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INSTITUTE FOR THE PROFESSIONAL
DEVELOPMENT OF ADULT EDUCATORS

CCRS for ABE Math

Webinar Series Part 1

Presenter: Ronald Cruz

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Unit 1
Focusing on the Major Work of the Levels

Three Key Advances Prompted by the CCR Standards

1. **Focus**: Focus strongly where the CCR Standards focus.
2. **Coherence**: Design learning around coherent progressions from level to level.
3. **Rigor**: Pursue conceptual understanding, procedural skill and fluency, and application—all with equal intensity.

Rationale for Focus

Relevance and Importance Based on the Research

- High-performing nations significantly narrow the scope of content so that students can focus their time and energy. Focusing on too many topics has a negative impact on student performance (TIMSS research).
- Focusing on what is emphasized in the standards gives students a strong foundation and uses instructional time productively (ACT survey of college faculty).
- Identifying concepts that support the major work of each level creates a coherent flow of knowledge and skills within the level.

Implications of Focus on Instruction

- Focus means that some content is more important than other content and receives more time and attention.
- Other content supports the more important content.
- The Standards for Mathematical Practice become a critical focus in the CCR Standards and the mathematics curriculum.

Major Areas of Focus

- *Level A:* Whole numbers
- *Level B:* Whole numbers and fractions
- *Level C*: Positive whole numbers, fractions, and decimals
- *Level D:* Rational numbers
- *Level E:* Real numbers

CCRS for ABE Mathematics Domains

1. Number and Operations: Base Ten
2. Operations and Algebraic Thinking
3. Measurement and Data
4. Geometry
5. Number and Operations: Fractions
6. Expressions and Equations
7. The Number System
8. Ratios and Proportional Relationships
9. Statistics and Probability
10. Functions

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Unit 2
Thinking Across Levels to Connect Learning

Three Key Advances Prompted by the CCR Standards

1. **Focus**: Focus strongly where the CCR Standards focus.
2. **Coherence**: Design learning around coherent progressions from level to level.
3. **Rigor**: Pursue conceptual understanding, procedural skill and fluency, and application—all with equal intensity.

Rationale for Coherence

Relevance and Importance Based on the Research

Research emanating from TIMSS and the ACT National Curriculum Survey support the premise that coherent standards and curricula are important for college and career readiness:

- Coherence allows students to demonstrate new understanding built on foundations from previous study.
- Coherence prevents standards from being a list of isolated topics.
- Coherence means that each standard is not a new event, but rather an extension of previous learning.

Implications of Coherence on Instruction

- Content unfolds meaningfully.
- Connections between concepts are made both *within* and *across* the levels.
- Students and teachers *expect* knowledge and skills to build and grow.

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Unit 3
Engaging the Three Components of Rigor

Three Key Advances Prompted by the CCR Standards

1. **Focus**: Focus strongly where the CCR Standards focus.
2. **Coherence**: Design learning around coherent progressions from level to level.
3. **Rigor**: Pursue conceptual understanding, procedural skill and fluency, and application—all with equal intensity.

Rationale for Rigor

Relevance and Importance Based on the Research

- Surveys of employers and professors of first-year credit-bearing mathematics courses validate the importance of rigor in instruction.
- Students with solid conceptual understanding can generalize and apply concepts from several perspectives.
- Students who can perform calculations with speed and accuracy (fluency) are able to access more complex concepts and procedures.
- When students have the ability to use math flexibly, they are able to apply their knowledge to solve problems.

Implications of Rigor on Instruction

Rigor in lessons relates to the depth at which the major work of each level should be addressed:

- **Conceptual Understanding:** Comprehending key concepts behind the procedures
- **Fluency:** Gaining speed and accuracy in applying procedures
- **Application:** Supporting problem-solving and deeper mathematical thinking

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Unit 4

Connecting Standards for Mathematical Practice to Content

Standards for Mathematical Practice

MP.1 Make sense of problems and persevere in solving them.

MP.2 Reason abstractly and quantitatively.

MP.3 Construct viable arguments and critique the reasoning of others.

MP.4 Model with mathematics.

MP.5 Use appropriate tools strategically.

MP.6 Attend to precision.

MP.7 Look for and make use of structure.

MP.8 Look for and express regularity in repeated reasoning.

Rationale for the Standards for Mathematical Practice

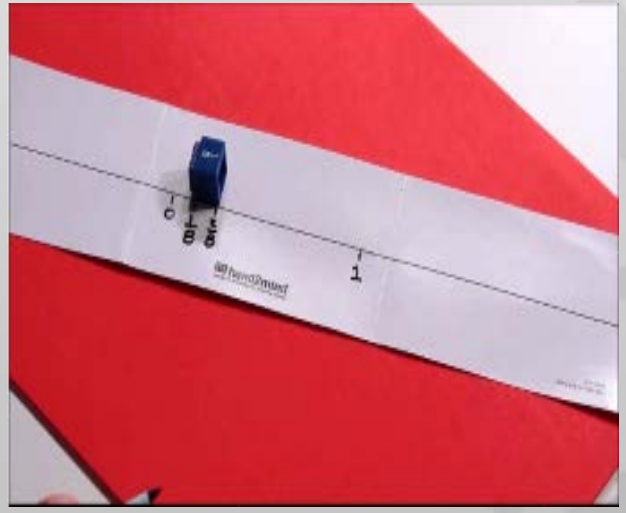
Relevance and Importance Based on the Research

- The Standards for Mathematical Practice rest on "processes and proficiencies" with established significance in mathematics education (NCTM and NRC).
- When Standards for Mathematical Practice are connected to content, deeper understanding can occur, enabling students to extend them to new situations (ACT National Curriculum Survey).
- Attention to the Standards for Mathematical Practice shifts the emphasis from just "how to get the answer" to also "learning how to learn."

Implications of the Standards for Mathematical Practice on Instruction

- The Standards for Mathematical Practice are applied across all levels.
- Not all Standards for Mathematical Practice are appropriate for every lesson.
- Students need opportunities to experience *all* of the Standards for Mathematical Practice over the course of the unit or the level of study.

Using Math Manipulatives in the Classroom



The Algebra Tiles Web App

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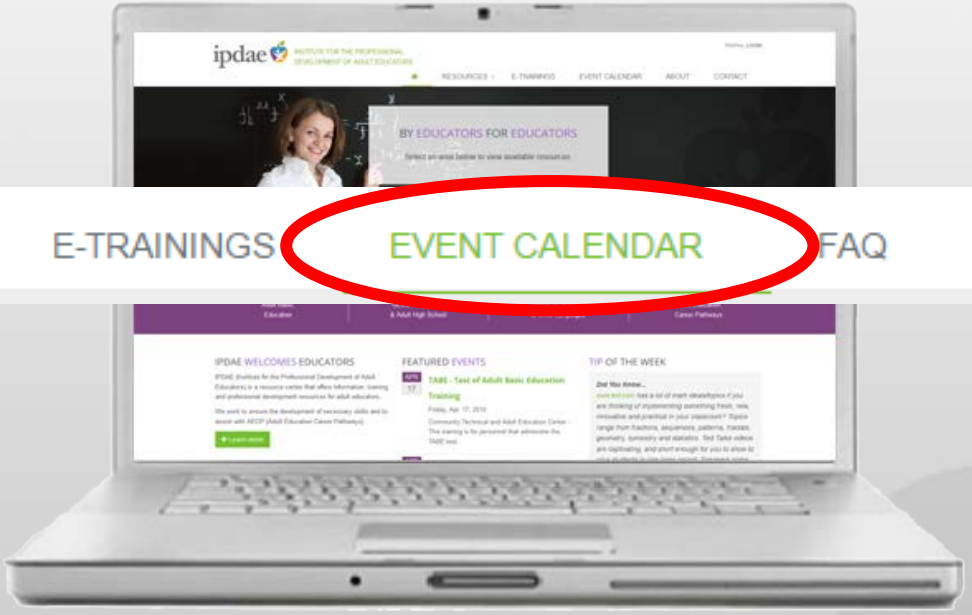

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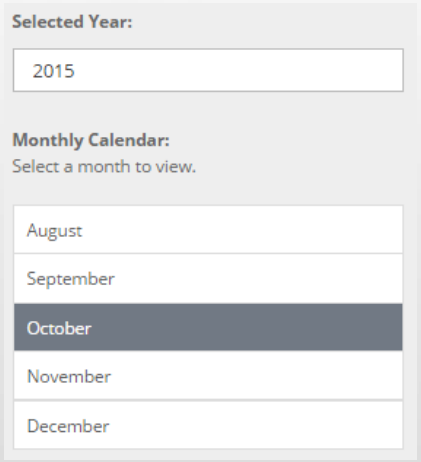

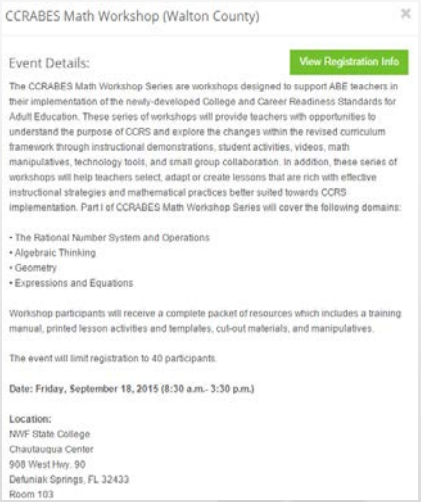

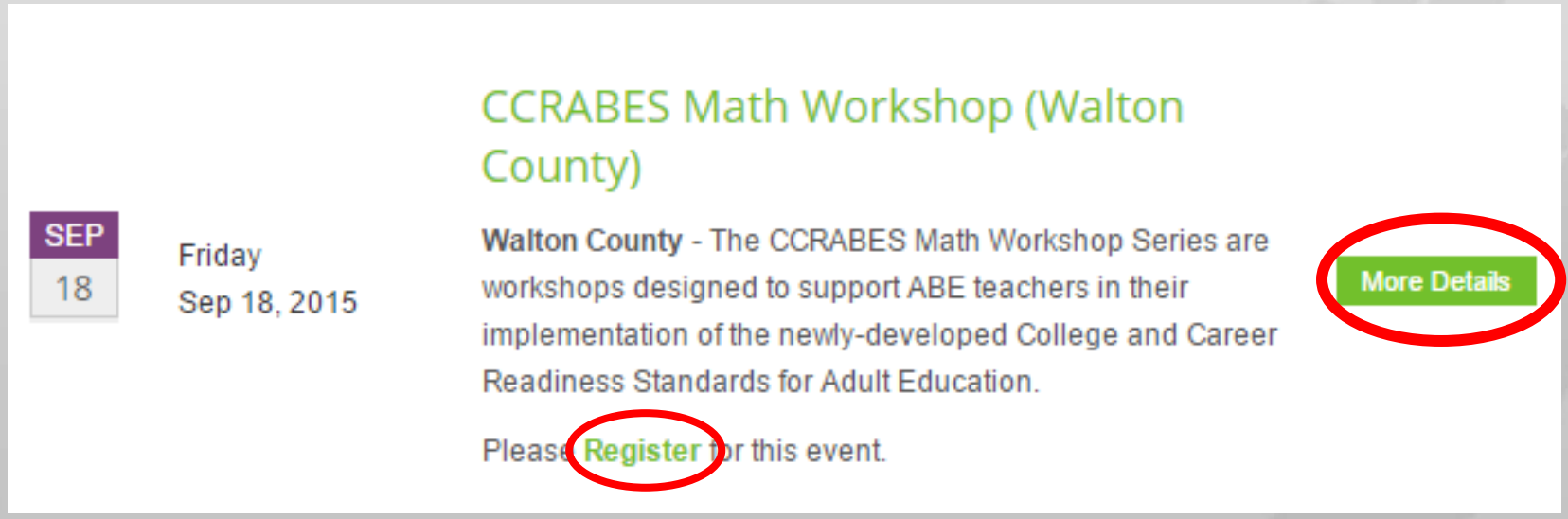

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Thank You!