

**A Longitudinal/Cross-Sectional Study of the Impact of *Mathematics in Context*  
on Student Mathematical Performance**

**Teaching Log**  
(Working Paper #5)

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## Description of the Teaching Log

The teaching log compiled by study teachers daily was one of the instruments designed to record information about daily instruction in study classes for the longitudinal/cross-sectional study. Information from the teaching logs was used in the analysis of the content of the actual curriculum, the use and modification of curricular materials, lesson planning, mathematical interaction during instruction, and classroom assessment. The teaching log was pilot-tested with nonstudy teachers during the spring semester prior to the study. Based on feedback from pilot teachers and input from district personnel involved in the study, the log was refined to clarify items and make the format easier for teachers to complete in five to ten minutes daily.

The teaching log consisted of Introductory Information, Daily Logs, and Journal Questions. The purpose of the Introductory Information was to document the unit/chapter taught, changes in class rosters, information about grouping for instruction, and the physical arrangement of the classroom. After indicating their name, the school, city, and date, teachers identified the text and the unit/chapter currently taught. Because the study was longitudinal, teachers noted names of students who were added (Item 1) or dropped from the class (Item 2). Over time, tables were used for teachers to record specific information. For students who were added to the class, teachers noted the approximate date students joined the class and the class periods to which the students were assigned. For students who dropped the class, teachers noted the approximate date students dropped and reasons they left the class. For Item 3, teachers indicated whether they intended for students to work in small groups or pairs during the teaching of the particular unit/chapter. They also described the reason for grouping students in that way and criteria for grouping the students. Finally, teachers sketched the physical arrangement of the classroom. The Introductory Information was completed once a month.

The daily log was printed on both sides of a single sheet of paper. The first side of the log was designed to document content taught, forms of instruction, and student activities. After noting the date, unit/chapter and pages taught on a particular day, teachers indicated if the lesson was a continuation of the previous lesson. If the lesson was continued, teachers were asked to indicate activities that were new to the current lesson. For Item 2, teachers checked whether all students in the class covered the same content. If they did not, they described the ways the content differed and the reasons for these differences. Item 3 was designed to learn about the instructional activities that were used during the class period: warm-up activity, review of previous material, teacher presentation of material, whole-class discussion, small-group or pair work, independent practice, or another activity specified by the teacher. Teachers checked the instructional activities used and circled an emphasis code for each one that ranged from 1 (used for 15% or less of the class period) to 4 (used for more than 75% of the lesson). In Item 4, teachers noted whether the instructional activities precipitated changes in the physical arrangement of the classroom, and they described the reason for such changes. The last item on the first page was designed to learn about the types of activities students engaged in during the class period: listened to teacher or took notes, investigated problems, discussed answers and solution strategies, participated in whole-class discussion, practiced computation, took a quiz or test, reflected on or summarized lesson content, began homework, or another activity specified by the teacher. Teachers checked the student activities and circled an emphasis code for each one from the same scale used for instructional activities. Items 2, 3, and 5 were adapted from the daily log in Porter, Kirst, Osthoff, Smithson, & Schneider (1993).

The second page of the log was designed to document supplemental materials, classroom assessment, homework, and formal assessment. For Item 6, teachers checked the additional materials used during the lesson: teacher-designed materials, work from text resource materials, work from other resources, quiz, calculators, or another resource specified by the teacher. Teachers were asked to date and attach teacher-designed materials, worksheets from other resources, and quizzes to the daily log page. Item 7 was

designed to gather information about teachers' use of classroom assessment. If they assessed students informally during the class period, they completed three sets of questions which addressed (a) what was assessed (students' understanding of particular content or procedure, students' efforts in working as a group, students attitudes toward mathematics, or another item specified by the teacher); (b) the methods of classroom assessment (observation, listening during group work, questioning, checklists, checking student work); and (c) description of changes made in instruction, if any, based on the information gathered. After the first semester of the study, parts (a) and (b) were changed to a checklist format for easier use by the teachers. In Item 8, teachers checked the type of homework assignment, if given: exercises from the text, completion of work begun in class, teacher-designed work, work from text resource materials, exercises from another text, supplementary practice, investigation or project, or other assignment specified by the teacher. After the first semester of the study, Item 8 was revised to be less time-intensive for teachers. In the original log, teachers were asked to list the pages and exercise numbers for text assignments and to attach exercises from supplemental resources and investigations or projects. For the revised item, a more inclusive checklist was used (adding teacher-designed materials, work from text resources materials, and supplemental practice). Teachers were asked to briefly describe the content of teacher-designed and supplemental practice in lieu of attaching copies of such materials, and listing exercise numbers was eliminated. In the final item on the second page, for lessons during which a formal assessment was given, teachers checked the type of formal assessment used: end-of-unit or chapter test, district or state test, student presentation, or student projects. Teachers were asked to date and attach copies of end-of-unit or chapter tests that were representative of below average, average, and above average performance and copies instructions given for student presentations or projects. Items 6 and 8 were adapted from the daily log in Porter, Kirst, Osthoff, Smithson, & Schneider (1993).

Journal questions were printed on one side of a paper, and one sheet was inserted after each daily log sheet. The journal questions were designed to document lesson content that was emphasized or modified and notable classroom events. Each journal question was accompanied by a list of suggestions for reflection. The first journal question focused on parts of the lesson that were emphasized and modifications made in the lesson from its presentation in the unit/chapter taught. Suggestions for reflection were: particular items or aspects of the lesson emphasized (or deleted) and the reasons for the emphasis (or deletion); additional activities, exercises, or procedures included and the reasons for adding them; and changes in the order of the lessons as compared to the order presented in the unit/chapter. The second journal question focused on notable classroom events. Suggestions for reflection were: a lesson or part of a lesson that went exceptionally well; a surprising event that occurred; content that was particularly difficult for students; an event in which students comprehended content that was previously difficult for them; emergent student misconceptions; an unusual or unexpected strategy brought out by a student; and a student's question that caused a modification in the lesson. Teachers had the option of commenting on other instructional issues of importance to them. In preparation for analysis, journal entries for each teacher were typed and collated by research staff.

Teachers were instructed to complete a daily log sheet for each day of instruction as soon as possible after the lesson and complete at least one set of journal entries per week for the entire school year. If teachers taught multiple mathematics classes, they were asked to complete the log for the class that was observed monthly by the on-site observer. In this way, the information gathered through the log would add the teacher's perspective on the particular lessons for which observation reports were completed, thereby adding a means of triangulating data from observations and teaching logs. Each month the teaching log was a different color for ease in documenting the receipt of teacher logs. A binder was given to each teacher at the beginning of the school year. This binder contained the one-page Introductory Information, daily log sheets and journal questions for each instructional day for one month, a pocket folder for holding supplementary resources, quizzes, and formal assessments used by the teacher during instruction, and a postage-paid envelope for sending the log to the research team. Instructions for

completing the teaching log and models of completed logs were reviewed with the teachers each August during the Summer Institute sponsored by the project for study teachers. District contact persons reviewed the instructions with teachers who were unable to attend the Summer Institutes. Subsequent teaching logs with postage-paid envelopes were sent to each teacher monthly. Logs were sent to a contact teacher at each school for distribution. The contact teacher was given an honorarium of \$50 per semester for distributing all study instruments to teachers on a timely basis. Teachers received an honorarium of \$50 per teaching log upon receipt of the log at the research center. (As a result of negotiation with the teachers, the honorarium was increased to \$125 per log during the second and third years of the study.)

Graduate project assistants were liaisons between the research staff and study teachers. Each project assistant read and commented on teacher logs received from one of two research sites (Districts 1 and 2). The numbers of teachers in Districts 1 and 2 who sent logs and journal entries to the research center monthly varied greatly (see Table 1), despite our extensive efforts to collect a full set of teaching logs from each teacher. During the first and second years of data collection, reminders were sent to teachers from the research staff, and graduate research assistants encouraged teachers to continue completing this important source of data through personalized letters of interest in the teachers' work.

Table 1  
*Number of Teaching Logs Received, by Grade and Year*

Grade (No. of Teachers*)	Number of Teaching Logs Per Teacher	Percent of Teachers Submitting Teaching Logs			
		0-2 Logs	3-6 Logs	7-8 Logs	9 Logs
<i>1997-1998</i>					
5 (13)	0-9	23	15	23	38
6 (12)	0-9	33	42	8	17
7 (10)	0-9	10	20	30	40
<i>1998-1999</i>					
6 (12)	0-9	33	25	0	42
7 (12)	0-9	50	17	8	25
8 (10)	0-9	30	20	0	50
<i>1999-2000</i>					
7 (9)	0-9	44	22	0	33
8 (9)	0-9	22	11	11	56

\*Includes teachers who taught portions of the school year

Reference:

Porter, A. C., Kirst, M. W., Osthoff, E. J., Smithson, J. L., & Schneider, S. A. (1993). *Reform up close: A classroom analysis*. Madison, WI: University of Wisconsin–Madison.

## DAILY LOG PROCEDURES

The daily logs you complete are crucial components of the longitudinal study. These logs are designed to record daily practices in your mathematics classroom. No single instrument can characterize the complexities of classroom life, but the logs are intended to facilitate the general description of your teaching practices and your students' activities in the classroom. Your thoroughness in completing the daily logs is a most vital and appreciated aspect of this study.

### INSTRUCTIONS:

At the beginning of month, please complete the introductory information.

The daily log is intended to reflect the character of your mathematics classroom. As its name implies, this log should be completed on a daily basis, as soon after the math class meets as possible. Most questions on the daily log can be completed with a check mark or brief descriptions.

The most crucial components of the daily log, the journal questions, require as thorough description as you can give to accurately reflect the lesson flow and classroom events. The importance of your thoroughness in answering these two questions cannot be underestimated. We would like you to respond to these questions as often as you notice events reflective of the suggested topics in your classroom, but we expect them to be completed at least once a week as these events present themselves.

If you do not have enough room to complete these, or any other questions, please complete them on an additional sheet of paper and attach the paper behind its corresponding entry.

In addition to filling in the daily log, where requested, we would like you to place hand-outs and/or student work in the folder provided and send these items along each month when you send your daily log entries to us. As you make copies of materials for students, please date an additional copy to include with its corresponding daily log entry.

We estimate that it should take no more than 10 minutes each day to complete the daily log. The journal questions will require additional time to answer each week.

At the end of month, please staple or clip the log together with the introductory information in front, and return the completed log, the requested materials, and student work in the provided envelope.

If at any time you have questions about these procedures or the completion of the logs, please contact Lesley Wagner at 1-800-862-1055 or via e-mail at [lrwagner@students.wisc.edu](mailto:lrwagner@students.wisc.edu).

Thank you for your invaluable time in completing the daily log.

**Please complete this information at the beginning of each month.**

**INTRODUCTORY INFORMATION**

Name \_\_\_\_\_ Date \_\_\_\_/\_\_\_\_/\_\_\_\_  
School \_\_\_\_\_ Text \_\_\_\_\_  
City \_\_\_\_\_ Unit/Chapter \_\_\_\_\_

- 1. Please list the names of students added to the class, the date they were added, and the period to which they were added:

Name of Student	Date Added to Class	Class Period

- 2. Please list the names of students dropped from the class, the date they were dropped, and the reason they were dropped (e.g., transferred to new class, transferred to new school):

Name of Student	Date Dropped from Class	Reason Dropped

- 3. If students will work in groups or pairs during the teaching of this unit or chapter, please describe how these groups or pairs are chosen and the reason for grouping the students this way.

- 4. Please sketch the physical arrangement of the classroom.



6. Please check the additional materials used during the lesson:
- Teacher designed materials (Please date and attach)
  - Work from publisher resource materials
  - Worksheets or activities from sources other than the text or unit (Please date and attach)
  - Quiz (Please date and attach)
  - Calculators
  - Other (please specify) \_\_\_\_\_
7. If you informally assessed students during the class period, please answer the following questions:
- a) Please check what you were assessing
- Students' understanding of \_\_\_\_\_
  - Students' efforts in working as a group
  - Students' attitudes toward math (e.g., confidence, perseverance)
  - Other, please describe \_\_\_\_\_
- b) Please check way(s) in which you informally assessed students
- Observation
  - Listening during group work
  - Questioning
  - Checklists
  - Checking their work
- c) Did the information you gained affect your instruction?  Yes  No  
If yes, please describe.
8. Please check all student homework assignments that apply.
- Exercises from text/unit
  - Completion of work begun in class
  - Teacher designed, please indicate content \_\_\_\_\_
  - Work from publisher resource materials
  - Exercises from source other than text
  - Supplementary practice, please indicate content \_\_\_\_\_
  - Investigation/Project
    - related to the unit, please describe \_\_\_\_\_
    - supplementary to the unit, please describe \_\_\_\_\_
  - Other, \_\_\_\_\_
9. If a formal assessment was part of the lesson, please indicate the type of assessment. Please attach copies of student assessments that are representative of below average, average, and above average performance as well as copies of student papers that show any interesting or unusual work.
- Test
  - District or state developed test, please specify \_\_\_\_\_
  - Student presentations (Please date and attach the instructions or options given to students)
  - Student projects (Please date and attach the instructions or options given to students)

**\*\*Please remember to reflect on the following aspects of classroom instruction at least once a week.\*\***

Date \_\_\_/\_\_\_/\_\_\_

### Journal Questions

1. Please describe the parts of the lesson you emphasized and any modifications you made in the lesson as compared to its presentation in the unit or chapter of the text. Please check and reflect on one or more of the following occurrences:

particular problems or aspects of the lesson that were emphasized and explain why they were emphasized

particular problems or aspects of the lesson that were deleted and explain why they were deleted

additional activities, problems, or procedures that were included in the lesson and explain why they were added

the order of presentation of lesson activities and/or content as compared to its presentation in the unit or chapter; if you changed the order of presentation, please describe how it was changed and explain why

other changes, please describe

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2. Please describe any notable classroom event(s) related to the lesson. Please check and reflect on one or more of the following events:

the lesson or part of the lesson went exceptionally well

something surprising occurred

an idea was particularly difficult for the students

students seemed to comprehend an idea that had previously been troublesome

student misconceptions emerged

a student offered an unusual or unexpectedly sophisticated strategy

a student's question caused a modification in the lesson

other(s), please describe \_\_\_\_\_