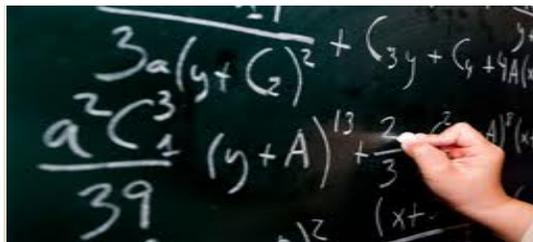


# Planning Checklist

- ❑ **Begin with data to make instructional decisions.** Use tools such as the MSTAR Universal Screener and Diagnostic Assessment to determine how to differentiate content to increase student learning.
- ❑ **Analyze mathematics standards.** Choose a skill that is conceptual in nature. What is the essential question(s) and understanding?
- ❑ **Develop the content.** What concepts, facts, and vocabulary do students need to know? What content will stretch their minds?
- ❑ **Engage the students.** Make connections between past and present learning and students' interests.
- ❑ **Explore.** How will students develop their conceptual understanding? Will students actively learn through large group or small group instruction? Will they be given a real-world problem to solve, inquiry, or a project?
- ❑ **Explain.** How will students verbalize, write, and explain their conceptual understanding?
- ❑ **Elaborate.** Are there additional activities that encourage students to think beyond the grade level skill?
- ❑ **Evaluate.** How will you assess understanding of key concepts?



## Works Consulted

Gavin, M.K, Moylan, K.G. (2012). 7 Steps to High-End Learning. *Teaching Children Mathematics* 19(3), 184-192.

Jobrack, B. *The 5E instructional Model: engage, explore, explain, evaluate, extend.* Retrieved from [https://www.mheonline.com/secondary-science/pdf/5e\\_lesson\\_cycle.pdf](https://www.mheonline.com/secondary-science/pdf/5e_lesson_cycle.pdf)

Lawrence-Brown, D. (2004). Differentiation Instruction: Inclusive Strategies for Standards-Based Learning that Benefit the Whole Class. *American Secondary Education* 32(3), 34-63

Tomlinson, C.A. (1999). Mapping a Route Toward Differentiated Instruction. *Educational Leadership* 57(1), 12-16

Tomlinson, C.A. (1999). *The Differentiated Classroom: Responding to the Needs of all Learners.* Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C.A., Brighton, C., Hertberg, H., Callahan, C.M., Moon, T.R., Brimijoin, K., Conover, L.A., & Reynolds, T. (2003). Differentiating Instruction in Response to Student Readiness, Interest, and Learning Profile in Academically Diverse Classrooms: *A Review of Literature.* *Journal for the Education of the Gifted* 27(3), 119-145

Texas Education Agency (2012). *MSTAR Implementation Tools Academy.* Austin: Texas Education Agency.

Wistrom, E. (2011). *Learn to Differentiate Instruction in Math.* Retrieved from <http://www.brighthubeducation.com/teaching-methods-tips/70728-differentiated-instruction-in-math-class-tips-to-reach-all-levels/>

# Math in Many Ways: Using MSTAR Data to Differentiate Instruction

## SMU Research in Mathematics Education

Dawn Woods, Deni  
Basaraba, Erica Simon,  
Savannah Hill, & Beth  
Richardson



**SMU** | ANNETTE CALDWELL SIMMONS  
SCHOOL OF EDUCATION  
& HUMAN DEVELOPMENT

[www.smu.edu/RME](http://www.smu.edu/RME)

Email: [RME@smu.edu](mailto:RME@smu.edu)



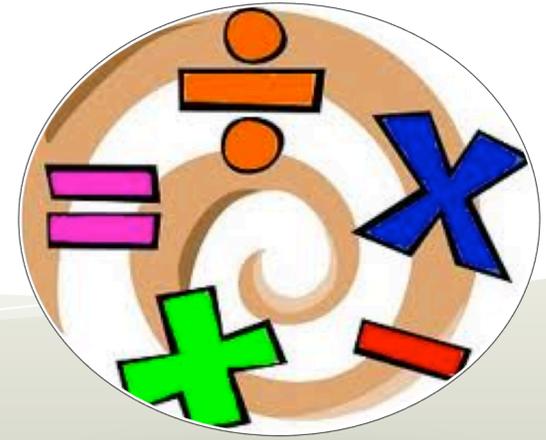
@RME\_SMU



SMU Research in Mathematics  
Education- RME

# Differentiation

Differentiation develops deep mathematical understanding while accommodating a diverse range of student abilities, interests, and prior experiences. Differentiation is the process of teaching that maximizes student growth through curricula that are individualized in content, process, and/or products. This process enables teachers to meet each student where they are thereby strengthening their learning process.



## Differentiation Strategies

### Content Strategies

Drive content selection by skill and interest.

- Use MSTAR Universal Screener, the MSTAR Diagnostic Assessment, and MSTAR Professional Development Trainings to make data a part of your ongoing cycle of instructional improvement.
- Adjust content to meet students' needs in conjunction with the RtI support system.
- Adjust content to meet the needs of gifted and talented students by compacting curriculum to move students beyond the curriculum that they have already mastered.

### Process Strategies

Determine how a student comes to understand and assimilate facts, concepts, and skills and teach him/her in a way to grow understanding.

- Teach to incorporate a variety of learning styles.
- Flip your classroom!
- Apply strategies such as Cognitively Guided Instructional Theory to assess students' thinking to design problems that will develop students' skills.
- Enable students to self-pace or self-direct learning of content, providing the best fit for students' learning style.

### Product Strategies

Students demonstrate mastery by creating products that best fit their learning style and level of ability. Products could include:

- Creating a model or representation
- Presenting a report or teaching a lesson
- Identifying and extending a pattern
- Classifying and ordering
- Making inferences and drawing conclusions
- Interpreting data
- Creating and testing a hypothesis
- Journaling a process