Enhancing Brain Development in Children: 
"The High Five"

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Brain Research and Development

There has been increasing interest in brain development and the application of this new information to programs helping children in their growth and performance in school. Such application of basic research is not always easy. And the information is diverse, making it challenging to identify where to focus efforts and understanding what is most important in the overall development of children's capacity.

Many educators have tried to apply this research to program ideas and interventions in schools. Based on the research, there seem to be five general elements that are important to create a strong environment for greater brain development to occur. While the literature breaks some down into more detailed categories, these five include the most common and consistent elements for strong brain enhancing programs.

1. "Enriched & Supportive Environment"

The first of these is the development of an enriching and supportive environment. This includes several key components, such as challenging children within the academic setting. Of course, this is a difficult task in and of itself, with an important balance to be achieved. For not enough challenge leads to boredom, and too much challenge tends to intimidate children and discourage them from participating or even trying. In order to support children in their continued effort to learn, it also seems to be important to provide positive feedback to them on their efforts and performance every 10-20 minutes. This encourages them to keep learning while also keeping a connection between teacher and student, especially in larger classrooms where children are more easily "lost." Another part of this environment is the involvement of students as active learners rather than passive recipients of information. In this way, students are participating in the learning process with more energy and interest than when they simply are receiving. This also stimulates more parts of the brain from curiosity, problem solving, speaking, processing information, and even excitement which elicits the Limbic or emotional system and is related to the transfer of information into long term memory.

A related piece to the active learner is for children to feel empowered in the learning process so they take increasing responsibility for learning rather than seeing the responsibility solely as that of the teacher. This helps not only in the immediate class learning, but it also helps them establish their own goals for long-term educational outcomes, an important factor in achievement. This also helps them be more creative and curious in their learning. While they may ask more questions, which can be a bit challenging for teachers, the intended outcomes are important to keep in mind when a teacher feels overwhelmed. Then let the children be more involved in finding answers as well, which is another way for expanding the children's brains.

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In order for an enriched environment to be influential for children, it is important that they feel a sense of belonging in that environment. Children feel more open to learning and challenges when they feel like they belong in a group, feel wanted and safe, and that a teacher cares about what happens to them. While parents and teachers are aware of this issue, it becomes even more important in a challenging setting when children may be feeling a bit tenuous with the academic stimulation they face. It also is something not to take for granted, but rather to cultivate continually with children.

It also is important to include clear support for achievement. While this seems like a given in any classroom, what many educators continue to emphasize is to identify and support small gains children make, helping them feel excited and pleased with any progress. Sometimes we get so focused on helping children improve by overcoming the mistakes they make that we overlook or forget to focus on what they have achieved, even in small amounts.

One final component educators emphasize for enhancing brain development is to identify and appreciate unique characteristics of each child. Of course, this helps a child feel like she or he belongs in a group and feel supported. This also helps to identify strengths in children who may be overlooked in a positive way because of the many difficulties they present to a parent or teacher. While this often is difficult in a large classroom, one way to go about this is to identify one strength or unique positive characteristic for one child each day. While this is only five children in a week, a teacher could cover his/her classroom in a month. Then other characteristics could be added over the year as they are noticed, but even one can help a child feel more positive, supported, and connected to a family or classroom teacher.

2. "Reduce Emotional Priority"

One of the interesting things about the human brain is the division of labor that takes place with many different parts while still functioning as a whole. The brain also develops from the most basic parts, such as the brainstem (blue), which regulate basic aspects of our lives like breathing that become automatic, to the more complex parts of the brain, such as the cerebrum and frontal cortex (gray). In between these parts of the brain is the "diencephalon", which includes the thalamus and hypothalamus, and the limbic system, which includes the amygdala, hippocampus, and basal ganglia. Based on the research by Dr. Bruce Perry with traumatized children, more that these lower brain functions are activated (the brainstem, diencephalon, and limbic system), the less higher brain functions are involved or activated for use in learning. It is the higher brain functions that are used for academic learning, including things like math, language, art, and problem solving, not to mention future planning and decision making. When lower parts of the brain are activated or dominate, especially in times of stress and threat, then there is less modulation or controlling of the lower parts of the brain, which relate to flight or fight responses, emotional reactions, and more basic protective responses. In order for students to learn and perform well, it is the higher brain functions that must modulate or regulate the lower brain functions and be performing in a more active way, finds Dr. Bryan Post in his work with traumatized children and youth.

Dr. David Sousa's works finds similar results. He finds that emotional responses actually diminish the brain's ability to process cognitive information. The stress hormones that are distributed by the hippocampus inhibit cognitive functioning and long-term memory. So even if a child is involved in the learning process, he/she is less likely to remember the information and therefore perform more poorly on exams in response to questions about the information they have covered in class. When students
are operating in survival or emotional mode, the cognitive processing and memory that is needed for learning takes a back seat to the more immediate needs and pressures.

3. "Establish New Tracks"

In order for new pathways in the brain to be developed, it is useful to use both repetition and multiple senses so the input of information occurs from different sources. This allows students to gather information from different senses, which stimulate different parts of the brain. In addition, connections are made between these different sensory inputs to identify the same information from different sources and experiences. When children learn about the solar system, for example, through visual and auditory interaction, they have two different sources of information. When this is added to the physical experience of building a solar system, figuring out the size of each planet, making each planet in relation to the size and distance from the sun, then they have a multitude of ways to understand the elements and relationships among the parts of the solar system. This increases not only the understanding but also the application of information. These aspects stimulate different parts of the brain, as well as making connections between the parts, laying down new pathways and connections in the process.

4. "Believe in Student's Capabilities"

There is an interesting aspect of research, especially medical research, called the "placebo" effect. This idea is that the "sugar" pill has just as much effect as the intended medicine or intervention. This often is dismissed as "all in the mind," or no "real" effect, because it was not the intended intervention. Yet the effects are both real and often substantial. When people believe in something, it seems to impact outcomes. Such an impact may take on a different meaning as we look at the research of Dr. Bruce Lipton, a cell biologist who presents information about how cells are influenced most not by their own genetics or nucleus, but by the perception of their environment. Rather than a cell being turned on or off by itself, it is the environment that stimulates the cell. In addition, Dr. Lipton indicates that cells are either in a protective mode or a learning mode. Both take energy, but the cell can only do one response at a time. This again gives us some indication of how our collection of cells that makes up not only the brain but the whole body respond. Thus, when student environments are stimulating and enhance the belief that they are intelligent and can learn, such an atmosphere seems to impact the learning response and performance in children.

Donna Tileston, a veteran teacher of at-risk students, found that students' scores changed dramatically one year when teachers changed their style of teaching. What seemed to change more and create an increase in the percentage of students mastering every part of a standardized test from 28% to 67% was that the teachers convinced the students that they could learn and perform on such a test. It is believing in the students and convincing them to believe in themselves that helps create a change in learning, putting the cells in learning rather than protective mode through out the body.

5. "Be Present"

One final element that is important in children learning is for the parent or teacher to be emotionally, mentally, and energetically present when they are with the child, rather than being there only at the physical level and being absent mentally and energetically. This is a critical influence on people, especially children. There are many ways to express this once the adult is clear about their own presence. This can occur simply by putting one's hand on the child's back, shoulders, or head. Parents or teachers can even stimulate the brain energetically by touching the child physically, while also intending energy to go along with the physical touch.

One way to gain clarity on such presence is to shake hands with another person. As you are holding the other person's hand, intend for your energy to leave your hand and move up your arm.
Have the other person pay attention to what they are feeling. Then bring the energy back down and ask them to remove the energy from their arm. You usually will feel pretty quickly the difference between energy "presence" and the absence of energy. Children tend to be much clearer about such a difference, and they almost always prefer the presence rather than the absence of energy. This again makes them feel safe, feel more connected to the teacher and class, and help them be more present. When children are present, they are more likely to stimulate their own brain, learn, and remember what they have learned.

So next time you interact with another parent or teacher, give them the "high five" hand, and help them remember the important elements of enhancing brain development in children.

3. "Establish New Tracks"

2. "Reduce Emotional Priority"

4. "Believe in Capabilities"

1. "Supportive Environment"

5. "Be Present"

References


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