

香港資優教育學院
The Hong Kong Academy for Gifted Education

Factsheet

TEACHING AND LEARNING IDEAS IN A NUTSHELL – BRAIN-BASED LEARNING

Definition

This learning theory is based on the structure and function of the brain. As long as the brain is not prohibited from fulfilling its normal processes, learning will occur.

Discussion

People often say that everyone **can** learn. Yet the reality is that everyone **does** learn. Every person is born with a brain that functions as an immensely powerful processor. Traditional schooling, however, often inhibits learning by discouraging, ignoring, or punishing the brain's natural learning processes.

The core principles of brain-based learning state that:

- The brain is a parallel processor, meaning it can perform several activities at once, like tasting and smelling
- Learning engages the whole physiology
- The search for meaning is innate
- The search for meaning comes through patterning
- Emotions are critical to patterning
- The brain processes wholes and parts simultaneously
- Learning involves both focused attention and peripheral perception
- Learning involves both conscious and unconscious processes
- We have two types of memory: spatial and rote
- We understand best when facts are embedded in natural, spatial memory
- Learning is enhanced by challenge and inhibited by threat
- Each brain is unique

The three instructional techniques associated with brain-based learning are:

Orchestrated immersion - Creating learning environments that fully immerse students in an educational experience

Relaxed alertness - Trying to eliminate fear in learners, while maintaining a highly challenging environment

Active processing - Allowing the learner to consolidate and internalise information by actively processing it.

How Brain-Based Learning Impacts on Education

Curriculum

Teachers must design learning around student interests and make learning contextual.

Teaching

Educators let students learn in teams and use peripheral learning. Teachers structure learning around real problems, encouraging students to also learn in settings outside the classroom and the school building.

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Assessment

Since all students are learning, their assessment should allow them to understand their own learning styles and preferences. This way, students monitor and enhance their own learning process.

What Brain-Based Learning Suggests

How the brain works has a significant impact on what kinds of learning activities are most effective. Educators need to help students have appropriate experiences and capitalize on those experiences. As Renate Caine illustrates on p. 113 of her book *Making Connections*, three interactive elements are essential to this process:

- Teachers must immerse learners in complex, interactive experiences that are both rich and real. One excellent example is immersing students in a foreign culture to teach them a second language. Educators must take advantage of the brain's ability to parallel process.
- Students must have a personally meaningful challenge. Such challenges stimulate a student's mind to the desired state of alertness.
- In order for a student to gain insight about a problem, there must be intensive analysis of the different ways to approach it, and about learning in general. This is what's known as the "active processing of experience."

A few other tenets of brain-based learning include:

- Feedback is best when it comes from reality, rather than from an authority figure.
- People learn best when solving realistic problems.
- The big picture can't be separated from the details.
- Because every brain is different, educators should allow learners to customize their own environments.
- The best problem solvers are those that laugh

Designers of educational tools **must be artistic** in their creation of brain-friendly environments. Instructors need to realize that the best way to learn is not through lecture, but by participation in realistic environments that let learners try new things safely.

Reading

Renate and Geoffrey Caine. *Making Connections: Teaching and the Human Brain*. Addison Wesley Longman Publishing Co, 1995

Leslie A. Hart. *Human Brain and Human Learning*. Brain Age Pub, 1999