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
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.

To view the following topics, click on the title below or turn to the appropriate page.

**Who Should Use the Guide**

**Why Use the Guide**

**Professional Development Workshops for Educators**

- Introduction to the Surveys of Enacted Curriculum
- Assumptions About Teaching and Learning
- Closing the Gaps In Student Achievement
- Moving Towards Aligned Instruction
- Understanding Cognitive Demand: What Students Should Be Able To Do
- Needs Assessment For Professional Development

**Feedback Form**

**SEC In-Depth**

- Overview: Surveys of Enacted Curriculum
- Rationale for SEC: New Ways to Use Data
- What’s Covered in the Surveys
- Typical Applications of SEC Data
- Guide for Use of SEC Data
- How Data are Reported
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](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
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.


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.
### Purpose:
- To provide participants with background on the survey and reporting tools.
- To increase understanding of enacted curriculum concepts and how data might be useful to educators.

### Participants:
Potential participants in PD activities, administrators and decision-makers, or as introduction portion of workshop

### Materials:
- Copies of SEC Brochure
- Copies of *Using Data on Enacted Curriculum*... (report), or pages printed in color from CD
- Copies of Teacher Surveys: Instructional Practices
- [If LCD projector, use SEC-CD]

### Activity 1: Warm-Up
Participants discuss what current data and types of data are used in schools in math and science to examine instruction and curriculum---How are data used? (E.g., assessment results)

### Activity 2: What Data are provided through SEC
- Hand out one chart reporting data (or use projector)--from *Using Data*... (e.g., Use of Time in Recent Unit).
- Discuss what the chart shows, what questions are raised, what people don't understand, how the data might be useful.
- Handout or show sample pages of the survey.

### Activity 3: Examples of Reporting from SEC
- With handouts, or with projector, show samples of survey item profiles, scales, content maps.
- Show overhead with List of Topics in Survey, or List of charts available for reporting.

### Activity 4: Uses of SEC data
Review examples of uses of SEC data through overhead and illustration
- Comparing...
- Interpreting...
- Aligning...
- Needs Assessment...
- School curriculum Improvement...
- Evaluation of Professional development...
# Workshop

**ASSUMPTIONS AND VIEWS ABOUT TEACHING AND LEARNING**

<table>
<thead>
<tr>
<th>Purpose:</th>
<th>To identify teacher views and assumptions about education, and compare with guiding principles that underlie state documents.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants:</td>
<td>Teachers -- Up to 35 (20 to 25 ideal)</td>
</tr>
<tr>
<td>Time Needed:</td>
<td>3 hours (If survey questions are done ahead of time). More time will be needed if survey is not done and results computed before the session.</td>
</tr>
</tbody>
</table>
| Materials: | Survey: Teacher opinion portion  
Power Point presentation or overheads  
State framework or standards document(s) |

### Activity 1: Intro/collect data

**1 hour**

- Have participants take teacher opinion portion of survey (Math: 113-118, Science 112-114, 127). This could be used to build engagement in questions, with or without compiling results and discussion.
- Give each teacher an opportunity to use three adjectives to describe their classroom. Use results to provide an extensive discussion on what classrooms “look like”.

### Activity 2:

**1 hour**

- Using the four slides from the Power Point Presentation, discuss the teaching methods and assumptions shown in each of the slides.
- Have each teacher develop, on paper, descriptions of their philosophy of teaching and learning.
- Discuss ideas from each participant.
- Present the group survey data and spend time comparing the group’s differing philosophies of education using the data.

### Activity 3: Analyze standards

**1 hour**

- Using state frameworks and standards documents, locate places where guiding principles or assumptions might be found or deduced. Working in small groups, have participants identify underlying assumptions/ principles, either explicitly or implicitly stated in documents.
- In large group, come to consensus on principles or philosophy of education represented in state documents.

### Activity 4: Compare data

**1 hour**

- Present state survey results from teacher opinion portion of survey for purpose of comparison.
- Compare data with principles and standards in Activity 3

### Activity 5: Follow Up

In large (or small) group, discuss the following questions:
- Are there principles missing from the state document?
- Which beliefs/opinions on state survey are furthest from state document?
- What are implications of holding these beliefs?

Complete Feedback Form
| **Next Steps:** | An extension for this activity might be to look at beliefs of teachers in high poverty schools or schools with similar demographics that have varied student achievement. For example: look at schools that are low performing and compare teacher beliefs with schools that have the same demographics but have high student achievement. |
Leader Notes:
- It is suggested that the survey questions be completed ahead of time. This allows for the data to be analyzed and graphed which allows the facilitator to be better prepared. Graphs can be added to the existing Power Point presentation.
- In Activity 2, teachers can develop written individual descriptions of their philosophy of teaching and learning.
- Example graphs for discussion of data for Activity 2 are shown in Power Point Slides 9 -14. These slides could be used as a focus for discussion if group data is not available.

Preparation:
- Transparencies can be made from the Power Point Presentation slides [or click on power point from WV tryout]

Resources:
- Ice Breaker: Slide 2 from Power Point Presentation
- Activity 2: Slide 3 – 7 from Power Point Presentation
- Survey Questions: Math & Science Teacher Opinion (Math 113 – 118 or complete survey 113-130; Science 112-115 or complete survey 112 - 129)
- State Framework or Standards
- Results from State Survey
- Activity 6: Slide 8 from Power Point Presentation

Other Helps – Links to the Whole:
- Suggestions include using the other four workshops as needed -- entry point may vary from site to site. While there is no sequence required, it is recommended that this workshop be closely connected to the “Needs Assessment for Professional Development” activity.

Scenario:
- This workshop is most appropriate for teachers, but can be adapted for use at regional or state level with professional development providers and district personnel. The workshop could be done for district level personnel to use as a model for teacher professional development.
- The workshop can designed for any group of teachers, but providing the workshop for a group of teachers with diverse professional development backgrounds [e.g., WHAT MEANS?] will provide a rich discussion.
# Workshop

**Understanding Cognitive Demand**  
*(What Students Should Be Able To Do)*

<table>
<thead>
<tr>
<th><strong>Purpose:</strong></th>
<th>To gain knowledge of cognitive demand (or expectations for students) and understand its vote in assessment and in instruction for mathematics or science.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants:</strong></td>
<td>From 10 to 30 Teachers</td>
</tr>
<tr>
<td><strong>Time Needed:</strong></td>
<td>Half-day</td>
</tr>
</tbody>
</table>

### Activity 1: Introduce  
*Introduce (15-30 min)*

- Introduce the workshop by identifying objectives: review five categories of cognitive demand as they relate to student assessment.
- Give examples of the five categories.
- Give each participant a set of 5 test items to classify according to the cognitive demand. *(Each participant is classifying the same 5 test items; test items can be multiple choice, short answer or open-response).*

### Activity 2: Classify  
*Classify (30-60 min)*

Reflection: think, pair, and share format.

- At their table, participants individually classify each of the five test items into the five categories of cognitive demand.
- The group pairs and shares their classifications, and reflect on what they believe students would have to “know and be able to do” in order to answer each of the questions in Activity 1.
- Participants then reflect on instructional strategies that would help students learn the necessary skills.

### Activity 3: Jigsaw Activity  
*Jigsaw Activity (40-60 min)*

Give each participant a copy of *Survey of Classroom Practices* booklet, Subject Content sections.

- Go to the third page, “Expectations for students in….”
- Set up 5 groups. Each group will focus on each of the five categories of cognitive demand.
- Charge to each group: Review the descriptors written under each category, then draft 1 example of student performance that would be representative of each of the cognitive demands.
- Convene as a whole group. The workshop leader will ask a group to give an example for one of the cognitive demands. Ask other groups to agree or disagree and provide other examples. Use this procedure for each of the five cognitive demands.
| Activity 4: Calibration (40-60 min) | Return to home table (5 groups).
- Give each participant 5 pre-cut “pie pieces” cut from colored construction paper. (Pie pieces are one of 5 colors, each color representing one of the 5 “expectations”.)
- On each table, put a set of 10 or more pre-written assessment items (the set should reflect all of the expectations).
- Read the first assessment item aloud - Have each group member decide (to themselves) which of the expectations that item represents.
- Each group member should then take the colored piece of pie that represents that expectation and place it in the center of the table.
- Questions for each group to reflect on: Did everyone agree on which expectation was associated with the assessment item? If not, why? Discuss disagreements. Can some assessment items reflect more than one expectation?

| Possible next steps: | Participants use samples of their own classroom assignments for classification, discussion of appropriate instructional strategies for successful performance.
Charge: Analyze the classroom test, identifying questions that reflect each of the expectations. How many reflect each of the expectations? Report out and discuss with the grade-alike/domain-alike group.
Use available videos (such as TIMSS) to analyze teaching methods illustrated.

| Related Workshops: | See Alignment Workshop for work with district/state assessment items and their relationship to instruction and state standards. |
Workshop Notes
Understanding Cognitive Demand
(What Students Should Be Able To Do)

Materials:
- Survey of Instructional Content
- Sample assessment items
- Construction paper of five distinct colors, cut into 1/5 pie portions
- Handouts & Transparency of Cognitive Demand Categories and descriptors
- Writing tablets/Newsprint/Markers
- Overhead Projector

Preparation:
- Put together a short five-item assessment to be used for activity one.
- Make sufficient copies of 5 item test used in activity one to cover anticipated number of workshop participants.
- Select a sample of assessment items (at least 10) from various sources (local, state, NAEP, etc.) that reflect each of the various cognitive categories.
- Bring sufficient copies of the SEC instrument for the relevant subject and grade level, so that each participant has a copy to take with them.
- Bring overhead transparency/PowerPoint of the Cognitive Categories (with descriptors).
- Have teachers bring copies of an assessment of their own for possible next steps.

Scenario:
- Your school is concerned about the implications of a new state assessment and is worried that your students might not do well on some types of questions anticipated to be included. The school has heard that there are new demands for standards-based teaching and learning. The teachers would like to have a better understanding of the cognitive demands that might be required for students to do well on the new assessment.

Other Helps – Links to the Whole:
- It is recommended that this activity be subject specific (i.e. mathematics or science).
- While better inter-rater reliability is hoped for in activity 4 than found in activity two, it should be noted that the conversation itself is more important than complete agreement on the types of cognitive demand reflected in the various assessment items reviewed.

Presenter Notes:
- Think, Pair & Share activity explanation/rationale
- Directions for Jig-Saw activity
- Suggestions on Calibration
Workshop
CLOSING THE GAP

Purpose:
- To learn how to identify performance gaps between student groups on standardized assessments.
- To identify and become aware of teacher, classroom, and school factors that may be related to the gaps.
- To identify possible instructional strategies for improving instruction and changing educational methods and procedures.

Participants: Educators and administrators at a local site

Time Needed: 4 hours minimum (add additional time to complete surveys)

Materials:
- Teacher Survey: Items from the SEC that address teacher preparedness for dealing with diverse learners (Items: 6, 7, 12, 13, 92, 102, 103, 105, 107-110, 112, 127, 129, 136, 149)
- Disaggregated student achievement results from state assessment
- Disaggregated Instructional Practices data from SEC, by vote (7), Achievement Level (11), LEP (12). List of resources, such as web list, showing analyses of performance by student groups, and research findings on strategies for differentiated instruction to address diverse learners

Goal: Compare appropriate district/school data for different student groups and results of SEC teacher survey questions (see SEC survey) relative to preparedness for teaching diverse learners. Use this data and survey results as basis for working cooperatively in developing strategies for improvement.

Activity 1: Survey/Warm-up (30 min)
- Teachers complete Survey items on teacher preparedness (outlined above). [If possible, enter data from surveys into database and produce reporting charts for use in next activity.]
- Descriptions of my classroom: Write 5 descriptors about classroom practice and students (provide some samples). For example, “Think about your classroom…what does it feel like, what does it sound like, what does it look like, what are the strengths, what areas need improvement, are there any difficult children.”
- Option: Have a variety of descriptors on wall; teachers find one that matches their classroom; they stand by it, and share in this group why they chose that descriptor. Report out to large group.

Activity 2: Analysis of Groups (1 hour)
- Divide all participants into small groups.
- With assistance of group leader familiar with state/district-wide assessment, review disaggregated data to identify gaps in achievement in participants’ district or school.
- Focus on the types of gaps people identified—race/ethnic, gender, disability, LEP and examine the reasons for identifying these gaps.
− Report out possible explanations for gaps; and divide into categories—student background, motivation, teachers’ preparation, instruction, peers, school climate, curriculum, etc.
− Review possible explanations and reasoning provided by participants.
− Participants go back to small groups to discuss relationships between their preparation, their own perceptions, and student gaps.

Activity 3: Identify teaching differences  
(15 min)
− Interpret results from the SEC survey items completed in Activity 1. (Data on teacher reports of preparation, instructional practices, or content could also be analyzed).
− Disaggregate the results by characteristics of students that are taught by participants. Question: Do level of preparation, practices, content taught differ by students taught?
− Examine other school and educational indicators such as prior achievement, course taking, methods of assessment, curriculum, or professional development strategies that may explain gaps.
− Identify and prioritize as a whole group.

Activity 4: Strategies for instruction  
(45 min)
− Brainstorm ways that teachers and schools can change instruction or curriculum or school organization/procedures.
− How can we reduce gap? Are there any existing initiatives that focus on eliminating performance gaps for different student groups in your school?
− What alternate strategies have been tried in your school or district or others? Do you know what works?
− Ask participants to examine latest research on the achievement gap and how to close it, and to identify three or more possible strategies to improve practices.

Complete Feedback Form

Next Steps: Next workshop, ask for instructional leader to focus on helping teachers to learn and practice strategies for teaching diverse learners. Teachers compare progress through observation, and report back on their own progress. Form network of teachers and administrators in school or district to maintain effort and build support.

Long Term: Revisit in a year or so when new data are available. Progress towards reducing the gaps can be monitored over time. A future session could look at content coverage and practice for diverse learners. Utilize data from feedback form to determine future staff development activities.
Leader Notes:

- This is an ideal workshop to use in districts and/or schools with diverse populations and an apparent disparity in academic achievement in mathematics and science. It is intended to help identify specific performance gaps, facilitate conversations about factors that contribute to them, and develop strategies to close them.
- The appropriate audience consists of either small groups of administrators, groups of classroom teachers, or a combination of teachers and administrators. It will work best for groups under 30 people. It can be done in 3 hours, including a break.

Materials:

- Condensed Survey of the Enacted Curriculum (SEC).
- Appropriate overhead transparencies to introduce research on differentiated instruction to address diverse learners. See notes below for Power Point presentation.
- Samples of disaggregated data that can be used to identify gaps in student performance. SEC instructional data can be disaggregated and reported by student groups (e.g., % minority or %LEP) using items from the Teacher Survey. The database for 11 state study is available for these kinds of disaggregations.
- List of relevant resources.
- Samples of class descriptors.

Scenario:

- A district assistant superintendent could run this workshop for principals and appropriate coordinators or department heads. The district might be facing parental concerns related to equity. Another possible scenario would be that a department head would hold this workshop for teachers in his or her department to sensitized them to issues related to instruction and an apparent gap in achievement. Two departments might compare their successes in working with diverse groups.

Notes on Power Point presentation on “Closing the Gap”:

These power point slides could be used to provide information and stimulate discussion about “closing the gap” before the workshop activities. Slides are to be grouped as follows:

- National/State Statistics (Tony will provide)
- All-Inclusive Classroom (Tony will provide)
- Is Science/Mathematics for all students? (Tony will provide info for science)
- Learning Styles
No single policy, program or action can ensure the school success of every child, but a combination of approaches can. Here is what research is saying about strategies or actions a district, a school or a teacher should consider:

1. Do not think in terms of remediation but insist on high-quality instruction sensitive to students’ needs from the beginning of their time in school and respond immediately and intensively if children start to fall behind.

2. Start early. There is no such thing as an intellectually unmotivated 4 or 5 year old. Build on their enthusiasm and energy thereby ensuring a good start in elementary school.

3. Overdetermine success. Anticipate all the ways children might fail and plan on how each will be prevented and quickly dealt with effectively.

4. Have consistency in tracking achievement by race, language, gender and income.

5. Reduce class size for more one-on-one interactions. Will most likely benefit the minority student.

6. Involve parents. Provide clear instructions to parents on what to do with their children.

7. Professional development for Principals and Teachers on raising minority achievement.

8. Kids generally care more about the reactions of their peers than those of teachers or parents. Therefore encourage a number of minorities to take upper level and AP courses.

9. Do not “dumb-down” the curriculum for minorities. The biggest factor in determining whether young people go on to a post-secondary program is participation in a strong curriculum.

10. Do not have new or underqualified teachers teaching classes with high concentrations of minority and poor students.

11. Make sure your standardized tests are not inherently biased against minorities.

12. Lobby for money from your state Capitol to help close the gaps in achievement between whites and minorities.

13. Use technology as a way of reducing isolation.

14. Emphasize collaborative learning in heterogeneous groups.

15. Change teacher attitudes that they cannot teach science to ‘all’. If you expect less from a student, that’s what you will get.
# Workshop

## Moving Toward Aligned Instruction

### Purpose:
- To learn methods of determining alignment of content taught in classrooms and state/district assessments.
- To examine possible uses of alignment information to increase the effectiveness of teaching and learning.

### Participants:
Decision-makers for instructional programs at building, district, or regional level such as teachers, curriculum specialists, and/or administrators. Up to 30 participants. (Size of audience needs to permit meaningful discussion and may vary with audience and level of understanding of and experience with alignment issues.)

### Time Needed:
A minimum of one day. One and one-half days recommended. Additional time may be needed if workshop activities include participants completing the survey and/or in-depth analysis of the data and level of alignment.

### Materials:
- Survey of Instructional Content
- Content maps with local results
- Assessment coding procedures for using content matrix
- Released form/items from targeted test (if alignment is not available)
- State content standards, frameworks, and assessments

### Goals:
Increase knowledge of alignment procedures through SEC. Gain understanding of applications of self-report data. Develop strategies for identifying alignment needs.

### Idea:
Identify discrepancies and brainstorm ways to bring about alignment.

### Activity 1:
**Understanding content topics**

(60 min.)

- Introduce Survey of Instructional Content. Display topic area in the content survey. Ask participants to think about what concepts and skills related to the topic are critical at their respective grade(s), what students would be expected to do to demonstrate the concepts and skills, and what classroom practices would be needed. Using Think-Pair-Share, participants discuss, share, and briefly report their practice related to the given topic. Attention may need to be given to definition of cognitive demand, particularly for generalists within the audience.
- Participants complete a selected portion of the Instructional Content Survey.
- Produce content map of teacher responses.
- An informal mapping may be done using chart paper and post-it notes by asking participants to place notes on grid representing expectations for each of the topics in the selected section.

### Activity 2:
**Code assessments**

(90 min)

- Introduce coding of assessments -- present an assessment item related to the topic used in the introductory activity above. The item may be a NAEP, TIMSS, or state assessment item. Participants discuss the content being assessed, how it is being assessed (link to cognitive demand), and what classroom experiences are needed.
- Discuss the differences in interpretations when coding tasks. Identify strategies for addressing factors that may contribute to these differences.
| Activity 3: Compare (90 min) | Code part of a selected assessment instrument related to the section of the Instructional Content Survey (using procedures developed and tested by CCSSO/WCER).
Produce a map of the assessment using data template and mapping software (if available). Alternate: show map of assessment items or standards previously produced.
Present and discuss the coding for a selected item. |
|-------------------------------|-------------------------------------------------------------------------------------------------|
| Activity 4: Issues in alignment (90 min) | Model the comparison of data and content maps for instruction and assessment using the samples from the SEC-CD; e.g., maps of instructional content, state assessment, and NAEP, and/or participant responses.
Divide into small groups to analyze and interpret the differences in content maps for the written, taught, and assessed curriculum. Share and discuss initial findings and identify what may be contributing factors for differences.
Compare and contrast the content map with the assessment coding from Activities 1 and 2. |
| Activity 5: Reflect and apply (30 min) | Provide a vignette via video or written description; e.g., from NSES or NCTM. Ask participants to identify classroom practices that reflect standard(s).
Discuss and clarify issues related to alignment such as what is the intended content, what content is being assessed, how complex is the expectation, and what classroom practices support the standard(s).
Generate strategies for addressing alignment issues and link to selected items from instructional strategies section of survey (items 15-84). |
| Next Steps: | Identify past and current strategies and procedures for making decisions regarding content, instruction, and assessment in response to district and/or state standards/assessments.
Modify and identify new strategies that emerge from the mapping activity and the alignment issues discussion, such as instructional materials alignment. |
| | Plan for implementation of strategies and procedures identified in Activity 5.
Complete Feedback Form |
Leader Notes:
None

Materials:
• Copies of external assessments, state standards, and results of teacher surveys.
• Procedures and instructions for content analysis of standards and assessments.
• Mapping and alignment software.

Preparation:
• Have available data scanner and computer software to input surveys and produce content maps or web-based survey system. Staff will be needed to support the data collection and analysis during the workshop.

Resources:
• Learning Through Assessment package (WestEd)

Scenario:
• Use to improve test scores of low performing schools where alignment problems have been identified.

Alternate:
• Provide survey report based on prior data collection that matches the group of participants in workshop
## Workshop
### PROFESSIONAL DEVELOPMENT NEEDS ASSESSMENT

**Purpose:** To identify and clarify professional development needs of teachers in the area of instructional practice.

**Participants:** Local district science and mathematics specialists, curriculum coordinators, lead teachers, and administrators

**Time Needed:** One day plus, participants must collect teacher survey data prior to Activity 2.

**Goals:** To become knowledgeable about the use and purpose of the Surveys of Enacted Curriculum. To identify professional development needs in the area of instructional practice. To develop plans for professional development in instructional practice to meet these identified needs.

### Activity 1: Introduction to the Surveys
(2 hours)
- Present overview of the Survey(s) (see Overview/Basic Survey training)
- Discuss potential for Survey; Share information about the other SEC Survey-Based Workshops.
- Complete Instructional Activities in Mathematics and Science Surveys, questions 34 – 76.
- Share results. Discuss potential problems and definitions.

### Activity 2: Collection and Analysis of Data
(2 hours)
- Collect data from teachers in schools prior to workshop, participants bring results to workshop
- Present school and/or district data
- Compare local data to state data
- Identify similarities and differences
- Summarize findings in large group

### Activity 3: Choosing a Focus Area
(2 hours)
- Based upon survey results, choose a focus area in the Instructional Activities section (e.g., instructional time, use of technology, problem solving, types of assignments).
- List the needs identified and then brainstorm ways of addressing the needs. (e.g., Identified barriers, resources, research base, timelines, leverage points, and strategies for addressing needs.)
- Record results on chart paper and display on walls for a Gallery Walk. Choose a group member to answer questions regarding your plan.

### Activity 4: Gallery Walk
(1 hour)
- Conduct Gallery Walk. Gallery visitors have the opportunity to ask questions, make suggestions, and identify other needs to be considered. Visitors use post-it notes to cite concerns.
- Return to large group and discuss presentations and suggestions.
- Determine next steps or other SEC workshops to be conducted.
- Complete Feedback Form
Leader Notes:
• This workshop was designed for local district science and/or mathematics specialists, curriculum coordinators, lead teachers, and administrators as a part of a comprehensive analysis of needs in schools and districts to plan the professional development needed to improve student learning. It should be conducted as part of a consolidated planning process to identify funding sources and plan the professional development calendar.

Materials:
• Use Chart D, “Most Recent Unit”, as an example of how to display data
• Short list of ice breaker activities
• Selected survey questions, Instructional Activities, questions 34-76. (Please note that the mathematics and science questions are different.)
• Survey of Classroom Practices results in graph or table format from participants’ state
• Overview of SEC Surveys
• Directions for Gallery Walk or Walk About

Preparation:
• A standard PowerPoint format should be developed for use with all presentations. The format should include the SEC logo and footer with CCSSO identified.

Resources:
• Short, annotated bibliography related to professional development research, trends, etc.
• Instructions for customizing sections of the Survey for use in this workshop, i.e. converting pdf files to Word should the presenter/facilitator choose to add or eliminate questions.

Scenario:
• This workshop can be adapted for use at a regional or state level with professional development providers and district personnel.
• Eliminating the district level teacher data and using workshop participants’ responses to the survey (based on personal observations of classrooms) provides data to compare to state data.
• Each individual workshop is approximately 1-2 hours in length. However, participants must collect teacher data prior to the beginning of Activity 2.

Other Helps – Links to the Whole:
• Suggestions include using the other four workshops as needed – entry point may vary from site to site. While there is no sequence required, it is recommended that this workshop be closely connected to “Assumptions About Teaching and Learning” workshop.
## Workshop Guide

### Template

<table>
<thead>
<tr>
<th>Purpose:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Audience:</td>
<td></td>
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<tr>
<td>Time needed:</td>
<td></td>
</tr>
<tr>
<td>Materials:</td>
<td></td>
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Activity 1:

Activity 2:

Activity 3:

Activity 4:

Next Steps:
Please provide your feedback and any specific suggestions for improving the professional development workshop:

<table>
<thead>
<tr>
<th>Purpose:</th>
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</thead>
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<tr>
<td>The purpose of the Workshop was clearly stated / presented.</td>
<td>O O O O O</td>
</tr>
<tr>
<td>Activities were consistent with the purpose.</td>
<td>O O O O O</td>
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<table>
<thead>
<tr>
<th>Participants:</th>
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<tbody>
<tr>
<td>The Workshop was on-target and useful to you in your current position.</td>
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<tr>
<td><strong>Comments:</strong></td>
<td>1 2 3 4 5</td>
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<tr>
<td></td>
<td>O O O O O</td>
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</table>

<table>
<thead>
<tr>
<th>Time needed:</th>
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<tr>
<td>The length of time provided was appropriate to the purpose and activities.</td>
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</tr>
<tr>
<td><strong>Comments:</strong></td>
<td>1 2 3 4 5</td>
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<tr>
<td></td>
<td>O O O O O</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Materials:</th>
<th>1 2 3 4 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>The materials provided were appropriate and useful.</td>
<td>O O O O O</td>
</tr>
<tr>
<td><strong>Comments:</strong></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td></td>
<td>O O O O O</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Activities:</th>
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</tr>
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<tr>
<td>There was a good flow to the activities</td>
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</tr>
<tr>
<td>Participants were active and interested</td>
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</tr>
<tr>
<td>Leaders did a good job of facilitating the workshop</td>
<td>O O O O O</td>
</tr>
<tr>
<td>The workshop exemplified effective pedagogy</td>
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</tr>
<tr>
<td><strong>Comments:</strong></td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td></td>
<td>O O O O O</td>
</tr>
</tbody>
</table>

1 Strongly Disagree  2 Disagree  3 Neutral  4 Agree  5 Strongly Agree
CLOSING THE GAP

Problem Statement:

Why do specific groups of students achieve at different levels consistently over time?

- What do we know about it?
- What can we do in our school, classroom?
Introduction

Evidence of Gap and Trends over Time

[View NAEP Scores]

• What do we all “know” produces the gap and prevents it from closing?
• What are the reasons teachers, administrators, and others tell us?
Figure 3.3
Average mathematics scale scores by race/ethnicity, grades 4, 8, and 12: 1990–2000

Closing the Gap
Figure 3.4a
National Achievement Level Results by Race/Ethnicity

Percentages of students within each mathematics achievement level range and at or above achievement levels by race/ethnicity, grade 4: 1990–2000

Closing the Gap
But, is there other evidence on closing the gap that challenges what many have observed?

[See Texas trends]

Percent of Grade 4 Mathematics Students At or Above Basic Achievement Level (NAEP)
Texas State Math Assessment Trends

Closing the Gap
What is your classroom environment?

• List 5 descriptors of your class on sticky notes
  – What are the outstanding characteristics an observer would see/feel?
  – How does it “feel” to students?

• Work with others at your table to identify commonalities and differences in the class descriptors

• In Groups, ask Question: Do the descriptors tell you anything about which students will do well in the class and which will not?
What about Teaching Practices and Knowledge?

- Are teachers prepared?
  What can data tell us?

- Distribute SEC Teacher Survey items:
  [#6, 7, 12, 13, 92, 102, 103, 105, 107-110, 112, 127, 129, 136, 149: copy items from the Survey booklet on to a single sheet and distribute to group]
  Please complete the set of items individually.
What do Assessment Scores Show about Gaps?

• Divide into small groups; distribute assessment data to each group
• What does your group observe?
  [each group reviews assessment score data for several schools disaggregated by race/ethnic, LEP, poverty level]
  Report out observations, and any initial ideas for explanation of gaps

Closing the Gap
Analysis of Teacher-reported Data

[Still in work groups]

• Review results from survey of teacher participants
• What do you observe from overall results?
  – What do you observe when teacher data are disaggregated by students taught?
  – What do you observe when data are grouped by teachers’ level of science/math preparation?
• Discuss possible relationship of teacher data to achievement gaps
• Discuss other explanations – other than teacher preparation
• Report out group findings
What to do about Gaps?

• Two Approaches
  A) Strategies or programs (in your school/district or others) addressing gaps
  B) Brainstorm on what is needed in your school/district

• In whole group, develop consensus on what works and what is needed; how to focus efforts and identify next steps
List of References

Multicultural Approaches in Math and Science – Call the Eisenhower National Clearinghouse (ENC), 800.621.5785

Connecting with the Learner: An Equity Toolkit – Call the North Central Regional Educational Laboratory (NCREL), 800.356.2735


Preparing Secondary Education Teachers to Work with English Language Learners: Science, The National Clearinghouse for Bilingual Education NCBE) at http://www.ncbe.gwu.edu


The Role of Federal Resources in Closing the Achievement Gaps of Minority and Disadvantaged Students, Rand Education

High Student Achievement: How Six School Districts Changed into High-Performance Systems, Gordon Cawelti and Nancy Protheroe

Closing the Gap: Done in a Decade, Thinking K-16, The Education Trust, Spring 2001

Improving Student Achievement: What State NAEP Test Scores Tell Us, RAND Education

Closing the Gap
Moving Toward Aligned Instruction

Purpose
To learn reliable, statistical method of measuring degree of alignment of content taught in classrooms and state/district assessments
To examine uses of alignment information in planning steps to increase the effectiveness of teaching and learning
We hope to:

• Increase knowledge of alignment procedures through Survey of Enacted Curriculum
• Gain understanding of applications of self-report data
• Develop strategies for identifying needs
• Identify discrepancies and brainstorm ways to bring about alignment
Survey of Instructional Content

Sample Section from Survey

**Subject Content: Mathematics**

<table>
<thead>
<tr>
<th>Time on Topic</th>
<th>Middle School Mathematics Topics</th>
<th>Memorize</th>
<th>Understand Concepts</th>
<th>Perform Procedures</th>
<th>Analyze / Reason</th>
<th>Solve Novel Problems</th>
<th>Integrate</th>
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Moving Toward Aligned Instruction
Coding Instructional Content

[Select one Topic area within Math or Science]

For this topic area:

– What concepts and skills in this topic are critical at the grade/course you teach?
– What would students be expected to do to demonstrate the concepts and skills?
– What classroom practices would be needed?
Use Think-Pair-Share

• Discuss, Share, and briefly Report your practice related to the given topic, and at least 3 different Expectations (cognitive demands) for the topic
Complete Survey individually for this topic area

• Display your responses (if web-based survey available) or on poster board on walls
• Compare and contrast responses
15. Students in Mrs. Johnson's class were asked to tell why $\frac{4}{5}$ is greater than $\frac{2}{3}$. Whose reason is best?

A) Kelly said, "Because 4 is greater than 2."
B) Keri said, "Because 5 is larger than 3."
C) Kim said, "Because $\frac{4}{5}$ is closer than $\frac{2}{3}$ to 1."
D) Kevin said, "Because $4 + 5$ is more than $2 + 3$."

Moving Toward Aligned Instruction
How do we Code the Content Matrix?

• As a Group:

• For this item:
  – What content is being assessed?
  – What classroom experiences are needed to learn?
  – How is it being assessed? Where would we place it on the Expectations dimension (link to cognitive demand)
Assessment Coding

• Code section of a selected assessment instrument using these procedures

• How do we interpret the data for the assessment content map?
Alignment Content Map

Grade 8 Science Alignment Analysis

Gr. 8 NAEP Assessment
- Nature of Science
- Meas. & Calc. In Science
- Life Science
- Physical Science
- Earth Science
- Chemistry

Gr. 8 State ‘B’ Assessment
- Memorize
- Understand Concepts
- Perform Procedures
- Conduct Experiments
- Analyze Information
- Apply Concepts

Moving Toward Aligned Instruction
Analyze Content Maps

• Divide into small groups to analyze and interpret differences in content maps for instructional content taught compared to the assessment

• Share and discuss initial findings and identify what may be contributing factors for differences

Compare and contrast content maps produced from Activities 1 and 2
Clarify Issues in Alignment

- Provide a vignette (video or written description)
- Identify classroom practices that reflect standard(s) – (in groups)

Discuss and clarify issues related to alignment, such as What is the intended content? What is being taught? What are the expectations? What assessments would be aligned with the instruction?
Reflect and Apply

What are your current strategies for making decisions regarding content, instruction, and local/classroom assessment in response to district and/or state standards/assessments?

How might decisions be modified with results from alignment analysis and content mapping?
Professional Development Needs Assessment

CCSSO/Your state department of ed and name
Activity 1

Introduction to the Surveys
Purpose

To identify and clarify professional development needs of teachers in the area of instructional practice.
Goals

✓ To become knowledgeable about the use and purpose of the Surveys of Enacted Curriculum
✓ To identify professional development needs in the area of instructional practice
✓ To develop plans for professional development in instructional practice to meet identified needs
Overview of Surveys

✓ What are the Surveys of the Enacted Curriculum?
✓ How were the Surveys developed?
Potential of Surveys

- How can the Surveys be used in your school and/or district?
- How will the data be used to change instruction?
Instructional Activities in Mathematics and Science (34 – 76)

✓ Complete the Instructional Activities portion of the Survey
✓ Share personal results
✓ Discuss potential problems and definitions
Activity 2

Collecting and analyzing school and/or district data
Instructional Activities in Mathematics and Science (34 – 76)

✓ Present school and/or district data
✓ How do local data compare to state data?
✓ What similarities can you identify?
✓ What differences can you identify?
Activity 3

Choosing an Area of Focus
Based on local data, in which area did we find the greatest need?

✓ Instructional Time?
✓ Use of Technology?
✓ Problem Solving?
✓ Types of Assignments?
✓ Use of Instructional Materials?
✓ Design of laboratory activities, investigations, ad experiments?

Professional Development Needs Assessment
Assignment

In small groups, answer the questions on the following slides. Create presentations for a gallery walk. Select a group speaker.
How do we address our focus area?

✓ What does research say about our area of focus?
✓ What commitments exist at the local level to making improvements in our area of focus?
✓ What barriers exist to improving teaching and learning in our focus area?
✓ What resources exist in our school and/or district to address the need?
How do we address our focus area?

✓ What is the timeline for improvement?
✓ What strategies can be employed to improve our area of need?
✓ What are the key leverage points?
Activity 4

Gallery Walk
Gallery Walk

✓ Review gallery presentations
✓ Put post-it notes on gallery presentations, Ask questions, suggest improvements
✓ Return to large group to discuss presentations and improvements
Other Workshops Available

✓ What other Survey-based workshops are available?
  ✓ Assumptions about Teaching and Learning
  ✓ Moving toward Aligned Instruction
  ✓ Closing the Gap
  ✓ Understanding Cognitive Demand
LEADERSHIP

EDUCATIONAL PHILOSOPHY
AND
BELIEFS

Assumptions and Views about Teaching and Learning
DESCRIBE YOUR CLASSROOM!

Use three adjectives that best describe your classroom.
Assumptions and Views about Teaching and Learning
WHAT IS YOUR PHILOSOPHY OF EDUCATION?

• Describe your philosophy of teaching.
• Describe your philosophy of student learning.
Discussion Points

• Are there beliefs missing from the state document?
• Which beliefs/opinions on the survey are further from the IGO’s?
• What are the implications of holding these beliefs?
Students learn mathematics best when they ask a lot of questions.
Students master and retain more through repeated practice than applications.
Calculators should be incorporated only after basic facts have been mastered.

Assumptions and Views about Teaching and Learning
All students can learn challenging math content.
Students learn math better with students of similar ability.
Students need to learn basic skills before problem solving.
Workshop

Understanding Cognitive Demand
(What Students Should Be Able To Do)
Purpose of Workshop

• To gain knowledge of cognitive demand (or explanations for students)

• To understand its role in assessment and in instruction for mathematics or science
Categories of cognitive demand (expectations)

• Math:
  – Memorize
  – Perform procedures
  – Communicate understanding of concepts

What are some examples in instruction in the classroom?
Cognitive Demand (expectations)

• Science:

What are some examples in instruction in the classroom?
Demand reflected in Assessment

• Classify Five Different Test Items

• Steps:
  – Classify Individually
  – Pair and Share
  – Identify instructional strategies to learn content and expectations

Understanding Cognitive Demand
Jigsaw Activity
(re-divide into 5 groups)

- Each group looks at the 5 types of Cognitive Demand, and reviews descriptions
- Work together to draft one kind of student performance that illustrates one of the types of cognitive demand, then go on to another type, then a 3rd, etc.
- By type: each group shares with whole group the student performance they drafted

(Complete all 5 types)
Calibration Activity (confirming knowledge of cognitive demand)

Return to original table

Everyone vote for the Demand the assessment item exhibits
(complete all 10 items)

Which items had consensus? Which differed? Why?
Next Steps

• How can we apply this knowledge in reviewing instructional activities?

• How can we use in constructing assessments?