

# Differentiation in the Mathematics Classroom

GRADES 6–12

GRADUATE CREDIT: 3 SEMESTER HOURS

Students in middle school or high school math classes often exhibit a wide range of skills, learning styles, and attitudes toward math. Through this course, educators address the challenge of bringing students of diverse abilities and needs to an equal level of competence, taking into account the cumulative nature of mathematics proficiency. Educators learn how to apply grade-appropriate, differentiated instruction methods, thus providing students with multiple paths to understanding content. Through these strategies, they learn to help students to master fundamental skills and concepts, internalize content, visualize key concepts, and collaborate to solve problems.

*This course is designed for grades 6–12 mathematics teachers, lead teachers, and curriculum coordinators.*

## COURSE TOPICS

- Principles of differentiation
- Getting to know your students
- Differentiation strategies
- Differentiation with technology
- Managing the differentiated classroom
- Mastery strategies
- Understanding strategies
- Self-expressive strategies
- Interpersonal strategies
- Multi-style strategies

## COURSE OUTCOMES

By the end of the course, educators will:

- Analyze self-efficacy with differentiating in the mathematics classroom.
- Analyze current beliefs, understandings, and challenges with regard to differentiated instruction.
- Analyze personal math history.
- Evaluate strategies, tools, and resources for differentiating instruction by student readiness, interest, and learning profile.
- Evaluate the potential of games, Web 2.0 tools, and handheld devices to support the differentiation of instruction by readiness, interest, and learning profile.
- Design learning experiences based on Mastery strategies to support learning objectives, Common Core standards, state standards, and/or district curriculum.
- Design learning experiences based on Understanding strategies to support learning objectives, Common Core standards, state standards, and/or district curriculum.
- Design learning experiences based on Self-expressive strategies to support learning objectives, Common Core standards, state standards, and/or district curriculum.
- Design learning experiences based on Interpersonal strategies to support learning objectives, Common Core standards, state standards, and/or district curriculum.
- Develop learning activities that incorporate multi-style strategies.

## DIFFERENTIATION IN THE MATHEMATICS CLASSROOM

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### METHODS OF ASSESSMENT

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This course provides numerous opportunities to apply research-based concepts and theory to practical teaching situations. Assessment is conducted in the following ways:

- **Assignments** help educators explore concepts and make connections between the content and their teaching practice. Point values for assignments are indicated next to the title of each assignment. Submission guidelines are provided within the context of each assignment.
- **Study Team Discussions (print & DVD) or Discussion Summaries (online)** allow educators to share ideas about the course content with other teachers, then ask them to analyze and summarize the discussion and then describe how their understanding of the topic has been enhanced or expanded.
- **Check Your Understanding** questions provide educators with instant feedback on their understanding of the course materials.
- The **Final Reflection** requires educators to synthesize the content and reflect on their key learnings throughout the course.

Course texts, websites, and journal articles help facilitate learning and transfer theory into practice. Video programs feature interviews with nationally recognized education experts. Classroom scenes provide a view into the classrooms of master teachers who demonstrate the strategies taught in the course. This course is offered in two distance-learning formats: print & DVD and online. Educators select one format when they enroll.

### PRINT & DVD FORMAT

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Educators in the print & DVD version of the course receive printed materials to facilitate their learning. This version of the course requires educators to form a study team. The educator must have at least one study partner or peer coach, preferably another educator, to complete activities, engage in discussion, and seek feedback. It is not necessary that the study partner be enrolled in the course. Educators enrolled in the print & DVD version should have Internet access in order to connect with the many websites that are offered as learning resources. Assignments are submitted via email. The print & DVD course includes:

- The print study guide:
  - *Differentiation in the Mathematics Classroom*
- The DVD:
  - Laureate Education, Inc. (Executive Producer). (2011). *Differentiation in the mathematics classroom*. Baltimore: Executive Producer.
- The course textbook(s):
  - Tomlinson, C. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.
  - Thomas, E. J., & Brunsting, J. R. (2010). *Styles and strategies for teaching high school mathematics*. Thousand Oaks, CA: Corwin Press, **or** Thomas, E. J., & Brunsting, J. R. (2010). *Styles and strategies for teaching middle school mathematics*. Thousand Oaks, CA: Corwin Press, according to the grade level you teach.
- The other required readings

### ONLINE FORMAT

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Educators in the online version of the course access the course content via an online classroom. Educators are required to participate in virtual discussions with fellow educators via a discussion board. The course textbook is shipped to educators, but the video programs and other resources are available within the online classroom. Assignments are submitted through the online classroom. The online course includes:

- Access to the online classroom for:
  - *Differentiation in the Mathematics Classroom*
- Access to the video programs in the online classroom as well as a backup DVD:
  - Laureate Education, Inc. (Executive Producer). (2011). *Differentiation in the mathematics classroom*. Baltimore: Executive Producer.
- The course textbook(s):
  - Tomlinson, C. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.
  - Thomas, E. J., & Brunsting, J. R. (2010). *Styles and strategies for teaching high school mathematics*. Thousand Oaks, CA: Corwin Press, **or** Thomas, E. J., & Brunsting, J. R. (2010). *Styles and strategies for teaching middle school mathematics*. Thousand Oaks, CA: Corwin Press, according to the grade level you teach.
- Access to the other required readings

## DIFFERENTIATION IN THE MATHEMATICS CLASSROOM

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### SYSTEM REQUIREMENTS FOR ONLINE COURSE FORMAT:

- Operating system for PC: Windows® XP, Windows Vista®, or Windows® 7
- Operating system for Mac®: OS X or higher
- Processor: 1 GHz, 32/64 bit or higher
- Memory: Minimum 512 MB of RAM; 1 GB recommended
- Browser: Microsoft Internet Explorer® 6.0 or higher; Firefox® 3.6 (also for Mac®: Apple® Safari® 4 or higher)
- Internet connection: Broadband (DSL, cable modem, or similar) required
- Software: Microsoft Word®, Adobe® Flash® Player 7 or higher (free), Adobe® Acrobat® Reader® version 8 or higher (free)
- Monitor resolution: 1280 x 800 pixels or higher

**Note:** If you are using a Macintosh®, please be sure to download Mozilla® Firefox® 3.6. It's free, and the download should take only a few minutes at [www.mozilla.org](http://www.mozilla.org).

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## EDUCATION EXPERTS

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### Edward J. Thomas, Ph.D.

Dr. Edward Thomas is founder and president of Dimension 2000, a professional development organization that works with teachers of mathematics. He has over 30 years of experience as a mathematics teacher at the middle school, high school, district, and undergraduate levels. Dr. Thomas has authored several articles and books on mathematics instruction and has developed a number of educational games for the mathematics classroom. He was the co-chair of the Northwest Georgia P–16 council, an initiative designed to improve teacher quality and student achievement from preschool through the undergraduate level. Dr. Thomas is an experienced mathematics consultant who has conducted workshops for schools throughout the country. He has also presented at state, regional, and national conferences for the National Council of Teachers of Mathematics (NCTM), Georgia Council of Teachers of Mathematics (GCTM), Southern Regional Education Board (SREB), Georgia Association of Educational Leaders (GAEL), Georgia Middle School Association (GMSA), and the Association for Supervision and Curriculum Development (ASCD).

### Carol Ann Tomlinson, Ph.D.

Dr. Carol Ann Tomlinson is the William Clay Parrish Jr. Professor and Chair of Educational Leadership, Foundations, and Policy at the University of Virginia's Curry School of Education, and co-director of the university's Institutes on Academic Diversity. Her special interests have included curriculum and instruction for struggling learners and advanced learners, effective instruction in heterogeneous settings, and encouraging creative and critical thinking in the classroom. Dr. Tomlinson is a prominent expert on the concept of differentiation and provides professional development throughout the United States and abroad. She is the author of more than 100 articles, books, book chapters, and other professional development materials, including the textbook *How to Differentiate Instruction in Mixed-Ability Classrooms*.

### Grace E. Smith, Ph.D.

Dr. Grace Smith received a Ph.D. in Instructional (Educational) Technology from Wayne State University. Her experience includes 10 years as a teacher and reading specialist in public and private schools and eight years as a technology curriculum coordinator for a school district of 10,000 students. She has co-authored texts as *Differentiating Instruction with Technology in Middle School Classrooms* and *Differentiating Instruction with Technology in K–5 Classrooms*, and presented at numerous conferences and online. Dr. Smith has also worked as the director of continuing professional education at a business college, as an educational consultant, and as an adjunct professor at two universities, where she taught writing and technology courses.

### Stephanie Throne, Ph.D.

Dr. Stephanie Throne earned her Ph.D. in Romance Languages and Literature from the University of Michigan at Ann Arbor and has been a professor of Spanish and German. She has co-authored texts including *Differentiating Instruction with Technology in Middle School Classrooms*, *Differentiating Instruction with Technology in K–5 Classrooms* and a Spanish text for upper-elementary and middle school students. She has presented at many conferences, workshops and webinars and has served as a faculty consultant for the Educational Testing Service for a decade. Dr. Throne is a frequent editor/proofreader for several publications.



### ABOUT CANTER

Canter, a subsidiary of Laureate Education, Inc., is committed to serving the educational community with high-quality, graduate-level courses that blend research-based theory with practical strategies. Canter began with one groundbreaking guide on managing behavior in the classroom and, more than 35 years later, has helped more than 300,000 educators address the most critical issues in education while advancing their careers.

### FOR MORE INFORMATION

For more information about Canter graduate-level courses, visit [www.Canter.net](http://www.Canter.net) or call 1-800-669-9011.

### ABOUT OUR PARTNERSHIP

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Canter offers its courses in partnership with Walden University, allowing you to benefit from Canter's quality curriculum in a self-paced format, while earning graduate credit from a leading accredited university.\* The course curriculum is developed and designed by Canter in collaboration with national education experts, while graduate credit is granted through Walden University, which assesses student work. Credit may be applicable for certification renewal and/or salary advancement.<sup>†</sup> Course credit may be transferable with prior approval from the university providing your advanced degree or planned program.

### Walden University

The Richard W. Riley College of Education and Leadership at Walden University is a **National Council for Accreditation of Teacher Education (NCATE)**–accredited college dedicated to enhancing educator effectiveness. As a recognized standard of excellence in professional education for the preparation of teachers, administrators, and other pre-K–12 school professionals, NCATE accreditation ensures the college has met rigorous national standards set by the profession and members of the public.

The college, named for the former Secretary of the U.S. Department of Education, was identified by *U.S. News & World Report* as having the largest online graduate program in education by enrollment (May 2010). Walden students were awarded the fourth most TEACH Grants to students nationwide in 2010–2011, according to the U.S. Department of Education. The choice of more than 53,000 students and alumni, including more than 80 state teachers of the year, the college is also a proud partner of the National Education Association (NEA) Academy and a year-round sponsor of the National Association for the Education of Young Children (NAEYC).

Walden University is accredited by The Higher Learning Commission and a member of the North Central Association, [www.ncahlc.org](http://www.ncahlc.org). Canter and Walden University are both subsidiaries of Laureate Education, Inc.

\*Prospective Washington state students are advised to contact the Office of the Superintendent of Public Instruction at 1-360-725-6275 or [prof.educ@k12.wa.us](mailto:prof.educ@k12.wa.us) to determine whether Walden's programs in the field of education are approved for teacher certification or endorsements in Washington state. Additionally, teachers are advised to contact their individual school district as to whether this program may qualify for salary advancement.

<sup>†</sup>It is each student's responsibility to check with his or her state/district and evaluate and understand any requirements related to the use of individual courses for any purpose.