Components of an Effective Elementary Mathematics Lesson

An effective mathematics lesson should be structured so that these elements are included:

objectives are clearly defined and communicated
teaching is consistent with concept formation and skill attainment
practice is used and related to previous learning
multiple forms of assessment are frequently used
all students are highly engaged and redirected if necessary
students are expected to reason, solve problems, communicate and make connections
students are expected to immediately recall basic facts
students are expected to explain and use algorithms for addition, subtraction, multiplication, and division
opportunities for linkages are provided

This model for the Components of an Effective Elementary Mathematics Lesson is intended as a guide for lesson development. **It should be noted that all components are not evident in every lesson, and each component should be carefully selected to provide a balanced mathematics program.** The lesson needs to maintain a basic structure, which supports the above elements while allowing teachers the flexibility to plan lessons to meet specific needs. By using this structure, teachers can use effective teaching strategies to introduce, develop and provide opportunities for students to apply concepts/skills in mathematics.

Structure	Purpose	Implementation
Introduction (1-2 minutes) Overview Preview	**set the stage for the lesson (what you will do today and how it links to previous learning)** **preview lesson agenda** **state mathematical objectives** **state expectations**	*make connections with prior work: "Yesterday we ____; today we will be _____ by _____* *"First we'll…, then….and finally…."* *"We're doing this to learn…"* *"When we complete _____ you will know…, be able to…"*
Daily Oral Practice: (10-15 minutes) may be utilized at different points within a lesson or during the day	**practice computation for mastery; review and maintain concepts/ skills from previous lessons** **review and maintain basic facts and algorithms**	*provide mental math, practice activities; use games, songs to reinforce information students should know by the end of the year*

Structure	Purpose	Implementation
Concept/Skill Development and Application (50-55 minutes)	**introduce lesson: stimulate curiosity and motivation to learn** • **stimulate curiosity, and motivation to learn** • **assess student prior knowledge and link to current lesson**	*present a part of the problem, investigation or task; present a similar but smaller problem, investigation or task* *introduce/use materials/tools to solve a problem, begin investigation or complete initial task* *provide ongoing, continuous assessment*
	linkage/connections	*provide opportunities for students to make connections to prior learning* *use oral recitation*
	introduce, understand, learn new concepts/skills by investigating core ideas in mathematics	*present problems to be solved, the investigation, or tasks* *discuss to make sure students understand what they are to do and what materials, tools, and resources are available to use* *develop concepts/extend skills through focused individual, large/ small group activities, tasks or problems*
	develop appropriate vocabulary	*develop appropriate descriptive terms; utilize appropriate mathematical notation*
	conduct assessment	*assess student learning and adjust lesson as necessary; use oral recitation* *monitor and maintain student engagement (see CEF pp. IV-1)*
	use: • **problem solving strategies** • **reasoning** • **communication** • **connections** **apply mathematical concepts and skills in new situations**	*use hands-on materials, tools, technology, pencil and paper, mathematics notebooks, and own language to:* • *reason* • *solve problems and explain strategies* • *use algorithms* • *make observations* • *investigate problems, materials* • *collect and record evidence* • *organize data* • *develop models* • *communicate explanations based on evidence, data, methods, strategies, and results* • *verify solutions* • *justify and defend results* • *generate new questions and make connections* • *record work in mathematics notebook*

Structure	Purpose	Implementation
	use and learn vocabulary/specific facts	*use related vocabulary words in context* *connect students' informal language to precise mathematical terms and vocabulary; take notes when appropriate*
Practice: Guided and Independent (included in lesson)	**practice concept/skills embedded in the lesson**	*provide oral or written activities; use drill; use oral recitation; use games*
Homework assignment (5 minutes)	**introduce homework** **practice, reinforce/maintain, apply concepts/skills already learned; collect data**	*discuss to make sure students understand what they are to do and what materials, tools, and resources are needed to complete homework*
Linkage and Closure (4-9 minutes)	**summarize the lesson or unit of study** **set the stage for future learning with connection to past and/or future lessons**	*use notebooks, models and recorded data to:* · *reflect on learning* · *review connections with prior learning, within content area, across strands, and with real-life situations (i.e., "This is like when . . ." or "This reminds me of …")* · *raise new questions for further consideration* · *pose additional challenges* · *make generalizations as appropriate*