

Brain-Based Ways We Think and Learn™

Course Description

Brain-Based Ways We Think and Learn™ is a PLS 3rd Learning course that provides experienced and beginner educators with a comprehensive understanding of the ways in which findings from current brain research can be applied to teaching and learning. Participants will engage in brain-based learning experiences that will take place in a brain-compatible learning environment as they examine the work of a wide variety of experts. Concepts include identifying how the brain receives information and creates meaning from it, understanding the characteristics of a brain-compatible learning environment, studying brain-based instructional strategies, and learning how to create an enriched classroom environment. Throughout the course, class members will also hone their understanding of how to apply four key cognitive processes (induction, deduction, analysis, and synthesis) to their lesson planning and instructional practice in a way that enhances the benefits of brain-compatible learning and further increases student comprehension and achievement.

Digital vs. Printed Course Materials

Please note:

- There is a **required** \$10 material fee that provides access to digital course materials.* (The digital materials are identical to the printed materials.)
- You have the **option** to purchase a printed manual (and other printed corresponding materials) for an additional \$30.

**After you register and your class is confirmed, you will receive a confirmation letter outlining how to access digital materials. If you choose digital materials (no printed materials), there may be a small file of pages you will need to print and bring to class. You will also need to access these digital materials during the course, so be prepared to bring your own device (B.Y.O.D.) to each class. If you pre-ordered a printed manual, it will be provided to you on the first day of class.*

Course Alignments

This PLS 3rd Learning course is aligned to Charlotte Danielson's **Framework for Teaching**:

Domain 1 – 1B and 1E

Domain 2 – 2B

Domain 3 – 3C, 3D, and 3E

Domain 4 – 4A, 4E, and 4F

Course Outcomes

Upon completion of this class, the learner will be able to:

1. Apply the findings in current brain research to teaching and learning strategies in the classroom.
2. Identify basic brain anatomy and explain the implications for the cognitive process of learning and memory.
3. Apply the elements of a brain-compatible, enriched environment to a classroom environment that supports learning.
4. Identify instructional strategies that are compatible with the brain's natural learning process, and incorporate these strategies into the design of curriculum and instruction.
5. Distinguish between deductive and inductive thinking.
6. Incorporate deductive-learning experiences into the design of curriculum and instruction.
7. Incorporate inductive-learning experiences into the design of curriculum and instruction.
8. Identify analysis thinking and incorporate analysis-learning experiences into the design of curriculum and instruction.
9. Identify synthesis thinking and incorporate synthesis-learning experiences into the design of curriculum and instruction.
10. Experience and evaluate the interconnectedness of the inductive-, deductive-, analysis-, and synthesis-thinking processes to real-world problem solving and cognition.
11. Design a lesson plan that enhances comprehension, retention, and achievement by incorporating the inductive-, deductive-, analysis-, and synthesis-thinking processes, as well as brain-compatible instructional strategies and an enriched environment.
12. Reflect on and continuously evaluate personal practice to actively seek out opportunities to grow professionally.
13. Generalize this course content to reflect how the diverse populations within classrooms have their needs met by the application of the skills, strategies, and knowledge gained in this course.
14. Work collaboratively to share knowledge, skills, and experiences, refine understanding of content, give and receive feedback, and improve expertise.

Institutional Outcomes

(To be listed here)

Required Text

Selected research articles, research summaries, and topical articles drawn from educational literature and the course manual.

Topical Outline

List of Concepts

Overview

Course overview, IDEAS icons (inductive reasoning, deductive reasoning, enriched environment, analysis, and synthesis), the Enhanced Learning graph, components of the course (research excerpts, energizers, state changes, reflections, celebrations, metacognition)

Compelling Why: The Brain and How It Works

Teaching in a brain-compatible way, research about brain-based learning environments, the "E" of IDEAS (Enriched Environment), the value of celebrations as a tool for enrichment, brain facts, brain-anatomy diagram, the triune brain, brain-mind learning principles, characteristics of brain-based learning, implications of brain research for teachers

Deduction

Introduction to the "D" of IDEAS (Deduction), examples of deductive thinking, deductive statements, deductive lesson plans, common generalities, metacognition, brain-based teaching strategies, research about deductive teaching and learning

Giving Directions in a Brain-Based Classroom

Formats for effective direction-giving; brain-based teaching strategies from the experts: emotions in learning, awareness and meaning, states for learning

Induction

Introduction to the "I" of IDEAS (Induction), teaching inductively, mental rehearsal (Imagineering, Visualization, Mental Imagery, Mental Rehearsal), creating a virtual field trip, examples of inductive learning in the classroom, debriefing inductive activities, research about inductive teaching and learning

Enhanced Learning

Elements of brain-based learning environments (absence of threat, meaningful content, choices, adequate processing time, enriched environment, collaboration, immediate feedback, and opportunities to achieve mastery), creating an enriched environment, six kinds of input (symbolic, secondhand, hands-on representation, hands-on real thing, immersion, being there)

Discovery Learning Centers

Discovery learning centers as strategies to implement deductive reasoning in the classroom; strategies to improve student memory

Analysis

Introduction to the "A" of IDEAS (Analysis), examples of analytical thinking, analysis skills, analysis activity using two levels of analysis (factual and metacognitive), classroom applications of analysis, reflections on brain-compatible learning environments

Synthesis and Patterns of Thinking

Research findings: patterns and meaning, word mapping, introduction to the "S" of IDEAS (Synthesis), problem-solving scenarios designed to metacognitively apply and analyze all course elements

Course Assessments and Links to Institutional Outcomes and Course Outcomes (75% of final grade)

Throughout the course, the learner will be assessed and evaluated on the completion of the following assessments. There are 13 assessments in this course, for a total of 100 points.

		Points	Correlations With Institutional Outcomes	Correlations With Course Outcomes
Assessment No. 1:	Excerpts from the Experts—The Brain	7		1, 2, 4
Assessment No. 2:	Classroom Application of Deduction	7		5, 6, 13
Assessment No. 3:	Excerpts from the Experts: Brain-Compatible Learning Environment	7		1, 3
Assessment No. 4:	Excerpts from the Experts: Brain-Based Teaching Strategies	7		1, 4, 13
Assessment No. 5:	My Brain-Based Teaching Strategies	3		1, 4, 13
Assessment No. 6:	Inductive Learning in the Classroom	7		5, 7, 13, 14
Assessment No. 7:	Reflections on a Brain-Compatible Learning Environment	7		1, 3, 4, 13, 14
Assessment No. 8:	Excerpts from the Experts—Memory	7		1, 5, 7
Assessment No. 9:	Excerpts from the Experts—Patterns and Meaning	7		1, 8
Assessment No. 10:	Classroom Application of Analysis	6		9, 13
Assessment No. 11:	My IDEAS Plan	15		5, 6, 7, 11, 13
Assessment No. 12:	Group Presentation	15		3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
Assessment No. 13:	Preparedness and Participation Memo	5		12, 14
Total		100		

Criteria specific to each assessment will be explained in conjunction with the instructional activities.

Course Project (25% of final grade)

As a requirement of this course, participants will complete a course project designed to strengthen professional practice and extend knowledge related to the specific content of the course. This project is divided into multiple grade activities to be completed throughout the term:

- topic identification and approval;
- topic research and article review;
- topic presentation and feedback survey development;
- presentation and feedback review; and
- project reflection.

Instructional Materials

Instructors and learners will use instructor-generated materials, learner-generated materials, print resources, and Web-based resources to facilitate learning.

Instructional Methodology

The instructional methodology of this course focuses on developing, enhancing, and improving the instructional expertise and pedagogical knowledge base of practicing educators. Strategies include instructor presentation of new content through short lecturebursts, active construction of knowledge during hands-on practice and problem solving, collaborative group work, personal reflection, in-class presentations and demonstrations, ad hoc and structured small-group or whole class discussion, analysis of assigned reading, and application of course content and skills to each participant's individual grade level, subject area, and classroom.

Evaluation

The evaluation of learner work will be based on the defined criteria for learner assessments, which will be processed with learners prior to their instructional activities and engagement with the student learning targets (outcomes). Grading is based solely on the evaluation of student learning targets and defined criteria for learner assessments.

Formative assessment of learning outcomes is conducted throughout the course, using a variety of means that include the following: completion of assessments; constructive contributions to class discussions (whole-class as well as small-group); sharing of valuable, pertinent, and/or applicable ideas and experiences; involvement in the inductive process; interactive journal entries with written instructor feedback; critical or reflective responses to assigned readings; oral discussions in a whole-class or small-group setting; active participation and general attentiveness to the instructor and others. It is expected that each student will contribute to the academic quality of the course.

Summative assessment includes the completion of a culminating assignment that requires the participant to synthesize class content, apply it to his or her specific teaching situation, and complete a reflective action plan for implementing the major components of content and skill acquired during the course.

Grading Policy

(To be listed here)

Absence and Tardy Policy

(To be listed)

PLS 3rd Learning's Academic Integrity Policy

PLS 3rd Learning expects absolute academic honesty and integrity from every course participant. The specific Academic Integrity and Honor Code Policies of our partner colleges and universities are embraced and enforced by PLS 3rd Learning instructors. The following are considered to be serious violations:

- Plagiarism: the use of another's ideas, data, or words without proper acknowledgement.
- Fabrication: the use of invented information or the falsification of research or other findings with the intent to deceive.
- Collusion: improper collaboration with another in preparing assignments or projects.
- Cheating: an act of deception by which a student misrepresents that he or she has mastered information on an academic exercise that he or she has not mastered.
- Academic Misconduct: tampering with grades, or taking part in obtaining or distributing any part of student work that is not his or her own.

Violation or suspected violation will be investigated and pursued according to specific college/university procedures.

Identity Authentication

The college/university, PLS 3rd Learning, and students share a joint responsibility to ensure that each student's contribution in an online course activity comes from that student alone. For the student, this responsibility has two parts:

1. Students are responsible for positively ensuring that every contribution to an online course created with the students' computer account is made by the student alone. Contributions covered under this policy include: written assignments; quiz and exam submissions; discussion forum postings; live participation in text-based chat sessions, phone conferences, and videoconferences. If a student allows another person to write or make any kind of submission to an online activity in the student's name, then this constitutes cheating and will be treated as a violation of academic honesty.
2. Students are responsible for ensuring the integrity of their computer account security by following the actions required of them by the PLS 3rd Learning Acceptable Use Policy. These actions include keeping passcodes private, updating passcodes when required by PLS 3rd Learning, and reporting breaches of the security policy to the IT Helpdesk.

Participant Professionalism Policy

As a courtesy to other participants and to your instructor, please refrain from text messaging, checking e-mail, or answering your cell phone during class time. Breaks are provided throughout the course so you can attend to personal matters. Using

your personal electronic devices during class time is distracting and disrupts instruction and participant communication and collaboration. If you have an emergency or justifiable reason to leave your cell phone turned on during class time, please make arrangements with the instructor prior to the beginning of class.

Alignments to Charlotte Danielson's *Framework for Teaching*

Each PLS 3rd Learning course is aligned to the components in Charlotte Danielson's *Framework for Teaching*. The alignments for this course are listed below.

DOMAIN 1: PLANNING AND PREPARATION

- 1B. Demonstrating Knowledge of Students
- 1E. Designing Coherent Instruction

DOMAIN 2: THE CLASSROOM ENVIRONMENT

- 2B. Establishing a Culture for Learning

DOMAIN 3: INSTRUCTION

- 3C. Engaging Students in Learning
- 3D. Using Assessment in Instruction
- 3E. Demonstrating Flexibility and Responsiveness

DOMAIN 4: PROFESSIONAL RESPONSIBILITIES

- 4A. Reflecting on Teaching
- 4E. Growing and Developing Professionally
- 4F. Showing Professionalism

Course Outcome Correlations With Model Core Teaching Standards (InTASC)

Course Outcomes

Standard 1: Learner Development

The teacher understands how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences.

**1, 2, 3, 4, 5, 6, 7,
8, 9, 10, 11**

Standard 2: Learning Differences

The teacher uses understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.

**1, 2, 3, 4, 6, 7, 8,
9, 10, 11, 13**

Standard 3: Learning Environments

The teacher works with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.

1, 2, 3, 4, 10, 11

Standard 4: Content Knowledge

The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content.

**1, 2, 3, 4, 5, 6, 7,
8, 9, 10, 11, 12,
13, 14**

Standard 5: Application of Content

The teacher understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.

**3, 4, 5, 6, 7, 8, 9,
10, 11, 13**

Standard 6: Assessment

The teacher understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making.

**1, 3, 4, 5, 6, 7, 8,
9, 10, 11**

Standard 7: Planning for Instruction

The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.

**1, 2, 3, 4, 5, 6, 7,
8, 9, 10, 11**

Standard 8: Instructional Strategies

The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.

**1, 3, 4, 5, 6, 7, 8,
9, 10, 11**

Standard 9: Professional Learning and Ethical Practice

The teacher engages in ongoing professional learning and uses evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner.

1, 12, 13, 14

Standard 10: Leadership and Collaboration

The teacher seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.

1, 12, 13, 14

The Interstate New Teacher Assessment and Support Consortium (InTASC) standards were developed by the Council of the Chief State School Officers and member states. Copies may be downloaded from the Council's website at <http://www.ccsso.org/intasc>

Council of Chief State School Officers. (2011, April). Interstate Teacher Assessment and Support Consortium (InTASC) Model Core Teaching Standards: A Resource for State Dialogue. Washington, DC: Author.

http://www.ccsso.org/Documents/2011/InTASC_Model_Core_Teaching_Standards_2011.pdf

Course Outcome Correlations With National Board for Professional Teaching (NBPTS) Five Core Propositions

Proposition 1: Teachers are Committed to Students and Their Learning.	Course Outcomes
NBCTs are dedicated to making knowledge accessible to all students. They believe all students can learn.	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14
They treat students equitably. They recognize the individual differences that distinguish their students from one another and they take account for these differences in their practice.	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14
NBCTs understand how students develop and learn.	1, 2, 3, 4, 6, 7, 8, 9, 11, 13
They respect the cultural and family differences students bring to their classroom.	1, 3, 4, 6, 7, 8, 9, 10, 11, 13
They are concerned with their students' self-concept, their motivation and the effects of learning on peer relationships.	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 13
NBCTs are also concerned with the development of character and civic responsibility.	1, 10, 11, 12, 13
Proposition 2: Teachers Know the Subjects They Teach and How to Teach Those Subjects to Students.	
NBCTs have mastery over the subject(s) they teach. They have a deep understanding of the history, structure and real-world applications of the subject.	1, 3, 4, 6, 7, 8, 9, 10, 11, 13, 14
They have skill and experience in teaching it, and they are very familiar with the skills gaps and preconceptions students may bring to the subject.	1, 3, 4, 6, 7, 8, 9, 13, 14
They are able to use diverse instructional strategies to teach for understanding.	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14
Proposition 3: Teachers are Responsible for Managing and Monitoring Student Learning.	
NBCTs deliver effective instruction. They move fluently through a range of instructional techniques, keeping students motivated, engaged and focused.	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

They know how to engage students to ensure a disciplined learning environment, and how to organize instruction to meet instructional goals.

**1, 2, 3, 4, 5, 6, 7, 8, 9,
10, 11, 12, 13, 14**

NBCTs know how to assess the progress of individual students as well as the class as a whole.

**1, 3, 5, 6, 7, 8, 9, 10,
11, 12, 13, 14**

They use multiple methods for measuring student growth and understanding, and they can clearly explain student performance to parents.

**1, 3, 4, 5, 6, 7, 8, 9,
10, 11, 12, 13, 14**

Proposition 4: Teachers Think Systematically about Their Practice and Learn from Experience.

NBCTs model what it means to be an educated person - they read, they question, they create and they are willing to try new things.

1, 3, 10, 11, 12, 14

They are familiar with learning theories and instructional strategies and stay abreast of current issues in American education.

**1, 2, 3, 4, 6, 7, 8, 9,
10, 11, 12, 13**

They critically examine their practice on a regular basis to deepen knowledge, expand their repertoire of skills, and incorporate new findings into their practice.

**1, 2, 3, 4, 6, 7, 8, 9,
10, 11, 13, 14**

Proposition 5: Teachers are Members of Learning Communities.

NBCTs collaborate with others to improve student learning.

**1, 2, 3, 4, 6, 7, 8, 9,
10, 11, 13, 14**

They are leaders and actively know how to seek and build partnerships with community groups and businesses.

4, 10, 11, 12, 13, 14

They work with other professionals on instructional policy, curriculum development and staff development.

**1, 3, 4, 6, 7, 8, 9, 10,
11, 12, 13, 14**

They can evaluate school progress and the allocation of resources in order to meet state and local education objectives.

1, 10, 13, 14

They know how to work collaboratively with parents to engage them productively in the work of the school.

1, 3, 4, 10, 11, 13, 14

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