Executive function is a broad term used to describe the complex cognitive and behavioral processes that play a significant role in learning and academic achievement (ResearchILD, 2014). Executive function consists of five different components which include remembering, task monitoring and self-checking, organizing and prioritizing, cognitive flexibility and shifting flexibility, and goal setting. According to Doubletts, Kapa, and Plante (2017), the self-regulation function referred to as self-regulated learning involves individuals to the following behaviors: Executive function refers to the brain-based skills that are required for humans to perform a task or interact appropriately. For the primary participants, the following strategy instruction utilizing an executive function curriculum, SMARTS Online Curriculum (ResearchILD, 2014).

References

According to Anderson, Calandra, Conley, Mur, and Yang (2008), organizational skills allow students to effectively manage their time and materials in the classroom. Students can use binders, different notebooks, and different color folders to help them stay organized. Students who have the ability to remember what they are learning in school notesbooks for different subjects, keep a clean book bag, color code their supplies, and bring all necessary items to class. Using a binder with specific sections for different subjects makes it easier for the students to find what they need, and makes it easier to keep track of their homework. When they are able to prioritize and organize, students will have a different view of what is important. According to ResearchILD (2014), students who do not prioritize their time find themselves overwhelmed when completing academic tasks because they do not have the skills necessary to make it specific and attainable. By time, in lesson 44.3 of the SMARTS curriculum, the students will learn how to divide their tasks into obligations, aspirations, and negotiated tasks. These tasks are included in the curriculum to help students manage their time and achieve their goals and complete tasks. According to Willis (2010), students are able to prioritize academic tasks become more self-directed learners who can successfully plan and achieve long-term goals.

Cognitive flexibility

According to the SMARTS online curriculum, cognitive flexibility/stillness is the ability to think flexibly and to shift perspectives and approaches flexibly. This process is essential for students' ability to learn new concepts and ideas. It shows that students have the ability to combine ideas and concepts creatively and to integrate multiple frameworks and ideas. Executive function is the ability to shift perspectives and approaches flexibly (ResearchILD, 2014). In lesson 1.2 from the SMARTS curriculum, the main goal is for students to demonstrate cognitive flexibility by defining it and using it to solve math equation. The main goal of the lesson was for students to understand that they have to think in new ways or do different things. Students were shown four math problems which they had to solve in two different ways. They could either add the numbers together or help students practice word problems. There is no one way to do something or see something. One aspect of the lesson was showing the students images that had more than one image that would appear. Students were able to see different images in the same image by changing their perspective and the way they were thinking. The students were able to think flexibly and reflect that there can be more than one meaning, and that not everyone thinks the same way.

Anthony, Armour, Dudley, Hardy, Kenee, Strong, Wallace, and Yerkes (2017) state that flexibility is a complex construct encompassing a range of interrelated characteristics, behaviors and cognition. Not only does cognitive flexibility improve cognition, but it can also influence the way students behave. Martin and Gardner (2007) state that students need to be able to think flexibly and to shift perspectives and approaches flexibly in order to obtain more diverse types of tasks, solve problems and improve their comprehension. Students who struggle with solving math problems can use cognitive flexibility by trying to answer the problem in more than one way. If they get stuck or frustrated, students can take a step back and try to solve the problem a different way. In order to teach cognitive flexibility to students, educators need to encourage growth mindsets and to use the metacognitive strategies. Students need to be aware that there are multiple solutions to an problem. Students can grow and learn to solve problems using different methods once they are confident in their ability to be flexible cognitively.

Goal Setting

According to ResearchILD (2014), goal setting is defined as the ability to set realistic expectations in order to achieve a desired outcome. Goal setting involves defining challenges and setting goals that are specific, measurable, and have challenges developing a realistic goal because they do not have the skills necessary to make it specific and attainable. In lesson 2.1 of the SMARTS curriculum, students learn the strategy of setting a CANDO (Clear, Appropriate, Numerical, Doable, and Obtainable) goal. In Lesson 5.4 of the SMARTS curriculum, students learn how to set goals that are specific and personalized. The students are taught that the SMARTS Online curriculum into their math and ELA lessons. At the end of each lesson or series of lessons, students complete a strategy self-monitoring/reflection tool that helps students understand the importance of shifting between multiple perspectives (Lesson 3.5). In Unit 4, Part 4: Organizing Materials and Priorities, the goal is: Students learn how to organize their backpacks and belongings and time management strategies (Lessons 4.4.1, 4.4.2). In Unit 5: Remembering: Accessing Working Memory was taught. During this unit, students were taught about the different parts of the brain and how it impacts working memory. Students stated that they needed strategies to help them in challenging in working memory, and learned new strategies to help in remembering information, such as cartoons and mnemonics. This strategy was used to help students remember important information. Students then learned the benefits of self-monitoring and strategies to help them self-monitor (Lessons 5.1, 5.2, 5.3, 5.4). Memonics were used as a tool to help students remember important information. Students who understand the importance of self-monitoring and strategies self-monitor and were more self-monitoring.

Executive Function Wheel

Executive Function Wheel for Our Brain. Mnemonics should also be personalized to students' interests. The mnemonic strategy for teaching executive function strategies to students with special needs in an academic after-school program.