

## Chapter 5

# Collecting and Documenting Student Learning: Overview

Collecting and Documenting Student Learning: Overview .....	1
Samples of Student Work .....	2
<i>To Do</i> : Reviewing Learning Records from Other Teachers' Students .....	3

In order to assess what students know and can do in mathematics near the end of the year, it is necessary to collect evidence of student learning throughout the year. During the year teachers observe and monitor the progress of students as they work on mathematical assignments and projects. Teachers, and the students, look for and document evidence of student progress toward meeting the standards as described in the Mathematical Understanding and Disposition Scales. Records of evidence are collected on the LR Data Collection Form in two formats: *Observation Notes* (page 2 of the form) and *Analysis of Mathematics Work* (page 3 of the form). Copies of the student work related to the records of evidence are included, along with the LR form, in each student's portfolio. See Chapter 6 for suggestions for recording *Observation Notes*, and see Chapter 7 for suggestions for recording *Analysis of Mathematics Work*.

The Five Dimensions of Learning discussed in Chapter 1 provide a framework for describing student progress. (See pages 3-4 in Chapter 1.) Teachers will be able to gauge the degree of *confidence and independence* students have in learning and using mathematics from the initial parent and student conferences through their written and oral reflections throughout the year. In addition, student *experience* with mathematical ideas and processes in and outside of school as well as the extent of their grasp of *strategies* and subject matter *knowledge and understanding* can be preliminarily assessed at the beginning of the year. Conversations with students and periodic journal entries will give teachers insights into the students' abilities to *reflect* on their own learning.

## **Samples of Student Work**

Samples of a student’s work throughout the year are the core of the evidence in the Learning Record. It is unnecessary to include all the daily assignments students do throughout the year, nor would that be helpful when summarizing student learning. However, there are a number of times when a teacher sees that a student has “got it”—the student has a deep insight or produces a piece of work that shows a depth of understanding about an important mathematical idea. These are the kinds of experiences that we want to document in the Learning Record, and these are the samples of the student’s work that we want to analyze and comment about on pages 2 or 3 of the Data Collection Form.

It is important to consider what kinds of student work will provide evidence of a depth of understanding. The Learning Record Mathematics Scales call for more than mere proficiency with computational procedures. Students need to make sense of the problems they encounter and of how to solve them. In many cases students should know multiple ways of approaching and solving a problem. Students need to be able to explain their thinking orally and in writing. Their explanations need to go beyond stating the memorized steps for specific kinds of problems, and express why their thinking is sensible.

The student work included in the Learning Record needs to reflect what the student has accomplished during the year. A student’s work samples may include investigations that take multiple days, assessments that are given at the end of a unit, or even a daily assignment. It is probable that a particular task will not provide appropriate evidence of learning for all students in a classroom—that different students will show evidence of their learning on different tasks.

There will also be times when there is no student work product involved. For example, a teacher may do some of her assessments via individual oral interviews. If so, recording the questions and responses will form a written record. There also will be times when the teacher observes a student who has a sudden insight during a class discussion, when presenting before the class, when answering a question, or when working with others. These unplanned-for key moments can be documented on the LR Data Collection Form.

Yet, there is a limit about how much work is reasonable to include. Therefore, there needs to be careful thought about the selections of what work to include.

Questions that can be considered include the following.

- Does the work show evidence of the student's *understanding* of mathematical ideas (rather than mere procedural knowledge)?
- Does the work show evidence of a student's progress throughout the year?
- Does the work show evidence of a student's understanding in the different areas of mathematics, i.e. number sense; patterns, functions, and algebra; geometry and measurement; and data analysis, statistics, and probability?
- Does the work show evidence about a student's disposition about mathematics?
- Who selects the work samples—the student, the teacher, or both?

### **To Do: Reviewing Learning Records from Other Teachers' Students**

Looking at some examples of a number of students' Learning Records may be helpful, particularly for teachers beginning to use the mathematics component. Chapters 6 and 7 include examples of Observation Notes and Analysis of Mathematics Work, along with copies of the related student work. Your coach may have copies of a complete record from Glen, a 4<sup>th</sup> grade student. Use the suggestions below when reviewing Learning Records from other teachers' classes. (The suggestions may also be helpful when doing LR moderations, either at a school site or at inter-site moderations.)

- Work with another teacher or a group.
- Do the mathematics tasks that are part of the record. You may want to do the tasks individually before discussing them with a partner or small group. It is critical that reviewers actually "do" the tasks, particularly if they are unfamiliar with them. Doing a task helps one understand any complexities that may be involved and gives teachers an idea of how students might go

about solving it and/or what difficulties they might encounter. (Even if one is familiar with a task, redoing it is often helpful.)

- Share your thoughts about the tasks and then discuss your ideas about what students might do.
- Examine the students' work. Think about what the teacher might say about the student's work on the task before reviewing the *Observation Notes* and the *Analysis of Student Work*, realizing, of course, that the classroom teacher really knows the student and you do not, and that your ideas are alternative conjectures.

It helps to have had experience teaching a grade level, and it is also useful to be familiar with the important mathematical ideas for the grade level as identified on the Mathematical Understanding and the Mathematical Disposition Scales.