Mathematics Content

COMPONENT #: 1-009-319 **POINTS TO BE EARNED:** 120 MPP

PART I – PLANNING

DESCRIPTION: Write a brief description of content and intent of component.

This component is designed to enable the participant to enhance his/her mathematical content knowledge. Participants will develop a deep, flexible knowledge of mathematics curriculum goals and the important ideas that are central to their grade level; knowledge about the challenges students are likely to encounter in learning these ideas; knowledge about how to represent these ideas to teach them effectively; and knowledge about how to assess students' understanding. This knowledge will enable the participants to make curricular judgments, respond to students' questions, predict conceptual paths and plan accordingly. Participants will understand the critical areas and progressions of mathematics and be able to represent mathematics as a coherent and connected discipline.

Upon successful completion of this professional development activity, the participant will be able to incorporate the principles presented in this workshop to his/her instruction.

STANDARDS/FOCUS AREAS ADDRESSED BY COMPONENT: Identify the standards, national/state/district imperatives, initiatives or key focus areas this component supports.

Standards for Professional Learning (choose one)

☐ Learning Communities
☐ Leadership
☐ Resources
☐ Data
X Learning Designs
☐ Implementation
☐ Outcomes

Florida Educator Accomplished Practices (check all that apply)

X Instructional Design and Lesson Planning
X The Learning Environment
X Instructional Delivery and Facilitation
X Assessment
X Continuous Professional Improvement
☐ Professional Responsibility and Ethical Conduct

Florida Leadership Standards (check all that apply)

X Student Learning Results
X Student Learning as a Priority
X Instructional Plan Implementation
☐ Faculty Development
X Learning Environment
X Decision Making
☐ Leadership Development
☐ School Management
X Communication
☐ Professional and Ethical Behaviors

IPEGS Standards (check all that apply)

X PS 2 – Knowledge of Learners
X PS 3 – Instructional Planning
X PS 4 – Instructional Delivery and Engagement
X PS 5 – Assessment
X PS 6 – Communication
☐ PS 7 – Professionalism
X PS 8 – Learning Environment

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IMPACT FOCUS AREA(S): Select the intended impact focus area(s) from the choices below. Note that Impact Evaluation procedures should reflect this level of impact.

X Educator knowledge/skill (content)
☐ Educator (professional growth)
X Student learning
☐ Organizational support and change

SPECIFIC LEARNER OUTCOMES: Identify the intended learner outcomes (number and content of learner outcomes should be reflective of the total points participants will earn as a result of completing this learning).

1. Enhance his/her mathematics expertise in the K-8 domains and 9-12 conceptual categories of the mathematics standards.
2. Enhance his/her ability to think mathematically and solve problems algebraically, geometrically, numerically, and verbally.
3. Enhance his/her ability to connect mathematical ideas.
4. Explore the effective use of hands-on activities and manipulatives in classroom instruction in order to guide student discovery leading to deep conceptual understanding of mathematics.
5. Build new mathematical knowledge through problem solving.
6. Use mathematics representations to interpret physical, social, and mathematical phenomena.
7. Use technology to enhance mathematical understanding.
8. Select and use various types of reasoning and methods of proof.
9. Demonstrate an understanding of how mathematical ideas interconnect and build upon one another.

PART II – LEARNING

LEARNING PROCEDURES: Describe the experiences (the "what") and formats/methods (the "how") that will be used to provide participants with the knowledge and skills sufficient to master the intended learner outcome of this component.

1. Actively participate in professional learning activities designed to enhance mathematical content knowledge (SLO 1-9).
2. Solve real-world mathematics problems algebraically, geometrically, numerically, verbally, and using models (SLO 1-9).
3. Discuss the ways to develop mathematical understanding using problem solving, technology, communication, and multiple representations (SLO 1-9).

PART III – IMPLEMENTATION

IMPLEMENTATION PROCEDURES: Method(s) and resource(s) that will be provided to support implementation of new learning for participants (check all that apply).

X Apply newly acquired professional knowledge, skills, dispositions, and behaviors to improve practice.

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X Provide sufficient classroom- and school-focused support and assistance by skillful coaches, mentors, or others to the educator to ensure high-fidelity implementation of professional learning.

X Provide educators with web-based resources and assistance to support implementation of professional learning.

PART IV – EVALUATION

IMPACT EVALUATION PROCEDURES: Describe the processes that will be used to determine the impact (as identified in previous section titled "Impact Focus Areas"). Description should reflect methods for determining at least ONE of those areas, and will include a specific section for each impact focus area identified for this component.

1. Educator knowledge/skill (content): Will consist of observation of participants actively engaged in professional learning activities and discussions on mathematics standards and innovative mathematical practices.
2. Student learning: Will include evidence (e.g. student sample work, pre and post assessments) verifying that the content impacted student achievement.

COMPONENT EVALUATION PROCEDURES: Describe the process(es) that will be used to determine the effectiveness of this component to include design, implementation and impact (check all that apply).

X Evaluate the impact of all professional learning on educator's practice through reflection, assessment, collaborative protocols for examining educator practice and work samples, peer visits, and/or professional portfolios.

X Determine the degree to which educator's professional learning contributed to student performance gains as measured by classroom assessment data.

X Use summative and formative data from state or national standardized student achievement measures, when available, or other measures of student learning and behavior such as district achievement tests, progress monitoring, educator-constructed tests, action research results, discipline referrals, and/or portfolios of student work to assess the impact of professional learning.

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