

Your Brain On Challenge Based Learning (CBL)

Over the last several decades, neuroscience, psychology and education researchers have gained significant insights into the learning process. Fourteen areas in Mind, Brain and Education science intersect with and support the efficacy of the CBL framework.

Meaningful Engagement

The brain processes the meaning of input before processing the details. CBL focuses learning on real-world challenges that are personally relevant, triggering intrinsic motivation and setting the stage for future learning.

Top-Down Processing

CBL provides a framework or schema that supports top-down processing by moving from a Big Idea to an increasing level of detail and application through the Engage, Investigate and Act phases.

Pattern Seeking

The primary way we find meaning is through identifying and understanding patterns. The CBL framework provides an overall structure and ongoing opportunities for identifying and creating patterns.

Crystallized and Fluid Intelligence

Crystallized intelligence (acquisition of knowledge and procedure) and Fluid intelligence (applying crystallized intelligence to unique and novel circumstances) are key components of the CBL Framework.

Hypothesis Testing

The active and physical approach of hypothesis testing is the essence of human learning. The CBL framework includes a series of exploratory cycles that allow for active hypothesizing and testing. Instead of learning out of context and being tested on it, in CBL, we contextually hypothesize, test, and learn from the experience.

Active Learning

Research shows that active participation enhances neural connections, reinforcing learning and long-term memory retention. CBL promotes active and experiential learning by encouraging learners to move beyond the four walls of the classroom to investigate, learn and apply knowledge in authentic settings.

Collaboration and Social Interaction

Research into the science of social decision-making reveals that different brain regions work together and connections are strengthened during social interaction. CBL works to capitalize on the positive elements of social interaction by aligning behind common challenges and emphasizing the value of working together.

Problem-Solving and Critical Thinking

Humans are, by nature, problem-solvers, and the ability to creatively solve problems is a critical element in the evolution of humans. CBL provides a forum and process for developing analytical thinking, cognitive flexibility, creativity and problem-solving skills.

Personalized Learning

Since we all have different experiences, our brains are "wired" differently. Therefore, creating learning environments where everyone is treated equally and expected to learn at the same pace makes little sense. CBL allows learners to explore topics of interest, builds personal ownership of the process, and emphasizes the importance of diverse perspectives and approaches.

Reflection and Metacognition

Reflection allows for active and dynamic internal processing, such as autobiographical memory retrieval, making connections, envisioning the future, and introspection. CBL places reflection and metacognition front and center in the learning process.

Emotion and Memory

Emotion is crucial in learning and memory consolidation. Emotional states activate our ability to make connections and focus our brain resources. By addressing real-world and meaningful challenges, CBL seeks to embrace emotions and emotional moments to enhance learning.

Stress

Moderate stress during learning material that is related and meaningful and then put into action enhances memory formation. The CBL framework provides a safe space to experience and manage stress in a controlled environment that models real-life experiences.

Sharing

We improve retention by working together to resolve challenges and sharing that knowledge with others. A central tenet of CBL is that we are all learners; the flip side is that we are all teachers. Throughout the challenge, the learners reflect on and document their experience so they can share the experience with others.

Technology

The emerging MBE science questions the effectiveness of widely practiced approaches to formal schooling. Instead of using technology to support or amplify traditional practices, technology should be an opportunity to reorganize learning to align with how our brains work. CBL is a framework that supports how we naturally learn outside the four walls of the classroom and learning in our post-school lives.

