

PDA Differentiating Mathematics Instruction

Course Objectives

General Objective:

This course enables educators to develop, increase and demonstrate knowledge about how to apply the guidelines of differentiating instruction to mathematics instruction. Emphasis is on evidence-based practices structured by a responsive decision-making framework in order for all students to achieve at the highest possible level. Content includes how to use pre-assessment, continuous assessment, and summative assessments to design and deliver effective lessons for initial instruction in mathematics and how to effectively use flexible small group instruction to respond to individual learner needs.

Specific Objectives:

Participants will be able to:

1. Define terms and guidelines related to differentiating instruction.
2. Define common terms used in effective mathematics instruction.
3. Self-evaluate their current instructional practices related to the guidelines of differentiating instruction.
4. Discuss the rationale for differentiating mathematics instruction.
5. Explain the connection between continuous assessment and meaningful differentiation.
6. Identify the National Council of Teachers of Mathematics' processes, standards and principles for mathematics and access current research about effective mathematics instruction.
7. Identify potential barriers to mathematics achievement and common misconceptions about mathematics.
8. Examine their own core mathematics program for strengths and limitations
9. Explain the relationships between the "big ideas" of Mathematics: levels of conceptual understanding: concrete-representational-abstract(C-R-A) and levels of expressing mathematical understanding.
10. Target a Florida Next Generation Sunshine State Standard/Access Point and explain how to teach that benchmark at the concrete, representational and abstract levels.
11. Identify types and sources of assessment information related to effective mathematics instruction including the components of a Mathematics Dynamic Assessment.
12. Analyze pre-assessment data for trends and patterns to determine the "what" and "how" to teach for initial understanding.
13. Determine how error pattern analyses and flexible interviewing can be efficiently integrated in into the assessment/instructional process.
14. Develop learning and assessment activities to meet student needs and their level of understanding (C-R-A).
15. Identify various types of flexible grouping structures.
16. Purposefully group students based on sound rationale informed by pre-assessment and continuous whole-class assessment data.
17. Set appropriate and precise learning goals for groups in order to plan appropriate flexible mathematics group learning activities.
18. Integrate continuous assessment with flexible groups.
19. Use the following key ideas to differentiate mathematics instruction:
 - Continuous assessment information, focusing on the "nouns" of mathematics (concepts/skills) *and* the "verbs" of mathematics (processes of doing), should be used to meaningfully differentiate math instruction.

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- Assessment should be continuous, varied and used to inform the instructional planning process.
- Differentiated mathematics instruction uses a combination of whole-group, small-group and individualized instruction in order to be responsive to students' needs.
- There are strengths and limitations of core mathematics programs.
- Differentiating Mathematics instruction is dependent on understanding the NGSSS and Access Points, NCTM standards, processes and principles.
- Students' understanding of mathematics occurs across different levels and stages.
- There is a reflexive relationship between the "big ideas" of mathematics and the "processes of doing mathematics."
- Flexible grouping structures can be used to increase student progress from acquisition to proficiency for targeted mathematics concepts and skills and can be used to extend understanding of mathematics concepts and skills.