Discover how differentiated instruction can be implemented in your classroom
Understand how data from Middle School Students in Texas (MSTAR) assessment system can be used to help differentiate instruction

Goals of Workshop

Why Differentiate?

What is Differentiation?

Differentiation can...

Engage the learner by expanding upon their interests
Dignify the learner
  - Respect learning and cultural differences
  - Provide targeted instructional support to address individual students learning needs at the students' readiness level
Challenge teachers to create rigorous and relevant lessons
  - Strategize to adjust content, process, and/or product to meet individual learning needs and preferences

Pedagogical approach centered on students
  - Interest
  - Readiness level
  - Learner preference
Modification of curriculum content, process, and products

(Stradling and Saunder, 1993)
Differentiate by Content

- Content selection focuses on readiness levels
  - Enrich content to meet the needs of gifted and talented students
  - Adjust content to meet students’ needs in conjunction with the RtI support system
- Content selection can be driven by interest
- Remember, one size does not fit all!

Differentiate by Process

- Incorporate student preferences and learning styles
  - Determine how a student comes to understand and assimilate facts, concepts, and skills
  - Provide small groups for explicit, direct instruction
- Differentiation by process could look like
  - Flipping your classroom
  - Project Based Learning
  - Cognitively Guided Instructional Theory
  - Self-pace or self-directed learning of content

Differentiate by Product

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

Summing Up: Differentiation in Math

- Differentiation can help to develop 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 Checklist

- Begin with data to make instructional decisions
- Analyze mathematics standards
- Develop the content
- Engage the students
- Explore
- Explain
- Elaborate
- Evaluate
Step 1: Data

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.

Texas Algebra Ready Initiative

Goal:

Algebra Readiness

ESTAR ↔ EOC

MSTAR Initiatives

Professional Development

MSTAR Initiatives

MSTAR Universal Screener
MSTAR Diagnostic Assessment

MSTAR Professional Development

Evaluation (K-4)

MSTAR Academy I: Fraction/Decimal Relationships and Operations
MSTAR Academy I: Review and Needs Assessment
MSTAR Academy I: Lesson Study Model Implementation
More about Tier II for the Math Learner
Addressing the G/T Math Learner through RtI
Addressing the College and Career Readiness Standards in Math

Additional Online MSTAR Courses

MSTAR Introduction: An Executive Summary
MSTAR Academy I: Fraction/Decimal Relationships and Operations
MSTAR Academy I: Review and Needs Assessment
MSTAR Academy I: Lesson Study Model Implementation
More about Tier II for the Math Learner
Addressing the G/T Math Learner through RtI
Addressing the College and Career Readiness Standards in Math

MSTAR Initiatives

Professional Development

MSTAR Initiatives

MSTAR Universal Screener
MSTAR Diagnostic Assessment
Purpose of the MSTAR Universal Screener

Identify students who are at-risk for struggling with algebra-related core instruction
- Determines IF interventions are needed
- Determines DEGREE OF INTENSITY of the intervention needed
- Monitors students’ RISK STATUS
Not intended to provide diagnostic information
Guides instructional decisions
Designed to be administered in fall, winter, and spring

Course: MSTAR Universal Screener Overview

MSTAR Universal Screener Reports

Class Performance Summary Report
- MSTAR Comparison Reports
  - Comparisons over time
  - Comparisons across classes
  - Comparisons across grades
  - Comparisons across teachers

MSTAR Initiatives

MSTAR Initiatives

MSTAR Universal Screener can be accessed through the Project Share Gateway at www.projectsharetexas.org
- It can also be accessed directly at http://mstar.epsilen.com.

Purpose of the MSTAR Diagnostic Assessment

Given as needed to address the learning needs of struggling students in Tiers 2 and 3 after the MSTAR Screener
- Identify WHY students are struggling with algebra-related core instruction
  - Identify students’ current level of understanding in key algebra-related content
  - Identify students’ persistent misconceptions in key algebra-related content
- Provides information that can be used to plan supplemental instruction
- Not intended to provide screening information
Step 2: Analyze mathematics standards

Choose a skill that is conceptual (a functional grasp of mathematics that a student applies to concepts, operations, and relations) in nature.

- What is the essential question(s) and understanding?
- What mathematical process skills can you incorporate?
- What readiness level are your students at?

Looks Like

Grade 6 – Measurement and data. The student applies mathematical process standards to use numerical or graphical representations to analyze problems. The student is expected to:

(A) represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots;
(B) use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution;
(C) summarize numeric data with numerical summaries, including the mean and median, quartiles, and interquartile range (IQR), measures of spread, and use these summaries to describe the center, spread, and shape of the data distribution;
(D) summarize categorical data with numerical and graphical summaries, including the mode, the measure of center, and the measure of frequency tables, and the percent bar graph, and use these summaries to describe the data distribution.

Step 3: Content

- What concepts, facts, and vocabulary do students need to know?
- What concepts do students already know?
- What content will stretch their minds?
- Do students have special interests in this content area or can students’ interests be tied to this content?

Looks Like

Step 4: Engage

- Make connections between past and present learning and students’ interests.

Looks Like

Popcorn Drop
Step 5: Explore

1. 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?

Looks Like

Grade 6 Measurement and data TEK

Apply mathematical process standards to use numerical or graphical representations to analyze problems.

Step 6: Explain

1. How will students verbalize, write, and explain their conceptual understanding?
   - What will the product look like?
   - Can students use their preferences to meet product requirements?

Looks Like

Survey Project

Problem: The editor of our class newsletter requests that you and your partner gather information about your classmates to be used in feature articles about our team. With your partner, you are to create, implement, and analyze the results of a survey, using the mathematical knowledge you have gained this week. (Remember, your math journal is a great reference!)

Step 7: Elaborate

1. Are there additional activities that encourage students to think beyond the grade level skill?
   - Can students’ interests, readiness levels, and preferences be applied?

Looks Like

Grade 7 – Measurement and data. The student applies mathematical process standards to use

(A) Compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads;

(B) Use data from a random sample to make inferences about a population; and

(C) Compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations.
Step 8: Evaluate

How will you assess students' understanding of key concepts?

Looks Like

Differentiation Checklist

- Begin with data to make instructional decisions
- Analyze mathematics standards
- Develop the content
- Engage the students
- Explore
- Explain
- Elaborate
- Evaluate

Helpful Hints and Tips

Differentiation Is...

Works Consulted