



BRAIN-BASED LEARNING STRATEGIES: INTEGRATION IN TEACHING- LEARNING

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Abstract

Learning is as natural as breathing. It can be inhibited or facilitated. New methods and approaches like constructivism, multiple intelligence, and inquiry-based learning etc. are adapted to remove the limitations of conventional ways of teaching and to improve the quality of instruction. One of the upcoming approaches is Brain-Based Learning. Brain-based learning is an approach of learning which addresses student learning from the point of view of the human brain. Brain based learning strategies are designed on the basis how human attention, memory, motivation and knowledge acquisition work. This research paper emphasizes on concept, Principles and strategies of brain based learning.

Key Words: Brain based learning, Principles, Strategies,



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Introduction:

Brain-based learning is an educational approach that incorporates insights from neuroscience into teaching and learning practices. The underlying principle is to align instructional strategies with the way the brain processes information, thereby enhancing the learning experience. Brain-based education is the purposeful engagement of strategies that apply to how our brain works in the context of education. Purposeful engagement is a key concept in brain-based learning, emphasizing the importance of actively involving learners in

meaningful and relevant activities to enhance their understanding and retention of information. Brain-based education is rooted in the idea of aligning teaching strategies with the principles of how the brain learns best. This approach recognizes that the brain is a dynamic organ with unique characteristics, and educators can optimize learning experiences by incorporating strategies that resonate with these characteristics.

Concept of Brain-Based Learning

Findings of the researches in neuroscience are as follows

1. Learning be facilitate in an environment of total immersion.
2. Interactions of brain with its environment suggest that more enrich environment the more enrich brain.
3. An enriched environment can contribute up to 25% increase in the number of brain connections.

The concept of Brain Based learning is developed on the basis of these principles.

- **Definition of Brain Based Learning:**

1. **Jensan (1998)-**

Brain based Learning can be defined as an interdisciplinary answer to the question of “What is the most effective way of Brain’s learning mechanism.”

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2. **Caine & Caine (2002) -**

Recognition of the brains codes for a meaningful learning and adjusting the teaching process in relation of these codes is called brain based learning.

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Principles of Brain-Based Learning

Based on the findings of researches in neuro science, Psychology and education Twelve Brain Based Learning Principles were developed by Caine and Caine (2002). These brain based principles are general theoretical foundation for brain based learning. These principles are as follows:

- i. The brain is a parallel processor, meaning it can perform several activities at once, like tasting and smelling.
- ii. Learning engages the whole physiology.
- iii. The search for meaning is innate.
- iv. The search for meaning comes through patterning.
- v. Emotions are critical to patterning.
- vi. The brain processes wholes and parts simultaneously.

- vii. Learning involves both focused attention and peripheral perception.
- viii. Learning involves both conscious and unconscious processes.
- ix. We have two types of memory: spatial and rote.
 - x. We understand best when facts are embedded in natural, spatial memory.
- xi. Learning is enhanced by challenge and inhibited by threat.
- xii. Each brain is unique.

Principles of Brain Based learning suggest that real life experiences lead to effective learning. Implementation of these principles in teaching-learning process helps to enhance learning.

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www.cainelearners.com

<http://www.talkingpage.org/artic>

Brain-Based Learning Strategies

Brain-based learning strategies are aligned with the principles how the brain learns best. Some brain-based learning strategies given below.

- 1. Active learning:** Active learning encourages hands on activities, group projects, and interactive exercises that engage students actively in the learning process. Active learning promotes neural activation and enhances understanding.
- 2. Real Word Applications:** Connect learning experiences to real-world scenarios for making learning effective and meaningful. Practical application of the learned material helps students to understand its relevance with day-to-day life and strengthens memory retention.
- 3. Multisensory Approaches:** The multisensory approach appeals to the use of multiple senses by incorporating audio-visual aids, auditory elements and hands-on experiences. Various parts of the brain can be stimulated by engaging different senses to accommodate diverse learning styles.
- 4. Collaborative Learning:** Promote a collaborative learning environment where students can work together on projects and share their ideas. Collaboration can enhance social interaction, promote critical thinking and activates multiple areas of the brain. Group activities, discussions, and peer learning can enhance understanding and retention of information.
- 5. Brain Brakes:** Incorporate small brakes during learning and allow students to move, stretch or relax. Physical activities increase blood flow to the brain and helps to improve focus and attention.
- 6. Mindfulness and Relaxation Techniques:** Introduce mindfulness exercises or relaxation techniques to help students to manage stress and promote emotional well-being. Calm and focused minds are more reactive to learning.

7. Choice and Autonomy: Provide students with choice in their learning. Allow them to take decisions about projects, topics or methods. This fosters autonomy and increases motivation.

8. Storytelling: Utilize storytelling as a teaching tool. Narrative formats activate different parts of the brain, and also make information more memorable and engaging.

9. Inquiry-Based Learning: Encourage students to ask questions and explore topics in depth. Inquiry-based learning can promote critical thinking and curiosity. It also stimulates neural activity.

10. Reflection and Metacognition: Organize reflecting activities where students can think about their learning process and reconstruct it. Metacognitive skills help students to become aware of their learning and thinking strategies. Foster metacognitive skills, such as self-awareness and self-regulation.

11. Positive learning environment: Create a supportive and positive learning environment in the classrooms. Emotions influence learning. Positive emotions enhance memory and motivation, while negative emotions can impede learning. Creating a positive and supportive learning environment is essential. A positive environment fosters positive emotions that can enhance learning. Nutritive and free environment contribute to students overall well-being.

12. Integration of technology: Interactive educational tools, multimedia presentations, and online resources can provide novel and stimulating learning experiences. So integrate technology thoughtfully in the teaching-learning process.

13. Flexible and Adaptive Instructions: Instructional methods should be flexible and adaptive. Students have different learning styles and preferences recognize these and adapt the teaching strategies accordingly.

14. Chunking Information: Divide information in small manageable parts that is chunks. Breaking down of the content in small pieces helps in processing the information and memorize it.

15. Repetition and Retrieval Practice: Adapt repetition and retrieval practices in classroom teaching as it reinforces the learning. Long term memory can be enhanced by reviewing information at interval and actively recalling of it from memory.

16. Multiple Intelligences: Howard Gardner's theory of multiple intelligences suggests that individuals have different strengths and learning styles. Brain-based learning encourages educators to recognize and accommodate diverse intelligences in their teaching methods. So use learning experiences that can suit all learning styles.

17. Movement and Exercise: Physical activity has been linked to improved cognitive function and academic performance. Brain-based learning advocates for incorporating movement and exercise into the classroom to support overall brain health. Movement and exercise play a

significant role in brain-based learning, as physical activity has been linked to improved cognitive function and overall brain health. Incorporating movement into the learning environment can positively impact attention, memory, and the ability to process information

18. Relevance and Meaning: Making learning relevant to students' lives and connecting new information to existing knowledge can enhance comprehension and retention. Brain-based learning emphasizes the importance of creating meaningful and context-rich learning experiences. Emphasizing relevance and meaning involves making educational experiences meaningful and applicable to students' lives. When learning is perceived as relevant and meaningful, it engages learners more effectively and facilitates better understanding and retention.

19. Feedback and Reflection: Regular feedback and opportunities for reflection are crucial for the learning process. Constructive feedback helps students adjust their understanding, and reflective practices support the consolidation of learning. Provide timely and constructive feedback to guide learning. Encourage reflection to help students

20. Brain-Compatible Assessments: Design assessments that align with how the brain processes and retains information. Consider a variety of assessment methods to accommodate diverse learning styles. Brain-compatible assessments in brain-based learning are designed to align with the natural processes of the brain and support effective learning. These assessments take into consideration the principles of neuroscience and aim to evaluate not only what students know but also how well they understand and can apply their knowledge.

21. Sleep and Nutrition: Sleep and nutrition play critical roles in supporting brain function and, consequently, have implications for brain-based learning. Both sleep and nutrition significantly impact cognitive processes, memory, attention, and overall mental well-being. Recognize the importance of sleep and nutrition in supporting optimal brain function. Encourage healthy sleep habits and provide opportunities for nutritious meals.

22. Brain-Ready Classrooms: Creating "Brain-Ready Classrooms" involves designing learning environments that align with the principles of brain-based learning. These classrooms are intended to support optimal brain function, enhance engagement, and facilitate effective learning. Brain ready classrooms should have flexible Seating, Natural Light and Ventilation, Adequate Space for Movement, Interactive Learning Stations, Visual Stimuli, Organization and Clutter Control, Colour Psychology, Technology Integration, Brain-Compatible Furniture, Quiet Spaces, Multi-Sensory Learning Tools, Mindfulness and Relaxation Areas, Positive Classroom Culture etc.

23. Neuroscience Principles: Understanding the fundamental principles of neuroscience and how the brain processes information forms the basis of brain-based education. This knowledge informs instructional practices to better suit the brain's natural learning mechanisms.

24. Individual Differences: Acknowledging and accommodating diverse learning styles and preferences. Brain-based education recognizes that individuals may have different strengths, and tailoring instruction to these differences can enhance the learning experience. Learning strategies should be adapted by considering individual differences.

Conclusion: Brain-based learning strategies can be combined with brain-based principles to create a rich and varied learning experiences. It is important for educators to adapt these strategies according to the needs and characteristics of the learners.

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