

COURSE SYLLABUS

Course: Differentiation and the Brain

Presenters: David Sousa and Carol Ann Tomlinson

Hours: 45

Required eBook: *Differentiation and the Brain: How Neuroscience Supports the Learner-Friendly Classroom* (Sousa and Tomlinson, Solution Tree Press, 2011)

Course Overview

Research is revealing so much about how the brain learns that educators can no longer ignore the implications of these discoveries for educational practice. Teachers need to find ways to use this brain research to develop strategies that will allow students to succeed in classrooms with a diverse mix of student readiness, interest, and learning profile. This course, led by expert presenters Carol Ann Tomlinson and David A. Sousa, offers a model for teachers for setting up a differentiated and brain-friendly classroom. Through workshop and classroom footage and interviews with practitioners, participants will explore how teachers' and students' mindsets affect differentiation and learn how to develop learning environments most conducive to differentiation. They will study the major components of a brain-friendly quality curriculum; explore effective practices for assessing student achievement to inform instruction; learn how to respond to student readiness, interests, and learning profiles; and investigate effective management techniques for the differentiated classroom.

Presenters' Bios

David A. Sousa, Ed.D., is an international consultant in educational neuroscience and author of more than a dozen books that suggest ways that educators and parents can translate current brain research into strategies for improving learning. Dr. Sousa has edited science books and published dozens of articles in leading journals on staff development, science education, and educational research. His most popular books for educators include *How the Brain Learns*, third edition; *How the Special Needs Brain Learns*, second edition; *How the Gifted Brain Learns*; *How the Brain Learns to Read*; *How the Brain Influences Behavior*; *How the Brain Learns Mathematics*, which was selected by the Independent Publishers' Association as one of the best professional development books of 2008; *The Leadership Brain*; and *Mind, Brain, and Education: Neuroscience Implications for the Classroom*.

Dr. Sousa is past president of the National Staff Development Council. He has received numerous awards, including the Distinguished Alumni Award and an honorary doctorate from Massachusetts State College at Bridgewater and an honorary doctorate from Gratz College in Philadelphia. He has a master of arts teaching degree in science from Harvard University and a doctorate from Rutgers University. He has taught senior high school science and has served as a K-12 director of science and a district superintendent in New Jersey schools. He has also been an adjunct professor of education at Seton Hall University and a visiting lecturer at Rutgers University.



Carol Ann Tomlinson, Ed.D. is a highly esteemed consultant, trainer, presenter, and author. She works with teachers through the United States and internationally to develop more responsive, heterogeneous classrooms. Her education experience includes twenty-one years as a public school teacher and twelve years as a program administrator of special services for struggling and advanced learners. Recognized by the state of Virginia as Teacher of the year, Dr. Tomlinson has focused throughout her career on curriculum and instruction for struggling and advanced learners and encouraging creative and critical thinking in the classroom. She is a faculty member at the University of Virginia's Curry School of Education, where she is the William Clary Parrish Jr. Professor and chair of the Department of Educational Leadership, Foundations, and Policy. Dr. Tomlinson codirects the university's Institutes on Academic Diversity. She was named Outstanding Professor in the Curry School of Education in 2004 and received an All University Teaching Award in 2008.

Dr. Tomlinson is a reviewer for eight journals and the author of more than two hundred articles, book chapters, books, and professional development materials. Among her books on differentiation are: *How to Differentiate Instruction in Mixed-Ability Classrooms*, *The Differentiated Classroom: Responding to the Needs of All Learners*, *Fulfilling the Promise of the Differentiated Classroom: Strategies and Tools for Responsive Teaching*, *Integrating Differentiated Instruction and Understanding by Design: Connecting Content and Kids* (with Jay McTighe), and *Leading and Managing a Differentiated Classroom* (with Marcia Imbeau). Dr. Tomlinson's master's degree and doctor of education degree come from the University of Virginia.

Course Objectives

After completing this course, educators will know:

- Mindset's effects on student learning
- Environment's effects on learning
- High quality, brain-friendly curriculum
- Effective assessment strategies
- Differentiation strategies to meet the needs of students' different readiness, interests, and learning profiles
- Effective management techniques for the differentiated classroom

Student Learning Outcomes

After completing this course, educators will apply the following skills:

- Embrace a growth mindset to affect student achievement
- Create a cooperative classroom environment
- Develop high quality curriculum
- Employ assessment strategies for, as, and of student learning
- Differentiate for readiness, interest, and learning profile
- Lead and manage their differentiated classrooms



Unit 1: Mindset, Learning Environment, and Differentiation

In this unit, Dr. Tomlinson and Dr. Sousa explore the notion that the learning environment impacts everything else that goes on in the classroom either positively or negatively; as Dr. Sousa says, there are no neutral classrooms. In this context, the presenters and workshop participants consider students' social and emotional needs; the effects of the teacher's growth or a fixed mindset on the student's mindset and, therefore, his or her growth or achievement; and the importance of making personal connections with students.

Unit Objectives

After completing this unit, educators will know:

- A productive definition of differentiated instruction
- Classroom environment's impact on student learning
- Fixed vs. growth mindsets and their effects on student learning

Student Learning Outcomes

After completing this unit, educators will apply the following skills:

- Create classroom environments that support student learning
- Impact student learning by maintaining a growth mindset

eBook: Chapters 1 & 2

Participants read Chapter 1, "The Nonnegotiables of Effective Differentiation," and Chapter 2, "Mindset, Learning Environment, and Differentiation," in their eBook, and respond to reflection prompts.

Unit 2: A Community of Learners

As Dr. Sousa notes, teachers are brain changers, not only in the intellectual work they facilitate for students, but the emotional and social work as well. In this unit, the presenters and workshop participants explore the impact of emotion on student learning, how to forge connections with students, and how to engage them socially to construct a community of learners.

Unit Objectives

After completing this unit, educators will know:

- The emotional and social climate's effects on student learning
- Strategies for forging connections with students



- The dangers of stereotype threat

Student Learning Outcomes

After completing this unit, educators will apply the following skills:

- Meet students' emotional and social needs in the classroom
- Forge connections with their students that facilitate learning
- Employ flexible grouping strategies that contribute to a community of learners

Unit 3: Sense and Meaning

Sample lesson plans anchor this unit's consideration of such subjects as what constitutes 21st century learning, how to enable shifts of new information from students' short-term to their long-term memory, how to emphasize the meaning or relevance of content, and how to orient students toward learning.

Unit Objectives

After completing this unit, educators will know:

- 21st century students' needs
- The process the brain undergoes to shift knowledge from short- to long-term memory
- The importance of assisting students in finding meaning in content
- How to successfully orient students toward learning

Student Learning Outcomes

After completing this unit, educators will apply the following skills:

- Facilitate the shift of knowledge from short- to long-term memory
- Highlight sense and meaning in relation to new content
- Orient students toward learning

eBook: Chapter 3

Participants read Chapter 3, "Curriculum and Differentiation," in their eBook and respond to reflection prompts.

Unit 4: Curriculum and Differentiation

When teachers differentiate high quality curriculum, the quality of their differentiation and the prospects for student learning are stronger. Dr. Tomlinson specifies that high quality curriculum includes clear KUDs



(know, understand, do), respectful tasks, a plan to engage learners, and “teaching up.” Dr. Sousa adds that curriculum races are not brain-friendly. Time must be allowed for students to find sense and meaning in what they are learning in order to remember it.

Unit Objectives

After completing this unit, educators will know:

- What constitutes high quality curricula
- What constitutes high quality differentiation
- How memory systems work
- Strategies to effect student engagement
- How to foreground essential knowledge, skills, and understanding
- Why to “teach up”
- Respectful tasks

Student Learning Outcomes

After completing this unit, educators will apply the following skills:

- Create high quality curricula
- Plan and execute high quality differentiation
- Help students transfer new knowledge, skills, and understanding to long-term memory
- Effect student engagement
- Detail essential knowledge, skills, and understandings
- Translate standards into essential knowledge, skills, and understanding
- Challenge all students
- Construct respectful differentiated tasks

eBook: Chapter 4

Participants read Chapter 4, “Classroom Assessment and Differentiation,” in their eBook and respond to reflection prompts.

Unit 5: Classroom Assessment and Differentiation

In this unit, Dr. Tomlinson and Dr. Sousa consider the role of assessment in a differentiated classroom. Assessment is a process, not an instrument, they argue, and should be ongoing as assessment for instruction, as instruction, and of instruction. They explore the role of feedback vs. grades and provide methods for reducing students’ anxiety, which inhibits memory recall.

Unit Objectives



After completing this unit, educators will know:

- When, why, and how to assess students' readiness, interest, and learning profiles
- When, why, and how to assess students' work
- The role of pre-, formative, and summative assessment
- The importance of ongoing feedback
- The importance of facilitating high quality processing through assessment
- How to minimize students' stress in relation to assessment

Student Learning Outcomes

After completing this unit, educators will apply the following skills:

- Engage in ongoing practices that promote assessment for, as, and of student learning
- Provide productive feedback to students
- Use assessment to facilitate high quality processing tasks
- Diminish students' assessment anxiety

eBook: Chapters 5, 6 & 7

Participants read Chapter 5, "Differentiating in Response to Student Readiness," Chapter 6, "Differentiating in Response to Student Interest," and Chapter 7, "Differentiating in Response to Student Learning Profile," in their eBook and respond to reflection prompts.

Unit 6: Differentiating in Response to Student Readiness, Interest, and Learning Profile

Differentiated instruction tends to students' varied readiness, interests, and learning profiles. In this unit, Dr. Tomlinson details what those three terms mean and offers examples of how to meet those needs. Dr. Sousa elaborates on students' need for challenge and intrinsic rewards, as well as the need to feel a sense of belonging and safety.

Unit Objectives

After completing this unit, educators will know:

- Grouping strategies that facilitate differentiation and learning
- The relationships of differentiation to student growth, motivation, and efficiency
- Strategies for productive differentiation for readiness, interest, and learning profile
- The role of dopamine in student learning
- The functions of multiple-modality projects

Student Learning Outcomes



After completing this unit, educators will apply the following skills:

- Group students to facilitate learning
- Differentiate to effect student growth, motivation, and efficiency
- Differentiate for students' readiness, interests, and learning profiles
- Provide more opportunities for students' success
- Employ multiple-modality projects to engage different learning profiles

eBook: Chapter 8

Participants read Chapter 8, "Managing a Differentiated Classroom," in their eBook and respond to reflection prompts.

Unit 7: Leading and Managing a Differentiated Classroom

A differentiated classroom requires flexible classroom management from teachers, which in turn supports high level learning. Dr. Tomlinson compares teachers as leaders to teachers as managers and the role each plays, while Dr. Sousa describes students' need for order and routine and the opportunity to take risks and make mistakes.

Unit Objectives

After completing this unit, educators will know:

- Different learning environments and their effects on student learning
- Teachers as managers vs. teachers as leaders
- The importance of routine
- The importance of an environment conducive to risk-taking

Student Learning Outcomes

After completing this unit, educators will apply the following skills:

- Distinguish between dysfunctional, adequate, orderly, orderly/restrictive, and orderly/enabling learning environments
- Facilitate an orderly/enabling environment through differentiated instruction
- Embrace their roles as both managers and leaders
- Establish routines that enable learning
- Construct a classroom environment conducive to risk-taking



Methods of Instruction

- Videos (presentations consisting of lecture, interviews, and classroom footage)
- eBook (chapters and exercises from the eBook)
- Reflection questions (open-ended questions at intervals throughout the video presentations where participants are asked to reflect on the course content, their own practice, and their intentions for their practice)
- Quizzes (selected-response quizzes to assess understanding of the video presentations and eBook content)

Plagiarism Policy

KDS recognizes plagiarism as a serious academic offense. Plagiarism is the passing off of someone else's work as one's own and includes failing to cite sources for others' ideas, copying material from books or the Internet (including lesson plans and rubrics), and handing in work written by someone other than the participant. Plagiarism will result in a failing grade and may have additional consequences. For more information about plagiarism and guidelines for appropriate citation, consult plagiarism.org.

Passing Requirements:

In order to complete the requirements of the course, the participant must complete all course work (e.g., reflections, quizzes, and any midterm and/or final), including watching all videos and participating in all discussion forums. We do not award partial credit.

- Quizzes 40% of total grade
- Reflection Questions 60% of total grade

KDS Self-Assessment Rubric:

	Distinguished	Proficient	Basic	Unsatisfactory
Quizzes	100% Correct	80% Correct	60% Correct	0-40% Correct

	Distinguished	Proficient	Basic	Unsatisfactory
Reflection Questions	Participant provides rich detail from the content of the course in his or her responses Participant makes his or her responses to the questions personally meaningful	Participant includes appropriate content from the course in his or her responses Participant makes thoughtful comments in direct response to the questions	Participant includes some content from the course, usually appropriate, in his or her responses Participant answers the questions directly, not always fully	Participant includes no content from the course in his or her responses Participant does not address the questions posed