

# Preface

I began my career in literacy working at the adult literacy program of the San Diego Public Library. During my time there I met hundreds of adults with low literacy skills who often cried when they spoke about their school experiences. They told stories of struggling to read to their children because of their own literacy struggles. They described the obstacles they faced in getting a new and/or better job because they could not spell. I remember one student's emotional story about not being able to write a letter to his son because his spelling was so bad. Every single student I worked with included spelling as one of their literacy goals because they thought it was an important skill for their everyday lives. As I transitioned to helping younger dyslexic students and their families, I continued to seek out trainings that were based on evidence and widely accepted in the dyslexia community. I was trained and studied just about everything, but something was missing. There seemed to be so much emphasis placed on memorization techniques and lists of rules to apply. My students often asked me, "Why?" and I was left with the response, "English is just crazy, now let's get back to that sight-word study method to help you memorize this crazy word."

I never believe that I know everything I need to know about reading and spelling. In fact, the more I learn the more I realize how much I still don't know. That openness led me to a meeting at a conference that changed my professional life forever and challenged everything I had been taught in every training I had ever attended.

I was at a dyslexia conference and I noticed that there was a bit of a frenzy at a booth near me in the convention hall. My initial thought was that it was another snake-oil salesman trying to dupe the dyslexia community to make some money. But as I sat and watched, I thought, there must be something there that is legitimate because that many people in this community cannot be duped. So, I walked over to Dr. Peter Bowers and said, "Okay, so tell me what you are talking about here." He replied, "Give me one English word that you think is crazy and nonsensical." I immediately gave him the word *sign*, which he wrote down on a cocktail napkin. We had a brief discussion about what *sign* means and within one minute we were talking about the connection in meaning and spelling between *sign* and *signal*. In that one minute I felt like someone had ripped the blindfold off my eyes. I couldn't believe I had gone through years and years of education about education and training after training about teaching English to struggling learners and not once did someone show me what Dr. Bowers showed me in less than one minute. I was immediately disappointed in my education, but more importantly, I was hyper-motivated to find out more. This was what my students needed: to see the connections between words and understand the whys of words, and be shown how to figure this out on their own, independently, like the curious, thoughtful individuals that they are.

Since that brief meeting, myself and my staff have been immersed in the studying of English orthography with others like the brilliant linguist at Real Spelling and Dr. Bowers, and the content of this book is heavily influenced and informed by their scientific (yes, linguistics is a science) work. As a professional in the dyslexia community I feel a great deal of responsibility to investigate all avenues and ideas that are presented to me; some are crazy and easy to dismiss and some are so compelling, like the lesson of *sign*, that it drives me to go back to school to understand as much as I can. It would be impossible to

fit everything you should know about English to help our struggling students in a book like this, so I highly encourage you to continue your education past this book by consulting the resource section for valuable courses, blogs and instructional aids.

This book is intended to give you an introduction to why spelling is hard for students with dyslexia, and others, to help you understand and use the reading and spelling terms accurately and then offer some instructional strategies. This book is not a new program or approach, it is a resource to offer you, the professional, information that you can use to improve your students' ability to understand how the English orthography is actually structured. Hopefully, by the end of the book you will feel confident enough to get excited when you and your student/s come to words that seems illogical and then investigate your way through the word to understand it together.

Most importantly, this book is about honesty and integrity. As the mother of an elementary (primary) school student, I want him to learn the truth about English. I know he is capable. I know his friends are capable. I know that he is interested, and I know his friends are interested. The information in this book is not new or something I created, it is not a program or a method or approach, it is just the facts about the English writing system and it is up to you to figure out how to deliver this book of truths to your students. There is a glossary at the end of the book that explains any terms related to spelling and writing.

## **Key to markings used in this book**

When writing about English spelling in an accurate way, there are notations that can be used to differentiate when we are referring to phonetic and phonemic spellings.

< >	Letters between these symbols show the spelling of the word; they are a letter string and should be spelled out, not pronounced.	<bold> + <ly>
//	Phonemic representation	table = /teɪbəl/ catch = /kætʃ/
[ ]	Phonetic representation	[dɪsˈlɛksɪə]
*	This indicates an incorrect spelling	*<acshun>

Orthography is the writing system  
of a language.

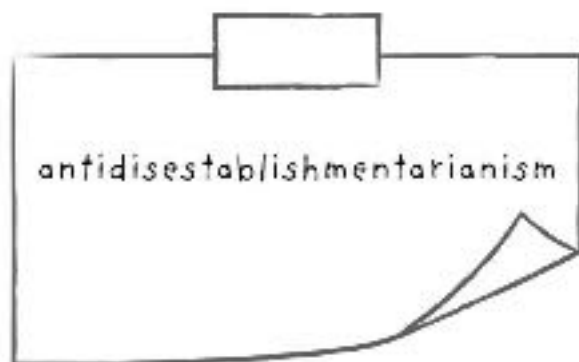
This is a book about helping struggling students understand English *orthography*. That understanding can shift the way we talk about the English writing system from memorization techniques and sounding-it-out strategies to discovering the reasons for spellings. This shift can improve our students' attitudes towards spelling, because if we are constantly berating English as illogical, we send the message that it is pointless to try to understand it.

A phoneme is the smallest contrastive unit in  
the sound system of a language. The phonemes  
/b/ and /r/ distinguish the word bat from rat.

Phonetics is the term used to describe speech sounds. This includes the articulatory features to produce speech and the sounds that are produced.

In order to begin talking about spelling with students in an accurate way, we have to begin using, and understanding, the correct terminology, and we have to understand some basic spelling patterns before we guide the discovery process. And yes, I am suggesting using the terminology listed below with kids as young as kindergarten (year 1) age. If you think I am crazy, try it first. Think about this: we talk about dinosaurs with kids of this age without a second thought, using words like *tyrannosaurus* and *triceratops*—why do we think the term *phoneme* is too hard for students?

Before you start on your journey, which I hope will be as eye-opening as mine was, consider this word:



By the time you reach the end of the book you should be able to come up with at least a hypothesis about the spelling.

Lastly, the information in this book is not intended to create perfect spellers; none of us are perfect spellers. It is also not intended to be the end of your learning, it should be just the beginning—consider it an introduction. The intention is to help you, and your students, change the questions that are asked during spelling instruction and then dig deeper. Students should begin to understand there is a reason for spellings and you should begin to understand how to help them through the process to find that reason. Remember that students with dyslexia are good problem solvers and pattern seekers, so helping them discover the logic of the English spelling system seems like a natural teaching choice. The result should be more mindful spelling; not perfect spelling, but mindful.

## INTRODUCTION

# Why Spelling is so Hard

You can see a phone, but you cannot see a phoneme.

Linguistics Professor

Spelling. It is described as crazy and often declared unimportant. Spelling lists are created with random, unrelated words and taught via rote memorization techniques. It is taught out of context and isolated from grammar. This is a disastrous combination for kids with dyslexia and troublesome for many kids without dyslexia. Of course, many students will learn to spell without a hitch, but does that make it okay? Read on to become part of a spelling revolution.

How many times have you seen the word *does* spelled \*<dose> or the word *two* as \*<tow> and maybe *spelled* as \*<speld>, even after the student has studied these words repeatedly? These spellings are the result of the first strategy kids are taught when learning how to spell (and read), which is to "sound it out." So, let's put this strategy to the test. Grab a pen (or pencil or keyboard with autocorrect disabled) and write the directions to making a peanut butter and jelly (jam) sandwich. Make sure to include every little detail from getting a knife out of the drawer to opening the lids on the jars. But make sure that while you are writing those directions you are sounding out every word and spelling each word exactly as it sounds. There are no right or wrong answers,

spell the words as you pronounce them. Stop here until you are done. Once you have finished this task take a look at what you have written. I am willing to bet you have something like this:

Frst u nede a pece uv bred. Then git sum penut budr and a nife.

Now, this is my American English interpretation of words like *get* and *butter*. If you speak another dialect of English, you may have spelled *butter* as \*<butr>; remember that there are no wrong answers. Now think about this: how fast did the sounding-it-out strategy fall apart for you? In the first sentence? Maybe even the first word? I am also willing to guess that was relatively difficult for you. Have you seen spelling like this before? Perhaps in your classroom or your child's homework? Students who spell this way are not doing anything wrong. They are doing exactly what we teach them to do—they are sounding out the words. When the sounding-it-out approach fails them they are then taught to think the word is crazy, nonsensical and just a word to be memorized. But let's think about that for a minute. A student who struggles with understanding and remembering written language is now being told to memorize written language, with no sense attached to it. Where is the sense in that?

For students with dyslexia, spelling English words cannot be reduced to either sounding it out or memorizing it. In fact, it shouldn't be reduced to this for students without dyslexia either. When they do sound it out and end up spelling words like the words you spelled while writing directions for the sandwich, they end up with a lot of red marks on their papers. They tend to begin to use smaller words that they are more confident they can spell. By doing that they produce work that is not representative of their actual intellectual ability. And by doing that they begin to feel inferior to their peers who can spell.

Students with dyslexia need to understand that the English writing system is not a random collection of words with letters included for



no reason. Although, in most curriculum manuals, that is how it is presented. Words are introduced as either regular or irregular. Crazy or sane. Decodable or sight word. But this is all a huge misunderstanding by the education community. Spelling is driven by morphology (structure and meaning), etymology (history) and phonology (sound system of a particular language). Written word families have evolved through time to convey meaning first and represent phonology second, and this is demonstrated by the evolution of a word that shifts pronunciation but not spelling. Think of the word *been* and its different English pronunciations throughout the world. Even though the way most Americans pronounce that word is different than most British speakers, the spelling does not change.

### **Why is it so hard for kids with dyslexia to spell?**

First, we have to understand what dyslexia is and what it is not. According to the International Dyslexia Association (IDA):

Dyslexia 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, 2019) (This definition was adopted by the IDA Board of Directors on November 12, 2002 and is also used by the National Institute of Child Health and Human Development (NICHD).)

I took the liberty of emphasizing *poor spelling* in the IDA's definition. Spelling is highlighted because when people talk about dyslexia they often refer to reading and make no mention of spelling, and the fact is that just about everyone with dyslexia struggles with spelling (IDA, 2011). Some students with dyslexia are decent readers but poor spellers, and those students are often overlooked. This oversight is usually accompanied by a comment about spelling not being important.

## Signs and symptoms of dyslexia

Before we can talk about how to teach spelling, we have to have at least a cursory understanding of what dyslexia is and is not. For a more thorough explanation of dyslexia, please see the list of dyslexia resources at the end of this book.

The following is a list of signs and symptoms of dyslexia. While you are reading through this list it is important to understand that there is not one profile for a student with dyslexia. Dyslexia occurs on a continuum and can be mild to moderate to severe to profound. One child with dyslexia might have extreme difficulty with basic reading tasks, while another may be able to decode but have difficulty with spelling, and another might have trouble with reading fluency. It is extremely important to determine the strengths and weaknesses of each individual in order to determine what is appropriate for them to improve their literacy skills (Sandman-Hurley, 2016).

- **Difficulty decoding words in isolation:** This is assessed by having the student read words out of context—the lists are usually filled with unrelated words. This is often more difficult for children with dyslexia because they have to rely on their limited knowledge of the structure of English words to decode isolated words without the benefit of context. Without context

there is no way to know how to pronounce a word like *produce* because the context will determine where the stress is in the word and that stress placement will determine if it is a verb or a noun. For example, are you referring to the *produce* in the grocery store or are you referring to a product you are going to *produce*? Additionally, the pronunciation of some graphemes, like <ch>, depends on the etymology, which isolated lists do not provide.

- **Difficulty with spelling:** Children with dyslexia almost always struggle with spelling and are often relying on the sounding-it-out strategy they have been taught. For example, they might spell *spilled* as \*<spild> or \*<spilld>.
- **Difficulty with *phonemic understanding*:** For example, your student may have difficulty understanding, or articulating, that the word *cat* has three phonemes, /c/ /a/ /t/, and may instead say it the following way: /c/ /at/.

Phonemic understanding is the ability of the student to verbally manipulate the phonemes of a language.

- **Difficulty with *phonological understanding*:** Phonological understanding is the ability to manipulate the language sounds in a particular language, which includes identifying individual words, to word parts or syllables, and then into the smallest parts called phonemes or speech sounds.
- **Slow, laborious reading:** Children with dyslexia might read a passage or sentences very slowly, trying to decode (sound out)

each and every word. This difficulty is more pronounced when larger, polysyllabic words are included in the text.

- Difficulty with math problems: A child with dyslexia who is struggling with reading might also struggle to read math problems.
- Reversing letters passed the second grade (year 3): The reversal of b and d, as well as other letters, is normal through the first grade (year 2); after that it becomes a red flag.

Spelling is more difficult for students with dyslexia because they have difficulty processing and storing language and that makes accessing words from memory difficult. A phonological memory weakness is common for students with dyslexia. Phonological memory measures the individual's ability to code information phonologically for temporary storage in working or short-term memory (Wagner *et al.*, 2013). Students often search for related words that are connected by meaning (Nagy *et al.*, 1989), but if they do not understand those connections this becomes difficult.

As important as it is to understand what dyslexia is, it is equally important to understand what it is not.

- Dyslexia is not caused by poor eyesight or hearing problems. Vision Therapy or Color Overlays will not help. This bullet point is sure to raise eyebrows, so I encourage you to read through the meta-analysis done by the American Academy of Pediatrics for the evidence to support this point (American Academy of Pediatrics *et al.*, 2009).
- Dyslexia is not seeing words or letters backwards. Yes, many students with dyslexia do confuse their *bs* and their *ds*, but it

is not because they see the letters backwards. This confusion happens because they have difficulty learning that when certain letters change their spatial orientation they also change their phonology and grapheme status. For example, when you look at a picture of an elephant and then flip the picture over it is still an elephant. When we present students with a <b> and then change it to a <d> everything about it changes. It is normal to confuse letters through the end of the first grade (year 2), but after that it becomes a symptom of dyslexia. But it's just one small symptom and not all students with dyslexia do it.

- Dyslexia is not a developmental disability.
- Dyslexia is not acquired alexia, aphasia or anomia—these are caused by some type of head injury (e.g. stroke).
- Dyslexia is not a degenerative disease.
- Dyslexia is not lack of educational opportunity.
- Dyslexia is not the result of laziness or a lack of effort on the part of the student.
- Dyslexia not just a weakness in phonological understanding. Many students might not have a weakness in this area and might even have a phonological understanding strength but not be able to transfer that strength to the orthography. These students have difficulty remembering “sight words” (words that cannot be “sounded out,” such as *sign*, *two* and *was*) and have difficulty with spelling. This is a weakness in orthographic understanding.

Many students will see a word a few times and remember how to spell it, but for those students with dyslexia who tend to have a more

difficult time committing spellings to memory or who get frustrated with the inconsistent strategy of sounding out words, these students, really all students, need to understand the reasons behind the spellings. We need to remove the amount of pressure being placed on their memory to recall words instead of helping them understand spellings deeply. In order to do that, we, as teachers, need to understand it ourselves. This book is not intended to be a guide that tells you to do this first and do that second. This book was designed to give you the information you need to understand the true structure of the English language so that you can use that knowledge to create individualized lessons with your struggling students. Additionally, while this book is geared towards working with students with dyslexia, it is really imperative that every student, and teacher, has this information about their own language. Our kids deserve for us to make this improvement in our understanding. It can be uncomfortable and scary to admit that there were things about English that we didn't understand and we may have been teaching it erroneously to our students, but when you have the evidence from the language itself you cannot help but change the way you teach it.

### **Food for thought: Sidebar about the term *awareness***

In the education world, it is very common to use terms like phonological awareness, phonemic awareness, orthographic awareness and morphological awareness. But since this is a book about being accurate with our language, maybe we should revisit that terminology. Do we want our students to be aware or do we want them to understand? Perhaps it's time to change those terms to better reflect the outcome we want. How about: phonemic understanding, phonological understanding and morphological understanding?

## Morphological understanding to improve spelling

Morphology is the study of the internal structure of a word, which is made up of morphemes. A morpheme is the smallest meaningful unit in a word. For example, the word **plays** is two morphemes: play + s → plays.

Educational research is often studied through the lens that phonology is the primary influence on spelling, while failing to understand, or study, the primary role of morphology. Notably, Ehri (2000) developed a much-referenced developmental spelling continuum in which it is suggested that morphology should be introduced, but not until a much later stage, after children have "mastered" phonics. This ignores the fact that students in kindergarten (year 1) come to school with an understanding about spoken English morphology, which is evidenced when they verbally add a <-s> suffix to a base word to indicate the pluralized form of that word like *cats* or the third person singular verb like *runs*. They are even able to change the pronunciation of the suffix <-s> of /dagz/ and /kæts/ implicitly (Berko, 1958). Yet they go to school and learn written syllables, which does not give them the opportunity to leverage what they understand about morphology, instead it contradicts what they already implicitly understand. Again, most students will have no problem with this contradiction to what they implicitly know, but students with dyslexia can be very confused by this imbalance. A Nunes, Bryant and Bindman (1997) study supported the Ehri stage hypothesis, but with a caveat: they suggested that while it may be developmentally normal to spell phonetically [sic] before transitioning to morphological spelling, the transition is aided by

"explicit grammatical awareness," which means students understand that when morphemes are added to words they can change the word from one part of speech to another. For example, adding a suffix <-s> to the base <cat> changes the word from a singular noun to a plural noun. Carlisle (2010, p.480) stated that "even kindergartners can acquire morphological awareness, if this is what they are taught," which is the crucial point—if they are taught.

An affix is a morpheme that is joined to a base or root. An affix can be a suffix or a prefix. In the word **replayed**, <re-> is the prefix, <play> is the base and <-ed> is the suffix.

Research aside, the fact that the current research studies spelling structure from a phonology-first perspective, without regard to the role that meaning plays in spelling, places the spelling stages into question. Does it really make sense to withhold suffixes like <-ly> and <-ion> from students when kindergarten-age kids (year 1) clearly come into contact with words like *likely* and *action*? Where is the evidence that withholding this information is better than teaching it earlier? Why do we wait so long to talk about *vowel digraphs* like the <oo> in *school*?

A vowel digraph is two graphemes (e.g. <oo>) that spell one phoneme.



Etymology is the study of the origins and history of words.

The explicit teaching of morphological understanding in early grades is not a part of the current school curriculum, so those questions remain unanswered. In fact, Bowers, Kirby and Deacon (2010) argue that there is no evidence for waiting to teach the intersection of morphology, phonology and etymology to younger children. In fact, studies have been conducted that provide some evidence that this type of explicit instruction actually benefits the younger children as well as struggling readers and spellers (Kirby *et al.*, 2011). Leong (2000) concluded that knowledge of morphology, semantics and syntax should improve reading and spelling. His study supported an earlier finding from Shankweiler *et al.* (2009, cited in Leong, 2000) that struggling students lacked a “knowledge of derived forms and other morphological relations...awareness of English spelling conventions... knowledge of word families, all of which are held to be important for spelling” (p.289). Carlisle (2010) also noted that a student’s knowledge of morphology can also lead to improved word recognition. The spelling mistakes made by young and struggling students (e.g. \*<kisst> and \*<vacashun>) often reveal a lack of understanding of the role morphology plays in the English spelling in words like *kissed* and *vacation*, which is a contradiction to what they understand about their spoken language.

A grapheme is a letter, or a group of letters, that represent a phoneme. In the word **chip** there are four letters: c, h, i, p and three graphemes: ch - i - p. In the word **chips**, there are five letters: c, h, i, p, s and four graphemes: ch - i - p - s and two morphemes: chip + s.

A base is the current spelling of an English word. Bases can be either bound or free. In the word **replayed**, **play** is the free base. In the word **structure**, **struct** is a bound base.

Kemp, Mitchell and Bryant (2017) explain that the morphological structure of the word will determine the spelling more than the pronunciation will. For example, the affix <-ed> changes its phonology based on the articulation of the last *grapheme* of the *base* or affix, /speld/, /weldɪd/ and /laɪkt/, or previous morpheme, but the spelling does not change. The results of the Kemp *et al.* study also supported previous research that showed that students who do not have explicit instruction in morphology do not use this information when they spell, which suggests it needs to be explicitly taught. Finally, English does offer morphological information to readers and spellers that would improve their ability to spell (Aronoff, Berg and Heyer, 2016) but that information is not introduced until much later in the learning-to-read-and-spell process. And before we go on, make no mistake—this is not a book about teaching morphology. This is a book about the intersection

of morphology, etymology and phonology; it is here that we can truly understand English spellings.

## **Dispelling (pun intended) common myths about English**

### **Myth #1: Morphology is for older students**

Morphology research is not limited to the education world. In fact, there is a plethora of research about young children and their understanding of morphology in the linguistic research base, but that research is often not cited in educational journals. In 1958 Jeanne Berko conducted a famous experiment, called the Wug test. During this test, kindergarteners and first graders (years 1 and 2) were given the following sentence using a word that the students had not heard before: "This is a wug. Now there is another one. There are two of them. There are two \_\_\_\_\_" (Berko, 1958, p.155). The students' answers were not only correct when answering /wʌgz/, but Berko concluded that "they were consistent and orderly answers, and they demonstrated that there can be no doubt that children in this age range operate with clearly delimited morphological rules" (Berko, 1958, p.171). This was just the beginning of understanding that young children do implicitly understand the morphological rules of their language, yet we teach them something different when they get to school. In particular, students with dyslexia will experience extreme frustration when learning to spell due to this inconsistency in how English is taught.<sup>1</sup>

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1 While students do continue to grow and develop in their morphological understanding in spelling throughout the elementary school years (years 2-6) (Apel, Diehm and Apel, 2013; Berninger *et al.*, 2010), it is quite likely that we are missing an opportunity to explicitly introduce it earlier, as evidenced by Bowers, Kirby and Deacon (2010) and Goodwin and Ahn (2003).