

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

Teacher Interview: Teaching and Learning Mathematics
(Working Paper #4)

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Description of Teacher Interview: Mathematics Teaching and Learning

The teacher interview on mathematics teaching and learning was the primary instrument used to gather information about teachers' perspectives on mathematics instruction, their opportunities for professional development, and influences on the curriculum choices they make. The interview also gathered data on the role of the department chair or lead teacher in their schools.

The interview was composed of seven questions. The probing questions were designed to enhance both the breadth and depth of teacher responses and to ensure consistency of the data gathered from all study teachers. A brief introductory statement to the teacher provided a description of the interview, assurance that there were no right or wrong answers to interview questions, and notification that the interview would be audiotaped.

The first interview question asked the teacher about the best ways for students to learn mathematics. The probes provided specific attention to (a) whether meaningful contexts should be used to present concepts; (b) the importance of teaching concepts; (c) the importance of teaching algorithms and procedures; (d) the role of problem solving; (e) whether basic skills should be mastered before problem solving; and (f) the role of calculators.

The second interview question was dedicated to descriptions of opportunities for professional development. Probing questions provided attention to opportunities at school, district, state, and national levels.

The third interview question was designed to collect information about the teacher's opportunities to set the agenda for professional development and express concerns or needs that should be addressed through professional development. Related probes were (a) whether these opportunities were opened at school and district levels; and (b) who set the goals for professional development at both school and district levels.

The fourth interview question focused on the support the principal provided for the teacher's efforts to improve his/her teaching. Probing questions centered on (a) feedback given to the teacher after teaching was observed; (b) time for collaboration with other mathematics teachers; (c) information and resources for professional development; and (d) needed or updated materials.

The fifth interview question asked whether the teacher was the department chair or lead teacher for the school and what were the duties associated with that position.

The sixth interview question gathered information on the ways the statewide testing program influenced instruction. Probing questions asked about (a) content selection; (b) time spent in preparation for such tests; and (c) changes in instruction.

In the second and third study years, an additional question was used with teachers who had taught *Mathematics in Context* during the previous school year. In the first part of this question, the teacher was asked about how his/her experiences teaching *Mathematics in Context* during the past school year might influence teaching during the current year. Probes asked about the differences in teaching, planning, student grouping, lessons that will be emphasized or de-emphasized, and pacing instruction. The second question asked teachers the things that were particularly successful last year that they planned to implement again in the current year. Probes asked about whether successes were related to particular lessons, models or representations, planning, and collaboration with other teachers.

The interview protocol on mathematics teaching and learning was used during the fall semester of each study year. The interviews with teachers in Districts 1 and 2 were conducted by the on-site observer in

each district. Audiotaped interviews were promptly sent to the research center. Interviews with teachers in Districts 3 and 4 were conducted via telephone by the project director or a project assistant at the research center. The interviews were conducted at times that were convenient for the teacher and that did not interfere with classroom instruction, such as during the teacher's planning time or before or after school. Interviewers were instructed to follow particular procedures, including asking probing questions and interjecting nonjudgmental comments when appropriate (see Instructions for Interviews in this appendix). The interviews varied from 20-30 minutes, depending on teacher responses and the need to use probing questions. Teachers received an honorarium of \$25 per interview. Interviews were transcribed for analysis. All teachers in Districts 1 and 2 completed the interview on mathematics teaching and learning. Two teachers (one in District 3, the other in District 4) did not complete these interviews.

Teacher Interview Protocol: Mathematics Teaching and Learning

Instructions for Interviewer

1. Be sure that you and the principal/teacher are alone and in a quiet room where responses can be recorded. Be sure that the tape is labeled with the principal/teacher's full name and the date of the interview.
2. Remember to follow the written protocol faithfully. You should always probe once if you think that the principal/teacher has not answered the question asked. In most cases, probes are given. In other cases, you may use one of the following.
 - Anything else?
 - Can you tell me more about ()?
 - Rephrase the question.
3. In responding to some questions, the principal/teacher may describe one aspect of the question in depth while not addressing the breadth of the question. Probes are provided to assist you in eliciting a broad response to each question. As you listen to the person's responses, glance at the list of probes and use the probe(s) that will give a more complete answer to the question. You might say, for example, "What about (probe)?" or "How important is (probe)?"
3. If the principal/teacher has already answered a question you are about to ask, you should say: "The next question is (). I think you have already answered it. Do you think you have answered it? Is there anything else you want to add?"
4. Your responses to the principal/teacher's statements should be non-committal and non-judgmental. Use responses such as "Thanks," "That's fine," "Alright," and "Okay."
5. If you forget to ask a question, make sure that you go back and ask it even if it is out of order.
6. Thank the principal/teacher for his/her time.

Instructions adapted from:

Fennema, E., Carpenter, T., & Loef, M. (1990). *Belief Interview: CGI-2*. Madison, WI: University of Wisconsin–Madison.

Teacher Interview Protocol: Mathematics Teaching and Learning
Mathematics in Context Longitudinal/Cross-Sectional Study

Turn on the tape recorder and record the following:

This is (your first and last names). I am interviewing (teacher's first and last names) who teaches () grade at (school name). Today is (month, date, year).

Say to teacher:

I am interested in your views on mathematics instruction, your opportunities for professional development, and the influences on the curriculum choices you make. Please answer the following questions as truthfully as possible. There are no right or wrong answers to these questions. I am only interested in your opinions and ideas. Your responses will be audiotaped.

1. What is the best way for students to learn mathematics?
 - Probe: Meaningful contexts used to present concepts
 - Probe: Importance of teaching concepts
 - Probe: Importance of teaching algorithms or procedures
 - Probe: Role of problem solving
 - Probe: Mastery of basic skills before problem solving
 - Probe: Role of calculators

2. Would you please describe your opportunities for professional development?
 - Probe: At the school level
 - Probe: At the district level
 - Probe: At the state level
 - Probe: At the national level

3. Describe the opportunities you have to set the agenda or to express concerns or needs in professional development meetings.
 - Probe: At the school level
 - Probe: At the district level
 - Probe: Who sets goals for professional development meetings?
 - At the school level
 - At the district level

4. How does the principal support you in your effort to improve your teaching?
 - Probe: Feedback after observing you teach
 - Probe: Time for collaboration with other mathematics teachers
 - Probe: Information and resources for professional development
 - Probe: Needed or up-to-date materials

5. **For new study teachers:** Are you the department chair or lead teacher for your school/grade? What are the duties associated with this position?

6. How does the statewide testing program influence your instruction?
 - Probe: Content selection
 - Probe: Time spent in preparation
 - Probe: Changes in instruction

- 7. For study teachers who taught MiC last year:
How will your experiences teaching MiC last year influence your teaching this year?**
- A. What will you do differently?**
- 1. Teaching?**
 - 2. Planning?**
 - 3. Grouping?**
 - 4. Lessons emphasized/de-emphasized?**
 - 5. Pacing?**
- B. What did you feel was particularly successful that you will do again this year?**
- 1. Particular lessons?**
 - 2. Models/representations of concepts?**
 - 3. Planning?**
 - 4. Collaboration with other teachers?**

Interview Protocol

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1. What is the best way for students to learn mathematics?
2. Would you please describe your opportunities for professional development?
3. Describe the opportunities you have to set the agenda or to express concerns or needs in professional development meetings.
4. How does the principal support you in your effort to improve your teaching?
5. Are you the department chair or lead teacher for your school/grade? What are the duties associated with this position?
6. How does the statewide testing program influence your instruction?
7. **For study teachers who taught *Mathematics in Context* last year:
How will your experiences teaching *Mathematics in Context* last year influence your teaching this year?**

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4. How does the principal support you in your effort to improve your teaching?
5. Are you the department chair or lead teacher for your school/grade? What are the duties associated with this position?
6. How does the statewide testing program influence your instruction?