Landmark Teaching Principle™ #1

Provide Opportunities for Success

PROCESSING SPEED

As previously stated, processing speed refers to the rate at which a task is completed. It refers to the ability to perceive information, make sense of that information, and supply a response. Furthermore, processing speed can include three components: **visual processing**, **verbal processing**, and **motor speed.**

Associated Facts

Research continues to examine many facets of processing speed: which parts of the brain control these functions, who processing speed effects, how it effects them, and what can be done about slow processing. Current research from the Learning and Emotional Assessment Program (LEAP) at Mass General suggests that:

- Boys are affected more by processing speed deficits than girls (about **70% of students with significant deficits were boys**). This could be based specifically on the population from this study, but evidence suggests that elementary schools in particular are designed in favor of girls' learning styles and, therefore, boys often struggle more.
- **Social difficulties are common in about ⅛ of children** with processing speed deficits (not just those children with Autism Spectrum Disorder (ASD)-related diagnoses).
- **Language impairments were reported in about 40% of the children.**
- 77% of students displaying processing speed deficits were currently receiving services under an IEP or 504 plan, validating the claim that processing speed can significantly influence academic success.
- While having Attention Deficit Hyperactive Disorder (ADHD) is not the same as having processing speed deficits, there are significant percentages of students who experience both. Co-morbidity, the simultaneous presence of two diagnoses, is common for students with processing speed deficits in the following categories:
  - **61% of the children in the study had ADHD**
  - **28% presented with reading disorders**
  - **20% had a math disorder**
  - **20% were diagnosed with a generalized anxiety disorder**
  - **17% had ASD**
  - **15% presented written expression deficits**

More specifically, Stephen Butnik discusses the link between processing speed and reading development in "Understanding, Diagnosing, and Coping with Slow Processing Speed." Butnik says that processing speed influences:

- Reading disorders such as dyslexia
- A subset of reading disorders involving verbal and visual processing speed
- Grapho-motor problems, often known as **dysgraphia**, where students present these troubles:
  - letter formation (upper and lower case)
  - slow and laborious handwriting
  - spacing between words

Three Presentations of Slow Processors

Of the students with processing speed deficits, there are three main profiles:

- The **chill** student: embraces the persona of being "the slow one" and even wears it as a badge of honor, sometimes to a fault. This student presents as laid back and slow moving, but seems unfazed by those facts and may even appear to enjoy it.
- The **anxious** student: tends to be nervous all the time. The student is aware of being slower than other students and, therefore, becomes anxious over the discrepancy with peers. This anxiety can even cause the student to slow down, thus creating a cycle of anxiety.
- The **lost** student: appears to never be at the right place at the right time. This student is always a step or two (or even more) behind the other students and can never seem to manage to get themselves, their materials, and their thoughts on the same page as everyone else.

Role of Attention Deficit Hyperactive Disorder (ADHD) and Executive Function (EF)

As mentioned previously, a percentage of students with slow processing speed also have ADHD. Specifically, students who have been determined to have the inattentive subtype of ADHD appear to have a sluggish cognitive tempo. These students often present as mentally spacey or foggy, or even under-active. They are generally slow moving and their work is slow and error prone. In addition, these students have a poor sense of time and have difficulty estimating how long a task will take.

Executive Function clusters can also play a role in processing speed. Activation and focus impact the student's ability to start a task and maintain focus throughout completion. Effort determines a student's stamina throughout the day and can even impact emotion. Lastly, working memory deficits can inhibit a student's processing speed.

HOW IS THIS PROVIDING OPPORTUNITIES FOR SUCCESS?

In order for teachers to create an atmosphere that is conducive to learning for all students, they need to have a clear understanding of how processing speed impacts students' ability to process large amounts of information quickly, thus allowing them to be successful in today's classrooms. The next issue will focus on strategies for the classroom to help alleviate processing speed deficits and allow all students access to the curriculum and instruction.