

TIPS 2.0 Annotated Session Example

Day #: Session Title
Session 3 Teaching through Mathematical Processes



<p>Time: colour-coded to the three session parts</p> <p>120 min</p> <ul style="list-style-type: none"> Mentally engages participants at start of session Makes connections between different math strands, previous groups of sessions, prior learning interests Introduces a problem or motivating activity 	<p>Math Learning Goals</p> <ul style="list-style-type: none"> 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. <p>Rationale How learning connects to research</p> <p>Materials used in the session</p> <p>Same key learning listed in the series outline</p>	<p>Materials</p> <ul style="list-style-type: none"> Math Process S3 ppt Mathematics curriculum documents, Grades 1-8, 9-10, 11-12 chart paper, highlighters variety of manipulatives calculators and graphing technology
<p>Minds On...</p>	<p>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.</p> <p>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.</p>	<p>Bansho is an instructional strategy to make thinking explicit when problem solving by organizing and annotating student work samples through classroom discourse. Note: a minimum of 5 solutions is needed to Bansho.</p>
<p>Action!</p> <ul style="list-style-type: none"> Do mathematics: reflecting, discussing, observing, investigating, exploring, creating listening, reasoning, making connections, demonstrating understanding, discovering, hypothesizing Participants listen, observe, respond and prompt, pose questions, provide appropriate scaffolding and challenge, ... <p>DI A for L</p>	<p>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.</p> <p>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.</p> <p>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).</p> <p>Differentiate content based on participant interest in order to motivate participation</p> <p>Curriculum Expectations/Observations/Mental Note: Observe participants' understanding of the connections between the Mathematical Processes and the curriculum expectations.</p> <p>Suggest a grouping → teaching/learning strategy</p>	<p>Developing Proficiency pages from TIPS Continuum and Connections packages for perimeter, area and volume; patterning; and equations.</p> <p>Provide hyperlinks to: • Rationale/research • Classroom video • Session artefacts • Professional dialogue</p> <p>DI: Explicitly identify planned differentiation of content, process, or product based on readiness, interest or learning preference.</p>
<p>Consolidate/Debrief</p> <p>Reflection</p> <p>Focus for the follow-up activity</p>	<p>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.</p> <p>Home Activity or Further Classroom Consolidation Journal Reflection: Consider the interconnectivity of the Mathematical Processes and differentiated instruction.</p> <p>Meaningful and appropriate follow-up to consolidate understanding, build confidence in doing mathematics independently, provide parents with a window into participants' learning and connections with life beyond the classroom.</p>	<p>Indicates an assessment opportunity (what is assessed/strategy/tool)</p> <ul style="list-style-type: none"> Assessment for learning (inform future instruction) Assessment as learning (reflection) Assessment of learning (student achievement)

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