Theory into Practice: Dyslexia, Phonological Processing Deficits, and Explicit and Systematic Instruction

Struggling readers are faced with a variety of potential factors that may contribute to their difficulties in reading. When a teacher is faced with a student who is a struggling reader, they should be able to define the target skills and knowledge to be learned and build instruction upon the students' prior knowledge and skills. Reading disabilities require instruction that goes beyond the normal range of instruction. If a student who is a struggling reader has dyslexia, the teachers and parents working with the student should be clear as to what dyslexia is, how phonological processing deficits affect the disability, and how systematic and explicit instruction should be used to work with the student towards becoming a strong reader. This paper focuses on these three components to reading instruction, as they all are important for teachers to understand when identifying and working with a struggling reader.

Dyslexia

Dyslexia and reading disabilities exist within a unique place in American culture and the educational system. Misconceptions and misunderstandings of dyslexia are very common as many Americans are familiar with the term and misuse it constantly. One of the most common held misconceptions is that dyslexia is a problem of writing and reading letters and words backwards, or flipping them. Other misconceptions of dyslexia include believing it is gendered (affecting more boys than girls), and that it can be something children can grow out of. By dispelling the common myths of dyslexia to students and their parents, educators can begin to work on addressing a student's reading disability.

The term dyslexia can be broken up into two parts which can be remembered to help clarification of the concept. The first half, *dys*, means bad, not, or difficult. The second half,

lexia, means words, reading, or language. It's literal meaning then, is difficult-word. The common misunderstanding that dyslexia is about mixing the letters of a word or words *can* be a symptom of dyslexia, but this is not the primary symptom of dyslexia; many individuals with dyslexia never have these problems. (Hudson, High, Al Otaiba, 2007). Beginning readers and writers of all abilities often display this "flipping" characteristic, but simply exhibiting the tendency to reverse letters or words by no means indicates a reading disability or dyslexia.

Dyslexia is a specific learning disability that is a neurobiological problem. Individuals don't have dyslexia because of poverty, race, or gender, however lack of a literate environment is correlated with language skills. The neurobiological nature means that dyslexia exists as a problem in the brain. Over the last 20 years or so research has found a causal relationship between deficits in phonological processing and dyslexia. This phonological processing deficit may lie at the core of dyslexia (Catts and Kamhi, 2005). Having a phonological processing deficit generally results in difficulties with word recognition and spelling. Here we can find how the common misunderstanding of flipping letters and words began.

Dyslexia is a learning disability that affects reading and in addition often affects spelling. The terms *reading disability* and *dyslexia* are often used interchangeably by many professionals. A central characteristic of dyslexia that children often display is the inability to read as many words by sight, or have many sight-words (Hudson et al, 2007). Another main feature is that children with dyslexia often stumble or try to "sound out" many words they come across within a text.

When confronted with a child who may possibly have dyslexia it is important to consider whether or not the child has any delays in language development. Language delay is a failure to develop language abilities on the usual developmental timetable. Language delay is distinct

from speech delay, in which the speech mechanism itself is the locus of delay. Thus, language delay refers specifically to a delay in the development of the underlying knowledge of language, rather than its implementation. Many children with dyslexia display delays in language development but these characteristics may sometimes dissipate before they enter school. If, however, such delays do not subside and continue to be persistent in the child's development, they would be the result of another factor and would not be considered dyslexia. If other cognitive problems or perceptual problems exist, these too would fall out of the definition of dyslexia. Visual problems cannot cause dyslexia either. Visual problems may co-exist with dyslexia, however they cannot be the cause of dyslexia.

Dyslexia involves having problems with phonological processing skills. This is argued to be a central characteristic of dyslexia. "The evidence in these areas suggests that, in most cases, phonological skills deficiencies associated with phonological coding deficits are the probable causes of the disorder rather than visual, semantic, or syntactic deficits, although reading difficulties in some children may be associated with general language deficits." (Vellutino, 2004). Vellutino argues for educators to look at the various phonological skills in order to understand if a student has dyslexia and to assess where to begin instruction.

Connection to Own Experience. Because of the prevalence of the misconceptions about dyslexia I have spent most of my life bearing these misunderstandings. There have been many students I have worked with who had dyslexia, but I was unaware of it, thinking it was something entirely different from reading disabilities. Looking back at my own learning experiences and students I have worked with I can see how my misconceptions of dyslexia obstructed the potential of my instruction. Although my instruction has been limited in terms of reading, I am certain that my instruction with struggling readers would have benefited

immensely from understanding with reading disabilities really are and how to work with and through them.

I spent months last year working with a 3rd grade student, Anthony, on his reading skills. I measured his fluency with curriculum-based measurements (CBM) every week. Anthony had great difficulty making it through the text selections, causing his fluency to be incredibly low. He exhibited the two main features of dyslexia, very limited words he could recognize by sight, and most words he came across he would stumble on, trying to sound them out.

Each week I spent with Anthony working on his CBMs as well as working with him in the school's resource room, I witnessed him repeatedly try to sound out words that I thought he knew. These were common words, that he should have known by sight, such as *the* or *that*. Sometimes Anthony would remember these commonplace words by sight, but if he tried to read them fast he would get them confused with another common word, like reading *it* instead of *in*, which really confused him when I would ask him to tell me what he had just read. I was surprised to see Anthony struggle so much with words I thought to myself "wow, he should *know* this."

Importance of Concept to Own Practice. As I have learned about dyslexia and unveiled my own misconceptions, I can see how many students I know have dyslexia. The concept of dyslexia is incredibly important for educators, parents, and students to clearly understand. Teachers should never assume that parents or other educators know what dyslexia is because of the widespread misconceptions. To make such assumptions would put the advances of a student's reading progress at the whims of poor communication between teacher and parent. There is great value in accurately understanding of the concept of dyslexia. I wonder how many educators and parents with students or children with dyslexia or reading disabilities remain in the

dark about these concepts and their terminology. The clearer everyone is about dyslexia, the more viable communication and growth in reading will become.

Phonological Processing Deficits

It is critical for educators and parents to understand what it means when their child displays traits of having a phonological processing deficit. When educators have a clear understanding of phonological processing there can be early identification of students who may have dyslexia. By waiting until a specific word-reading problem is demonstrated (usually not until 2nd or 3rd grades), students who may have exhibited phonological processing deficits earlier could have potentially been identified and intervention could have taken place (Honig, Diamond & Gutlohn, 2000). As Catts and Kamhi assert "by focusing on phonological processing abilities, it is possible to identify children who are dyslexic and at high risk for reading failure before they begin reading instruction," (Catts & Kamhi, 2005).

The four areas children with dyslexia have problems in phonological processing include phonological awareness, phonological memory, phonological retrieval, and phonological production. Each of these areas should be the focus of teachers in order to ensure early readers and writers are receiving the appropriate instruction and any necessary interventions they need.

When a reader has a phonological processing deficit they have difficulties in "linguistic operations that make use of information involving the sounds of speech," (Catts & Kamhi, 2005). Phonological awareness is the conscious awareness of or sensitivity to the sound structure of language. This includes the ability to detect, match, blend, segment, or otherwise manipulate the sounds in spoken language. As children learn to read and write, their focus generally lies on the meaning or comprehension of words. The four levels of phonological

awareness, from simplest to most difficult, include word level, syllable level, onset-rime level, and phonological/phoneme level.

When readers have the skills to attend to, reflect on, and manipulate the sounds in words they have phonological awareness. However, not all deficits in phonological awareness are caused by a reading problem. When children have been deprived of experience with text and language they are disadvantaged in their reading development skills.

Phonological retrieval, the second area of phonological processing, can be thought of as the ability to word-find. This can be exhibited in the tendency to substitute words and to overuse vague words. For example, substituting "dad" for "man" or overusing words or phrases that lack specificity such as "that" or "stuff." Continuous naming tasks, or rapid naming, can provide evidence as a useful tool for identifying problems with phonological retrieval. "Research further indicates that rapid naming explain unique variance in reading achievement beyond that accounted for by phonological awareness," (Catts and Kamhi, 2005).

Phonological processing also consists of phonological memory and phonological production. Children with dyslexia demonstrate problems with their phonological memory. Phonological memory, also called phonological coding, describes the ability to encode and store phonological information in the memory. Research has found that poor readers have difficulty using phonological memory to encode and store verbal information (Catts and Kamhi, 2005). Phonological production, or speech production, may be exhibited if students have trouble producing complex phonological sequences. This may even be the case for words or phrases students are very familiar with.

Connection to Own Experience. Anthony, who I am thinking about a lot after learning these important concepts about reading disabilities, probably had phonological processing

deficits as a part of his dyslexia. Anthony often substituted overused words or terms for specific words, which indicates difficulties with phonological retrieval. Studying and reading about dyslexia sparked my interest to delve further into what phonological processing is. After studying in Module 2 about phonological awareness, I want to know more about its function in phonological processing. Because students with dyslexia have phonological processing deficits, I believe it is critical for educators to be aware of what exactly this means. The terminology does not have the vast misconceptions surrounding it like dyslexia does, but sounds highly complex and can be intimidating to the novice instructor. The more understanding there is about what reading disabilities are and are not, the more successful interventions will be.

Importance of Concept to Own Practice. By looking at a student's phonological processing deficits and determining where strengths and weaknesses exist, intervention can begin. Because diagnoses of dyslexia usually happens once a student has been struggling with reading for some time (usually around 2nd grade) there needs to be a way to catch these students earlier and make the appropriate modifications, accommodations, and interventions. This is why understanding of phonological processing is so critical. Because readers who have phonological processing deficits are more likely to develop a reading disability, educators and parents can catch early warning signs about phonological processing skills much earlier than dyslexia would be diagnosed. Assessments done at the earlier stages are critical for the success of readers, making it possible to get intervention as soon as possible. By understanding and being able to identify the specific areas of weaknesses in a student's reading abilities teachers can target specific goals and determine the appropriate instruction that is needed for each individual student (Hudson, et al, 2007).

Explicit and Systematic Instruction

One of the most important skills a teacher should have for working with students with disabilities is effective, explicit and systematic instruction. This is critical for teaching the structure of language to children with reading disabilities. Phonological processing skills (phonological awareness, phonological memory, phonological retrieval, and phonological production) as well as other reading skills, such as fluency should be taught through explicit and systematic instruction in order to ensure students develop strength in each of these areas. "Evidence is presented in support of the idea that many poor readers are impaired because of inadequate instruction or other experiential factors." (Vellutino, 2004). There is an enormous need for instruction to be delivered in a systematic way based off of evidenced-based research in order to build strong readers, especially for students who are struggling.

Explicit instruction begins with clear instructional goals[1]. The format of instruction requires that it be continuously clear and understandable, provided through good modeling from the instructor. Teachers need to state the exact instructional targets so that both teacher and their students are on the same page with what the expectations and outcomes of the learning experience are. With explicit instruction

Explicit instruction also incorporates guided and independent practice with corrective feedback. Student engagement is high and there is a standard of frequent student responses in this engagement. This would look like having student responses somewhere between 7 to 10 times per minute. In order for students to gain meaningful insights and learning experiences, students need to be engaged and thinking critically and deeply.

[1] Based upon lecture notes Explicit, Effective Instruction, Module 1

Systematic instruction must always incorporate having a clear plan and goals of instruction at all times. Systematic instruction involves identifying educational goals, outlining instructional procedures, evaluating the effectiveness of the teaching procedures, adjusting instruction based upon the evaluation, and engaging students (Iovonanne, 2003). An example of systematic reading instruction would be direct instruction. Systematic instruction is critical for students with reading disabilities because the environment and instruction is centered around very specific and clear goals, leaving no room for guesswork. If systematic instruction is done properly, it will affectively build upon the skills readers already have and have clear learning targets that are made explicit to student at teacher.

Connection and Importance of Concept to Own Experience. In order to keep students engaged they should be motivated by the material they are working with. This is not always the case as students can be engaged and actively working with the materials yet remain unmotivated by the class content of instruction. It is important for course materials to be pertinent to each student's life and experiences. Materials need to be highlighted for these potentially motivating features in order to initiate and maintain student motivation and engagement. Teachers must consider the ways in which they can make connections to students lives with the material they are working with. Teachers must also consider how they can spark their students' interest with the materials being studied. This can be done by asking the students what interests them about the subject being taught. If this a connection is hard for the student to make the teacher should model how to become motivated by a topic.

Explicit and systematic instruction as methods for teaching are critical for educators, especially for those working with children with reading disabilities. Systematic and explicit instruction are accommodations and modifications that can be done in any classroom, from one-

on-one instruction to large group. Without explicit and systematic instruction there is no guarantee what is expected of the learner and how they will go about achieving their educational goals. Explicit and systematic instruction does not leave anything to chance, and there are no assumptions made about the goals, skills, or knowledge that children are expected to meet and attain. Explicit instruction is dependent upon clear and understandable direction and explanations.

By providing students with some power and choice in their learning process, they are much more likely to become motivated by whatever they are learning. Explicit and systematic instruction can incorporate power and choice to students by giving options of how to learn the target objectives. Two choices can be provided, for example, of what book should be read when the target of instruction is fluency, while the teacher is prepared to incorporate either choice into the planned instruction. Explicit instruction will not be affective if students are not convinced that they have some choice in what they are learning, as active participants. Choice and power does not mean that students will dictate the way the lesson is run, it means creating spaces and opportunities in the content to find room for their opinions and choices to be reflected.

Guided practice with corrective feedback is an important element of explicit instruction. This involves providing each student with many opportunities to explore and learn new skills and strategies. Teachers need to make sure to provide such opportunities for students in order for them to be able to make connections between the new skills they are learning and in what ways they can apply the skill to their life. Students should be able to state in which situations they can apply their new skill or knowledge and in which situations it would be inappropriate.

Conclusion

Dyslexia, phonological processing deficits, and systematic and explicit instruction are all important concepts and procedures that all teachers should be very familiar with. Best practice involves understanding how a student has developed a reading disability, where on the learning trajectory they are, and providing effective instruction to target the appropriate learning goals. Understanding what dyslexia may be built from, phonological processing deficits, is critical for both the general and special educators to understand. It is the skills or struggles with phonological processing that may indicate at an earlier age that a student has dyslexia, and intervention can begin sooner, potentially ensuring stronger reading skills for the student before the achievement gap widens between them and their peers. Systematic and explicit instruction are crucial for teaching children with disabilities, including those with dyslexia. Systematic and explicit instruction are strategies, accommodations, and modifications that are appropriate for working with struggling readers. By understanding and being grounded in these three components of reading instruction, teachers can begin effective intervention immediately when the first signs of struggle in reading occurs with their students.

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