Peer-to-Peer Support for Middle Grades Math

May 6, 2020
Why are we here today?
Who Is Here to Support You?

- FL Department of Education
  - Bureau of Exceptional Education and Student Services
  - Bureau of Standards and Instructional Support
- FL Diagnostic & Learning Resources System (FDLRS)
- FL Inclusion Network (FIN)
- FL State Personnel Development Grant (SPDG)
- Problem Solving/Response to Intervention Project (PS/RtI)
  - Student Support and Academic Achievement Unit
  - Technology Learning Connections Unit
Who Is Here to Share/Learn?
What do you need immediate support with?

5. Student Engagement
4. Supporting Teachers
3. Understanding the B.E.S.T. Standards
2. Implementation
1. Supporting students that struggle (virtually)
What is the biggest obstacle? Engagement/Motivation

Share a solution…

- Relevance
- Verbal encouragement and rewards
- Story telling
- Real world
- Incentive-based learning
- Hook
- Building relationships
What is the biggest obstacle?
Supporting Teachers

Share a solution:

• Professional Learning Communities (PLCs)
• Daily reminders/words of encouragement
• Professional development/mentoring
• Being available and flexible for teachers
What is the biggest obstacle?
Communication to Parents and Students

Share a solution...
- Google Voice
- Remind App
- Emailing
- Texting
- CMAPs
What is the biggest obstacle? Understanding and Implementing the B.E.S.T. Standards for Mathematics

Share a solution:
• Professional development
• Collaboration
What is the biggest obstacle?
Access and Equity

Share a solution:
• Culturally responsive teaching
• Parent education
• Individualized learning and assessments
• Meeting the students where they are at
• Accommodations/instructional supports
• Small groups
Background Knowledge on the B.E.S.T. Standards for Mathematics
The B.E.S.T. Standards were created by Florida educators for Florida students.
Success Criteria

• Provide a roadmap to make Florida’s standards number one in the nation.
• Support achievement as reflected on yearly state assessments, NAEP, ACT and SAT.
• Lead the nation in students graduating high school, as well as earning college degrees, industry certifications and other high-quality credentials.
• Provide a logical, sequential progression of content that increases a student’s knowledge and skills over time.
• Develop a standardized coding scheme.
• Have clear and concise standard language.
Emphasis of Benchmarks

• Progression of content across strands is purposeful so benchmarks are not taught in isolation
• Intentional balance of conceptual understanding and procedural fluency
• Written to allow teachers to meet students' individual skills, knowledge and ability
• Real-world applications intertwined within concepts for relevance
• Maintain high expectations for Florida’s students, ensuring equity and access for all
Current Instructional Design

Standard → Content → Instruction
B.E.S.T. Instructional Design
In thinking about the emphasis and B.E.S.T. Instructional Design, how will these support instruction for all students?
Overall Changes to Florida’s B.E.S.T Standards for K-12 Mathematics
**Coding Scheme**

Grade Level(s) ➔ Standard ➔ Subject Code ➔ Benchmark

**MA.6.NSO.3.1**

**Strand**

- Number Sense and Operations (NSO)
- Fractions (FR)
- Algebraic Reasoning (AR)
- Functions (F)
- Financial Literacy (FL)
- Geometric Reasoning (GR)
- Measurement (M)
- Trigonometry (T)
- Data Analysis and Probability (DP)
- Logic and Theory (LT)
- Calculus (C)
- Mathematical Thinking and Reasoning (MTR)
## Progression of Strands

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<th>Grade</th>
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Discussion

• In thinking about the progression of strands, how will these support instruction for all students?
Mathematical Thinking & Reasoning Standards (MTRs)

- Developed so that educators will teach through the lens of the MTRs
  - incorporates understanding through models, multiple methods, discussions and applications to real-world
- Language of MTRs written as self-monitoring tools for students
- Language of MTR clarifications written to provide guidance to all stakeholders on how to integrate MTRs into instruction
MTRs: Because Math Matters

• MA.K12.MTR.1.1 Actively participate in effortful learning both individually and with others.
• MA.K12.MTR.2.1 Demonstrate understanding by representing problems in multiple ways.
• MA.K12.MTR.3.1 Complete tasks with mathematical fluency.
• MA.K12.MTR.4.1 Engage in discussions that reflect on the mathematical thinking of self and others.
• MA.K12.MTR.5.1 Use patterns and structure to help understand and connect mathematical concepts.
• MA.K12.MTR.6.1 Assess the reasonableness of solutions.
• MA.K12.MTR.7.1 Apply mathematics to real-world contexts.
Discussion

• In thinking about the Mathematical Thinking and Reasoning Standards,
  • how will these support instruction for all students?
  • how do these assist with incorporating UDL principles?

![Universal Design for Learning Diagram]

- **Affective networks:** The **why** of learning
  - How learners get engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.
  - Stimulate interest and motivation for learning

- **Recognition networks:** The **what** of learning
  - How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author’s style are recognition tasks.
  - Present information and content in different ways

- **Strategic networks:** The **how** of learning
  - Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.
  - Differentiate the ways that students can express what they know
Benchmark Clarifications

• Support instruction (i.e., different methods, conceptual understanding, etc.)

• Provide extent of which benchmark should be taught

• Provide examples of expectations

• Provide connections to previous and extended knowledge

• References to appendices
Benchmark Examples

• Provide sample questions that could be used as tasks within the classroom
• Provide methods a student could solve a problem
MA.6.NSO.4.1 Apply and extend previous understandings of operations with whole numbers to add and subtract integers with procedural fluency.

Benchmark Clarifications:

Clarification 1: Instruction begins with the use of manipulatives, models and number lines working towards becoming procedurally fluent by the end of grade 6.

Clarification 2: Instruction focuses on the inverse relationship between the operations of addition and subtraction. If \( a \) and \( b \) are integers, then \( a - b = -(b - a) \).

MA.7.AR.3.2 Apply previous understanding of ratios to solve real-world problems involving proportions.

Example:

Scott is mowing lawns to earn money to buy a new gaming system and knows he needs to mow 35 lawns to earn enough money. If he can mow 4 lawns in 3 hours and 45 minutes, how long will it take him to mow 35 lawns? Assume that he can mow each lawn in the same amount of time.

Example:

Ashley normally runs 10-kilometer races which is about 6.2 miles. She wants to start training for a half-marathon which is 13.1 miles. How many kilometers will she run in the half-marathon? How does that compare to her normal 10K race distance?

MA.8.GR.1.2 Apply the Pythagorean Theorem to solve mathematical and real-world problems involving the distance between two points in a coordinate plane.

Example: The distance between \( A \) and \( B \) can be found by creating a right triangle with the vertex of the right angle at the point \( A \). This gives a height of the right triangle as 1 unit and a base of 2 units. Then using the Pythagorean Theorem the distance can be determined from the equation \( AB = \sqrt{1^2 + 2^2} \), which is equivalent to \( AB = \sqrt{5} \) units. So, the distance is \( \sqrt{5} \) units.

Benchmark Clarifications:

Clarification 1: Instruction includes making connections between distance on the coordinate plane and right triangles.

Clarification 2: Within this benchmark, the expectation is to memorize the Pythagorean Theorem. It is not the expectation to use the distance formula.

Clarification 3: Radicands are limited to whole numbers up to 225.
In thinking about the benchmark clarifications and examples, how will these support instruction for all students?
Horizontal & Vertical Progressions
Horizontal Progression

• Intentional progression of content within the areas of emphasis
• Progression of content within the same standard and across standards
## Horizontal Progression – Middle Grades Example

<table>
<thead>
<tr>
<th>MA.7.DP.1.1 Represent and interpret numerical and categorical data.</th>
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<tbody>
<tr>
<td><strong>MA.7.DP.1.1</strong> Determine an appropriate measure of center or measure of variation to summarize numerical data, represented numerically or graphically, taking into consideration the context and any outliers.</td>
</tr>
<tr>
<td><strong>MA.7.DP.1.2</strong> Given two numerical or graphical representations of data, use the measure(s) of center and measure(s) of variability to make comparisons, interpret results and draw conclusions about the two populations.</td>
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<tr>
<td><strong>MA.7.DP.1.3</strong> Given categorical data from a random sample, use proportional relationships to make predictions about a population.</td>
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<td><strong>MA.7.DP.1.4</strong> Use proportional reasoning to construct, display and interpret data in circle graphs.</td>
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<td><strong>MA.7.DP.1.5</strong> Given a real-world numerical or categorical data set, choose and create an appropriate graphical representation.</td>
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Vertical Progression

• Intentional progression of content from one year to the next or across multiple grade levels
  • Progression within the same strand and across strands

• Intentional progression of content among the strands from one grade level to the next
## Vertical Progression – Content Example

<table>
<thead>
<tr>
<th>MA.6.GR.1.1</th>
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<tr>
<td><strong>Extend previous understanding of the coordinate plane to plot rational number ordered pairs in all four quadrants and on both axes. Identify the x- or y-axis as the line of reflection when two ordered pairs have an opposite x- or y-coordinate.</strong></td>
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<tr>
<th>MA.7.AR.4.3</th>
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<td><strong>Given a mathematical or real-world context, graph proportional relationships from a table, equation or a written description.</strong></td>
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<tr>
<th>MA.8.AR.3.4</th>
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<td><strong>Given a mathematical or real-world context, graph a two-variable linear equation from a written description, a table or an equation in slope-intercept form.</strong></td>
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<th>MA.8.DP.1.1</th>
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<td><strong>Given a set of real-world bivariate numerical data, construct a scatter plot or a line graph as appropriate for the context.</strong></td>
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</table>
In thinking about the horizontal and vertical progression, how will these support instruction for all students?

**Universal Design for Learning**

**Affective networks:**
THE WHY OF LEARNING

- How learners get engaged and stay motivated. How they are challenged, excited, or interested. These are affective dimensions.

- Stimulate interest and motivation for learning

**Recognition networks:**
THE WHAT OF LEARNING

- How we gather facts and categorize what we see, hear, and read. Identifying letters, words, or an author’s style are recognition tasks.

- Present information and content in different ways

**Strategic networks:**
THE HOW OF LEARNING

- Planning and performing tasks. How we organize and express our ideas. Writing an essay or solving a math problem are strategic tasks.

- Differentiate the ways that students can express what they know
Florida’s B.E.S.T. Standards for Mathematics: Appendices
Appendices

A. Situations Involving Operations
B. Fluency and Automaticity Chart
C. K-12 Glossary
D. Properties of Operations, Equality and Inequality
E. K-12 Formulas
Discussion

• In thinking about the provided appendices, how will these support instruction for all students?

Universal Design for Learning

- **Affective networks:** THE WHY OF LEARNING
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Next Steps
## Timeline for Transition

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<th>2020 – 2021</th>
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<td><strong>Adoption Process</strong></td>
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*Recommended since current statewide assessments still in place, but this is a district decision.
Resources for Distance Learning

- FLDOE COVID-19 Resource Page
- CPALMS
  - http://www.cpalms.org
- A New Reality: Getting Remote Learning Right
  - ASCD Educational Leadership Special Report
- Collaborative Teaching Virtual Instruction Tips
  - Florida Inclusion Network (FIN)
- Technology & Learning Connections Website
  - www.tlc-mtss.com
- BEESS PD Portal https://fl-pda.org/independent/courses/
  - Math Difficulties, Disabilities, and Dyscalculia
Coming Soon…

Meeting the Math Needs of ALL Students Within the Virtual Environment - SERIES:

May 13th (2 – 3 PM EST)

- Standards-Based Instruction

To register for May 13th: https://bit.ly/3eOytgO
This Certificate of Participation is presented to

for attendance and successful participation in the
Meeting the Math Needs of All Students within the Virtual Environment Series
B.E.S.T. Standards

May 6, 2020

A collaborative project between the Florida Department of Education and the University of South Florida

Bureau of Exceptional Education and Student Services
Florida Department of Education

Submit this certificate of completion to your district staff development office. Upon satisfactory completion of follow-up implementation and evaluation activities as indicated in the district Master In-service Plan, you may be awarded 1 in-service point for this professional development activity pending your district’s approval.
Earn Up To Five Continuing Education Units (CEUs)
Must be completed by June 26th, 2020

Meeting the Math Needs of ALL Students
Within the Virtual Environment – SERIES

April 29th (2-3 pm) - Universal Design for Learning in Math
May 6th (2-3 pm) - B.E.S.T. Standards
May 13th (2-3 pm) - Standards-Based Instruction

• Earn one CEU for each webinar that you attend.
• Earn two additional CEUs for completing the follow-up activity after participating in the three webinars.
• Webinars are recorded, so if you miss one, you can view the recording and complete a form to earn credit.

For more information, contact srobertson@usf.edu

Webinars will take place in ZOOM. Please download prior to the presentation date.
https://zoom.us
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PS/RtI: Technology Learning Connections Unit
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Evaluation

The recording link will be available on PS/RtI’s website at:

http://www.floridarti.usf.edu/resources/presentations/2020/math_webinars/math_webinars.html