Table 2.1 Three-Phase Lesson Structure

Lesson Phase		Teacher Actions in a Teaching Mathematics through Problem-Solving Lesson
Before	Activate prior knowledge.	Begin with a simple version of the task; connect to students' experiences; brainstorm approaches or solution strategies; estimate or predict whether tasks involve a single computation or are aimed at the development of a computational procedure.
	Be sure the problem is understood.	Have students explain to you what the problem is asking. Go over vocabulary that may be troubling. Caution: This does not mean that you are explaining how to do the problem, just that students should understand what the problem is about.
	Establish clear expectations.	Tell students whether they will work individually, in pairs, or small groups, or if they will have a choice. Tell them how they will share their solutions and reasoning.
During	Let go!	Although it is tempting to want to step in and "help," hold back and enjoy observing and learning from students.
	Notice students' mathematical thinking.	Base your questions on students' work and their responses to you. Use prompts like: Tell me what you are doing; I see you have started to [multiply] these numbers. Can you tell me why you are [multiplying]? [substitute any process/strategy]; Can you tell me more about . . . ? Why did you . . . ? How does your diagram connect to the problem?
	Provide appropriate support.	Look for ways to support students' thinking and avoid telling them how to solve the problem. Ensure that students understand the problem (What do you know about the problem?); ask the student what he or she has already tried (also, Where did you get stuck?); suggest that the student use a different strategy (Can you draw a diagram? What if you used cubes to act out this problem? Is this like another problem we have solved?); create a parallel problem with simpler values (Jacobs & Ambrose, 2008).
	Provide worthwhile extensions.	Challenge early finishers in some manner that is related to the problem just solved. Possible questions to ask are: I see you found one way to do this. Are there any other solutions? Are any of the solutions different or more interesting than others? Some good questions for extending thinking are, What if . . . ? or Would that same idea work for . . . ?
After	Promote a community of learners.	You must teach your students about your expectations for this part of the lesson and how to interact respectfully with their peers. Role play appropriate (and inappropriate) ways of responding to each other. The "Orchestrating Classroom Discourse" section provides strategies and recommendations for how to facilitate discussions that help create a community of learners.
	Listen actively without evaluation.	The goal here is noticing students' mathematical thinking and making that thinking visible to other students. Avoid judging the correctness of an answer so students are more willing to share their ideas. Support students' thinking without evaluation by simply asking what others think about a student's response.
	Summarize main ideas and identify future problems.	Formalize the main ideas of the lesson, helping to highlight connections between strategies or different mathematical ideas. In addition, this is the time to reinforce appropriate terminology, definitions, and symbols. You may also want to lay the groundwork for future tasks and activities.

The lesson may take one or more math sessions, but the three-phase structure can also be applied to shorter tasks, resulting in a 10 to 20 minute minilesson.

Before

In the *Before* phase of the lesson you are preparing students to work on the problem. As you plan for this stage, analyze the problem you will give to students in order to anticipate