Appendix 1.

Monitoring Student Behaviors

In this appendix, we would like to briefly discuss instruments and procedures that can be used to monitor the critical student behaviors of involvement, coverage, and success. These instruments and procedures are adapted from training manuals developed at Research for Better Schools, Inc. (Huitt, Caldwell, Traver, and Graeber, 1981; Segars, Caldwell, Graeber, and Huitt, 1981; see also American Association of School Administrators, *Time on Task: Using Instructional Time More Effectively*).

Involvement

Student involvement is monitored by looking at three factors: allocated time, engagement rate, and student engaged time. We will discuss each one in turn.

Allocated Time

Data on allocated time can be collected by teachers, who simply note the actual (rather than scheduled) beginning and ending time of their lessons and record it on a log such as that shown in Figure A-1.

In this example, Ms. Jones first listed the reading/language arts and mathematics activities she had scheduled for October 2. Then as each activity began and ended, she simply noted the time on the log. At the end of the day, she calculated the time for each activity and then the total allocated time for reading/language arts and math.

Figure A-1. Allocated Time Log.

Allocated Time Log

Teacher *Ms. Jones* Date *10/2*

Reading/Language Arts

Activity	Begin	End	Time
Whole-class instruction	*9:01*	*9:30*	*29*
Seatwork	*9:35*	*9:44*	*14*
Group	*10:45*	*11:45*	*60*
Spelling	*1:30*	*1:41*	*11*
SSR	*2:00*	*2:15*	*15*
			129

Math

Activity	Begin	End	Time
Drill	*8:45*	*8:57*	*12*
Whole-class instruction	*9:53*	*10:10*	*17*
Seatwork	*10:10*	*10:25*	*15*
Groups	*1:05*	*1:27*	*22*
			66

Engagement Rate

Engagement rate data is best collected by an observer other than the classroom teacher (for example, peer teachers or supervisors). One example of how this might be done is included in the chapter on positive supervision (Chapter 3).

Several important points should be considered. First, the observer should talk to the teacher before observing the class to learn what the teacher expects will take place. Next, observer and teacher need to agree on a set of definitions of on-task and off-task behaviors. A number of research studies have generated such definitions. In general, "engaged" simply means being involved in or attending to instruction in the assigned academic content. For example, engaged students may be reading, writing, answering the teacher's questions, watching another student answer a question on the board—or doing anything else that indicates they are involved in the task at hand.

Unengaged students, on the other hand, are not involved in learning academic content. Figure A-2 presents a set of definitions adapted from the Follow Through Evaluation Study (Stallings and Kaskowitz, 1974), which lists five categories of unengaged behavior. The acronym "Ms. Duo" (for Management/transition, Socializing, Discipline, Unoccupied/observing, and Out of the room) has been suggested as an aid in remembering the categories.

Finally, the observer needs to collect data in such a way that the engagement rate can be computed. A simple formula is:

$$\text{Engagement rate} = \frac{\text{Total students engaged}}{\text{Total students observed}}$$

A form that can be used to collect engagement rate data is shown in Figure A-3. In this example, the observer went into the class in the

Figure A-2. Definitions of Unengaged Student Behaviors.

Management/ Transition:	getting ready for instruction, waiting, listening to nonacademic directions, or changing activities
Socializing:	interacting socially or watching others socialize
Discipline:	being reprimanded by an adult, being punished, or watching other students being scolded
Unoccupied/ Observing:	wandering about with no evident purpose or goal, watching other people or unassigned activities, or playing with materials
Out of the Room:	going out of the room temporarily

Figure A-3. Completed Engagement Rate Form.

Engagement Rate Form

State _____
District _____
School _____
Teacher Jones
Coder Brown
Date 10/2

State # _____
District # _____

School # _____
Teacher # _____

Date 10/2
Coder # _____

Grade _____
Students _____
Present _____

Subject MATH
Part of Class Observed
Beg. _____
Mid. ✓
End _____

	1	2	3	4	5	6	7	8	9
Time	10:00	10:01	10:02	10:03	10:04	10:05	10:06	10:07	10:08
Assigned	20	20	20	20	20	20	20	20	20
Management/ Transition					II	I		I	𝍸 III
Socializing				II	II				
Discipline									
Unoccupied/ Observing	I	II		II	IIII	II		I	IIII
Out of Room									
Total Unengaged	1	2	0	4	8	3	0	2	12
Engaged	19	18	20	16	12	17	20	18	8

	10	11	12	13	14	15		Engagement Rate
Time	10:09	10:10	10:11	10:12	10:13	10:14	Total	
Assigned	20	20	20	20	20	20	300	Engaged / Assigned
Management/ Transition	𝍸 𝍸 𝍸	𝍸 I 𝍸	𝍸	II	I	III	49	
Socializing					IIII		8	
Discipline			𝍸			𝍸 III	13	200/300 = 67%
Unoccupied/ Observing	II	𝍸	I		𝍸	I	30	
Out of Room								
Total Unengaged	17	16	11	2	10	12	100	
Engaged	3	4	9	18	10	8	200	

middle of a math lesson and made 15 separate observations at one-minute intervals. On each observation, the observer noted the number of students who were unengaged and made tally marks in the appropriate unengaged categories. At the end of each observation, the observer totaled the unengaged students and calculated the number of engaged students by subtracting the number who were unengaged from the number who were assigned to the task. At the end of the 15 observations, the observer calculated the total number of students who were observed during all the observations and the total number of students who were engaged. Since all students were assigned to math activities during the period of observation, the total observed would be 20 students, multiplied by 15 observations, or 300 student observations. The total number of students engaged would be calculated by simply summing the number of engaged students for all 15 observations, or 200 students.

The engagement rate is then calculated by dividing the total number of students engaged (200) by the total number of students observed (300). In this case, the engagement rate is 67 percent.

Student Engaged Time

The third measure of involvement, student engaged time, is the product of allocated time and engagement rate.

One way for teachers to monitor student involvement is to keep a record of all information collected throughout the year. The summary sheet shown in Figure A-4 is an example of how this might be done.

In this example, Ms. Jones' math class has been observed previously on September 30, and that data has already been entered on the summary sheet. For the October 2 observation, the allocated time of 66 minutes was obtained from the allocated time log shown in Figure A-1. The engagement rate of 67 percent was obtained from the engagement rate form shown in Figure A-3. The student engaged time of 44 minutes, obtained during the October 2 observation, is averaged with the previous data for an average student engaged time of 38 minutes.

Changes in the use of classroom time can be monitored easily by plotting the collected data on a graph. Figure A-5 shows an observation record for student engagement time in third-grade math that has been developed using this data. The vertical axis shows the expected level of achievement based on the reanalysis shown in Figure 2, Chapter 2. The horizontal axis shows the months of the school year. The shaded portion of the graph indicates "at expected level of achievement." In this example, the student engaged time data on the summary sheet shown in Figure A-4, plus data from the rest of the year, have been plotted. It is readily apparent that student engaged time for the first two observation

Figure A-4. Completed Summary Sheet.

State _____
District _____
School _____
Teacher JONES

SUMMARY SHEET

State # _____
District _____

School # _____
Teacher _____

Subject MATH
Year 1981

Date	Coder #	Part of Period	Engagement Rate	Allocated Time	Student Engaged Time	Average Student Engaged Time
9/30	×127	BEG	55%	60 min	33 min	X
10/2	12	MID	67%	66 min	44 min	38 min

days falls in the "below expected" zone. Based on the Stallings and Kaskowitz data, unless things change we would expect this class to perform less well on the upcoming achievement test than might be expected given the students' previous performance.

A major benefit of monitoring the status of student involvement throughout the school year is that corrective action can be taken early if necessary. For example, the engagement rate for students in Ms. Jones' room was about 60 percent for the two days, which is about average when data is collected using the procedures described. It is not unreasonable that the engagement rate could be improved to 80 percent, which would mean that students would spend about twelve minutes more per day than they do now actually involved in mathematics.[1]

Coverage

By coverage we mean that the content students cover during the course

[1]80 percent (new average engagement rate) × 63 minutes (average allocated time) = 50 minutes student engaged time; present average student engaged time = 38 minutes.

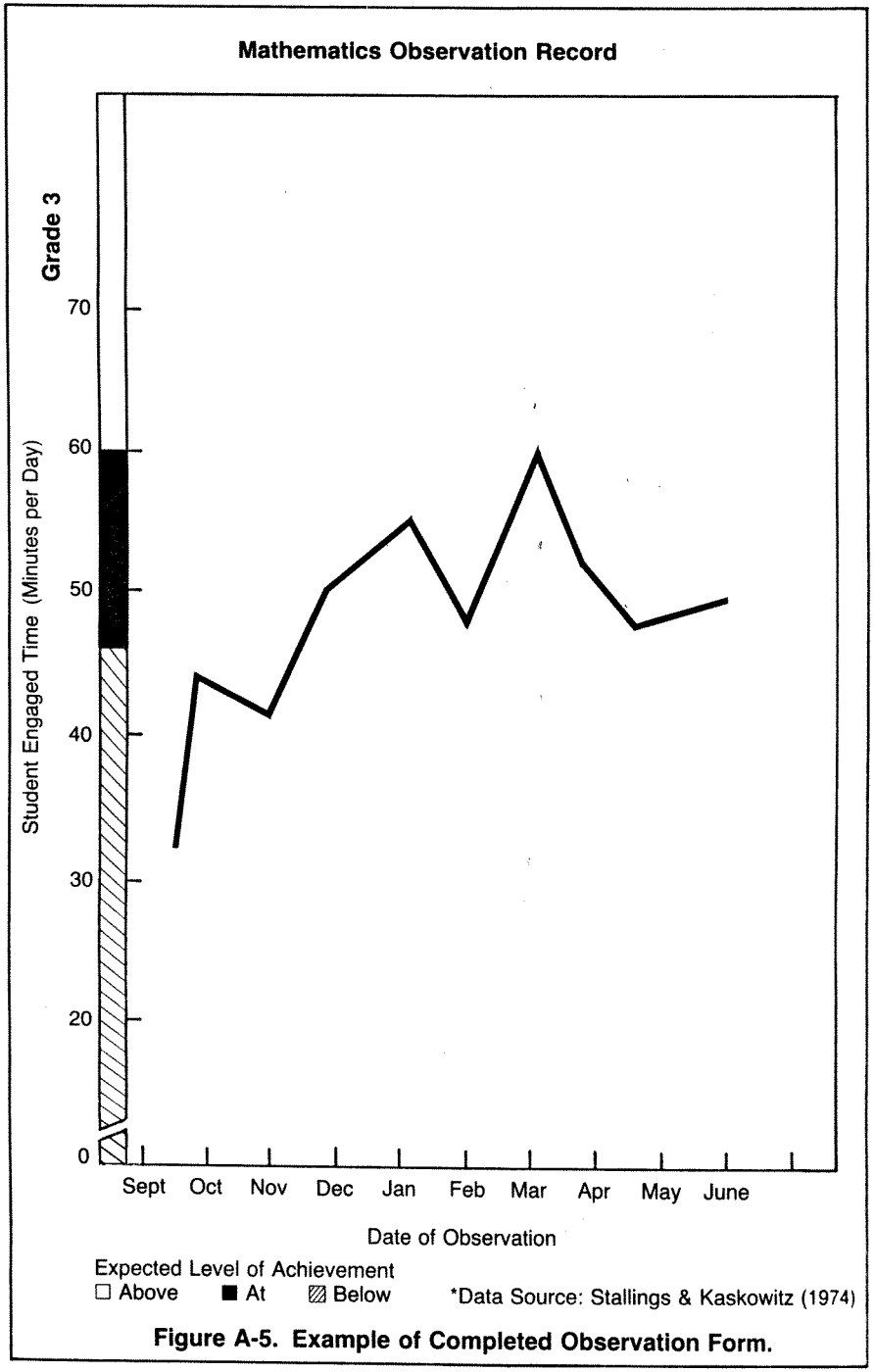

Figure A-5. Example of Completed Observation Form.

of the school year should be appropriate, both in terms of the students' prior learning of the prerequisites and in terms of the content that is to be tested on the standardized achievement test at the end of the year.

Monitoring whether the content covered is appropriate for the students' prior learning is probably best done by looking at the two other student behaviors: engagement rate and success. Students are not likely to work actively on an assignment that is either too easy or too difficult; nor are they likely to be successful on a task for which they don't have the necessary prerequisite skills.

Procedures for monitoring content coverage will vary depending on whether teachers and supervisors follow the procedures suggested in Chapter 2 for aligning curriculum and test content. If a curriculum guide is available that represents an optimal overlap of test topics and local curriculum topics, then teachers and supervisors need only monitor progress through the curriculum guide. A form such as that shown in Figure A-6 can be used by teachers to list the topics and the dates they are covered.

This example shows part of the typical math content for a fourth grade class in the column labeled "Curriculum." The curriculum listed in this guide has been placed according to topics; an alternative arrangement may be to sequence the curriculum in approximately the way it might be taught. In the column labeled "Materials," the district has entered the particular textbook pages that deal with that topic. Where the textbook does not match well with the curriculum, the district has developed a supplementary workbook. In the column labeled "Topics on Current Test," the district has indicated whether that particular content is on the test and what format is used. The district has also provided a guide to the average number of days needed to teach that content. The total number of days needed for this content is thought to be about 150 days, leaving room for the teacher to add additional topics as desired. The teacher has listed the relative strengths and weaknesses of his or her students in the column labeled "Prior Learning." This information might be obtained from the previous year's achievement test results (if testing was done in the spring) or through diagnostic testing at the beginning of the school year. In the column labeled "Date/Success," the teacher has listed the date on which instruction and testing on that topic were completed for the majority of students and the number of students who were successful on that date.

Supervisors can review these forms periodically (perhaps every nine weeks) to determine if the rate of coverage is adequate. They should not try to impose a lockstep curriculum that requires every teacher to be on the same page at the same time, however. Flexibility is needed, but the goal of teaching students what they need to know must

School Year Planning Guide
Mathematics—Grade 4

	Curriculum	Materials	Topics on Current Test	Prior Learning	Days Needed	Date / Success
Whole Numbers	Numeration/Place Value Place value to million	Houghton Mifflin pp. 22–29	Place value to ten thousands Renaming numbers		3	9-21 / 10 of 25
	Roman numerals to 100	Houghton Mifflin p. 44 Supplementary workbook pp. 4–5			2	9-21 / 12 of 25
	Addition & Subtraction Facts	Houghton Mifflin pp. 2–16		Strength-Addition	4	9-21 / 24 of 25
	Regrouping up to ten thousands place	Houghton Mifflin pp. 47–69 Supplementary workbook pp. 15–18	Up to 5 digits, vertical and horizontal formats	Weakness	4	10-9 / 15 of 25

Total 150 days

Figure A-6. Sample Page from School Year Planning Guide.

be constantly emphasized.

In determining whether enough of the content to be assessed is being covered, it is tempting to decide that "more is better." That is not always the case, however, as shown by the curvilinear relationship between coverage and achievement for first-grade math (see Chapter 2). It is also necessary, then, to be mindful of success and to cover as much as possible without sacrificing successful performance.

Success

Two aspects of student success need to be monitored: daily work, which includes both new and review work, and unit tests. Most teachers already give students these types of assignments and keep the records in a grade book.

One simple way of monitoring daily success, in addition to the grade book, is to have each student answer one or two questions or problems on the content covered during that class period. The teacher then has a rough idea of how well the students understand that day's work. In general, the BTES-III data indicate that students should spend over half their time on work where they make few or no errors.

With respect to testing, it is perhaps best to give a unit test every 1 to 4 weeks and a review test at least every 12 weeks. Many textbooks provide unit tests at the end of each chapter, which can be used to assess student knowledge. However, it is important to remember to eliminate any items that test content not covered during instruction.

It is also important to establish standards for success or mastery of the content tested. One rule that has been used is to expect all students to do as well as the best students, which often means students should answer more than 90 percent of the questions correctly. A second rule is that students must also be able to perform the present task well enough to be able to learn future tasks. If students do not perform successfully on their first effort, it may be necessary to provide corrective feedback and additional instruction before proceeding to a new topic or unit.

One way to monitor students' success or mastery on unit tests is to develop a progress chart such as that shown in Figure A-7. Students' names are written on the side of the chart, and the skills or objectives that are to be mastered are written at the top. When a student demonstrates mastery on an objective, the date of mastery is entered for that student in the column for that objective. For example, all the students in this example have demonstrated mastery on addition and subtraction facts, regrouping, and open number sentences, but only Ann, Dave, and Harriet have done so on multiplication facts.

Figure A-7. Sample Student Progress Chart.

Student	Numeration/Place Value Place value to 1,000,000	Roman Numerals to 100	Add & Subtract Facts	Regrouping up to 10,000	Open Number Sentences	Multiplication Facts
Ann	9/20	9/20	9/20	10/7	10/7	10/21
Bob	9/20	9/20	9/20	10/9	10/9	
Dave	9/20	9/20	9/20	10/7	10/7	10/21
Harriet	9/21	9/21	9/21	10/7	10/7	10/21
John	9/21	9/21	9/20	10/7	10/9	
⋮	⋮	⋮	⋮	⋮	⋮	⋮
Trisha	9/20	9/20	9/20	10/9	10/9	