



BRAIN BASED LEARNING: HOLISTIC APPROACH TO TEACHING AND LEARNING

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Abstract

The Brain Based Learning (BBL) is a comprehensive approach to instruction based on the structure and function of the brain. Renate Caine and Geoffry Caine have postulated twelve principles of BBL theory, which are further condensed into three instructional elements namely, relaxed alertness, orchestrated immersion, and active processing. Relaxed alertness is an optimal state of mind, comprising of low threat and high challenge, emphasizing that the learners should feel secure so that they can take a risk. The orchestrated immersion provides the learners with rich, complex experiences that include options and sense of wholeness. Active processing refers to theoretical organization and internalization of meaningful and conceptually coherent information by the learner. In this article we present in depth discussion on these three elements of BBL, highlighting their importance and implication.

Keywords: Brain Based Learning (BBL), Relaxed alertness, Orchestrated immersion, Active processing



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Teaching is the art of changing brain.

- James Zull

Introduction:

The objective of education is holistic development of student and to achieve this objective, different theories were developed by educationalists and psychologists. Amongst the different theories, the recently developed Brain Based Learning (BBL) theory is recognized as the most promising theory to achieve the aforesaid objective of education. The BBL is comprehensive approach to instruction based on how our brain learns naturally, and based on the structure and function of the brain. According to the BBL, unless the brain is prohibited from fulfilling its normal processes, learning will occur. Jensen (1995/2000) defines BBL as

“learning in accordance with the way the brain is naturally designed to learn” The importance of brain in learning process has been realized by various educationalists. For example, Frank Smith (1986) in his book “Insult to Intelligence” quotes “Learning is the brain's function, its constant concern, and we become restless and frustrated if there is no learning to be done”. Similarly, in the book ‘Human Brain and Human Learning’ Leslie Hart (1983), argues that teaching without an awareness of how the brain learns is like designing a glove with no sense of what a hand looks like, its shape, how it moves. The organ of learning, the brain, must be understood and accommodate.

Renate Caine and Jeffery Caine (1991), from the result of a cross-disciplinary search, have postulated twelve principles of BBL theory, as stated below.

1. *The brain is a parallel processor*, implying that the brain performs many tasks simultaneously, including thinking and feeling.
2. *Learning engages the entire physiology*, implying that the brain and the body are engaged in learning.
3. *The search for meaning is innate* implying that the brain’s or mind’s search for meaning is very personal.
4. *The search for meaning occurs through patterning*, implying that the brain is designed to perceive and generate patterns and it resists having meaningless patterns imposed on it.
5. *Emotions are critical to patterning* implying that our emotions are brain based and they play an important role in making decisions.
6. *The brain processes parts and wholes simultaneously* implying that the left and the right hemisphere have different functions, but they are designed to work together.
7. Learning involves both focused attention and peripheral perception implying that the brain response to the entire sensory context in which teaching or communication occurs.
8. Learning always involves conscious and unconscious processes implying that there is interplay between our conscious and our unconscious.
9. We have at least two different types of memory implying that spatial (autobiographical) and rote learning (taxon memory) implying that the taxon or rote memory systems consist of facts and skills that are stored by practice and rehearsal. The spatial or autobiographical, memory builds relationships among facts, events, and experiences.

10. Learning is developmental implying that children, and their brains, benefit from enriched home and school environments.
11. Learning is enhanced by challenge and inhibited by threat implying that students optimally benefit when their assignments are challenging and the classroom environment feels safe and supportive.
12. Each brain is unique implying that when teaching, we need to consider how each student learns most effectively; each student has his or her own unique set of brain strengths and weaknesses.

The brain-based education involves two components (a) designing and orchestrating lifelike, enriching, and appropriate experiences for learners, and (b) ensuring that students process experience in such a way as to increase the extraction of meaning. Moreover, Renate Caine and Jeffery Caine conclude that optimizing the use of the human brain means using the brain's infinite capacity to make connections, and understanding what conditions maximize this process. For complex learning to occur, the authors have identified three interactive and mutually supportive elements.

In recent times, the BBL approach has attracted a great deal of attention of researchers, teachers, and educationalist. This approach has been widely used in developed countries and its implication in Indian context is limited. In order to enhance the awareness of the BBL approach and attract more and more teachers to adopt it in day to day teaching process, it is desirable to explain the various facets of BBL approach to the Indian community. This paper is a sort of action in this regard. Herein, we discuss the three elements/phases of the BBL approach in detail.

Three elements of the BBL:

The three elements of BBL are “*relaxed alertness*”, “*orchestrated immersion*”, and “*active processing*”. These three elements are not separated from each other with clear lines of demarcation and revive components of each other.

1. Relaxed Alertness:

Relax alertness is an optimal state of mind, comprising of low threat and high challenge, emphasizing that the learners should feel secure so that they can take a risk. Relaxed alertness also includes a personal sense of wellbeing and safety that allows students to explore new thoughts and connections with an expanded capacity to tolerate ambiguity, uncertainty, and delay of fulfillment. The optimal state of mind has two indispensable characteristics (Renate Caine and Geoffry Caine, 1991).

- i. A relaxed nervous system and sense of safety and security that operates at mental, emotional and physical level.
- ii. Student self motivation, which is critical to the expansion of knowledge at more than surface levels.

According to the BBL principles 05 and 11, emotions play an important role in learning. It is well known that the emotions and thoughts interpenetrate and shape each others. The learner identifies the low threat environment via emotions. Thus, emotions play an important role in relaxed alertness. In order to maximize learning, it is necessary to establish an environment that allows the learner for self risk taking. The self risk taking environment is created by eliminating pervasive or continuous threat. Finally, the sense of safety allowing or welcoming appropriate risk in one part is referred to as relaxation.

While providing the low threat and high challenging environment in classroom, one has to be very careful, as the self risk taking capability varies from student to student. As the emotions and thoughts of a student are closely related to his/her socio-economic status, home, neighborhood, and society environment, his or her sense of safety differs from others.

1.1 Elements of instructions incorporating relaxed alertness:

i. Importance of Teacher prestige:

The teacher prestige deals with, how well a teacher masters the subject and share subject matter (expertise), his/her degree of congruence or empathy, and external behaviour (body language).

ii. Types of conditions and ‘sub-states:

There are two specific sub-states namely, childlike state and pseudo-passiveness (passive learner). The childlike state means creative playfulness, usually displayed by children. This state includes willingness to experiment and openness to unexpected consequence, a sense of positive anticipation. Passive learning is a condition similar to state of mind of the audience of a good musical concert. In this state, the learner is relaxed and attentive, but open to experience.

1.2 Relaxation Techniques:

For the sake of attracting students, one can define full form of “**R E L A X**” as **R**elax, **E**njoy, **L**earn, **A**ppreciate, **X**-pand. From numerous research studies, it has been observed that relaxation training has positive influence enhancing the students’ self-management skills, achievement, self-concept, social interaction skills and decreased state anxiety. Some of the relaxation techniques that have been used in class room environment are as listed below.

- i. **Progressive Muscle Relaxation:** Begin with the face, instruct the students to scrunch up their faces for 3-10 seconds, inhale deeply and then slowly relax their face and breathe deeply for 20 seconds. Then repeat with the shoulders, the arms and hands, and the legs. Then the students can end with a minute or two of deep breathing. Students should try to keep their eyes closed throughout the relaxation session.
 - ii. **Proprioceptive Activities:** Stair climbing, crawling on all fours, pulling/pushing items in the classroom, silly animal walks/ alternate walking, skipping, walking in slow motion, running on the spot, body stretching, etc.
 - iii. **Listening music**
 - iv. **Visual Imagery**
 - v. **Peer Sharing (Co-listening)**
 - vi. **Meditation**
- 2. Orchestrated Immersion:**

The power of orchestrated immersion is to take the information *off* the page and/or blackboard and bring it to life in the minds of students. This phase involves rational combination of two terms, ‘immersion’ and ‘orchestration’. Immersion focuses on how the students are exposed to the content. When wholeness and interconnectedness cannot be avoided, students are obliged to employ their local memory system in the exploration of the content. In such cases, there are two objectives. The first objective is to immerse the students in (compelling experiences). The second goal is to identify and appreciate the various elements of such experience and need to know how to bring them together effectively. That ‘bringing together’ through practical skill and artistry is what we call orchestration (Renate Caine and Geoffrey Caine, 1991).

In “orchestrated immersion”, the teacher plays a role of an orchestrator/architect, designing experiences that will lead the students to make meaningful connections. The focal point of orchestrated immersion is to make the essence of the subject meaningful and bright in the minds of students. If a student grasps the gist of subject via various sense organs, the retention level of the new input is increased. This phase helps the students to establish patterns and associations in their brains, providing them with rich and complex experiences, so as to make learning more permanent.

2.1 Elements of instructions incorporating orchestrated immersion:

- i. **The Teacher as a Designer of experience:** Orchestration involves the development of a teaching approach that combines planning with opportunity for spontaneity, by both the teacher and students. The spontaneous creativity is result of inner confidence of the

teacher as a communicator and focus on making sense. The teachers should have mastery of planning and design, if they are to effectively orchestrate experiences for learners. A person, who can orchestrate experience very well possess 'artistry'.

- ii. Dynamic Gestalts-Creating Sense of living Wholeness: Knowledge becomes natural when it is sufficiently connected with what else is already known. These patterns of interconnectedness are known as 'maps'. So a lot many opportunities, for making connections, should be provided to the students, from which they can extract meaningful patterns. With the sense of wholeness, the teachers should simultaneously be able to invoke creativity, permitting flexibility, change and excitement.

A long as we have grasp of greater purpose and sense of continuity and connectedness, day to day events make a sense. The 'myths', 'plots', 'belief-systems', 'agreements' are dynamic gestalts, because they provide overall pattern that make a sense. These dynamic gestalts can be used as given below.

- i. Establishing curricular themes.
- ii. Encouraging complex, real projects of personal interests to students.
- iii. Providing multisensory representation.
- iv. Telling stories and exploring myths.
- v. Using metaphors.
- vi. Considering the entire physical context.
- vii. Providing social relationships and sense of community.

3. Active Processing:

Active processing deals with theoretical organization and internalization of meaningful and conceptually coherent information by the learner. It is regarded as a path to understanding (meaningful learning) rather than simple memorization. Active processing is the only way for students to make sense of experience. It provides opportunities for students to learn not only about the subject but also about themselves about people. In active processing, the students consistently examine what is important to them, and often find surprising new issues of importance. It necessarily engages emotions, concept and values, when meaningfulness is of prime concern. Active processing is not just a stage in lesson occurring in one specific time, it is a matter of constantly working and manipulating the ongoing experiences that the student have (Renate Caine and Geoffrey Caine, 1991).

Since active processing refers to a way to understanding (meaningful learning), it's role and/or effect can be estimated via evaluation of the learner. Naturally, 'reflection' is one of the important techniques of evaluation, particularly when someone is interested in

estimating role or effect of active processing. In the experimental nature of the entire learning, it becomes more and more important for all students to reflect on their experiences for the purpose of adequately grasping the implications. At the moment, the closest that many schools come to reflection is with "wait time." This refers to a deliberate delay between a teacher's question and a student's answer, but wait time has as much to do with reflection as standing in line has to do with shopping. The power of reflection is cumulative. It is expected that the students to not only expand their natural knowledge, but also to desire that expansion. Reflection is powerful in part because it creates what Dewey called a "learning loop" (Fellows and Zimpher 1988).

Reflection in learning is not a simple process and divided into three main types namely, Reflection on feedback from others, Reflection without assistance, and Personal awareness of deep meanings.

3.1 Active Processing in action:

Participation of the elementary and secondary school students in social events. The students and teachers need to explore in more depth the power of the arts. For example, the school/social programmes, in which students are given the opportunity to develop their singing, dancing, and other artistic talents and where their participation is directly linked to the content of their school curriculum in history or science. The students need to experience the joy of participating and to have the opportunity to be creative. They will receive more than enough feedback to give them a sense of what the community values. They must also have the freedom to experiment.

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