



Brain-Based Teaching: Understanding How the Brain Learns

Category: Teaching and Learning

Workshop Overview

Following is a general overview of this workshop, including desired participant outcomes, an explanation of the workshop’s alignment with Learning Forward Standards for Professional Learning, and resources that are included in print and electronic form.

Category: Teaching and Learning

Duration: Full workshop – 3 hours

Desired Outcomes:

Participants will...

- Discover how brain research affects education.
- Identify how the brain’s three priorities affect learning.
- Identify and design instructional strategies based on brain research.

Learning Forward Standards for Professional Learning:

- **Learning Communities:** Occurs within learning communities committed to continuous improvement, collective responsibility, and goal alignment.
- **Resources:** Requires prioritizing, monitoring, and coordinating resources for educator learning.
- **Learning Designs:** Integrates theories, research, and models of human learning to achieve its intended outcomes.
- **Outcomes:** Aligns its outcomes with educator performance and student curriculum standards.

Resources in This Binder:

- Handouts
 - Workshop Agenda
 - Attendee Notes
 - 3-2-1 Evaluation Form
 - Certificate of Completion
- “Think About It” Exercise
- Ready, Set, Go Planning Activity





Topic Outline



Understanding the general flow of topics to be covered is an important part of giving a strong presentation. This allows the presenter(s) to lead effective group discussions and speak extemporaneously. Following are the main topics covered in this PowerPoint presentation. As you prepare to give the workshop, you may want to refer to this page often.

Main Topics:

1. Basic Concepts
2. The Brain's Three Priorities
3. Memory and Processing
4. Parallel Processing

Subtopics:

1. Basic Concepts

- a. Food for Thought
- b. Core Principles of Brain-Based Learning
- c. Brain Research and the Educator

2. The Brain's Three Priorities

- a. Overview
- b. Survival
- c. Emotional Well-Being
- d. Cognitive Learning

3. Memory and Processing

- a. Mnemonic Devices
- b. Additional Brain Facts
- c. Quick Review
- d. Types of Memory

4. Parallel Processing

- a. Introduction
- b. Interactive Environments
- c. Brain-Based Instructional Techniques



Presentation Outline

This outline is designed for you to see the PowerPoint presentation at a glance. Note that slide numbers and the approximate amount of time needed per slide are shown in the right two columns. **The times in bold print show the approximate total time needed for that topic, which includes the approximate times for the activities, shown in parentheses.** You might consider keeping this page within reach during the presentation.

Section of Presentation	Slide #	Timing (mins)
Getting Started		
Introduce self, co-teacher, participants	1-2	
Explain materials issued to participants		
Cover objectives (from Workshop Overview)	2	10
Topic 1 – Basic Concepts	3-10	15
Activity – Show of Hands	8-9	(10)
Topic 2 – The Brain’s Three Priorities	11-16	35
Discussion Point – Survival	13	(5)
Topic 3 – Memory and Processing	17-26	40
Activity – Memory Game	18-19	(10)
Break		
Topic 4 – Parallel Processing	27-34	60
Activity – Interactive Lessons	32	(20)
Discussion Point – Responding to Classroom Situations	33-34	(15)
Closing Thoughts	35-36	5
Total of 2 hours and 45 minutes (not including break)		

Helpful tip!

This workshop can be broken up into shorter sessions so that you can adapt the presentation according to your time constraints.



Slide 28

PDXPERT PARALLEL PROCESSING

Introduction

The brain can process many sensations simultaneously.

Educators can take advantage of this natural ability by immersing students in complex, interactive environments.

- Renate and Geoffrey Caine

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A slide titled "PDXPERT PARALLEL PROCESSING" with a sub-header "Introduction". The main text states "The brain can process many sensations simultaneously." and "Educators can take advantage of this natural ability by immersing students in complex, interactive environments." It is attributed to "- Renate and Geoffrey Caine". The logo "The MASTER Teacher Quality Support System" is in the bottom right corner.

One of the 12 principles Caine and Caine identified that can be applied to education is that the brain performs many functions simultaneously. They stress that interactive elements are essential to teaching students.

Students benefit the most when they learn to make connections between various aspects and topics of learning. The brain is naturally inclined to do so, and thus it is pedagogically sound to design instruction around this idea.

Slide 29

PDXPERT PARALLEL PROCESSING

Interactive Environments

- **Build a rainforest in the classroom.**
- **Use a compass to navigate around the school.**
- **Eat foreign foods while learning a new language.**

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One way to take advantage of the inclination toward parallel processing is to create and teach in interactive environments. This allows students to more fully engage with the learning process; they may be so engaged in “doing” activities within the interactive environment that they don’t even realize how much they are learning.

If possible, teachers might also consider taking classes on field trips to create an interactive learning environment.

Slide 32

PDXPERT
PARALLEL PROCESSING

How could you incorporate interactive elements into your own lesson plan?

Pair up with a partner and devise an idea for interactive instruction.

ACTIVITY: Interactive Lessons

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Activity: Interactive Lessons

Allow 20 minutes for this activity.

Instructions:

Have participants pair up with a partner. Ask participants to think of a new concept they will be teaching soon. Have partners work together to think of how they could create a complex, interactive environment that would allow parallel processing.

Give partners 10 minutes to think and write. Then have volunteers share their ideas with the whole group.

“Think About It” Exercise

Have staff complete this exercise to begin implementing what they learned during the workshop. Distribute this document to staff by attaching the file to the Next Day Follow-Up Email, or make copies for the staff.



1. Circle the instructional strategies in the list below that you have used in your classroom.

Brainstorming and discussion.

Movement.

Drawing and artwork.

Music, rhythm, and rhyme.

Field trips.

Project and problem-based instruction.

Games.

Role-play, drama, pantomime, and charades.

Humor.

Graphic organizers, semantic maps, and word webs.

Technology.

Manipulatives, experiments, labs, and models.

Visualization and guided imagery.

Work study or apprenticeships.

Mnemonic devices.

Writing or journaling.

Storytelling.

2. Are there any aspects of brain-based learning research that the presentation did not cover? What are they, and how do you propose to address these aspects?

3. Studies indicate that by interacting with complex real-world situations, the brain can function at its highest level. What opportunities can you provide to your students to connect their learning to real-world situations?
