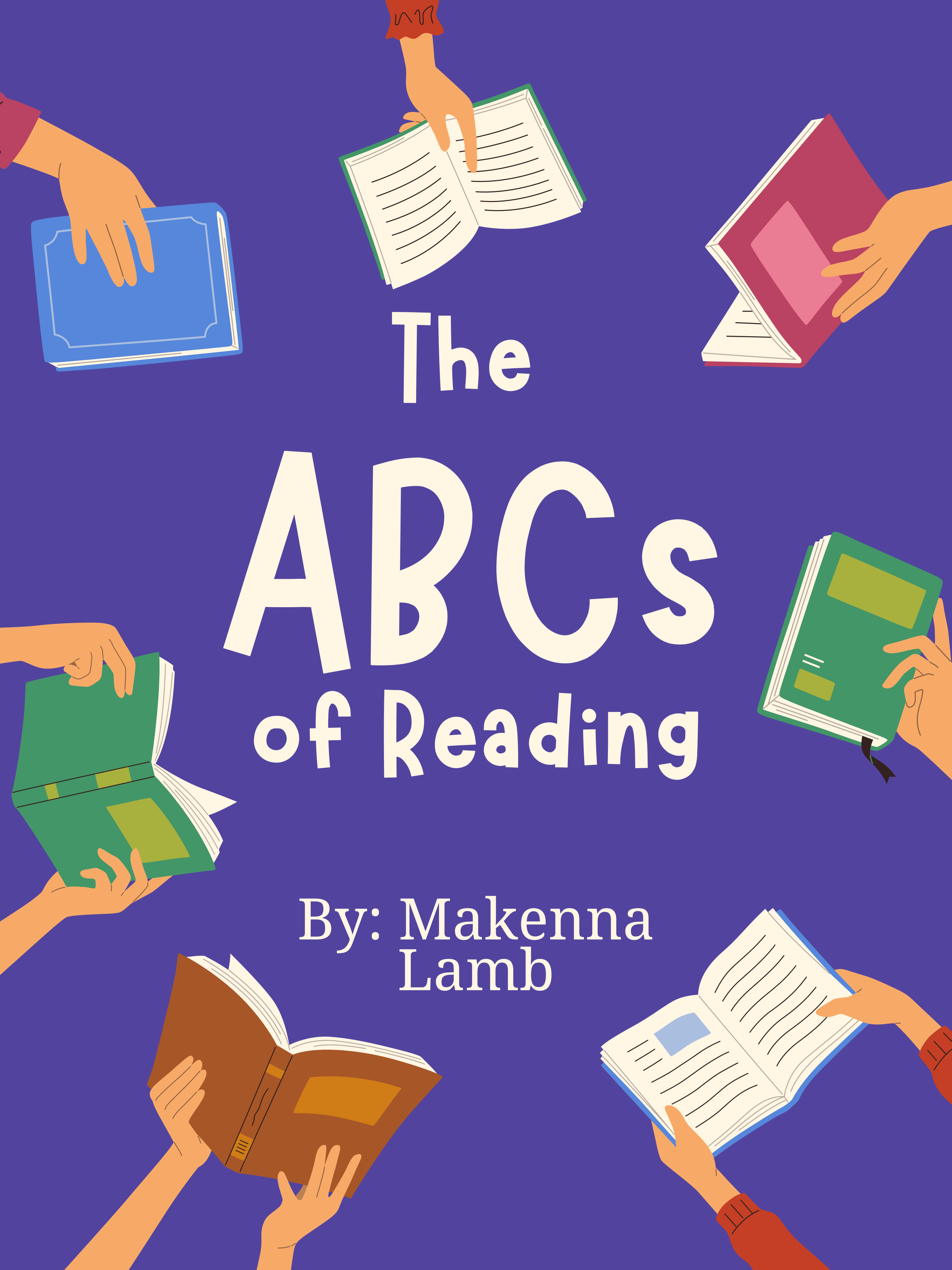# THIS BOOK IS MY PASSION PROJECT FOR CSD 9368 DEVELOPMENTAL LANGUAGE DISORDERS II.

I believe reading is made out to be much simpler than it is and if I took anything away from this course, it's that there are a lot of people who could benefit from learning more about reading. Whether it be parents, teachers, EAs, CDAs, SLPs or anyone in between, I hope to show them that reading is nothing like 'ABC' but much more elaborate. I compiled 26 important concepts that I feel better explain reading and its complexity.
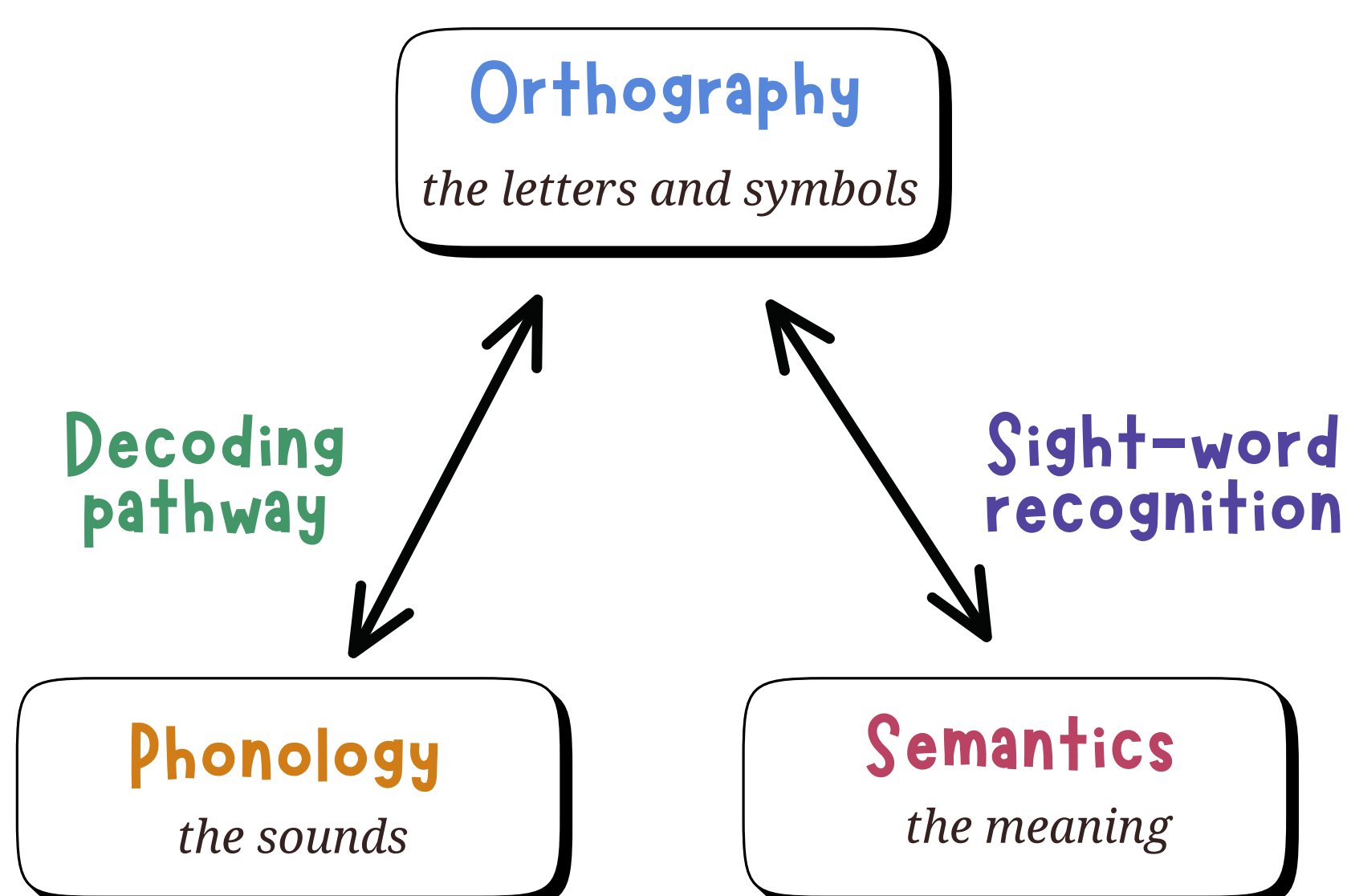
The
ABCs
of Reading

By: Makenna Lamb

IF ONLY READING WAS AS SIMPLE AS ABC...

Reading is a lifelong skill embedded in more areas of our lives than we know. We often take advantage of what seems like a simple ability and take for granted the important role it plays. However, for some children, reading is no easy feat, and these difficulties seep into other aspects of their life including many emotional, social and academic impacts. Children learn to read up until they start reading to learn. Early in development, the focus is on teaching children to read and targeting emergent literacy to ensure they have large vocabularies, strong comprehension skills and the ability to read fluently. Later on in development and childhood, reading becomes necessary to learn new things in school and in the world around them. While reading and language seem separate to many subjects at school, they are quite intertwined. Subjects such as science, geography and history use such complex language that is required in order to grasp the concepts being taught. Even a subject like math, is more closely related to reading than most people think and difficulties in reading can seep into other areas of academics including math. It's not just in the word problems in other subjects, but even the symbols used and the ability to make the connection between the symbols, the sounds and the meaning to comprehend the words and phrases.

This Dual Route of Reading model helps us understand the two possible pathways taken when reading words. The decoding pathway is how we match graphemes (letters) to phonemes (sounds) and use that to help us sound-out words. The sight word pathway is how we directly access words and their meaning through our memory and mental representation. The sight-word pathway is much faster and direct however having the second pathway allows us to read words we have not seen before. These pathways work together and are processing in parallel while we read.

Orthography
the letters and symbols

Decoding pathway

Sight-word recognition

Phonology
*the sounds*

Semantics
the meaning

While this model appears simple, it isn't always that simple for children to use these pathways. There are many factors that can impact a child's ability to read. Dyslexia, developmental language disorder, autism, intellectual disability, ADHD, and speech disorders to name a few, can negatively impact a child's ability to read. More than these, the environment itself can play a large role. There are so many small tasks our brain must do that appear simple and automatic for some of us but can be quite difficult for some children. The demands and capacity model explains how easily the demands of a situation or task can be too much for the capacity of an individual making that task near impossible to complete. Take a bucket for example, the water in the bucket represents everything needed for a child to read effectively. The bucket is quite full from the text itself, but then add environmental distractors, noise, difficulty decoding words, difficulty holding words in memory while determining the meaning, all while trying to comprehend the text. The bucket is now overflowing from all the demands that are outweighing the capacities of the child. Reading to learn is exactly like this; not only do children have to comprehend the words and language used but the complex concepts as well. Difficulty reading can lead to long term academic impacts and have detrimental impacts on social skills as well. Peer-to-peer interactions and group work are common in school and not being able to contribute or keep up with your group can be harmful to a child's self-esteem. Additionally, it can result in a lack of confidence in their selves but also teachers, peers and parents can misunderstand the child's true area of difficulty and make comments or put labels on the child. Furthermore, as the world is evolving, employment opportunities are evolving as well and the demand for effective reading skills is prevalent across many fields and sectors. Learning to read is a fundamental step in child development and essential before children are required to read to learn and grow.

Before learning to read, there are milestones in development that help children prepare for the reading stage. The Canadian Children's Literacy Foundation developed the 'Reading Brain' to describe language and reading milestones. Their model demonstrates that the 'reading brain' starts developing in utero and continues to evolve well into childhood. There are many skills that develop that help prepare children to start reading before they even begin. Sound perception, communication, comprehension, print awareness, observing and playing help children develop stronger literacy skills before they move into the reading stage. These skills are occasionally referred to as the 'building blocks for literacy' and activities that include speaking, singing, rhyming, drawing, understanding and listening, can positively impact early literacy development.

The National Reading Panel has identified 5 critical areas as essential components or 'pillars' for effective reading instruction:
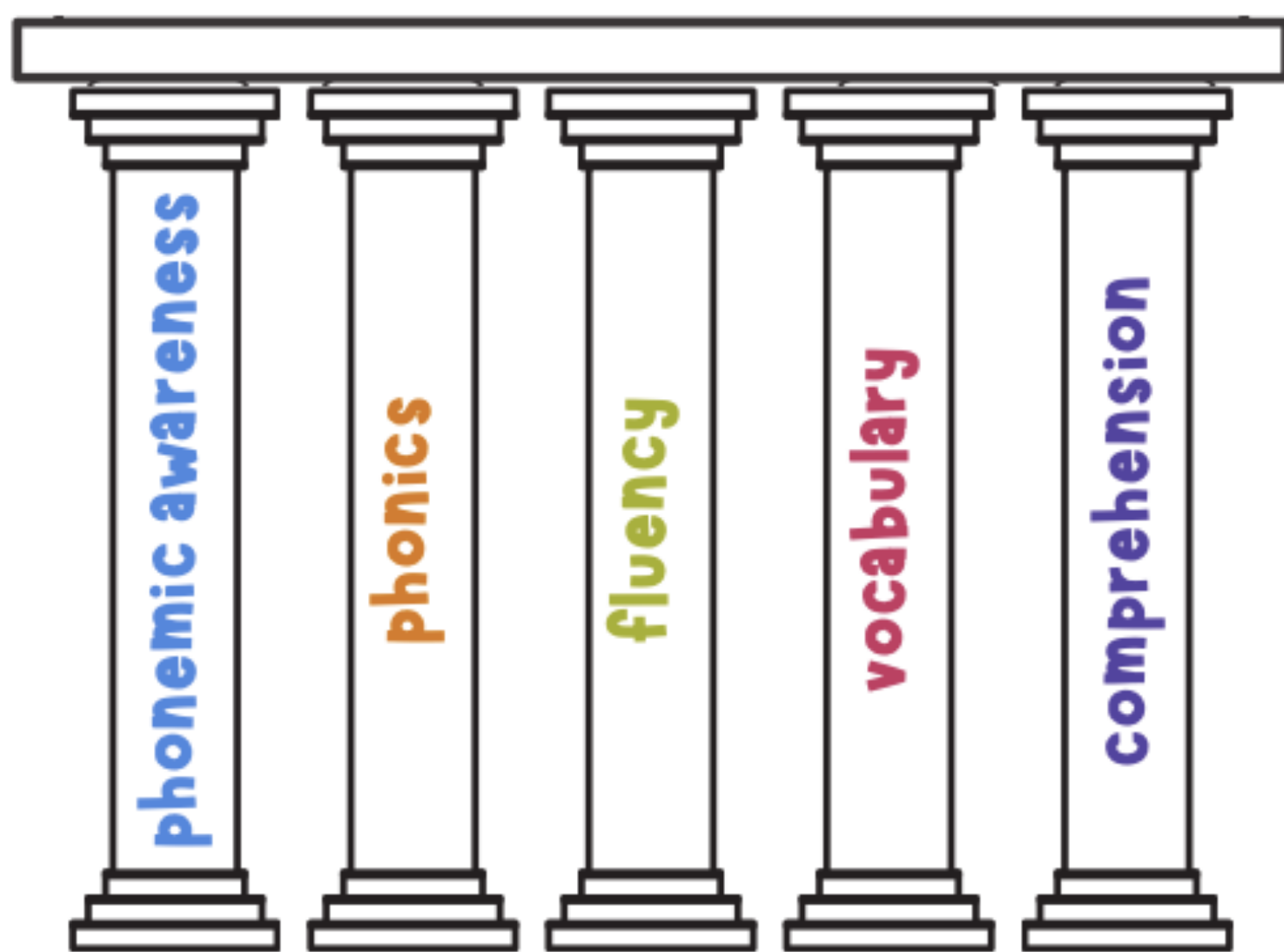
The Panel's report explained these essential components are most effective when taught through 'systematic and explicit instruction'. However, there is more to reading than just these 5 components and unfortunately for many children, some concepts are difficult to teach explicitly such as executive functions, or children have external factors impacting their ability to learn skills and concepts necessary for reading such as learning disabilities, behavioural difficulties, social differences and other external environmental considerations. While these pillars are important, there are other concept and areas important to reading that are worth exploring when working to better understand reading and how to support children in their literacy development.

"The ABC's of reading" gives the illusion that it is a simple task, but there is so much more to reading than just ABC.

Automaticity

Automaticity is the ability to recognize words fluently. This is important during reading as it frees up resources for text comprehension and other executive functions. Automaticity takes time to develop and best achieved and targeted with repetition and practicing sight words. Limiting the amount of time spent decoding and sounding words out, increases the fluency and automaticity of reading. This is difficult for children who have difficulties with memory or word recognition and rely on decoding. This becomes increasingly difficult as the level of text becomes more complex with more unfamiliar vocabulary. As the name suggests, reading becomes 'automatic' and doesn't require phoneme to grapheme matching which can be time consuming but also difficult for irregular words, nonintuitive combination pronunciations and silent letters. This also increases the size of a child's vocabulary as they automatically recognize a larger set of words and have them stored.

Blending and segmenting

Blending refers to combining phonemes while segmenting is the opposite, breaking phonemes apart. These two skills can be used to help children develop their phonemic awareness and support their phonics learning. Phonemic awareness refers to the ability to identify and manipulate individual sounds. It helps children learn to spell and understand the relationship between letters and sounds. Phonemic awareness helps children recognize letter combinations and manipulate phonemes to create combinations and words improving their word reading and decoding skills. Blending and segmenting are beneficial skills to incorporate into activities during early development. They can be done together or separate but both encourage phoneme manipulation and can be built into other activities such as singing, talking, reading, watching TV and even include skills targeting other develop milestones such as fine motor skills.

Cognivitve flexibility

Cognitive flexibility is one of our executive functions. It is the ability to adapt our behaviour and thinking in response to the environment. It allows us to switch course or tasks and allows us to imagine different outcomes or perspectives. Cognitive flexibility allows us to focus our attention on what we are reading and employ different reading strategies as needed. It helps us use our working memory to hold onto the relevant information and our inhibition to ignore irrelevant information. Being able to read fluently allows us to put our attention on comprehending the text or making inferences and predictions. Sometimes difficulty with cognitive flexibility impacts children's ability to read and stay on task and this can be misinterpreted as difficulty with reading and language. Cognitive flexibility also plays a role in reading to learn when we are adapting to new information, perspectives and environments.

Decoding

Decoding is one of the pathways in the Dual Route of Reading model. It refers to sounding out words and moving between orthography (letters) and phonology (sounds). When reading, we only sometimes use this pathway, typically with unfamiliar words. It's not very efficient to use this pathway as it takes a lot of time and resources to match letters and sounds and it is very difficult to use with irregular words. The ability to decode is a foundational skill and the early stages of reading before sight words, fluency, automaticity and comprehension. It is also an important skill to reduce the amount of memorization and context required to understand a word. Decoding is taught through phonics instruction which has been shown to be an effective way to teach children to read. When teaching children to read and decode, modelling and feedback can be useful strategies.

Engagement and motivation

A child's motivation to read is strongly linked to their reading abilities. Research has shown children who are intrinsically motivated to read spend 300% more time reading than low or unmotivated students. Reading more frequently can lead to stronger reading skills making motivation an important piece for reading development. Children can use motivation to better engage with what they are reading, such as asking questions and being more curious about what is to come. Engagement is the "why" of learning and it helps children remain interested, persist and maintain effort levels. Motivation drives goals and increases determination. Together, engagement and motivation increase the frequency of children reading leading to strong reading skills and overall positive attitudes around reading. Intrinsic motivation (coming from within) is typically more sustainable than extrinsic motivation (from external factors) however, neither type is better than the other and however we can motivate children to read, we should encourage!

Fluency

Fluency is the ability to read a text accurately and quickly. This is important because it frees up resources that can be used to understand what is being read instead. Decoding and memorization can use resources that take away from comprehension and make reading a less effective, more taxing task. The most effective way to enhance fluency in reading is through repeated reading with guidance. Fluency does include an aspect of appropriate prosody and expression as well, otherwise reading would sound robotic. Modelling prosody and expression when reading to children can help them learn by example and with practice and repetition they are likely to develop strong reading fluency. Fluency is also important to reading as it makes the task easier and in turn makes learning easier when there are complex words and topics that require more resources and effort.

Graphemic representation

Mental graphemic representations are internal cognitive images of written words or letter combinations that are stored in memory. These representations are accessed during the sight word pathway in the Dual Route of Reading model. This pathway moves between semantic (meaning) and orthography (spelling). This is important for reading efficiency and increasing fluency but specifically, plays a large role for irregular words where the graphemes do not match the phonemes and the word can't exactly be spelled out. Mental graphemic representations can be incomplete and can lead to errors. In these cases, the errors are often phonetically plausible with no spelling pattern but there may be a letter missing or letter in the wrong place e.g., brid for bird or snak for snack. Practicing sight words, mapping the phonemes to graphemes of irregular words, and repetition of reading can help children build mental graphemic representations and improve their reading fluency, freeing up resources for comprehension.

Higher level language skills

Inferencing, text structure awareness and comprehension monitoring are considered higher level language skills that build upon lower level skills such as word recognition, decoding, and fluency to help readers create a comprehensive representation of the text. According to research, 10% of children demonstrate proficient decoding skills but struggle with reading comprehension suggesting the need to support both lower level and higher level language skills in children when they are learning to read. Inferencing encourages readers to connect ideas and draw conclusions incorporating implied meaning. This requires comprehension beyond the literal text and can help children develop stronger reading comprehension skills. Text structure awareness is the ability to understand how information and ideas are organized in a text. Being familiar with how different text structures are arranged can aid with comprehension by being able to anticipate and make predictions. Graphic organizers can support children and help them organize their ideas and understanding of a story when reading. Comprehension monitoring is the process where students determine if they understand what they are reading. This is an important skill to develop as children get older and are expected to have more independence when reading.

Inhibition

Inhibition is another one of our executive functions. It is a higher order thing process where the direct or automatic expression is restrained. In language development and reading, we use inhibition to block out the information and ideas we don't need which allows us to use our resources and save our memory for the task at hand. Inhibition can be difficult for some children and can impact motivation, the ability to follow through, and starting and stopping tasks. Inhibition can help children focus more on their reading, improve comprehension and read at a quicker rate across environments.

Joint attention

Joint attention in reading is the practice of sharing focus with a child while reading a book together. It's a key part of language and literacy development, and can help children learn to communicate and bond with others. Joint attention is an important developmental milestone however, it can also help children be more involved in reading. Whether it's point out pictures in a book or maybe signs when driving, joint attention increases their exposure to print and language and can give parents and caregivers the opportunity to provide some auditory input as well. This can help children start to understand sounds and eventually how they map onto the letters and symbols they are seeing.

Knowledge

Background knowledge helps children create a situation model when they read by integrating their prior knowledge with their new learning. This can help readers create a coherent mental representation of what is happening in a text or story. Being able to connect background knowledge to what they are reading can make it easier to understand and make meaning of what children are reading. It can also facilitate stronger analyzing, interpreting and inferencing skills. Children will already have a foundation on the topic and potentially an idea of what comes next which can improve their overall comprehension. Background knowledge can also increase motivation and help keep children engaged as well as make the text more salient. Prior knowledge plays a role in reading to learn as children are more likely to retain information if they already know about it.

Literacy

Literacy is the ability to read and write. Reading literacy is the ability to understand and use written language forms. Literacy is a foundation skill that supports academic success and the development of other important reading skills including comprehension, vocabulary, and critical thinking. Reading is just one aspect of literacy and having strong reading skills translates into strong literacy skills which carries over into writing and even into other academic areas. Early literacy is essential in helping prepare children for school. Studies have shown that pre-school exposure to reading and language-rich environments increases the likelihood of academic success later on. Helping children develop literacy skills and getting them excited about reading early on can help them develop stronger intrinsic motivation and feel more confident reading independently. Literacy also extends into life skills such as following instructions, expressive communication and social skills. Setting children up for success before school and teaching them skills necessary to support their learning can help reduce the chances of them falling behind later on or discovering they need more support too late. Literacy supports cognition and early literacy can positively impact children's cognitive development including their attention, memory and critical thinking.

Morphological awareness

Morphological awareness is the ability to understand how words can be broken down into smaller units of meaning, called morphemes, such as roots, prefixes, and suffixes and manipulate them. This is an important skill for literacy development as it helps children understand the meaning of complex words through their smaller parts. It also helps children increase their vocabulary, improve their spelling and better understand new words independently. This skill can be difficult to master in the presence of reading or language delays and/or disorders. It can be supported and practiced through word webs - connecting words that share parts, with flashcard manipulation as well as prefix and suffix activities. Morphological awareness is also beneficial in the pronunciation of words as it allows children to understand the root vs. a prefix or suffix for example, mishear is pronounced miss + hear but if it was unfamiliar, a child may think to pronounce it mish - ear if they had no knowledge of the root word hear with the prefix mis. This would also help them decipher the meaning to hear incorrectly.

Narrative

Narrative is a form of language that uses a story context as a vehicle for academic, social, linguistic and cultural language. A narrative style can help children engage with what they are reading and make predictions. Teaching what a narrative is and using its structure can guide children's thinking. For example, when children know a story has a beginning/intro, a middle/problem, a solution and an ending, they can make inferences about what will happen next and organize the components of a text into these areas to increase their comprehension. When reading to learn, teachers can simplify concepts using skills from reading such as narratives. First, then, next and incorporating a problem and a solution after setting the scene can help children use the skills they already have from learning to read and transferring them into their reading to learn stages. Narratives can also be a great way to help children develop a stronger understanding of cause and effect. Being able to identify why a problem occurs in a story and how the solution fixed it can help them build their knowledge and better understanding of those concepts.

Orthographic knowledge

Orthographic knowledge is also known as letter knowledge. Word recognition when reading is dependent on knowledge of letters used to spell words. Reading using either pathway in the dual route reading model combines orthography with either sounds or meaning, making it a key skill for reading. Not only reading, but in writing as well, orthographic knowledge is important when spelling, spacing and having legible written language. Orthographic knowledge also includes rules and patterns that help govern a language. For example, knowing that u always follows q or that some vowels can be doubled and others cannot. Orthographic knowledge errors are seen in spelling when children make an error that is phonetically plausible but doesn't follow the rules of a language such as omitting a silent e at the end of a word. Knowledge of orthographic units can increase reading fluency and improve spelling in children. Some common units in English include -ing, -igh-, and -mb. Early in development, building letter knowledge can be incorporated in many activities such as sign recognition when driving or even using the child's name to build comfort with the orientation, size, positon and sounds of letters.

Phonics

Phonics involves learning the relationships between sounds and the letters that represent them. Phonics incorporates phonological and phonemic awareness and is essential when learning to read. Phonics is systematic and using decoding, follows a logical pattern of phoneme-grapheme correspondences. Teaching children to read starts with phonics instruction before moving onto to more complex concepts like morphemes and semantics. Not only is phonics important for sounding out words when reading, but it is also important when writing and recognizing combinations of letters make sounds that can improve reading automaticity. Poor readers may have deficits in their phonics skills and can have trouble decoding and with sight reading. Sometimes, explicit instruction of phonics seems too simple and basic and can be skimmed in schools, but some children really need the extra support and specific teaching of those letter-sound relationships. To support what will be covered in school, parents can incorporate some phonics instruction in early development with songs, manipulation activities, reading, rhyming, and other resources like videos or tv shows or toys, such as LeapFrog or PhonicsHero.

Questions

Asking questions is a great way to engage with a text or book. Not only are questions important to ensure comprehension of what has happened so far, but they can help maintain engagement and make children think about what they're reading. Questions can be useful in the classroom and clinic settings to understand a child's perspective, gain insight on their prior knowledge and analyze their critical thinking skills. It helps teachers and clinicians identify areas of difficulties and confusion as well as understand what the child is thinking by gauging what they think might happen next and why they might be thinking that. Questions are also a great tool to help children connect their reading to other areas of learning or other experiences. Reading about rain and evaporation in science might be difficult for some children or boring but providing them with real life examples like puddles disappearing, or helping them transfer the knowledge can help foster a more positive and engaging learning environment.

Rhyming

Rhyming is a great activity to support children's phonological awareness. Phonological awareness is the ability to recognize and work with sounds in words, syllables and sentences. Rhyming helps children discover word patterns and common units. Not only does it make reading fun, but it allows children to understand that altering one or two letters in a word can change the meaning like cat vs bat. Rhyming can also help children build their auditory discrimination skills as well as build their vocabulary. Being able to produce rhymes when given a word has been shown to be a predictor of how easily children learn to read. With feedback and reinforcement, rhyming activities can also show children the rules and pattern in a language and what words are real vs. words that rhyme but are made up. Rhyming is a great skill for children to develop when learning to read and so easily incorporated at various levels of reading development.

Semantics

Semantics refers to the meaning of a word, phrase, sentence or text. Semantic knowledge is knowledge of words, concepts, ideas and abstract information. Meaning gives reading a purpose and takes the act of reading beyond words on a page. Reading comprehension encompasses semantics and word recognition. Using decoding, sight words, and building vocabulary can help increase the fluency and automaticity of reading but building a strong semantic network can help children understand the meaning of what they are reading, make inferences and use prior semantic knowledge to help them decipher the meaning of new words. Semantic networks are also helpful in working memory and retaining information. Making the connection to prior knowledge and building semantic connections can help children learn and remember difficult concepts. Semantic skills can be targeted through word webs, categorizing words, finding synonyms and antonyms, recognizing words through description and making connections between words to understand the meaning of roots, prefixes and suffixes.

Text comprehension

Comprehension refers to the ability to process a text and understand what was read. Text comprehension helps readers derive meaning through intentionally interacting with the text. Comprehension is the goal of reading and what makes it fun and enjoyable. Without meaning, reading is just pronouncing the sounds from combining letters. Comprehension is a foundational skill for other skills such critical thinking, effective communication and learning new concepts. Fluent reading and a large vocabulary support reading comprehension which is essential in the reading to learn phase of development when the meaning behind the words is needed for the next step. For example, in science classes, comprehending the words in a textbook or in a definition can support the understanding of a whole concept and promote academic success. Text comprehension also helps with cognitive development as it allows children to expand their neural network and make connections between new information and their prior knowledge. Comprehension deficits can make it difficult to read and negatively impact motivation; supporting early literacy and reading can help children develop stronger comprehension skills.

Universal design

The Universal Design for Learning is a teaching and learning framework to optimize learning for ALL people. In reading, the concept of multiple means of representation can help support children when learning to read. Multiple means of representation refers to presenting the information in multiple formats to help all students understand and engage. This is key in reading because it also ensures children are able to interact with texts in multiple ways and develop stronger literacy skills. This could include text, images, audio or reading aloud, videos, graphic organizers, acting out or interactive opportunities. In reading, this multi-sensory input can help children integrate the new information into their prior knowledge in whatever form is easiest for them. It also is important in engagement and maintaining attention as well as improving the salience for them increasing opportunities for learning and memorizing concepts. There is no one way to learn that is optimal for all children. Incorporating multiple means of representation can support a variety of children while still addressing the necessary concepts or skills such as learning to read.

Vocabulary

Vocabulary refers to the words we must know in order to communicate effectively. It is a strong predictor of reading comprehension; beginning readers use it to make sense of the words they see in print, and readers must know what most of the words mean before they can understand what they are reading. Vocabulary can be developed indirectly when children engage daily in oral language, listen to adults read to them, and read extensively on their own, or can be developed directly when students are explicitly taught both individual words and word-learning strategies. In early childhood, vocabulary can be supported in rich-language environments with exposure to spoken and written language and explicitly taught words. In other words, using new words in multiple forms and supporting these new words with words a child already knows will help children expand their vocabulary and be able to read more fluently when they are able to recognize and comprehend a wider variety of words. Not only does vocabulary support children learning to read but it also benefits them when they are reading to learn later on in development. It is important to note for bilingual and multilingual children, their total vocabulary can span across languages. It may appear that they don't have a large vocabulary but it is important to consider the total number of words they know across their languages.

Working memory

Working memory is the small amount of information that can be held in mind and used in the execution of cognitive tasks. It requires rehearsal or refreshing, because it suffers catastrophic loss when attention shifts away for too long. Working memory is another executive function. In reading, working memory plays a role in comprehension. It allows readers to connect ideas in the text and to prior knowledge as well as draw conclusions. Working memory allows children to temporarily store and manipulate information while they are reading to better understand the text. Deficits in working memory make it difficult to comprehend longer sentences because children are unable to hold all the information in their brain. This can be difficult and cause problems within phrases but also across phrases. Working memory in reading is also important for decoding as children have to hold all the sounds before putting them together. Repetition can be used to help children with working memory difficulties when reading or following instructions.

Xample

Reading aloud to children can positively impact their literacy and cognitive development as well as spark their interest in reading early on. A gradual release of responsibility can be used as a scaffolding method to help children gain comfortability reading as well as support their learning by providing a model and allow them to imitate before having to try to read independently. Gradual release of responsibility follows the idea of "I do, we do, you do". With reading, this can look like reading aloud to a child, then reading aloud with them or having them read some words before moving to having them read to you. This can go further into reading development and be used in the classroom with reading comprehension tasks or graphic organizers. This also helps reinforce concepts and skills through repetition.

Young

Starting to read young in childhood has been shown to increase creativity and curiosity in children, a wider range of vocabulary, improved fluency and attention span as well as foster a love of learning. This is also important when considering early intervention and early detection of reading and/or language difficulties. Intervention when children are learning to read can help reduce the likelihood of having long lasting literacy and academic impacts, particularly in the reading to learn stages of development.

Zone of proximal development

The zone of proximal development is a concept from Lev Vygotsky's theory of learning and development that refers to the space between what a learner can do independently and what a learner can do with the support of an adult or more capable individual. In reading, this is the level of complexity of a text that a student can read independently but not effortlessly. This is used in school often for reading tasks such as listening or reading comprehension, where teacher's are able to pick an appropriate level for the child that is challenging and maintaining their engagement without being too frustrating or too easy and boring. This zone is where learning and skill development happens in children including in reading when children are moving to more complex text levels and structures.

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The end!