secondary Schools and Section 504 of the Rehabilitation Act and Title II of the Americans with Disabilities Act," <http://www2.ed.gov/about/offices/list/ocr/docs/placpub.html>
- "Protecting Students with Disabilities – Frequently Asked Questions about Section 504 and the Education of Children with Disabilities," <http://www2.ed.gov/about/offices/list/ocr/504faq.html>

IEP – Individual Education Plan

The child study team, (which may include school psychologist, classroom teacher, parents, and other specialists) recommends the intervention based upon assessment results. Recommendations are made for specially designed instruction and an individual education plan (IEP) is developed. The (IEP) identifies the specifics of the special education, related services, and other supports needed to provide a student with a FAPE based on their individual and unique needs. For a student with dyslexia, this typically means a multisensory, structured, sequential phonics based targeted instruction, and may also include other accommodations. Every student determined eligible for special education must have a current IEP in place. IDEA specifies the required contents of IEPs, IEP meetings, the composition of IEP teams, and procedures for amending IEPs and IEP progress and accountability. School districts are required to take steps to assure that one or both of an eligible student's parents are present at IEP meetings, or are provided the opportunity to attend.

For information about Procedural Safeguard regarding IEPs and Special Education, <http://www.k12.wa.us/SpecialEd/pubdocs/PS.pdf>

Washington Administrative Code

The [evaluation] group described in WAC [392-172A-03050](#):

Additional members of the evaluation group.

The determination of whether the student is eligible for special education services in the specific learning disability category shall be made by the student's parent and a group of qualified professionals which must include:

- (1) The student's general education classroom teacher; or
- (2) If the student does not have a general education classroom teacher, a general education classroom teacher qualified to teach a student of his or her age; or
- (3) For a student of less than school age, an individual qualified to teach a student of his or her age; and
- (4) At least one individual qualified to conduct individual diagnostic examinations of students, such as school psychologist, speech language pathologist, or remedial reading teacher.

WAC 392-172A-03055 may determine that a student has a specific learning disability if:

- (1) The student does not achieve adequately for the student's age or meet the state's grade level standards when provided with learning experiences and instruction appropriate for the student's age in one or more of the following areas:
 - (a) Oral expression
 - (b) Listening comprehension
 - (c) Written expression
 - (d) Basic reading skill
 - (e) Reading fluency skills
 - (f) Reading comprehension
 - (g) Mathematics calculation
 - (h) Mathematics problem solving
- (2) (a) The student does not make sufficient progress to meet age or state

grade level standards in one or more of the areas identified in subsection (1) of this section when using a process based on the student's response to scientific, research-based intervention or the group finds that the student has a severe discrepancy between achievement and intellectual ability in one or more of the areas identified in subsection (1) of this section; and

- (b) When considering eligibility under (a) of this subsection, the group may also consider whether the student exhibits a pattern of strengths and weaknesses in performance, achievement, or both, relative to age, state

grade level standards, or intellectual development, that is determined by the group to be relevant to the identification of a specific learning disability, using appropriate assessments, and through review of existing data.

- (3) The group determines that its findings under subsection (2) of this section are not primarily the result of:
 - (a) A visual, hearing, or motor disability;
 - (b) Intellectual disability;
 - (c) Emotional disturbance;
 - (d) Cultural factors;
 - (e) Environmental or economic disadvantage; or
 - (f) Limited English proficiency.

- (4) To ensure that underachievement in a student suspected of having a specific learning disability is not due to lack of appropriate instruction in reading or math, the group must consider:
 - (a) Data that demonstrate that prior to, or as a part of, the referral process, the student was provided appropriate instruction in general education settings, delivered by qualified personnel; and
 - (b) Data-based documentation of repeated assessments of achievement at reasonable intervals, reflecting formal assessment of student progress during instruction, which was provided to the student's parents.

- (5) The district or other public agency must promptly request parental consent to evaluate the student to determine if the student needs special education and related services, and must adhere to the time frames for an initial evaluation under [WAC 392-172A-03005](#):
 - (a) If, prior to a referral, a student has not made adequate progress after an appropriate period of time when provided instruction, as described in subsection (4)(a) and (b) of this section; or
 - (b) Whenever a student is referred for an evaluation.

In 2009, Washington State Legislature passed RCW 28A.300.530 and SSB 6016 Individuals with dyslexia — Identification and instruction — Handbook — Reports. The law states the following:

(1) Within available resources, the office of the superintendent of public instruction, in consultation with the school districts that participated in the Lorraine Wojahn dyslexia pilot program, and with an international nonprofit organization dedicated to supporting efforts to provide appropriate identification of and instruction for individuals with dyslexia, shall:

(a) Develop an educator training program to enhance the reading, writing, and spelling skills of students with dyslexia. The training program must provide research-based, multisensory literacy intervention professional development in the areas of dyslexia and intervention implementation. The program shall be posted on the web site of the office of the superintendent of public instruction. The training program may be regionally delivered through the educational service districts. The educational service districts may seek assistance from the international nonprofit organization to deliver the training, and

(b) Develop a dyslexia handbook to be used as a reference for teachers and parents of students with dyslexia. The handbook shall be modeled after other state dyslexia handbooks, and shall include guidelines for school districts to follow as they identify and provide services for students with dyslexia. Additionally, the handbook shall provide school districts, and parents and guardians with information regarding the state's relevant statutes and their relation to federal special education laws. The handbook shall be posted on the web site of the office of the superintendent of public instruction.

(2) Beginning September 1, 2009, and annually thereafter, each educational service district shall report to the office of the superintendent of public instruction the number of individuals who participate in the training developed and offered by the educational service district. The office of the superintendent of public instruction shall report that information to the legislative education committees.

Notes:

Finding -- Intent -- 2009 c 546: "Dyslexia is a language-based learning disability that affects individuals throughout their lives. Washington state has a long-standing tradition of working to serve its students with dyslexia. Since 2005, the legislature has provided funding for five pilot projects to implement research-based, multisensory literacy intervention for students with dyslexia. Participating schools were required to have a three-tiered reading structure in place, provide professional development training to teachers, assess students, and collect and maintain data on student progress.

The legislature finds that the students receiving intervention support through the dyslexia pilot projects have made substantial and steady academic gains. The legislature intends to

sustain this work and expand the implementation to a level of statewide support for students with dyslexia by developing and providing information and training, including a handbook to continue to improve the skills of our students with dyslexia." [2009 c 546 §

1.]

(Benton et al., 2009).

Legislative History and Dyslexia Resource Guide Project Timeline

In 2003-2004 a legislative committee led by Senator Kastama, created and submitted bill to support instruction for students with dyslexia. The bill is not passed; however,

\$677,000 is allocated in 2005-2007 Governor's State Budget to support five schools, called, Lorraine Wojahn Dyslexia Pilot Reading Program.

Beginning in the fall, 2005, four school districts applied for and received \$60,000 per year in grant funds for two years to implement research-based multi-sensory literacy intervention for students with dyslexia and/or who display characteristics of dyslexia. To receive grant funding, schools were required to have a three-tiered reading structure in place, provide professional development training to teachers, assess students, collect and maintain data on student progress, attend professional development training as requested by OSPI, and attend/present at a national conference.

September, 2005 – June, 2007

- Four schools are awarded \$120,000 for two years to implement intervention for students with dyslexia and provide professional development to teachers. OSPI collaborates with Washington Branch of IDA and offers Dyslexia Summit. 500 educators attend.
- Data are collected on results of Dyslexia Pilot Project. Approximately 180 students are provided with services.
- Students make substantial progress and outperform their grade level peers on measures of phonological processing.
- Over 25 teachers trained in a Scientifically Based Reading Research (SBRR) intervention program
- 6 teachers, 2 administrators attend out-of-state conferences
- 12 teachers attend in-state conferences
- All teachers and all principals at each school attend 30-45 minute presentation on dyslexia
- 3 schools present at OSPI Summer Institute 2006

July 2007-June 2009

- Legislators approve funding in the amount of \$588,000 to continue funding of the Lorraine Wojahn Dyslexia Pilot Reading Program.
- OSPI posts competitive grant application. 24 schools/districts apply. 12 schools/districts are accepted for three days of PD on topic of dyslexia and

grant preparation. Those 12 schools/districts submit second round of application.

- 4 schools awarded \$120,000 each for two years to implement intervention and provide PD to teachers.

- Students make substantial progress in areas of reading and spelling in all grades and outperform their grade level peers on phonological processing. Writing remains flat in all grades.
- District and school leaders continue to support teachers and students. Teachers continue to focus on student academic success.
- Dyslexia Pilot Project schools, including students, present at IDA 59th Annual Conference in Seattle.
- May 18, 2009, Governor Gregoire signs SSB 6016, “an act relating to training for educators to identify students with dyslexia” submitted by Senator Benton
- Legislators appropriated \$145,000 each year of the 2009-2011 biennium to fund SSB 6016.

July 2009-June 2011

- Forty-five educators, including representatives from each Educational Service District, attended five-days of professional development on the topic of dyslexia. All participants had previously completed twelve modules of *Language Essentials for Teachers of Spelling and Reading* (Sopris West) and considered reading experts. Plans to develop Washington State Dyslexia Training Module for “training of trainers” in place.
- Literacy representatives from the ESDs in collaboration with OSPI Reading, develop the Washington State Dyslexia Training Module and pilot the professional development.
- Washington Branch of the International Dyslexia Association in collaboration with OSPI develops the 2011 Washington State Dyslexia Resource Guide.

June 2011 to Present

The legislature provided \$1,265,000 for four years to implement research-based, multisensory literacy intervention for students with dyslexia for the years between 2005 and 2009 (Benton et al., 2009; Potts, 2015). Originally, SSB616 allocated \$145,000 per year. However in 2010, Engrossed Substitute Senate Bill 6444 reduced the funds to \$75,000, and then even further to \$37,000 by December 2010 (Benton et al., 2009; Potts, 2015). Since the year 2010, there has not been any supportive funding from the legislature to supplement trainers to implement

professional development trainings, and the handbook revisions have ceased (Potts, 2015).

In the fall of 2014, the Educational Service Districts within the state of Washington reported to OSPI none of the school districts requested professional development training on dyslexia during the 2013-2014 school year (ESD123, personal communication, March 25th, 2015).

Glossary

criterion referenced measure – a test designed to measure how well a student has learned a specific body of knowledge and skills according to predetermined criteria.

decode – to transform an encoded message, such as a group of letters, into an understandable form (word)

diagnostic assessment – in the context of RtI: specific tests, procedures or instruments (diagnostic tools) are selected to measure areas of concern. In this context, diagnostic testing does not lead to a *diagnosis* (the identification of a disorder); rather, it identifies areas to be addressed through differentiated instruction

discrepancy model – a method used to identify a learning disability through a combination of cognitive (intellectual) and academic (achievement) testing. The model compares the results of the tests to identify a 'severe discrepancy' between cognitive ability and academic achievement. Each state establishes its own formula for determining when a 'discrepancy' can be considered 'severe'.

dyscalculia – a specific learning disability involving innate difficulty in learning or comprehending simple mathematics. It is akin to dyslexia and includes difficulty in understanding numbers, learning how to manipulate numbers, learning math facts, and a number of other related symptoms

dysgraphia – a problem in handwriting in which the ability to retrieve and produce legible letters automatically, effortlessly, and quickly is impaired

dyslexia – a learning disorder marked by a difficulty in recognizing and understanding written language.

fluency – the ability to speak, read, or write a language clearly and efficiently

graphomotor functions – the ability to physically form letters, words and numbers

morpheme – the smallest meaningful element of speech or writing; base words, prefixes and suffixes

morphology – in linguistics, the structure of words in a language, including patterns of inflections and derivation

multisensory instruction – teaching by employing visual, auditory, and kinesthetic- tactile modalities to enhance retention and retrieval of information

norm-referenced test – a test to determine a student's placement on a normal distribution curve. Students are compared to age- or grade-level peers from a normative sample on this type of assessment.

orthographic coding – the ability to recognize and retrieve letter and letter sequences from memory

phoneme – a speech sound that distinguishes one word from another, e.g. the sounds "d" and "t" in the words "bid" and "bit." A phoneme is the smallest phonetic unit.

phonemic awareness – the ability to recognize that words are composed of individual sounds put together in a sequence

phonics – a method of teaching reading in which students learn to associate letters with the speech sounds they represent, rather than learning to recognize the whole word as a unit

phonograms – common orthographic patterns in language

phonological awareness – one's sensitivity to, or explicit awareness of, the phonological structure of one's language. It involves the ability to notice, think about, or manipulate the individual sounds of words. It does not require alphabet knowledge.

phonological memory – the ability to retrieve linguistic information, especially phonological in nature

phonology – speech sounds

prosody – a linguistic term to describe the rhythmic and tonal aspects of speech

Section 504 - Section 504 of the Rehabilitation Act of 1973 prohibits discrimination on the basis of a disability in programs or activities that receive federal financial assistance from the US Department of Education.

screening – generally a short, informal test used to determine whether further testing is indicated

syllabication – to break a word down into syllables in speech or writing

Acronyms

ADD/ADHA – Attention Deficit Disorder/Attention Deficit Hyperactivity

Disorder. ADD is a biological, brain based condition that is characterized by poor attention and distractibility and/or hyperactive (ADHD) and impulsive behaviors. It is one of the most common mental disorders that develop in children.

CBM – Curriculum Based Measurement. CBM is a method teachers use to determine how students are progressing in specific academic areas such as math, reading, writing, and spelling

FAPE – Free Appropriate Public Education. FAPE mandates that school districts provide access to general education and specialized educational services. It also requires that children with disabilities receive support free of charge as is provided to non-disabled students.

HSPE – High School Proficiency Exam. The HSPE measures the proficiency of students in high school and serves as Washington State's exit exam in reading and writing.

IDA – International Dyslexia Association. IDA is a non-profit organization dedicated to helping individuals with dyslexia, their families, and the communities that support them.

IDEA – Individuals with Disabilities Education Act. IDEA is a law ensuring services to children with disabilities throughout the nation. IDEA governs how states and public agencies provide early intervention, special education and related services to eligible infants, toddlers, children and youth with disabilities.

IEP – Individualized Education Plan. This is a legally binding document that spells out exactly what special education services a student will receive and why. It will include the student's classification, placement, services and therapies, academic and behavioral goals, a behavior plan if needed, percentage of time in regular education, and progress reports from teachers and therapists.

MSP – Measure of Student Progress. MSP is Washington State's exam for students in grades 3-8. The MSP name conveys the goal of the test: to measure student progress. State testing should never be the sole judge of a student's academic skills and knowledge.

OSPI – Office of the Superintendent of Public Instruction. OSPI is the primary agency charged with overseeing K-12 public education in Washington State. Led by State School Superintendent Randy Dorn, OSPI works with the state's 295 school districts to administer basic education programs and implement education reform on behalf of more than one million public school students.

Rtl – Response to Intervention. Rtl is a tiered instructional approach design to integrate assessment and intervention within a school-wide, multi-level prevention system to maximize student achievement and reduce behavioral problems.

SLD – Specific Learning Disability. A student has an SLD if he does not achieve adequately for his age or meet the state's grade level standards when provided with learning experiences and age appropriate instruction. Categories for SLD are outlined by the Washington Administrative Code. LSDs cannot be explained by visual or hearing impairments, emotional or behavioral disorders, lack of conventional instruction, or limited English proficiency.

WAC – Washington Administrative Code. Regulations of executive branch agencies are issued by authority of statutes. Like legislation and the Constitution, regulations are a source of primary law in Washington State. The WAC codifies the regulations and arranges them by subject or agency.

WABIDA – Washington Branch – International Dyslexia Association

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Resources

Online resources

Best Evidence Encyclopedia

<http://www.bestevidence.org/>

Doing What Works

<http://dww.ed.gov/>

Florida Center for Reading Research

<http://www.fcrr.org/>

International Dyslexia Association

<http://www.interdys.org/index.htm>

International Multisensory Structured Language Education Council (IMSLEC)

<http://www.imslec.org/>

Learning Disabilities Association of America

<http://www.ldanatl.org/>

National Center for Learning Disabilities

<http://www.nclld.org/>

North Central ESD Dyslexia Project

<http://www.ncesd.org/167310114123234440/blank/browse.asp?A=383&BMDRN=2000&BCOB=0&C=55211>

Office of the Education Ombudsman

<http://www.governor.wa.gov/oeo/>

Section 504 Manual (A Parent & Educator Guide to Free Appropriate Public Education under Section 504 of the Rehabilitation Act of 1973)

<http://www.psesd.org/images/stories/LandT/specialservices/504manual.pdf>

Section 504 Manual in Spanish (A Parent & Educator Guide to Free Appropriate Public Education under Section 504 of the Rehabilitation Act of 1973)

<http://www.psesd.org/images/stories/LandT/specialservices/504spanish.pdf>

US Department of Education Office for Civil Rights
<http://www2.ed.gov/about/offices/list/ocr/index.html?src=oc>

Washington Branch-International Dyslexia Association
<http://wabida.org/>

What Works Clearing House
<http://ies.ed.gov/ncee/wwc/>

Additional Resources.

(These resources are supplemental to resources included in the Reference section.)

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Washington State Office of the
Superintendent of Public Instruction
· *See* OSPI

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**This document is available online at:
<http://www.k12.wa.us/Reading/DyslexiaPilotProj.aspx>**

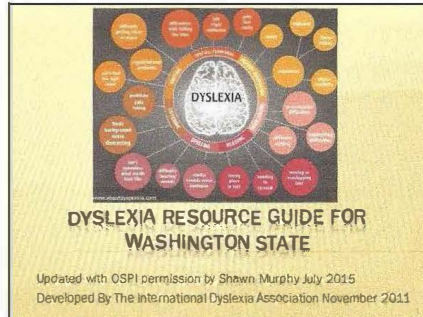


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2011

Appendix C:

This is the interactive web site for the 2015 Washington State Dyslexia Resources Guide draft. There are hot links provided throughout the actual website that provide various links.

8/20/2015



INTRODUCTION

TABLE OF CONTENTS

- ✦ What is dyslexia?
- ✦ How to identify students w/ a checklist & test to assess students with dyslexia.
- ✦ Evidence-based, multi-sensory programs known to help
- ✦ Accommodations for the classroom.
- ✦ Current state and national laws for dyslexia.

HOW TO USE THE INTERACTIVE PAGES

- ✦ Go to slide show tab
- ✦ Click on From Beginning
- ✦ Go to Table of Contents page
- ✦ Click on the area you are interested in.
- ✦ Enjoy

DYSLEXIA FACTS

TABLE OF CONTENTS

- ✦ Affects 4% to 20 % of students, or 1 out of 5.
- ✦ 40% of students in the U. S. read below grade level
- ✦ 80% of students who have Specific Learning Disabilities (SLD) also have dyslexia.
- ✦ When students have ADHD & dyslexia, teachers may attribute low academic performance to the ADHD, w/out providing accommodations for dyslexia.

TABLE OF CONTENTS

- Introduction
- Dyslexia Facts
- Overview
- Common Indicators
- Signs of Dyslexia
- Famous people with dyslexia
 - Anne Sullivan & Helen Keller
 - Charles Schwab & Charles H. Korman
- Response to Intervention
- Visual Cues
- Screening and Assessing
- List of appropriate accommodations
 - Oregon Learning Disabilities Indicator - OLODI
- Instruction and Intervention in the Classroom
 - Routines of Instruction
 - Essential components of reading
 - Oral Language Development
 - Spelling and Written Language
 - Evidence-based instruction in spelling
 - Instructional Methods
 - Strategies
 - Handwriting: Language by Hand
- Supplemental Information
 - Legal Law
 - Social Law
 - Executive Orders and District Policies/State Policies
 - Parent Training
 - Evidence
 - Accounts
 - References
 - Resources
 - Bibliography
- Different Multisensory Approach Programs
- Developmental Norms and Strategies

DYSLEXIA FACTS CONTINUED

TABLE OF CONTENTS

- Teachers have a significant influence on self-esteem of students w/ dyslexia.
- ✦ Unfair treatment causes low self-esteem; teachers may perceive students as lazy and use sarcasm to degrade them
- ✦ Most teachers unaware of accommodations & are in need of suggestions & further instruction
 - 56% of teachers felt they needed more training & information on dyslexia

OVERVIEW TABLE OF CONTENTS

- ✦ What Is Dyslexia?
- ✦ A learning disability in reading which causes difficulty w/ processing, identifying, decoding & spelling
- ✦ Difficulties w/word recognition
- ✦ Caused by dysfunction in the brain
- ✦ Normal I.Q.

COMMON INDICATORS TABLE OF CONTENTS

COMMON INDICATORS PG. 1

- ✦ Income: equally affected
- ✦ Gender: equally affected, with an even 50-50 ratio of boys to girls.
- ✦ Can co-exist with ADHD.
- ✦ Persistent & severe in spite of being exposed to proper education techniques, traditional reading programs, & typical intervention in improving literacy skills.
- ✦ Often later experience difficulty w/ mastering foreign languages, & may avoid courses or projects at work which emphasize extensive reading or writing requirements

OVERVIEW TABLE OF CONTENTS

- ✦ What is Dyslexia? (cont.)
- ✦ Isn't the result of poor instruction
- ✦ May include problems in reading comprehension & reduced reading experience
 - ✦ this can impede growth of vocabulary and background knowledge.
- ✦ Most school districts lack a category for dyslexia for special ed services; students are qualified under category of *Learning Disability* or *Reading Disability*.

COMMON INDICATORS TABLE OF CONTENTS

COMMON INDICATORS PG. 1

- ✦ Phonemic Awareness: difficulties w/ phonemic awareness,
 - ✦ (e.g., manipulating and analyzing phonemes within words and syllables such as say *sold* without the first sound (*o/d*) replacing sounds, such as say *sold*, but replace the first letter with the *f/f* sound (*fold*); and using pig latin, such as move the first letter of *sold* to the end of the word and add *ay* (*oldsay*).

COMMON INDICATORS TABLE OF CONTENTS

COMMON INDICATORS PG. 1

- ✦ Perplexing & varied & has many different characteristics.
- ✦ Each case highly individualized & diverse
- ✦ Range: may range from mild to severe.
- ✦ Heredity: when one parent has dyslexia, there is a 50% chance the child will have it.
- ✦ Race: all races equally affected

COMMON INDICATORS TABLE OF CONTENTS

COMMON INDICATORS PG. 1

- ✦ Phonemic Awareness: (cont.)
- ✦ important to start working on phonemic awareness at an early age.
- ✦ "Poor phonological awareness is often the first sign of dyslexia in children who have been introduced to phonics (sounds within words), yet who struggle to make full sense of them. Does your child have difficulties with any of the tasks on the chart? Can they successfully attend to simple short words but struggle with longer words? Are they aged 6-7 and over?..." Dyslexia Ideas Fb page

COMMON INDICATORS CONTINUED TABLE OF CONTENTS

COMMON INDICATORS PG. 1

- Decoding: can comprehend while text is read to them, but not when they read the text themselves
 - two main parts to reading:
 - decoding, (e.g., recognizing the word),
 - & comprehension, (e.g., determining what the word means).
- Fluency is a critical aspect to evaluate

COMMON INDICATORS CONTINUED TABLE OF CONTENTS

COMMON INDICATORS PG. 1

- Organization of time, materials & space:
 - Organization of materials
 - Forgetful, disorganized workspace, poor time management, difficulty w/ starting projects.
- Becomes overwhelmed with projects
- Difficulty with directions & time concepts such as left, right, over, under, half, past, quarter of 1.
- May not do as many tasks as expected or understand the concept.
- Social-emotional:
 - Due to early failures, may feel like they are "dumb" or stupid.
 - Many have been called "dumb" or "stupid" by family, teachers or peers.
 - Needs to be praised for areas they excel in, such as sports or music.

COMMON INDICATORS CONTINUED TABLE OF CONTENTS

COMMON INDICATORS PG. 1

Phonological Awareness

- Listening**
cat-car
Do these words sound the same?
- Alliteration**
hop-happy
Do these words begin with the same sound?
- Rhyming**
boy-toy
Do these two words rhyme?
- Blending**
c/a/t cat
Can you blend this word back together?
- Syllables**
wagon = 2
How many syllables are in this word?
- Segmentation**
hat h/a/t
Can you break this word apart by sound?

SIGNS OF DYSLLEXIA TABLE OF CONTENTS

- A common myth: people w/ dyslexia see letters backwards.
- Truth: most people with dyslexia have a phonological awareness disorder.
- Most people w/ dyslexia have some, if not all, of the common factors:
 - At least one parent has dyslexia
 - Speech difficulties
 - Difficulty w/ learning alphabet in order & randomly as well as the sounds of the letters in kindergarten
 - Difficulty with rhyming words: preschool & kindergarten
 - Number & letter reversals in 3rd & 4th grade
 - Difficulty w/ number facts in 1st & 2nd grade
 - Reading fluency & comprehension in 2nd & 3rd grade
 - Difficulty focusing on longer reading assignments by 3rd - 8th grade
 - Difficulty w/ learning foreign languages in high school
 - Difficulty w/ spelling all of their life

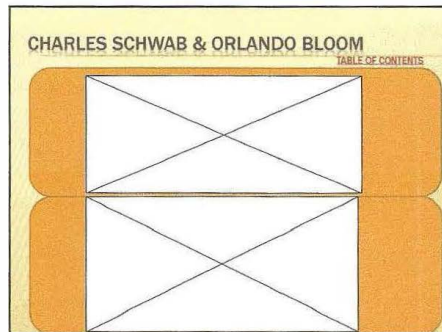
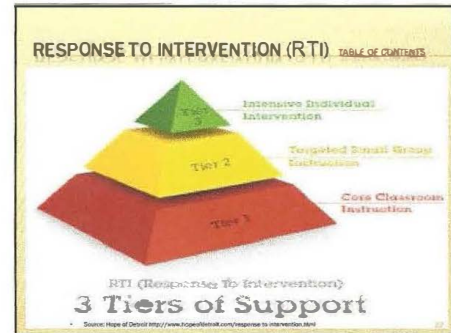
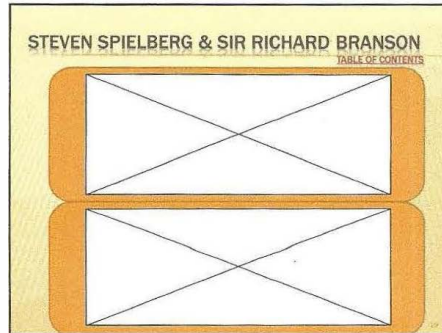
COMMON INDICATORS CONTINUED TABLE OF CONTENTS

COMMON INDICATORS PG. 1

- Spelling: multiple spelling errors
- Phonological Awareness: difficulty w/ speech sounds of a language
 - in a, the letter, or the /s/
- Oral language skills: difficulty w/ oral language
 - (e.g. using words that have similar but different meanings: "red" vs "green") and pronunciation (e.g. "poor" for "poor")
 - Need to use right words, e.g. "poor" vs "poor" and "poor" vs "poor" such as common phrases.
 - From a preschool years:
 - mix up the sequence of the sounds in a word, such as "supat" for "pats"
 - struggle with multi-syllable words & say the sounds out of sequence, (e.g. "magine" for "magazine") and "sawsheta" for "sawsheta")
 - difficulty with:
 - speech
 - rhyming
 - not wanting to learn at all
 - like letters in letters & the alphabet
 - poor letter-sound knowledge
 - Writing: struggle w/ punctuation & capitalization
 - Does not recognize capitalization for reading or writing
 - regularly misspell capitalization

FAMOUS PEOPLE W/ DYSLLEXIA TABLE OF CONTENTS

- Famous & successful people with dyslexia:
 - Jeremy Bentham - Major League Baseball player
 - Tom Cruise - Actor
 - Henry Wadsworth - Actor and author of the books Herk Zippor: Worlds Greatest Underachiever.
 - Albert Einstein - Great Physicist
 - Major League - NBA All Star basketball player
 - Charles Schwab - Investment Banker
 - Tommy Hilgier - Clothes Designer
 - Anthony Hopkins - Actor
 - Chris - Performer
 - Danny Glover - Actor
 - Jay Leno - Comedian: Late night talk show host
 - Whoppy Goldberg - Actress
 - Steven Spielberg - Director
- For more stories about people who have overcome dyslexia visit: <http://dyslexiahelp.umich.edu/success-stories/sarah>



VISUAL DYSLEXICS TABLE OF CONTENTS

- ✦ No 2 individuals w/ dyslexia are the same;
- ✦ There are different types of dyslexia: Visual, Phonological & Mixed
- ✦ Phonological difficulties are most common, but even in this type, visual challenges must not be overlooked
- ✦ Some types need to use their finger to follow text during reading but don't complain of glaring backgrounds with blurry text.
 - Overlays don't work for this type of dyslexia.

Strategies different for phonological and visual dyslexics, & for visual stress (or visual dyslexia), if present.

RESPONSE TO INTERVENTION (RTI) TABLE OF CONTENTS

- ✦ RtI: 3-tier intervention model designed to modify students' learning so they can be successful.
- ✦ Tier 1: All students. regular classroom instruction. 80% of students can learn under this tier.
- ✦ Tier 2: Extra support. Students who need extra help w/ classroom instruction. Small group instruction. 10 to 15% of students receive this instruction.
- ✦ Tier 3: Pull out resources-most intense, only 5% of students qualify. Used when no progress in tiers 1 or 2. Instruction more individualized.
- ✦ RtI used to help determine if a child needs special education services

VISUAL DYSLEXICS TABLE OF CONTENTS

Visual dyslexics Visual stress (perception of blurry distorted text) is often called 'visual dyslexia'

- ✦ may experience tracking problems in reading (losing place)
- ✦ letter mis-sequencing or reversing (b/d, p/q) in spelling.
- ✦ visual perceptual problems in reading
- ✦ eye fixation difficulties.
- ✦ Use of finger or marker to keep words 'together' & avoid losing place.
- ✦ colored overlays or tinted reading glasses can help.
- ✦ moving distorted or blurry text, especially on bright white backgrounds
- ✦ can co-occur w/phonological dyslexia

SCREENING & ASSESSMENT TABLE OF CONTENTS

- * Multidisciplinary team should involve:
 - + classroom teacher,
 - + the parent
 - + speech language pathologist,
 - + vision therapist,
 - + councilor,
 - + psychologist,
 - + administrator,
 - + the student where applicable

COLORADO LEARNING DISABILITIES QUESTIONNAIRE - CLDQ-R TABLE OF CONTENTS

DO YOU HAVE DYSLLEXIA? TAKE A QUICK QUIZ.

Scoring Instructions: Add up the circled numbers, and record the Total Score.

Statements	Never	Rarely	Sometimes	Frequently	Always
Has difficulty with spelling.	1	2	3	4	5
Has/had difficulty hearing letter names.	1	2	3	4	5
Has/had difficulty sounding out words.	1	2	3	4	5
Reads slowly.	1	2	3	4	5
Reads below grade level.	1	2	3	4	5
Requires extra help in school because of problems in reading and spelling.	1	2	3	4	5

The following cutoffs apply to the CLDQ-R Total Score:
 Total Score = 15 or less - Minimal Risk
 Total Score = 16-21 - Moderate Risk
 Total Score = 22 or more - Significant Risk

2013: The International Dyslexia Association (IDA)

LIST OF APPROPRIATE ASSESSMENTS TABLE OF CONTENTS

- * No single test defines dyslexia, so a combination of tests should be used.
- * Tests for diagnosing dyslexia:
 - + Comprehensive Test of Phonological Processing (CTOPP)
 - + Kaufman Test of Educational Achievement (KTEA-II)
 - + Lindamood Auditory Conceptualization Test, 3rd ed. (LAC-3; 2004)

INSTRUCTION & INTERVENTION IN THE CLASSROOM TABLE OF CONTENTS

- * Principles of Instruction
- * Essential Components of Reading
- * Additional Elements of Literacy
- * Oral Language Development
- * Spelling and Written Language
- * Handwriting: Language by Hand

LIST OF APPROPRIATE ASSESSMENTS TABLE OF CONTENTS

- * Phonemic-Awareness Skills Screening (PASS;2000)
- * Pre-reading Inventory of Phonological Awareness (PIPA;2003)
- * Test of Phonological Awareness; 2nd ed: PLUS (TOPA-2+; 2004)
- * Test of Phonological Awareness Skills in Spanish (TPAS;2004)
- * Test of Phonological Awareness Skills (TOPAS; 2003)
- * Woodcock-Johnson III Test of Cognitive Abilities

(Miller and Koverling, 2012, pp. 63 & 68)

PRINCIPLES OF INSTRUCTION TABLE OF CONTENTS

- * Teachers need specific training in dyslexia:
 - o Instruction should be:
- * Multisensory:
 - + Learning w/ eyes, ears, voice, & hands
- * Simultaneous and alternative:
 - + eye
 - o text & pictures,
 - + ears
 - o hearing lecture or being read to, & audiobooks
 - + Kinesthetically
 - o touch & movement, such as writing letters in shaving cream

PRINCIPLES OF INSTRUCTION
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Systematically and Cumulatively:
 - ✦ Teach reading & writing from a basic approach to a more advanced approach.
 - ✦ Orton-Gillingham –
 - ✦ multisensory teaching methods for reading, writing, spelling and decoding

ESSENTIAL COMPONENTS OF READING
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

Alliteration: A series of words w/ the same initial sound
 Silly Sammy Sick sipped six sodas and got sick, sick sick (from Dr. Seuss' ABC book)

Syllables: Clapping out the number of syllables in a words such as "cowboy"
 How many times did you clap?

Blending - sounding out words
 m - a - p. What word does it make? map

Segmenting: Can you break the word dog into separate sounds? c - o - g

PRINCIPLES OF INSTRUCTION
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Direct Instruction:
 - teacher driven & very scripted.
- ✦ Synthetic and Analytic:
 - ✦ Teach phonemic awareness before teaching letter sounds

ESSENTIAL COMPONENTS OF READING CONTINUED
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Phonics & Teaching the sounds to the alphabet
 - ✦ Work on the alphabet daily.
 - ✦ Use multisensory learning:
 - ✦ Write the letters in sand or shaving cream,
 - ✦ Sing the alphabet song,
 - ✦ Write out the letters
 - ✦ Use magnetic letters.
 - ✦ Have the student name the beginning or ending sound in a word

ESSENTIAL COMPONENTS OF READING
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ How to teach reading when someone has dyslexia:

Phonemic Awareness : Knowledge of sounds, & syllables in words – includes blending & segmenting of words

Listening "cat-cat". Do they sound the same or different?

Rhyming (Car-Bar, Do they sound the same?)

ESSENTIAL COMPONENTS OF READING CONTINUED
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Look for letters in books, magazines, or newspapers,
- ✦ Separate pictures by their first sounds
- ✦ Use environmental signs to point out words to help build vocabulary.

ESSENTIAL COMPONENTS OF READING
CONTINUED INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ “A person who can read all the correct words, but isn’t fluent, is dyslexic.” – Dr. Sally Shaywitz

ESSENTIAL COMPONENTS OF READING CONTINUED INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Comprehension: 3 requirements needed
 - ✦ enough time to process the word,
 - ✦ be able to connect the written word w/ a word that is spoken
 - ✦ have meaningful context w/ the word.

ESSENTIAL COMPONENTS OF READING
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

What is fluency?

- ✦ Fluency helps w/ understanding meaning of the story instead of just decoding the words
- ✦ 3 key aspects of fluency:
 - ✦ Accuracy – the way students recognize or decode words
 - ✦ Prosody or expression – reads with emotion
 - ✦ Conversational rate – being able to read independently at the same rate as conversational speech

ESSENTIAL COMPONENTS OF READING CONTINUED INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Comprehension tasks involve:
 - ✦ Pragmatics – How language is used
 - ✦ Discourse structure – organization of sentences
 - ✦ Semantics – word meanings
 - ✦ Syntax – How a sentence or phrase is created
 - ✦ Pragmatic – How language is used in order to communicate

ESSENTIAL COMPONENTS OF READING CONTINUED INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ **Vocabulary**
 - ✦ Recognition of words increases ability to read.
- ✦ Read to the students.
 - ✦ 1.) The more you read to them, the more they will be able to comprehend & read words.
 - ✦ 2.) Students w/ a high vocabulary are able to read & write better = more academic success.

ESSENTIAL COMPONENTS OF READING CONTINUED INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ **Keys to Reading Success w/ Dyslexia**
 - ✦ Teach phonemic awareness
 - ✦ Apply learning the sounds of the alphabet to decoding
 - ✦ Students need background knowledge to help with understanding
 - ✦ Provide opportunities for both oral & silent reading at their reading level
 - ✦ Activities for oral reading
 - ✦ Clarify questions about the reading
 - ✦ work on multistep directions

ORAL LANGUAGE DEVELOPMENT
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- * Students first learn by oral communication
- * Parents and Teachers can help build oral language by
 - + Asking questions throughout the day
 - + have students ask questions
 - + Teach students how to listen, speak, and watch
 - + Use a signal such as a bell of phrase
 - + Read to the class, it helps with students attention span

SPELLING AND WRITTEN LANGUAGE CONTINUED
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- * Some of the different rules students need to learn are
 - + Open vowel – “hi” the i says its name because there isn’t a consonant behind the vowel
 - + Closed vowel – “hit” the t says its sound because there is a consonant behind the vowel
 - + Vowels at end accented syllable will say its name (music), vowels at end of an unaccented syllable have a reduced vowel sound, called a schwa (away)
 - + Vowel consonant e syllables
 - + Vowel digraphs – when two vowels go walking the first one does the talking and the second one is shhhh quiet
 - + consonant –le
 - + R controlled words

ORAL LANGUAGE DEVELOPMENT CONTINUE
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- + When speaking, use complete sentences and expect it from the students
- + Critical thinking and listening skills. Have them describe the steps in making something to what books they like and why.
- + Practice multistep directions. Kindergarteners should be able to do 3 step directions
- + Work on oral and written vocabulary

SPELLING AND WRITTEN LANGUAGE CONTINUED
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- + Consonant digraphs and trigraphs occurs after a short vowel or a vowel that says its name. Words that follow this pattern are truck, judge, watch
- + Words that have the letters f, l, s, and z at the end are always doubled. This is called the FLOSS rule
- + Learn base words, one to two syllable words. The practice prefix and suffixes to base words.

SPELLING AND WRITTEN LANGUAGE
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- * Students with dyslexia have difficulty with spelling because they have difficulty with memorizing they need to learn
 - + Orthography – rules and patterns in words
 - + Phonology – how the letters sound
 - + Morphology – how the words look

MULTISENSORY APPROACH TO SPELLING
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- * Using a multisensory achieves better academic success.
 - + Multi-sensory strategies:
 - Using a recorder to record words
 - Rewrite the words
 - Segment the word and compare the letter to its sound
 - Blend the word and repeat it
 - Remember the sound of each letter and write the word
 - Draw a picture of the word and color the word in different colors

INDEPENDENT WRITING
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Students are ready to write stories when they can write the letters of the alphabet & write words.
- ✦ To teach successful writing, lessons should include
 - ✦ Practicing automatic and fluent writing
 - ✦ Lessons that teach different spelling rules
 - ✦ Practice writing with different levels of spelling words
 - ✦ Base words with prefixes and suffixes
 - ✦ Daily dictation of phrases and sentences
 - ✦ Teacher guidance & modeling on how to write a paragraph

HANDWRITING: LANGUAGE BY HAND CONTINUED
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Strategies for handwriting
 - ✦ 5 minute warm ups a day
 - ✦ Name letter aloud while its being written
 - ✦ Practice alphabetizing – dictionary work, phonebook work
 - ✦ Tracing letters over and over
 - ✦ Teach letter writing & composition together
 - ✦ Have students correct their own work

PARAGRAPHS
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Independent paragraph writing
 - ✦ Organized thought that expresses a cohesive sequence of events or ways to get to an idea
 - ✦ Focus on spelling words correctly
 - ✦ Focus on proper use of capitalization & punctuation
 - ✦ A good paragraph is comprised of
 - ✦ A clear topic sentence
 - ✦ Body – gives detail and supports topic sentence
 - ✦ Concluding sentence – provides closure or lead to next sentence

SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ✦ [Federal and State Law](#)
- ✦ [Legislative History and Dyslexia Resource Guide Project Timeline](#)
- ✦ [Glossary](#)
- ✦ [Acronyms](#)
- ✦ [References](#)
- ✦ [Resources](#)
- ✦ [Acknowledgements](#)

HANDWRITING: LANGUAGE BY HAND
INSTRUCTION AND INTERVENTION TABLE OF CONTENTS

- ✦ Handwriting
 - ✦ Use cursive for less letter reversals
 - ✦ Writing helps with learning and memory
- ✦ Keyboarding
 - ✦ engages thinking part of brain
 - ✦ Better for letter formation
- ✦ Best to teach cursive & keyboarding simultaneously

FEDERAL LAW TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ✦ 1973 – Section 504
 - ✦ Legal protection for students with disabilities
 - ✦ Does not provide funding for services
 - ✦ Allows for receipt of services without an Individualized Educational Plan (IEP)
 - ✦ Section 504 covers more than IDEA
 - ✦ College students can qualify for services
- ✦ 1975 – PL 94-142 Also known as IDEA, revised in 2006
 - ✦ Provides
 - ✦ free testing
 - ✦ Free and appropriate education
 - ✦ Coverage from ages 3 – 21
 - ✦ Covers Specific Learning Disability
 - ✦ Dyslexia is covered under this category

FEDERAL LAW
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ✦ Office of civil rights (OCR)
 - ✦ Branch of the Department of Education
 - ✦ Makes sure that school districts follow 504 plans
 - ✦ Eliminates discrimination of students with disabilities

LEGISLATIVE HISTORY & DYSLEXIA RESOURCE GUIDE PROJECT TIMELINE
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ✦ Requires each ESD to report number of attendance for training
- ✦ In 2014, all 9 ESD's reported no one requested professional development on dyslexia
- ✦ 2015 taskforce assigned to update the handbook
- ✦ July 2015 amendment to Elementary and Secondary Education Act (ESEA) of 1965.
 - ✦ Provide federal funding for teachers to use for professional development on dyslexia.
 - ✦ Amendment was denied. Senator Patty Murray (WA), most senior senator voted against it
 - ✦ Reason: Wouldn't be fair for other students with disabilities

STATE LAW
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ✦ Washington Laws
 - ✦ **WAC 392-172A-03050**
 - ✦ Describes who should be part of the evaluation group
 - ✦ **WAC 392-172A-03055**
 - ✦ Describes how a student qualifies for services as specific learning disabled
 - ✦ **WAC 392-172A-03005**
 - ✦ Describes the referral process and timelines for initial evaluations

SENATE DISCUSSION ABOUT ESEA AMENDMENT
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

LEGISLATIVE HISTORY & DYSLEXIA RESOURCE GUIDE PROJECT TIMELINE
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ✦ RCW 28A.300.530 - September 2009
 - ✦ Provided structure for funding SSB 6016
- ✦ SSB6016 - passed 2009
 - ✦ Provided training on dyslexia to the 9 ESD
 - ✦ 2005 to 2009 legislature provided \$1,265,000
 - ✦ Funding for schools to teach students with dyslexia
 - ✦ Original funding was \$145,000 per year
 - ✦ 2010 supplemental budget SSB6444 reduced funding to \$75,000 per year for 2010-2011 school year
 - ✦ December 2010 funds reduced to \$37,000 per year
 - ✦ Since 2011, funding for SSB6016 has been eliminated

GLOSSARY
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ✦ Attention Deficit/Hyperactivity Disorder (ADHD): A chronic condition that affects millions of children and often persists into adulthood. ADHD includes a combination of problems, such as difficulty sustaining attention, hyperactivity and impulsive" (Mayo, 2015).
- ✦ Blending: "Say the individual so unds in the word map as /n/ /a/ /p/" (Oudens, 2003 pg. 261).
- ✦ Cognitive Abilities: "Cognitive abilities are brain based skills needed to carry out any task from the simplest to the most complex" (Michelson, 2008).
- ✦ Dyslexia: "Dyslexia is a language-based learning disability. Dyslexia refers to a cluster of symptoms result in people having difficulties with specific language skills, particularly reading. Students with dyslexia often experience difficulties with both oral and written other language skills, such as writing and pronouncing words and writing. Dyslexia affects individuals throughout their lives; however, its impact can change at different stages in a person's life. It's referred to as a learning disability because dyslexia can make it very difficult for a student to succeed without phonics-based reading instruction. It is unavailable in most public schools. In its more severe forms, a student with dyslexia may qualify for special education with specially designed instruction, and as appropriate accommodations" (dos, 2014).

GLOSSARY
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- Grapheme: "The fundamental print unit in a written language; graphemes are used to represent phonemes, but also include both numbers and punctuation marks" (Mather & Wendling, 2012).
- Learning disability: "Learning disabilities are disorders that affect the ability to understand or use spoken or written language, to mathematical calculations, coordinate movements, or direct attention. Although learning disabilities occur in very young children, the disorders are usually not recognized until the child reaches school age. Research shows 8 to 10 percent of American children, under 18 years of age have some type of learning disability" (NIH, 2015).
- Morpheme: "Smallest unit of meaning in a language. For example the suffix s means the word is plural" (Mather & Wendling, 2012).
- Morphological: "The identification, analysis, and description of the structure of morphemes and other units of meaning of language" (Mather & Wendling, 2012).
- Neurobiological: "Having to do with the anatomy and physiology of the nervous system" (Mather & Wendling, 2012).
- Neurobiolinguistic: "A branch of linguistics dealing mainly with the biological basis of the relationship of the human language and brain" (Wiseleviski, 2007).

GLOSSARY
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- Resource Room: "An intervention for students with mild and moderate disabilities requiring extensive (over 50%) instruction in a special setting. Student schedules for the year may include a mix of resource room and general education classes, as they can substantially benefit from them. Reading language arts and mathematics (among other subjects) are commonly taught in a resource room" (Vannest, Hagan-Buzke, Parker, & Soares, 2011 pg. 221).
- Segmenting: "The /n/ /o/ /o/ together to form the word map" (Gutierrez, 2003 pg. 265).
- Specific Learning Disability: "(10) Specific learning disability is a term which refers to a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in the imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations, including conditions such as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.
- (11) Disorders not included. Specific learning disability does not include learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage" (IDEA, 2015).

GLOSSARY
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- Neuro-typical: "Neurotypical (NT) is a term created by the Asperger community to describe individuals who are not on the autistic spectrum" (Ohl, 2012 pg. 2).
- Orthography: "The writing system of a language, including the spelling, punctuation, and capitalization rules" (Mather & Wendling, 2012).
- Orton-Gillingham: "At their most basic level, Orton-Gillingham O-G programs use a multisensory approach to teach basic concepts of spelling, writing, and reading and continually build upon mastered skills. The premise behind the approach is that basic skills are hierarchical, referred to as the bottom-up approach, and the focus is on the automaticity of these specific subskills" (Rose & Zirkel, 2007 pg. 171).
- Phoneme: "The individual speech sounds of spoken language" (Mather & Wendling, 2012).

ACRONYMS
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- ADD/ADHA - Attention Deficit Disorder/Attention Deficit Hyperactivity Disorder. ADD is a biological, brain based condition that is characterized by poor attention and distractibility and/or hyperactive (ADHD) and impulsive behaviors. It is one of the most common mental disorders that develop in children.
- FAPE - Free Appropriate Public Education. FAPE mandates that school districts provide access to general education and specialized educational services. It also requires that children with disabilities receive support free of charge as is provided to non-disabled students.

GLOSSARY
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- Phonological Awareness: "Phonological awareness is a multi-level skill and reflects how words can be broken down into smaller units in differing ways. It refers to the phonological structure of the word, for example c-a-t spells cat" (Gillon, 2002 pg. 4).
- Phonology: "The study of the speech sounds of a language. For example, the letter sounds like /k/." (Mather & Wendling, 2012).
- Phonological weakness: "A lack of or an inability to hear and manipulate words into different sounds" (Shaywitz, 2003).
- Reading Comprehension: "The process of simultaneously extracting and constructing meaning through interaction and involvement with written language. We use the words extracting and constructing to emphasize both the importance and the insufficiency of the text as a determinant of reading comprehension" (Turnbull, 2015 pg. 7).
- Reading Recovery: "A reading intervention where students who is having difficulty in reading, receive individualized, one-on-one instruction in a pull-out model, typically for a period of 30 minutes for 12-20 weeks" (Dunn, 2010 p. 25).

ACRONYMS
TO SUPPLEMENTAL INFORMATION TABLE OF CONTENTS

- IDEA - Individuals with Disabilities Education Act. IDEA is a law ensuring services to children with disabilities throughout the nation. IDEA governs how states and public agencies provide early intervention, special education and related services to eligible infants, toddlers, children and youth with disabilities.
- IEP - Individualized Education Plan. This is a legally binding document that spells out exactly what special education services a student will receive and why. IEPs include the student's classification, placement, services and therapies, academic and behavioral goals, a behavior plan if needed, percentage of time in regular education, and progress reports from teachers and therapists.
- OSPI - Office of the Superintendent of Public Instruction. OSPI is the primary agency charged with overseeing K-12 public education in Washington State. Led by State School Superintendent Randy Dorn, OSPI works with the state's 295 school districts to administer basic education programs and implement education reform on behalf of more than one million public school students.

ACRONYMS	TABLE OF CONTENTS
<p>RTI – Response to Intervention. RTI is a tiered instructional approach designed to integrate assessment and intervention within a school-wide, multi-level prevention system to maximize student achievement and reduce behavioral problems.</p>	<p>SLD – Specific Learning Disability. A student has an SLD if he does not achieve adequately for his age or meet the state's grade level standards when provided with learning experiences and age appropriate instruction. Categories for SLD are outlined by the Washington Administrative Code. SLDs cannot be explained by visual or hearing impairments, emotional or behavioral disorders, lack of conventional instruction, or limited English proficiency.</p>

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ACRONYMS	TABLE OF CONTENTS
<p>WAC – Washington Administrative Code. Regulations of executive branch agencies are issued by authority of statutes. Like legislation and the Constitution, regulations are a source of primary law in Washington State. The WAC codifies the regulations and arranges them by subject or agency.</p> <p>WABIDA – Washington Branch – International Dyslexia Association</p>	<p>Visual attention span skills: a limitation of the number of discrete visual elements that can be processed in parallel in a multi-element display (Italeri, Donaghiu, & Viorio, 2013, p. 50).</p>

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Kindergarten (first half)	<ul style="list-style-type: none"> Identify and name objects in real-life Describe objects using coloring Highlight objects and illustrations Demonstrate an understanding of the concept of print Is able to recite part of the tale 	<ul style="list-style-type: none"> Storyline with focus on counting Shared reading Opportunities to read stories Collaborative and cooperative games Phonological awareness Workshop with an emphasis on reading/writing and dramatic play Letter naming activities
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Kindergarten (second half)	<ul style="list-style-type: none"> Identify and name objects in real-life Describe objects using coloring Highlight objects and illustrations Demonstrate an understanding of the concept of print Is able to recite part of the tale 	<ul style="list-style-type: none"> Storyline with focus on counting Shared reading Opportunities to read stories Collaborative and cooperative games Phonological awareness Workshop with an emphasis on reading/writing and dramatic play Letter naming activities
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