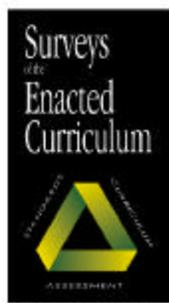


# Using Data on Enacted Curriculum - A Guide for Professional Development



**Moving toward Aligned  
Instruction**

**Assumptions About Teaching  
and Learning**

**Closing the Gap**

**Needs Assessment for  
Professional Development**

**Understanding Cognitive  
Demand**



# **Using Data on Enacted Curriculum — A Guide for Professional Development**

Produced by SCASS/SEC Collaborative Project

The Guide for Designing Professional Development is intended to accompany the Surveys of Enacted Curriculum (SEC) and the data reported to schools and districts using the Surveys. The Guide outlines a series of professional development activities that is based on the use of Enacted Curriculum data. The Guide provides examples and illustrations for how professional development workshops and activities can be organized and implemented with teachers and administrators.

This Guide was prepared through ideas, designs, and experience of educators that specialize in curriculum and professional development in mathematics and science education. It results from work of the same Collaborative team that designed, developed and field-tested the Surveys of Enacted Curriculum during 1998-2000. The activities were field-tested and reviewed in the Collaborative member states.

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## **Who Should Use The Guide**

This Guide is intended for use by educators in systems that have a commitment to using various kinds of data as a tool for identifying ways to improve instruction and advance student learning. The workshops in the Guide are designed for teachers, school administrators, and district administrators. The professional development workshops build on the data and reports provided through the Surveys of Enacted Curriculum systems.

Users of the curriculum data and the workshop designs generally share the view that schools need to improve their use of data for "formative evaluation," that is, information that provides reliable feedback to teachers about the process and content of instruction. (Data about the outcome of instruction, i.e. student achievement scores, provide different information.) They also share the idea that curriculum and instructional improvement can be advanced through work with colleagues.

## **Why Use the Guide**

Workshop leaders might be school, district, or state leaders in curriculum, professional development, or assessment. The school systems may have already collected data with the Surveys of Enacted Curriculum, and are seeking ways to analyze and use the data. Leaders may be seeking a series of workshops based on their data, or they may be looking for one workshop to introduce the idea of using curriculum data. If a leader is planning a series of workshops, the six different workshop topics included in the Guide might be used in sequence over the course of a year. Planning of a series can be coordinated because each workshop is linked to one or more sections of the Surveys, either for math or science. The Surveys, and resulting data, differ slightly according to the grade level taught, elementary, middle or high school, but planning might be organized by the grade levels of the teachers.

Someone leading a workshop could also be an educator or administrator that is seeking support from decision-makers to move toward broader collection of data on instruction in math or science. Five of the six pre-designed workshops have fairly specific goals for examining current practices in math or science education, and providing applications of the data for improving practice. To offer a broader view of the Surveys of Enacted Curriculum and uses of data, we designed an introduction workshop that is intended for initial users or decision-makers. This brief workshop activity is included as:

### **INTRODUCTION TO THE SURVEYS OF ENACTED CURRICULUM**

Turn to this workshop in the Guide or click on the title above for the design of an activity (15 to 30 minutes in length) to guide a variety of types of audiences through the purposes of SEC, the instruments, and sample reports and data from the Surveys.

## Professional Development Workshops for Educators

Designs for six different professional development workshops form the core of this Guide. Each workshop design has a specific purpose, agenda, and learning goals for professionals. The topics for the workshops were selected to highlight uses of data toward improving instruction in mathematics and science in schools. The designs and supporting materials illustrate how specific questions and sections of the Survey, and analysis of resulting data from teachers, can provide a sound basis for teachers and administrators to review current practices, analyze strengths and weaknesses of curriculum, and identify strategies for improvement.

The six topics identified in the Guide are:

**THE SURVEYS OF ENACTED CURRICULUM**  
**ASSUMPTIONS ABOUT TEACHING AND LEARNING**  
**CLOSING THE GAPS IN STUDENT ACHIEVEMENT**  
**MOVING TOWARD ALIGNED INSTRUCTION**  
**WHAT STUDENTS SHOULD BE ABLE TO DO: UNDERSTANDING COGNITIVE DEMAND**  
**NEEDS ASSESSMENT FOR PROFESSIONAL DEVELOPMENT**

To review the plans for each workshop, turn to the workshop in the Guide or click above on the title. A workshop design, agenda, and supporting materials are found in that section of the document.

All of the workshops involve groups of educators in analyzing data from the Surveys of Enacted Curriculum, and then reflecting on their own practices in science or math education in relation to the data. Some of the activities include an initial step of data collection with participants, others assume data have been collected and prepared in advance of workshop activities. Provided for the workshop leaders are the sequence of activities, necessary supporting materials, directions and script, as well as overheads and masters for introducing the activities.

An opportunity for evaluation and feedback should be provided for participants in any of the workshops and activities. A **Feedback Form** is provided with the Guide, and the Form can be used with any of the six workshops. The Form is designed to provide leaders with objective data, as well as open-ended responses and suggestions for improvement. Data from the Form should be provided at a succeeding session or disseminated to participants. Copies of the Feedback Form should be distributed to participants with time to complete the Form prior to the end of the workshop.

## SEC Introduction

### Overview: Surveys of Enacted Curriculum

The Surveys of Enacted Curriculum in Mathematics and Science provide a practical, reliable approach to collecting comparable data from teachers on the instructional practices used and the content of curriculum taught in classrooms. The Surveys also ask teachers to report on conditions for teaching in schools, instructional materials and equipment, and teacher preparation and professional development.

The Surveys were developed by collaborative efforts of CCSSO staff, state specialists in math and science, and researchers from the University of Wisconsin. The Surveys were piloted and field-tested in a sample of schools and classrooms. In spring of 1999 the Surveys were used to collect data in 600 classrooms across 11 states as a major test of the data collection instruments, and to develop methods of aggregating and reporting data. The data were also used to analyze the relationship of state initiatives in math and science to instructional practices. Several reports and papers have described the results, including *Using Data on Enacted Curriculum in Mathematics and Science: Sample Results from a Study of Classroom Practices and Subject Content*, (CCSSO, 2000) (available on this [CD: {Click Here}](#) or from CCSSO Publications, Washington, DC, 202/336-7016).

### Rationale for SEC: New Ways to Use Data

*Achievement Data Analysis.* Educators have found new ways to use data to analyze student performance and to improve instructional practices. School systems and states are providing results of standardized tests that are not only reported by school and classroom but also disaggregated by test item, by student demographics as well as by content standards. Many states are analyzing student achievement scores so that schools can see how their results compare with other schools with similar characteristics, such as school size, student socio-economic status or rates of mobility.

*Move Toward Instructional Data.* Accountability reporting, and stakes for schools and students, are the central motivating forces behind educators need to analyze data. Demonstrating educational progress to policy-makers may require greater focus on data, but educators also know that careful analysis of student progress and examination of the relationship of teaching strategies to learning has always been a standard for excellent teachers. Now, with the tools offered in the Surveys of Enacted Curriculum, teachers, administrators and district and state specialists have new resources for obtaining a variety of data about students, learning, and teaching that can guide efforts to re-focus teaching practices and curriculum.

*Using Data on Curriculum.* For years, schools have examined data on the courses, curriculum, or track received by students in middle school and high school to see if there is a relationship of curriculum and courses to subsequent education and to success after

schooling. These kinds of data analyses did little to analyze the actual content of instruction provided to students. Now, more schools can use in-depth data on instruction to analyze the effects of teaching on student achievement measured on system-wide tests.

*Improved Data Systems and Technology.* Currently, student-level information systems already in place in many states allow schools to cross-tabulate student achievement scores by teachers' level of certification, preparation, or experience. Districts and states can also analyze student performance on tests according to the course, types of curriculum materials, or texts used by teachers. And, recently, some states have begun to include questions concerning students' opportunity to learn specific content or skills that are included on tests, such as experience with hands-on or performance-based tasks in science.

*Lessons from TIMSS.* The recent international studies, such as TIMSS (conducted in 1995) and TIMSS-R (conducted in 1999), provide illustrations of what can be done with analyses of curriculum, including in-depth data on curriculum taught in classrooms, instructional practices, and teacher preparation. The TIMSS results demonstrate the power of data to identify the effect of specific differences in how mathematics and science content is organized and taught in classes.

With TIMSS results, educators can: (a) analyze differences in student achievement of students related to curriculum content taught, both between and within countries; (b) identify instructional practices that lead to lower/higher depth of understanding of central concepts; and (c) recognize the problem of repetition of curriculum topics across the grades in U.S. schools, which lowers the achievement of students at intended grade levels.

(To access further information, studies, and reports about TIMSS and TIMSS-R, click on <http://www.nces.ed.gov/timss>).

## **What's Covered in the Surveys**

The Surveys of Enacted Curriculum are made up of two main sections titled Classroom Practices and Instructional Content. The first section, Classroom Practices, includes items on instructional practices and teacher preparation. Topics such as Teacher Characteristics, Homework, and Assessments are covered in this section. The Instructional Content section covers teacher expectations for students and the amount of time spent on the curriculum topics taught during the school year. A list of the topics covered in the Surveys can be found below. The Surveys were created for elementary, middle and high school teachers, in both math and science.

- *Classroom Practices*
  - School Characteristics
  - Class Characteristics
  - Most Recent Unit

- Homework
  - Instructional Activities
  - Use of Calculators, Computers, and Other Equipment
  - Assessments
  - Instructional Influences
  - Classroom Instructional Preparation
  - Teacher Opinions
  - Professional Development
  - Formal Course Preparation
  - Teacher Characteristics
- *Instructional Content*
- Curriculum topics taught during school year
  - Time on Topic
  - Teacher expectations for student learning by topic

## Typical Applications of SEC Data

The initial uses and reports from the Surveys of Enacted Curriculum show the data have a number of practical and important uses for educators and leaders at all levels of our systems:

***T Comparing Instruction in One Classroom or School to Another***--Teachers report on their instructional practices and the content of instruction over the course of a school year. With common, structured questions and standard methods of summarizing data, teachers can gain a picture of their instruction in relation to others in their school or teaching in other schools in their district or state.

***T Interpreting Student Assessment Results***--The subject content data reported by teachers can be analyzed with the student assessment results to determine strengths and weaknesses in curriculum and teaching strategies. The assessment items or whole tests can also be compared to teacher reports of instruction.

***T Evaluation of Professional Development***--The Surveys include questions on the amount, types, and quality of professional development received by teachers (based on research). Professional Development needs, and the effects of Professional Development can be evaluated using the data on instructional practices.

***T Aligning Curriculum with Standards***--Survey data are reported by broad topic categories matched to the standards and by specific item profiles and teacher expectations that match to the benchmarks.

***T Needs Assessment and Planning***--The Enacted Curriculum Surveys can provide a tool for identifying needs of teachers and schools, determining effects of change in curriculum or policies, or providing instructional data for planning programs.

***T School Curriculum Improvement***--Teachers, schools and districts often seek ways to improve dialogue among teachers regarding their own practice and curriculum content. Data on Enacted Curriculum provide comparable measures for moving toward more in-depth discussions with teachers about content, strategies, and articulation among grades and courses.

## Guide for Use of SEC Data

A key step for school systems or states with the kind of rich, in-depth database offered by a study such as TIMSS is determining how best to provide the data and data interpretations with teachers. Questions are raised about how to structure a professional development offering, how to present data that are accessible and useful to teachers, and how to work with data to apply the findings to their practice and classrooms.

The practical steps and strategies for organizing professional development that focuses on data described by Love in *Using Data, Getting Results* (2000) need to be applied more broadly. The present Guide builds on the strategies, practical experiences and case examples described by Love. It offers a way to structure data-based sessions on instructional improvement with the data sources being participants' own classrooms and schools. The SEC Guide was established by educational leaders from several states that worked together with CCSSO staff and others to analyze data from the Survey of Enacted Curriculum. Then the state leaders worked on thoughtful approaches to planning professional development activities with teachers.

The models for the PD activities in the Guide are all based on some assumptions about participating educators. First, we assume that participants will be motivated to see how the intensive series of questions about content, practice, and teachers' background can be used to improve instruction. The designers of the Guide also assume that leaders and teachers are taking a positive approach to these sets of data as a tool for asking questions and sharing information among educators, and not with the view that data are primarily a method of evaluating, rewarding or punishing teachers. The goal is to assist planners of professional development to determine how the Surveys of Enacted Curriculum can be incorporated into a series of activities that move teachers toward improvement, based on good information, and assessment of weaknesses and strengths in current practices.

### How Data are Reported

A printed report is available from CCSSO (*Using Data on Enacted Curriculum in Mathematics and Science, 2000*). The report provides examples of how data are reported from the surveys. It also provides instructions for interpreting and using statistical charts, graphs, and comparisons across schools and teachers.

#### Sample Charts and Graphs

Active Learning in Science  
Reasoning and Problem Solving  
Mathematics and Science Content in Classrooms  
Assessment Strategies in Math and Science  
Use of Education Technology and Equipment  
Influences on Curriculum and Practices

*Sample Charts and Graphs (continued)*

Alignment of Content with State Assessments

Teacher Preparation

Interpreting Content Maps

Use of Class Time -- Mathematics

Use of Class Time -- Science

To view sample charts showing how Enacted Curriculum Data are reported for use by educators click on the SEC-CD "Results" TAB or go to the website listed below.

*http:// [www.ccsso.org/projects/SEC.html](http://www.ccsso.org/projects/SEC.html) [report title: download pdf file]*

**Also available from CCSSO--** A SEC-CD on the Surveys of Enacted Curriculum, containing surveys, reports, background papers, and data analysis procedures, plus this PD Guide. The CD was developed with support of the SCASS-SEC collaborative project.