

Lesson Framework

The Before Phase

Getting Started/Activating Prior Knowledge:

Teacher will choose questions, discussion topics, and or activities, that will help activate students' prior knowledge in regard to the focus of the lesson. This beginning should captivate the students' interest and attention and allow them to see connections to their prior knowledge.

At the end of this phase, or as a beginning of the next phase, students should be made aware of any expectations in regards to their completed work.

During the Lesson Phase

Investigation/Exploration:

Teacher will carefully select an investigation that will allow students to investigate the main focus of the lesson. Teacher's role during this investigation time will involve: encouraging testing of ideas, asking probing questions to clarify students' understandings, modelling, and re-directing students' thinking, as necessary.

After the Lesson Phase

Reflections/Connections:

Students are required to share their understandings and strategies for their mathematical thinking. This sharing can be through group discussion and/or written work. Teachers ask for explanations to accompany all answers.

This is a time for consolidating the students' understanding. Students need to be able to reflect on the lesson and talk about their learning. It will be necessary for the teacher to model this type of reflection.

Mental Math Practice:

This will involve the practice of mental math strategies as well as group discussion of the strategies used. The five minute practice time is for improving efficiency and fluency in using mental math strategies.

The actual instruction of a specific mental math strategy may become the focus of a lesson, as it would take longer than five minutes and thus may be part of the investigation/exploration section of the lesson.

*Adapted from Teaching Student Centered Mathematics,
Van de Walle, 2006*

Mathematics: Contact Us

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Mathematics: Instructional Strategies

*Student learning depends first, last, and always
on the quality of teachers.
~ Katzenmeyer & Moller, 2001*



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What do Mathematics Teachers do?

- Mathematics teachers continually seek improvement. These efforts include learning about pedagogy, on-going professional development, collaboration with colleagues and self-reflection.
- Mathematics teachers raise questions that encourage students to explore several solutions and challenge deeper thinking about real problems.
- Mathematics teachers keep the focus on thinking and reasoning, as opposed to the right answer.
- Mathematics teachers seek, and help students seek, connections to previous and developing knowledge, and mathematical history and culture.
- Mathematics teachers use five representations to develop mathematical concepts: contextually, concretely, verbally (oral and written), pictorially, symbolically.
- Mathematics teachers use manipulatives and technology when it is appropriate.
- Mathematics teachers work with other teachers to make connections between disciplines to show how mathematics is a part of every other major subject.

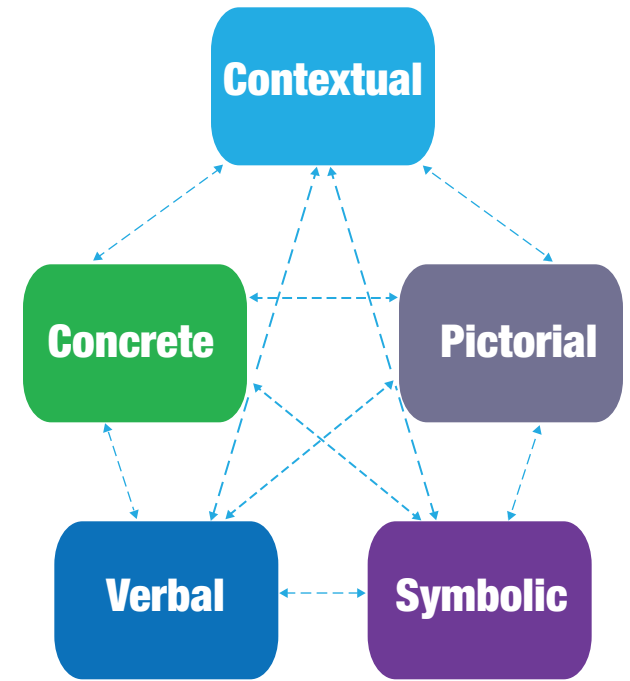


- Mathematics teachers use assessment that reflects the way mathematics is being taught, stressing understanding and problem solving.
- Mathematics teachers balance students' opportunities to develop independent thinking and collaborative learning skills.
- Mathematics teachers continually monitor student progress and revise their instructional plans as needed.
- Mathematics teachers regularly select meaningful mathematical tasks that require students to reason mathematically and to communicate and justify their thinking in a variety of ways: oral, written, concrete.
- Mathematics teachers value the power of student discourse and give effective formative feedback.
- Mathematics teachers have high expectations for all. They believe that all students are capable learners while understanding that not all students learn at the same pace.
- Mathematics teachers are an integral part of the learning community in the classroom.
- Mathematics teachers provide (actionable) feedback that is corrective in nature, timely, and specific to criterion.

Adapted from NS Curriculum Documents, Principles and Standards for School Mathematics, National Council of Teachers of Mathematics, 2000



Five Representations of a Mathematical Concept:



Our goal for children is that each new mathematical idea be well understood—that it be imbedded in as rich a web of related mathematical ideas as possible.

~ Hiebert & Carpenter, 1992



We develop independent lifelong learners in a student-centered environment with high expectations for all.

