

# Chapter 1

## Overview of the Learning Record Mathematics Component

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The Learning Record Assessment System provides an organized and mediated approach to the use of multiple sources of evidence to monitor and improve student learning in K-12 classrooms and schools throughout the year. A student's Learning Record (LR) yields a portfolio of information about the student's annual academic progress. Judgments about the nature and extent of progress are based on evidence that students are meeting set standards as they engage in authentic tasks, on information gained in consultation with parents or caregivers and the students themselves, and on analyses of student work.

Used to assess literacy (reading, writing, and talking and listening) in U.S. classrooms since 1988, the LR is an adaptation of the *Primary Language Record*, developed at the Centre for Language in Primary Education for K-6 use in London, England. In the United States, the model was expanded by the Center for Language in Learning (CLL) resulting in the development of a K-12 system of student assessment that validates teacher judgment of classroom work samples and observations for public accountability purposes.\* The mathematics component of the Learning Record has been under development since 1998.

### **Rationale for the Shift to the LR**

The Learning Record helps teachers assess student performance according to acknowledged standards without standardizing performance. The LR also allows students to show what they can do in their own unique ways.

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\* Materials to accompany the literacy component of the Learning Record is available at the FairTest web site.

The principles on which the LR rests are those designed to prepare student for the complexities of the information age, with emphases on:

- deep understanding over rote learning
- performance over assumptions of deficit
- individual development meshed with grade-level expectations and
- building upon the strengths of each individual student and the diversity of languages, cultures and experiences that are represented in the classroom.

In classrooms where these principles guide students, classroom assessment of student achievement occurs over time. Teachers recognize that students meet standards via different routes, therefore, assessment must be appropriate to the individual and true to the subject matter under study, so students may meet standards via different routes and timetables. For these reasons, many teachers use portfolios of student work for assessment purposes.

The LR is designed to provide a comprehensive and accurate documentation of student progress. The use of norm referenced tests provides only a limited indication of student learning. Such tests are one-time snapshots focused on narrow questions that can be answered in a multiple choice format. They do not show evidence of in-depth understanding or document progress over time.

In contrast, the L R Assessment System:

- encourages teacher observations of students as they apply new knowledge and/or strategies to tasks that are relevant to their prior experience,
- values the prior knowledge students bring to school by relating it to school learning,
- provides a fuller picture of each student's current understanding, and
- helps teachers make instructional decisions about what to teach and how to teach it.

The LR supports teachers as they move to portfolio assessment. It encourages students to become confident and reflective learners. Students demonstrate what they know in their oral discussions and presentations as well

as in written assignments. It allows teachers, students, and their parents or other adult caregivers to assess learning throughout the year and from one year to the next in a more comprehensive way than relying on single answer tests only.

Teachers' classroom observations, parents' observations at home, and students' self-assessments document student learning throughout the year and are corroborated with student work samples. Both the documentation and the corroborative samples are collected in a portfolio. Teachers summarize this information about student accomplishment in terms of student progress toward local and statewide standards of achievement.

Near the end of the year, on the basis of the observations and the work samples, a teacher identifies the level descriptors on the two mathematics scales that best match the student's achievement. The descriptors of a level on the scale, when illustrated by actual evidence of student work, communicate the present level of mathematical understanding and disposition and what must be achieved to reach the next higher level.

### **Centrality of Five Dimensions of Learning\* in the Learning Record**

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Integral to the LR are five dimensions of learning, which serve as a framework through which to view and assess student learning. These five dimensions, which are critical to students' understanding and successful use of mathematics, are revealed through observations, classroom discourse and interviews, as well as through students' written mathematics work.

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\* The five dimensions of learning have been adapted for use in the LR from the work of the Centre of Language in Primary Education, authors of the *Primary Language Record*. Their publication in 1990 of *Patterns of Learning* featured these dimensions in terms of language development. The California teachers

- *Confidence and Independence.* Are students willing to risk error? Are they increasingly able to volunteer information and possible solutions to problems, to ask questions and to initiate topics for discussion and study? Are they willing to persevere in the face of complexity?
- *Experience.* Are students using their prior knowledge to make sense of their current tasks and projects? Is there evidence to show that they have broadened and deepened their experience in mathematics? Can they apply their school experience to a range of authentic purposes?
- *Skills and Strategies.* Are students using the skills and strategies of the subject to solve problems and construct projects and products? Do they demonstrate they can use mathematics to solve a variety of problems across different mathematics strands? Can they communicate their strategies and findings clearly?
- *Knowledge and Understanding.* Are students increasingly able to show what they have come to know and understand? What evidence is there that they are adding to their personal knowledge and understanding? What evidence is there that their understanding helps them make connections among mathematical ideas and across other content areas?
- *Ability to Reflect.* Are students increasingly able to describe how and what they are learning to do and to understand? Can they provide criteria for assessing their own work? Are they developing the ability to judge the quality of their own work? Do they know what to do to improve it?

### **How the LR Works**

The Learning Record Assessment System, involves several elements:

1. Collection and analysis of student work. During the year, samples of student work, periodic in-depth assessments, and teacher observation notes are collected in individual portfolios. During and at the end of the school year, selected work from each student's portfolio is analyzed and summarized collaboratively by the student and the teacher. The Learning Record uses

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who developed the LR found them useful also in describing the development of learning generally. They

- standardized record forms, but does not require prescribed or common tasks to be included in students' portfolios.
2. Placement of students on a standardized performance scale. Near the end of the school year, using evidence in the portfolios, the teacher places each student at a level on the Learning Record scales. For mathematics, there are two scales, Mathematical Understanding and Mathematical Disposition. The Mathematical Understanding scale identifies important content performance levels, while the Mathematical Disposition scale helps teachers learn which of the Five Dimensions of Learning may need to be addressed.
  3. Systematic and sustained staff development. For participating schools, the Learning Record is phased in over a three-year period under the leadership of a CLL coach. Teachers participate in seminars while they begin to collect, share and analyze student work. They also discuss the implications of using the Learning Record on classroom practices. As site control over the system grows, the CLL support diminishes to quality assurance only.
  4. On-site and cross-site moderations. Moderations ensure that evidence of math proficiency in one classroom or school is comparable to evidence from other classrooms and schools. Near the end of the third quarter, teachers randomly select three records for moderation. These records are readied for outside review. After the teacher places each of these students on the Learning Record scales, the sample records (with names of students and teachers masked) are reviewed, first at the local school and then later at an inter-site moderation. Reviewers, reading in pairs, examine evidence in the portfolio and place the student on the scales. A third reading is done if the level placement on the scale(s) at the inter-site moderation does not match at least one of the other two placements (placements by the teacher or site).
  5. Reflection on the year's work. Near the end of the last quarter, students' Learning Records are finalized for the year. Parents, teachers, and students review the year's record, and the teacher comments on what comes next. At the end of the year, the record may be kept as a part of the student's

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have been slightly modified to fit mathematics learning.

permanent file and/or sent home, which many parents appreciate. The next year's teacher will find a student's record very useful for setting goals and planning instruction. Each year's parent and student conferences can begin by reviewing the end-of-year summaries from the previous year.

### **Learning Record Scales and Recording Form**

Since there is no one correct way to approach teaching, learning, and assessment, the LR assessment system does not require a prescribed curriculum, teaching methodology, or assessment tasks. There are, however, a standardized mathematics scale to guide evaluation of students' achievement and a LR recording form to permit parents and other teachers at the school and/or other schools to review student records easily.

As mentioned earlier, there are two Learning Record Mathematics Scales: the Mathematical Understanding (grades K-12) and the Mathematical Disposition (grades 3-12). The scales consist of performance levels that describe important benchmarks or characteristics of student work at various grades. There are thirteen levels (for grades K-12) on the Mathematical Understanding Scale, and five levels (for grades 3-12) on the Mathematical Disposition Scale. For ease of use, the Mathematical Understanding Scale is broken into grade spans: K-2, 3-5, 6-8, and high school level courses. See Chapter 2 for more information about the mathematics scales.

The recording form permits multiple sources of evidence about students' mathematical learning. It includes:

- parent descriptions of students' understanding and use of mathematics
- student work samples and reflections
- teacher and student observations and analyses of the work samples
- teacher summaries of what the data means in terms of student achievement
- teacher recommendations about what's next to be learned

See Chapter 3 and Part II for more information about the recording form and samples for discussion.

## The LR and Improving Schools

The LR is more than a way to assess student performance; it supports schoolwide improvement of curriculum, instruction *and* assessment. As a portfolio assessment method for all K-12 students, the LR is useful because:

- it acknowledges and builds on the prior experience of each learner, including the learner with special needs.
- it is based on current theory, research, and good practice about how students develop mathematical understanding.
- it encourages in-depth involvement with a range and variety of experiences in all areas of mathematics.
- it helps students focus on the construction of meanings of increasingly complex mathematical ideas and situations.
- it recognizes the interconnection between areas of mathematics, between mathematics and other subjects, and between mathematics content and processes.
- its implementation model supports teachers as they gain expertise in assessing student achievement by reviewing the quality of student work.
- it involves students, their parents, and teachers in observing progress in five important dimensions of learning, not only on what can be measured on a test.
- it provides information to parents, students, and teachers about what understandings and behaviors are expected for the student to be successful in mathematics.
- it provides performance scales congruent with desired outcomes described in national and state standards.
- it documents what students *can* do rather than what they *can't* do.
- it links classroom assessment to a broader school-wide assessment system for purposes of program evaluation and public accountability.