Session 3: Teaching through Mathematical Processes

120 min

Math Learning Goals

- Compare different problem solving solutions.
- Connect the Mathematical Processes to the curriculum expectations.
- Reflect on questions that focus on Mathematical Processes.
- Apply understanding of the connections between Mathematical Processes and the curriculum expectations.

Rationale

Materials

- Math Process S3 ppt
- Mathematics curriculum documents, Grades 1-8, 9-10, 11-12
- chart paper, highlighters
- variety of manipulatives
- calculators and graphing technology

Minds On…

Whole Group → Presentation

Participants share their solutions from **Home Activity**, identifying the Mathematical Process on chart paper and post on the wall, using Bansho strategy.

Participants do a gallery walk to view the different solutions.

Discuss the solutions and their placement on the trajectory. Re-arrange placements as discussion warrants.

Whole Group → Discussion

Lead a discussion on how solving problems in several ways promotes the use of the Mathematical Processes (Session 2 journal entry). Participants add to or modify their journal entries.

Bansho is an instructional strategy to make thinking explicit when problem solving by organizating and annotating of student work samples through classroom discourse.

Note: a minimum of 5 solutions is needed to Bansho.

Action!

AV

Small Group → Investigation

In groups of 2 or 3, participants select an overall expectation for a strand of a course or grade using the curriculum documents.

Participants investigate how Mathematical Processes are included in the curriculum expectation.

AV

Whole Group → Study

Identify the connections between the Mathematical Processes and the categories of the Achievement Chart.

Introduce the Continuum and Connections packages.

Reflect on the problems posed on the Developing Proficiency pages as they relate to an expectation and identify the connection to a process, concept, or procedure.

AV

Pairs → Question Development

Each pair selects and studies the questions for one expectation on the Developing Proficiency pages from the Continuum and Connections packages (5 minutes) and then composes a new question related to this expectation but with a focus on a different Mathematical Process (5 minutes).

DI

Differentiate content based on participant interest in order to motivate participation.

A for L

Curriculum Expectations/Observations/Mental Note: Observe participants' understanding of the connections between the Mathematical Processes and the curriculum expectations.

Developing Proficiency pages from TIPS Continuum and Connections packages for perimeter, area and volume; patterning; and equations.

Consolidate Debrief

Whole Group → Presentation

Selected pairs share their created problem with the group but do not identify the process focus. Participants conjecture what process is being focussed on in the question, and explain their reasoning.

Reflection

Home Activity or Further Classroom Consolidation

Journal Reflection: Consider the interconnectivity of the Mathematical Processes and differentiated instruction.