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

Teacher Background Data for 1999-2000

(Technical Report #26)

Thomas Romberg, Mary Shafer, Lori Folgert, Supiya Balakul, Chul Lee

University of Wisconsin-Madison

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INTRODUCTION

The purposes of the longitudinal/cross-sectional study of the impact of *Mathematics in Context* (MiC; National Center for Research in Mathematical Sciences Education & Freudenthal Institute, 1997–1998) on student performance are (a) to determine the mathematical knowledge, understanding, attitudes, and levels of student performance as a consequence of studying MiC for over three years; and (b) to compare student knowledge, understanding, attitudes, and levels of performance of students using MiC with those using conventional mathematics curricula. The research model for this study is an adaptation of a structural model for monitoring changes in school mathematics (Romberg, 1987). For this study, information is being gathered on 14 variables over a 3-year period for three groups of students (those in Grades 7 and 8 in 1999). The variables have been organized in five categories (prior, independent, intervening, outcome, and consequent). (See Figure 1 for variables and hypothesized relationships.)

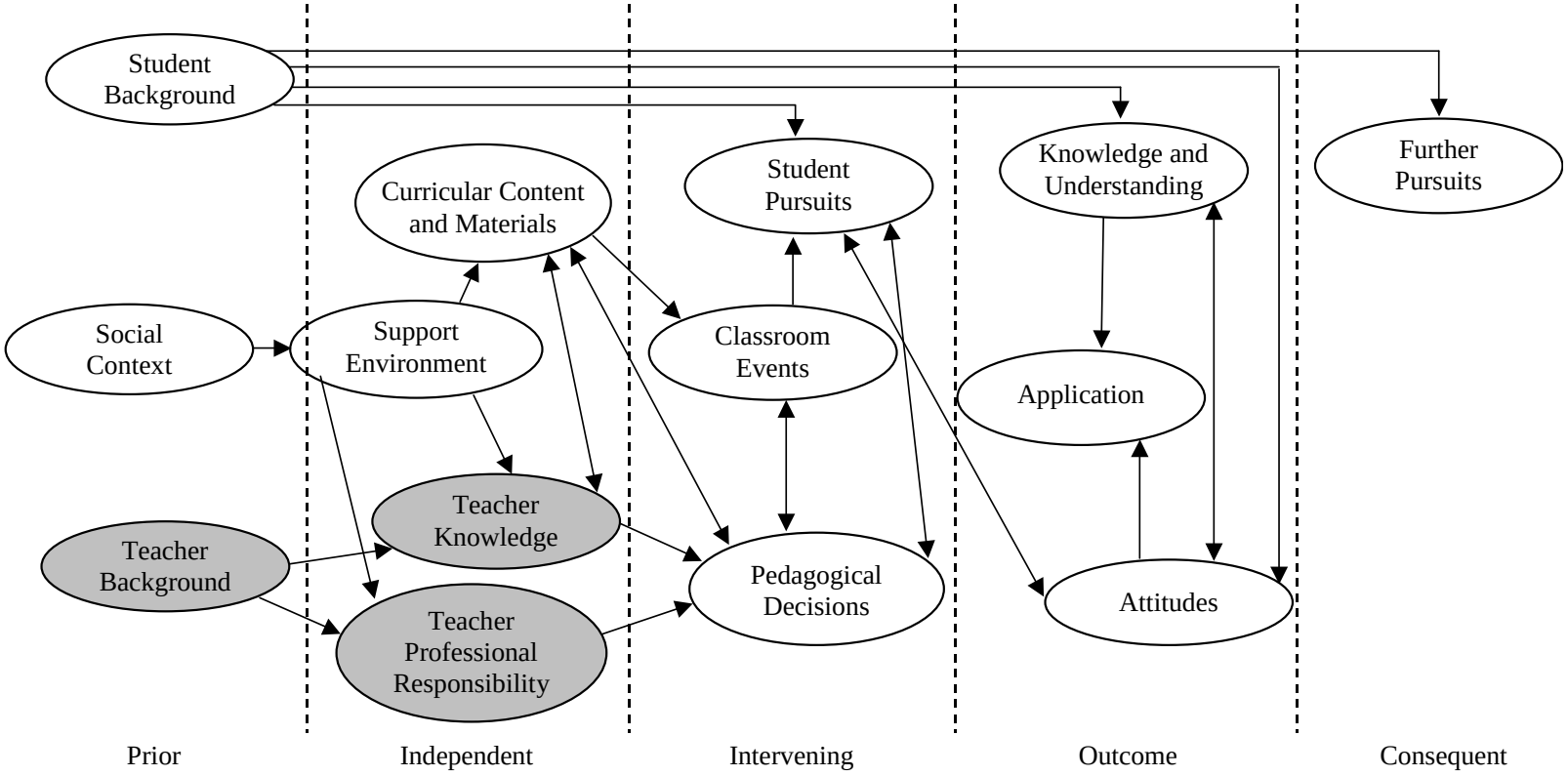

Figure 1. Revised model for the monitoring of school mathematics.

Overview: Teacher Background Data for 1999-2000

The purpose of this technical report is to summarize the information of the *Teacher Background* variable collected during spring and fall 1999[1] on teachers new to the longitudinal/cross-sectional study of the impact of *Mathematics in Context* on student performance. The purpose of gathering this information was to describe similarities and differences among the Grade 7 and Grade 8 study teachers. Characteristics for teachers at each grade level — sex, ethnicity, educational background, teaching experience, experience teaching mathematics, and experience teaching at the current school — were gathered via Teacher Questionnaire: Background and Experience (Shafer, Davis, & Wagner, 1997) and data about experience teaching *Mathematics in Context* were gathered via Teacher Questionnaire: Experience Teaching *Mathematics in Context* (Shafer, 1997). Information about each teacher's conceptions about mathematics teaching and learning and their assessment of student learning is gathered via Teacher Questionnaire: School Context (Shafer, Davis, & Wagner, 1997). (See Figure 2).

Fourteen seventh-grade teacher and 14 eighth-grade teachers from the 8 schools in four districts participated in the study. Districts are identified by number; school and teacher names are pseudonyms. Also noted are the type of materials used (MiC materials or a conventional text).

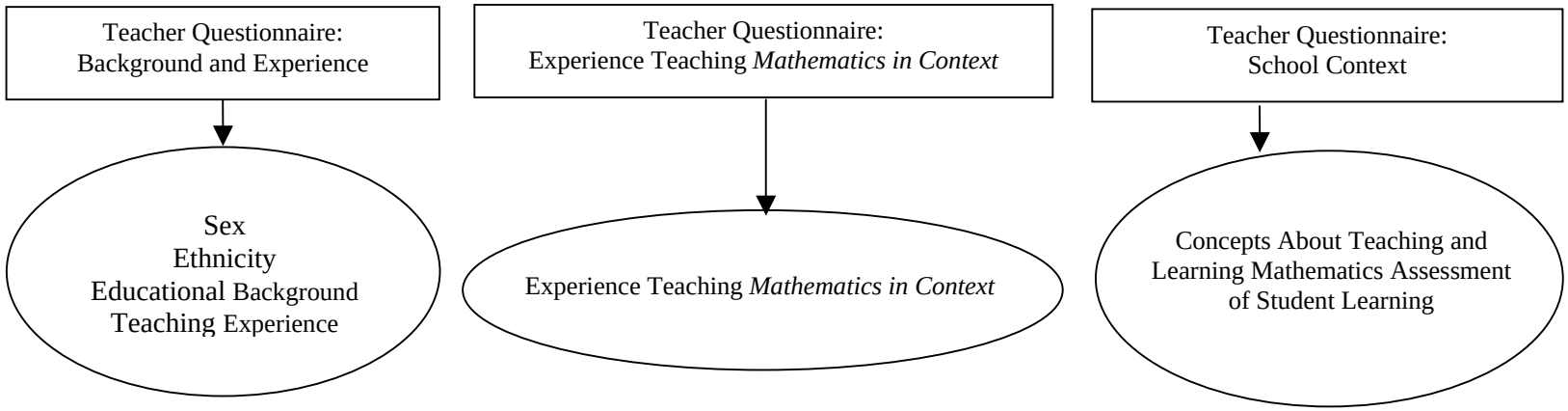

Figure 2. Teacher background characteristics in longitudinal/cross-sectional study of the impact of *Mathematics in Context* on student performance and their sources.

[1] Data in this report was collected from questionnaires teachers completed during the first year they participated in the study.

Grade 7

District 1

Table 1

Summary Data on Background Characteristics, Seventh-Grade Teachers in 1999-2000, District 1

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— MiC —				
Addams-St. James	M	White	5	3	4	7	6, 7, 9, 10, 11	Classroom teacher, Lead leacher
Von Humboldt-Botkin	F	White	4	4	0	7	7	Classroom teacher
Von Humboldt-Lawton*	F	White				7	7	
Von Humboldt-Muldoon	F	Multiracial	39	some summers	4	7	Pre-school to adult	Classroom teacher
				—Conventional —				
Fernwood-Hodge	M	White	3	0.5	2	7	7	Classroom teacher

* Lawton did not complete this teacher questionnaire.

Table 2

Experience Teaching Mathematics in Context, Seventh-Grade Teachers in 1999-2000, District 1

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
		— MiC —	
Addams-St. James*	One year		
Von Humboldt-Botkin	Less than one semester	1	None
Von Humboldt-Lawton	0	0	None
Von Humboldt-Muldoon	One year	6	Side Seeing, Figuring All the Angles, Packages and Polygons, Looking at an Angle, Cereal Numbers, Graphing Equations
		— Conventional —	
Fernwood-Hodge	0	0	None

* St. James did not complete this part of the teacher questionnaire.

Table 3

Professional Training, Seventh-Grade Teachers in 1999-2000, District 1

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
				— MiC —						
Addams-St. James	Mathematics	Education	10							
Von Humboldt-Botkin	Psychology	Math	14	Elementary Educ.	Math	9 to 12 hours				
Von Humboldt-Lawton										
Von Humboldt-Muldoon	Elem. Education	Theology-Philosophy		Administration	Sociology	30				
				— Conventional —						
Fernwood-Hodge	Elem. Education	Middle School Mathematics	8 to 10							

Table 4

Characterization of Mathematics, Seventh-Grade Teachers in 1999-2000, District 1

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
		— MiC —		
Addams-St. James	Agree	Agree	Agree	Strongly agree
Von Humboldt-Botkin	Strongly agree	Agree	Agree	Agree
Von Humboldt-Lawton	Agree	Disagree	Agree	Strongly agree
Von Humboldt-Muldoon	Strongly agree		Agree	Strongly agree
		— Conventional —		
Fernwood-Hodge	Agree	Agree	Agree	Agree

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 5

Mathematics Teaching and Learning, Seventh-Grade Teachers New to Study in 1999-2000, District 1, Part I

School-Teacher	Student Learning					
	1. Context	**2. Skill before More Math**	**3. Skills before Higher Order Thinking**	**4. Small Groups**	**5. Technology**	**6. Writing**
			— MiC —			
Addams-St. James	Agree	Agree	Disagree	No opinion	Strongly disagree	Agree
Von Humboldt-Botkin	Agree	No opinion	Agree	Agree	Disagree	Agree
Von Humboldt-Lawton	Agree	Disagree	Disagree	Agree	Disagree	Agree
Von Humboldt-Muldoon	Strongly agree	Disagree	Strongly disagree		Disagree	
			— Conventional —			
Fernwood-Hodge	Agree	Disagree	Agree	Disagree	Disagree	Agree

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 6

Mathematics Teaching and Learning, Seventh-Grade Teachers in 1999-2000, District 1, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Addams-St. James	Disagree&Agree	Strongly agree	Agree	Agree	Agree	Agree
Von Humboldt-Botkin	No opinion	No opinion	No opinion	Disagree	No opinion	Agree
Von Humboldt-Lawton	Agree	No opinion	Disagree	Agree	Disagree	Agree
Von Humboldt-Muldoon		Strongly agree				Strongly agree
			— Conventional —			
Fernwood-Hodge	Strongly agree	Agree	Agree	Agree	Agree	Agree

School-Teacher	Pedagogy					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Addams-St. James	Strongly agree	Agree	Agree	Agree	Strongly agree	Strongly agree
Von Humboldt-Botkin	No opinion	Agree	Agree	Agree	Agree	Agree
Von Humboldt-Lawton	Agree	Agree	Agree	Agree	Agree	Agree
Von Humboldt-Muldoon				Agree		Agree
			— Conventional —			
Fernwood-Hodge	Agree	Agree	Agree	Agree	Agree	Agree

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 7

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 1

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Addams-St. James	Sometimes	Somewhat important	Not important at all	Sometimes	Not very important	Not very important
Von Humboldt-Botkin*						
Von Humboldt-Lawton	Sometimes	Somewhat important	Not important at all	Sometimes	Somewhat important	Somewhat important
Von Humboldt-Muldoon	Sometimes	Somewhat important	Somewhat important	Often	Very important	Somewhat important
			— Conventional —			
Fernwood-Hodge	Sometimes	Somewhat important	Not very important	Sometimes	Somewhat important	Somewhat important

School-Teacher	Types of Formal Assessment					
	Classroom Quizzes and Tests			Portfolios of Student Work		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Addams-St. James	Always	Somewhat important	Very important	Sometimes	Not very important	Not very important
Von Humboldt-Botkin*						
Von Humboldt-Lawton	Sometimes	Somewhat important	Somewhat important	Sometimes		Somewhat important
Von Humboldt-Muldoon	Sometimes	Somewhat important	Somewhat important	Never		
			— Conventional —			
Fernwood-Hodge	Always	Somewhat important	Very important	Often	Very important	Very important

* Botkin did not complete this part of this teacher questionnaire.

Table 8

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 1

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —									
Addams-St. James	Always	Very important	Very important	Always	Very important	Very important	Always	Very important	Very important
Von Humboldt-Botkin									
Von Humboldt-Lawton	Often	Somewhat important	Not very important	Sometimes		Not very important	Sometimes		Not very important
Von Humboldt-Muldoon	Always	Very important	Very important	Always	Very important	Very important	Always	Very important	Very important
— Conventional —									
Fernwood-Hodge	Always	Very important	Very important	Always	Very important	Very important	Always	Very important	Very important

School-Teacher	Types of Informal Assessment					
	Observation of Student Work			of Student Knowledge and Reasoning Power		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —						
Addams-St. James	Always	Somewhat important	Very important	Always	Somewhat important	Not very important
Von Humboldt-Botkin						
Von Humboldt-Lawton	Sometimes		Not very important	Sometimes		Not very important
Von Humboldt-Muldoon	Always	Very important	Very important	Always	Very important	Very important
— Conventional —						
Fernwood-Hodge	Always	Somewhat important	Very important	Sometimes	Somewhat important	Somewhat important

District 2

Table 9

Summary Data on Background Characteristics, Seventh-Grade Teachers in 1999-2000, District 2

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— MiC —				
Guggenheim-Broughton	F	African American	14		14	6, 7, 8	6, 7, 8, 9	Classroom teacher
Guggenheim-Redling	F	White	15		3	7	6, 7, 8	Classroom teacher
Wier-Flader*	F							Classroom teacher
				—Conventional —				
Von Steuben-Friedman	F	White	7	18	1	6, 7	5, 6, 7, 8, 9, 10, 11	Classroom teacher

* Flader did not complete this teacher questionnaire.

Table 10

Experience Teaching Mathematics in ontextC, Seventh-Grade Teachers in 1999-2000, District 2

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
		— MiC —	
Guggenheim-Broughton	Two years	9	Side Seeing, Figuring All the Angles, Patterns and Symbols, Reallotment, Fraction Times, More or Less, Expressions and Formulas, Tracking Graphs, Looking at an Angle
Guggenheim-Redling	More than two years	4	Expressions and Formulas, Tracking Graphs, Comparing Quantities, Operations
Wier-Flader	More than two years	7	Side Seeing, Dry and Wet Numbers, Made to Measure, Ratios and Rates, Expressions and Formulas, Dealing with Data, Cereal Numbers*
		— Conventional —	
Von Steuben-Friedman	0	0	None

* Includes units taught in previous years.

Table 11

Professional Training, Seventh-Grade Teachers in 1999-2000, District 2

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
				— MiC —						
Guggenheim-Broughton	Business Administration	Economics	3	Computer Education						
Guggenheim-Redling	Elem. Education		5							
Wier-Flader										
				— Conventional —						
Von Steuben-Friedman	Mathematics Education		about 15							

Table 12

Characterization of Mathematics, Seventh-Grade Teachers in 1999-2000, District 2

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
		— MiC —		
Guggenheim-Broughton	Agree	Agree	Agree	Agree
Guggenheim-Redling	Disagree	Disagree	Agree	No opinion
Wier-Flader*				
		— Conventional —		
Von Steuben-Friedman	Agree	Agree	Agree	No opinion

* Flader did not complete this teacher questionnaire.

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 13

Mathematics Teaching and Learning, Seventh-Grade Teachers New to Study in 1999-2000, District 2, Part I

School-Teacher	Student Learning					
	1. Context	**2. Skill before More Math**	**3. Skills before Higher Order Thinking**	**4. Small Groups**	**5. Technology**	**6. Writing**
			— MiC —			
Guggenheim-Broughton	Agree	Agree	No opinion	Agree	Disagree	Agree
Guggenheim-Redling	No opinion	Disagree	Disagree	Agree	Disagree	Agree
Wier-Flader*						
			— Conventional —			
Von Steuben-Friedman	No opinion	Agree	Agree	Disagree	Disagree	No opinion

* Flader did not complete this teacher questionnaire.

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 14

Mathematics Teaching and Learning, Seventh-Grade Teachers in 1999-2000, District 2, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Guggenheim-Broughton	Agree	Agree	No opinion	Agree	Agree	Agree
Guggenheim-Redling	No opinion	Agree	Disagree	No opinion	Disagree	No opinion
Wier-Flader*						
			— Conventional —			
Von Steuben-Friedman	Strongly agree	Agree	Agree	Agree	Agree	No opinion

School-Teacher	Pedagogy					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Guggenheim-Broughton	Agree	Disagree	Agree	Agree	Agree	Agree
Guggenheim-Redling	Agree	Disagree	Agree	Agree	Agree	Agree
Wier-Flader*						
			— Conventional —			
Von Steuben-Friedman	Agree	No opinion	Agree	Disagree	Agree	Agree

* Flader did not complete this teacher questionnaire.

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 15

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 2

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Guggenheim-Broughton	Sometimes	Somewhat important	Somewhat important	Sometimes	Not very important	Somewhat important
Guggenheim-Redling	Sometimes	Somewhat important	Somewhat important	Often	Somewhat important	Very important
Wier-Flader*						
			— Conventional —			
Von Steuben-Friedman	Sometimes	Somewhat important	Very important	Sometimes	Somewhat important	Not very important

School-Teacher	Types of Formal Assessment					
	Classroom Quizzes and Tests			Portfolios of Student Work		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Guggenheim-Broughton	Often	Somewhat important	Very important	Sometimes	Somewhat important	Somewhat important
Guggenheim-Redling	Sometimes	Somewhat important	Somewhat important	Sometimes	Not very important	Not very important
Wier-Flader*						
			— Conventional —			
Von Steuben-Friedman	Always	Very important	Very important	Often	Somewhat important	Somewhat important

* Flader did not complete this teacher questionnaire.

Table 16

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 2

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —									
Guggenheim-Broughton	Sometimes	Very important	Very important	Sometimes	Somewhat important	Very important	Often	Somewhat important	Very important
Guggenheim-Redling	Often	Somewhat important	Somewhat important	Always	Very important	Very important	Always	Very important	Very important
Wier-Flader*									
— Conventional —									
Von Steuben-Friedman	Sometimes	Not very important	Some-what important	Often	Somewhat important	Somewhat important	Always	Somewhat important	Very important

School-Teacher	Types of Informal Assessment					
	Observation of Student Work			of Student Knowledge and Reasoning Power		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —						
Guggenheim-Broughton	Often	Somewhat important	Very important	Often	Somewhat important	Very important
Guggenheim-Redling	Always	Very important	Very important	Often	Somewhat important	Somewhat important
Wier-Flader*	Always					
— Conventional —						
Fernwood-Hodge	Always	Very important	Very important	Sometimes	Not very important	Not very important

* Flader did not complete this teacher questionnaire.

Table 17

Summary Data on Background Characteristics, Seventh-Grade Teachers in 1999-2000, District 3

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— *MiC* —				
Calhoun North-Perry	F	White	11	0	11	7	7, 8, 9, Adults	Classroom teacher
Calhoun North-Schroeder	F	White	27	0	21	7, 8	2, 3, 5, 6	Special education teacher

Table 18

Experience Teaching Mathematics in Context, Seventh-Grade Teachers in 1999-2000, District 3

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
	— *MiC* —		
Calhoun North-Perry	More than two years	8	Rations and Rates, Comparing Quantities, Operations, Packages and Polygons, Triangles and Beyond, Cereal Numbers, Powers of Ten, Decision Making
Calhoun North-Schroeder	More than two years	4	Tracking Graphs, Operations, Packages and Polygons, Powers of Ten

Table 19

Professional Training, Seventh-Grade Teachers in 1999-2000, District 3

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
					— *MiC* —					
Calhoun North-Perry	Business		10							Math supplement
Calhoun North-Schroeder	Social Science	Anthropology	3 to 4							Learning Handicapped, Resource Specialist

Table 20

Characterization of Mathematics, Seventh-Grade Teachers in 1999-2000, District 3

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
		— *MiC* —		
Calhoun North-Perry*				
Calhoun North-Schroeder	Strongly agree	Disagree	No opinion	Agree

* Perry did not complete this teacher questionnaire.

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 21

Mathematics Teaching and Learning, Seventh-Grade Teachers New to Study in 1999-2000, District 3, Part I

School-Teacher	Student Learning					
	1. Context	2. Skill before More Math	3. Skills before Higher Order Thinking	4. Small Groups	5. Technology	6. Writing
			— MiC —			
Calhoun North-Perry*						
Calhoun North-Schroeder	Strongly agree		Disagree	Agree	Disagree	Agree

* Perry did not complete this teacher questionnaire.

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 22

Mathematics Teaching and Learning, Seventh-Grade Teachers in 1999-2000, District 3, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Calhoun North-Perry*						
Calhoun North-Schroeder	Agree	Agree	Disagree	Agree	Agree	Agree
School-Teacher	**Pedagogy**					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Calhoun North-Perry*						
Calhoun North-Schroeder	Agree	Agree	Agree	Agree	Agree	Agree

* Perry did not complete this teacher questionnaire.

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 23

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 3

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
	— *MiC* —					
Calhoun North-Perry*						
Calhoun North-Schroeder	Never	Not important at all	Not important at all	Sometimes	Not important at all	Somewhat important
School-Teacher	**Types of Formal Assessment**					
	Classroom Quizzes and Tests			**Portfolios of Student Work**		
	Frequency	**What to Teach Next**	**Grades**	**Frequency**	**What to Teach Next**	**Grades**
	— *MiC* —					
Calhoun North-Perry*						
Calhoun North-Schroeder	Sometimes	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important

* Perry did not complete this teacher questionnaire.

Table 24

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 3

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
	— *MiC* —								
Calhoun North-Perry*									
Calhoun North-Schroeder	Always	Very important	Very important	Often	Very important	Very important	Often	Very important	Very important
School-Teacher	**Types of Informal Assessment**								
	Observation of Student Work			**of Student Knowledge and Reasoning Power**					
	Frequency	**What to Teach Next**	**Student Grades**	**Frequency**	**What to Teach Next**	**Student Grades**			
	— *MiC* —								
Calhoun North-Perry*									
Calhoun North-Schroeder	Always	Very important	Very important		Somewhat important	Very important			

* Perry did not complete this teacher questionnaire.

District 4

Table 25

Summary Data on Background Characteristics, Seventh-Grade Teachers in 1999-2000, District 4

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— *MiC* —				
Kelvyn Park-Kane	F	Hispanic	5		4	7	6, 8	Classroom teacher
Kelvyn Park-Lux*	F					7		
Kelvyn Park-Woodward	M	Other	3	0	3	7	7, 8	Classroom teacher

* Lux did not complete this teacher questionnaire.

Table 26

Experience Teaching Mathematics in Context,v Seventh-Grade Teachers in 1999-2000, District 4

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
		— *MiC* —	
Kelvyn Park-Kane	One year	2	More or Less, Operations
Kelvyn Park-Lux*			
Kelvyn Park-Woodward	Two years	3	More or Less, Ratios and Rates, Operations

* Lux did not complete this teacher questionnaire.

Table 27

Professional Training, Seventh-Grade Teachers in 1999-2000, District 4

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
					— *MiC* —					
Kelvyn Park-Kane	Communication	Spanish	5							
Kelvyn Park-Lux*										
Kelvyn Park-Woodward	Business Administration		Approx. 12							

* Lux did not complete this teacher questionnaire.

Table 28

Characterization of Mathematics, Seventh-Grade Teachers in 1999-2000, District 4

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
		— MiC —		
Kelvyn Park-Kane	No opinion	No opinion	Agree	No opinion
Kelvyn Park-Lux*				
Kelvyn Park-Woodward	Strongly agree	Agree	Agree	Agree

* Lux did not complete this teacher questionnaire.

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 29

Mathematics Teaching and Learning, Seventh-Grade Teachers New to Study in 1999-2000, District 4, Part I

School-Teacher	Student Learning					
	1. Context	**2. Skill before More Math**	**3. Skills before Higher Order Thinking**	**4. Small Groups**	**5. Technology**	**6. Writing**
			— MiC —			
Kelvyn Park-Kane	Agree	Agree	No opinion	Agree	Disagree	Agree
Kelvyn Park-Lux*						
Kelvyn Park-Woodward	Strongly agree	Strongly disagree	Disagree	Strongly agree	Disagree	Agree

* Lux did not complete this teacher questionnaire.

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 30

Mathematics Teaching and Learning, Seventh-Grade Teachers in 1999-2000, District 4, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Kelvyn Park-Kane	Strongly agree	Strongly agree	Disagree	No opinion	Agree	Agree
Kelvyn Park-Lux*						
Kelvyn Park-Woodward	Agree	Agree	Disagree	Disagree	Disagree	Agree

School-Teacher	Pedagogy					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Kelvyn Park-Kane	Disagree	Agree	No opinion	Agree	Strongly agree	Agree
Kelvyn Park-Lux*						
Kelvyn Park-Woodward	Disagree	Agree	Agree	Agree	Agree	Agree

* Lux did not complete this teacher questionnaire.

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 31

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 4

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— *MiC* —			
Kelvyn Park-Kane	Never	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important
Kelvyn Park-Lux*						
Kelvyn Park-Woodward	Sometimes	Somewhat important	Somewhat important	Often	Somewhat important	Very important

School-Teacher	Types of Formal Assessment					
	Classroom Quizzes and Tests			Portfolios of Student Work		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— *MiC* —			
Kelvyn Park-Kane	Sometimes	Somewhat important	Somewhat important	Sometimes	Not important at all	Not important at all
Kelvyn Park-Lux*						
Kelvyn Park-Woodward	Often	Very important	Very important	Always	Not very important	Somewhat important

* Lux did not complete this teacher questionnaire.

Table 32

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Seventh-Grade Teachers in 1999-2000, District 4

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —									
Kelvyn Park-Kane	Often	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important	Often	Somewhat important	Not important at all
Kelvyn Park-Lux*									
Kelvyn Park-Woodward	Always	Very important	Somewhat important	Always	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important

School-Teacher	Types of Informal Assessment					
	Observation of Student Work			of Student Knowledge and Reasoning Power		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —						
Kelvyn Park-Kane	Often	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important
Kelvyn Park-Lux*						
Kelvyn Park-Woodward	Often	Somewhat important	Very important	Always	Very important	Very important

* Lux did not complete this teacher questionnaire.

Grade 8

District 1

Table 33

Summary Data on Background Characteristics, Eighth-Grade Teachers in 1999-2000, District 1

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— MiC —				
Fernwood-Dunn*	F	African American				8		
Von Humboldt-Reichers	F	White	16		16	8	Math: 8; Music: 6, 7, 8	Classroom teacher
Von Humboldt-Waters	F	White	9		5	8	7, 8, 9, 10, 11, 12	Classroom teacher
				—Conventional —				
Addams-Wolfe*	F	White				8		
Fernwood-Pimm	F	White	11.5	0	1	8	2,3,4,6,8	Classroom teacher

* Dunn and Wolfe did not complete this teacher questionnaire.

Table 34

Experience Teaching Mathematics in Context, Eighth-Grade Teachers in 1999-2000, District 1

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
	— MiC —		
Fernwood-Dunn	0	0	None
Von Humboldt-Reichers	One year	6	Looking at an Angle, Decision Making, Triangles and Patchwork, Graphing Equations, Patterns and Figures, Great Expectations
Von Humboldt-Waters	One year	5	Looking at an Angle, Powers of Ten, Decision Making, Triangles and Patchwork, Graphing Equations
	— Conventional —		
Addams-Wolfe*			
Fernwood-Pimm	Less than one semester	0	None

*Wolfe did not complete this teacher questionnaire.

Table 35

Professional Training, Eighth-Grade Teachers in 1999-2000, District 1

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
— MiC —										
Fernwood-Dunn*										
Von Humboldt-Reichers	Music			Music						Certicied im Music K-12, gr. 7-9 Math
Von Humboldt-Waters	Math Education, related areas									
— Conventional —										
Addams-Wolfe*										
Fernwood-Pimm	Elem. Education + Science (Concentration)	Math	3 courses	Curriculum & Instruction, combo. of Ed.&Studies	Grad. Geometry course					

* Dunn and Wolfe did not complete this teacher questionnaire.

Table 36

Characterization of Mathematics, Eighth-Grade Teachers in 1999-2000, District 1

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
		— MiC —		
Fernwood-Dunn	Agree	Strongly agree	Agree	Strongly agree
Von Humboldt-Reichers	Strongly agree	Disagree	Strongly agree	Strongly agree
Von Humboldt-Waters	Strongly agree	Disagree	Strongly agree	Strongly agree
		— Conventional —		
Addams-Wolfe*				
Fernwood-Pimm	Strongly disagree	Strongly disagree	Agree	Agree

* Wolfe did not complete this teacher questionnaire.

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 37

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 1, Part I

School-Teacher	Student Learning					
	1. Context	**2. Skill before More Math**	**3. Skills before Higher Order Thinking**	**4. Small Groups**	**5. Technology**	**6. Writing**
			— MiC —			
Fernwood-Dunn	Agree	Strongly agree	No opinion	Strongly agree	No opinion	Agree
Von Humboldt-Reichers	Agree	Disagree	Agree	Agree	Disagree	Strongly agree
Von Humboldt-Waters	Strongly agree	No opinion	Disagree	Agree	Disagree	Agree
			— Conventional —			
Addams-Wolfe*						
Fernwood-Pimm	Agree	Disagree	Strongly disagree	Agree	Strongly disagree	Strongly agree

* Wolfe did not complete this teacher questionnaire.

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 38

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 1, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Fernwood-Dunn	No opinion	Strongly agree	Strongly agree	Strongly agree	No opinion	Strongly agree
Von Humboldt-Reichers	Strongly agree	Strongly agree	Disagree	Strongly agree	Strongly agree	Strongly agree
Von Humboldt-Waters	Strongly agree	Agree	No opinion	Strongly agree	Disagree	Agree
			— Conventional —			
Addams-Wolfe*						
Fernwood-Pimm	Strongly agree	Agree	Disagree	Agree		Strongly agree

School-Teacher	Pedagogy					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Fernwood-Dunn	No opinion	Disagree	Agree	Agree	Strongly agree	Strongly agree
Von Humboldt-Reichers	Strongly agree	Agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree
Von Humboldt-Waters	Agree	Agree	Agree	Agree	Strongly agree	Strongly agree
			— Conventional —			
Addams-Wolfe*						
Fernwood-Pimm	Strongly agree	Agree	Agree	Agree	Strongly agree	Strongly agree

* Wolfe did not complete this teacher questionnaire.

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 39

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 1

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Fernwood-Dunn	Always	Very important	Somewhat important	Sometimes	Not important at all	Not very important
Von Humboldt-Reichers	Sometimes	Not very important	Not important at all	Sometimes	Somewhat important	Very important
Von Humboldt-Waters	Sometimes	Very important	Not important at all	Sometimes	Not very important	Somewhat important
			— Conventional —			
Addams-Wolfe*						
Fernwood-Pimm	Never			Sometimes	Not very important	Somewhat important

School-Teacher	Types of Formal Assessment					
	Classroom Quizzes and Tests			Portfolios of Student Work		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Fernwood-Dunn	Always	Very important	Very important	Sometimes	Somewhat important	Somewhat important
Von Humboldt-Reichers	Often	Very important	Somewhat important	Always	Very important	Very important
Von Humboldt-Waters	Often	Very important	Very important	Never		
			— Conventional —			
Addams-Wolfe*						
Fernwood-Pimm	Sometimes	Not very important	Somewhat important	Never		

* Wolfe did not complete this teacher questionnaire.

Table 40

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 1

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —									
Fernwood-Dunn	Always	Very important	Somewhat important	Always	Somewhat important	Somewhat important	Always	Very important	Very important
Von Humboldt-Reichers	Always	Very important	Very important	Always	Very important	Very important	Always	Very important	Very important
Von Humboldt-Waters	Always	Very important	Not very important	Often	Somewhat important	Somewhat important	Sometimes	Somewhat important	Not important at all
— Conventional —									
Addams-Wolfe*									
Fernwood-Pimm	Often	Somewhat important	Not very important	Sometimes	Somewhat important	Not very important	Often	Somewhat important	Somewhat important

School-Teacher	Types of Informal Assessment					
	Observation of Student Work			Student Work Across Assessments Inferred Growth of Student Knowledge and Reasoning Power		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —						
Fernwood-Dunn	Often	Very important	Very important	Sometimes	Very important	Somewhat important
Von Humboldt-Reichers	Always	Very important	Very important	Sometimes	Somewhat important	Somewhat important
Von Humboldt-Waters	Often	Very important		Never		
— Conventional —						
Addams-Wolfe*						
Fernwood-Pimm	Sometimes	Not very important	Somewhat important	Sometimes	Somewhat important	Not very important

* Wolfe did not complete this teacher questionnaire.

District 2

Table 41

Summary Data on Background Characteristics, Eighth-Grade Teachers in 1999-2000, District 2

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— MiC —				
Guggenheim-Carlson	F	White	5	0	2	8	6, 7, 8, 9, 10, 11	Classroom teacher
Guggenheim-Dillard	M	White	6	0	5	8	6, 7, 8, 9, 10, 11, 12	Classroom teacher
Weir-Gallardo	M	African American	28		14	7, 8	K, 1, 2, 3, 4, 5, 6, 7, 8	Department chair
Weir-Shepard*	F	Jamacian/ Indian						
				—Conventional —				
(none)								

* Shepard did not complete all of this teacher questionnaire.

Table 42

Experience Teaching Mathematics in Context, Eighth-Grade Teachers in 1999-2000, District 2

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
	— MiC —		
Guggenheim-Carlson	Two years	5	Packages and Polygons, Triangles and Beyond, Cereal Numbers, Ups and Downs, Building Formulas
Guggenheim-Dillard	More than two years	5	Comparing Quantities, Packages and Polygons, Ups and Downs, Building Formulas, Decision Making
Weir-Gallardo	One year	4	Ways to Go, Triangles and Beyond, Powers oif Ten, Building Formulas
Weir-Shepard	0	0	None
	— Conventional —		
(none)			

Table 43

Professional Training, Eighth-Grade Teachers in 1999-2000, District 2

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
— MiC —										
Guggenheim-Carlson	Psychology	Business								Certified in mathematics
Guggenheim-Dillard	Mathematics Education		6							
Weir-Gallardo	Elem. Education	Early Childhood								Certified in mathematics
Weir-Shepard*										
— Conventional —										
(none)										

* Shepard did not complete all of this teacher questionnaire.

Table 44

Characterization of Mathematics, Eighth-Grade Teachers in 1999-2000, District 2

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
— MiC —				
Guggenheim-Carlson	No opinion	Agree	Strongly agree	Disagree
Guggenheim-Dillard	Strongly agree	Agree	Strongly agree	Strongly agree
Weir-Gallardo	Strongly disagree	Disagree	Agree	Agree
Weir-Shepard	Strongly agree	Agree	Strongly agree	Agree
— Conventional —				
(none)				

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 45

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 2, Part I

School-Teacher	Student Learning					
	1. Context	**2. Skill before More Math**	**3. Skills before Higher Order Thinking**	**4. Small Groups**	**5. Technology**	**6. Writing**
			— MiC —			
Guggenheim-Carlson	Agree	Strongly agree	Strongly agree	Strongly agree	Strongly disagree	Agree
Guggenheim-Dillard	Agree	Agree	Disagree	Strongly agree	Disagree	Strongly agree
Weir-Gallardo	Strongly agree	Strongly disagree	Disagree	Agree	Strongly disagree	Agree
Weir-Shepard	Strongly agree	Strongly agree	Strongly agree	Strongly agree	Disagree	Strongly agree
			— Conventional —			
(none)						

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 46

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 2, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Guggenheim-Carlson	Agree	Agree	Disagree	Strongly agree	Agree	Strongly agree
Guggenheim-Dillard	Agree	Strongly agree	Agree	Strongly agree	Disagree	Agree
Weir-Gallardo	Agree	Strongly agree	Agree	Strongly agree	Strongly disagree	Strongly agree
Weir-Shepard	Strongly agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree	Agree
			— Conventional —			
(none)						

School-Teacher	Pedagogy					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Guggenheim-Carlson	Agree	Agree	Agree	Agree	Agree	No opinion
Guggenheim-Dillard	Disagree	Agree	Agree	Agree	Strongly agree	Agree
Weir-Gallardo	Agree	Disagree	Agree	Agree	Agree	Agree
Weir-Shepard	Agree	Agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree
			— Conventional —			
(none)						

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 47

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 2

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Guggenheim-Carlson	Sometimes	Somewhat important	Not important at all	Often	Somewhat important	Very important
Guggenheim-Dillard	Sometimes	Not very important	Not important at all	Sometimes	Not very important	Not very important
Weir-Gallardo	Often	Somewhat important	Not important at all	Sometimes	Not very important	Not important at all
Weir-Shepard	Sometimes	Not very important	Not very important	Always	Very important	Very important
			— Conventional —			
(none)						

School-Teacher	Types of Formal Assessment					
	Classroom Quizzes and Tests			Portfolios of Student Work		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— MiC —			
Guggenheim-Carlson	Always	Very important	Somewhat important	Often	Not important at all	Somewhat important
Guggenheim-Dillard	Sometimes	Not very important	Somewhat important	Sometimes	Not very important	Not very important
Weir-Gallardo	Often	Somewhat important	Somewhat important	Sometimes	Not very important	Not very important
Weir-Shepard	Always	Very important	Somewhat important	Always	Very important	Somewhat important
			— Conventional —			
(none)						

Table 48

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 2

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —									
Guggenheim-Carlson	Always	Somewhat important	Not important at all	Often	Somewhat important	Not important at all	Always	Somewhat important	Somewhat important
Guggenheim-Dillard	Often	Somewhat important	Not very important	Often	Somewhat important	Not very important	Often	Very important	Very important
Weir-Gallardo	Often	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important
Weir-Shepard	Often	Very important	Not important at all	Always	Very important	Not very important	Always	Very important	Very important
— Conventional —									
(none)									

School-Teacher	Types of Informal Assessment					
	Observation of Student Work			Student Work Across Assessments Inferred Growth of Student Knowledge and Reasoning Power		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —						
Guggenheim-Carlson	Sometimes	Somewhat important	Somewhat important	Never	Not important at all	Not important at all
Guggenheim-Dillard	Always	Very important	Somewhat important	Sometimes	Not very important	Not very important
Weir-Gallardo	Often	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important
Weir-Shepard	Always	Very important	Somewhat important	Always	Very important	Somewhat important
— Conventional —						
(none)						

District 3

Table 49

Summary Data on Background Characteristics, Eighth-Grade Teachers in 1999-2000, District 3

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— MiC —				
Calhoun North-Schroeder	F	White	27	0	21	7, 8	2, 3, 5, 6	Special education teacher
Calhoun North-Wells	F	Other	24	2	22	8	4, 5, 6, 7, 8, 9	Classroom teacher

Table 50

Experience Teaching Mathematics in Context, Eighth-Grade Teachers in 1999-2000, District 3

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
		— MiC —	
Calhoun North-Schroeder	More than two years	4	Tracking Graphs, Operations, Packages and Polygons, Powers of Ten
Calhoun North-Wells	More than two years	6	Triangles and Patchwork, Going the Distance, Reflections on Number, Graphing Equations, Get the Most Out of It, Insights into Data

Table 51

Professional Training, Eighth-Grade Teachers in 1999-2000, District 3

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
— MiC —										
Calhoun North-Schroeder	Social Science	Anthropology	3 to 4							Learning Handicapped, Resource Specialist
Calhoun North-Wells	Education	Mathematics	15+							

Table 52

Characterization of Mathematics, Eighth-Grade Teachers in 1999-2000, District 3

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
— MiC —				
Calhoun North-Schroeder	Strongly agree	Disagree	No opinion	Agree
Calhoun North-Wells	Disagree	Strongly disagree	Strongly agree	Strongly agree

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 53

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 3, Part I

School-Teacher	Student Learning					
	1. Context	**2. Skill before More Math**	**3. Skills before Higher Order Thinking**	**4. Small Groups**	**5. Technology**	**6. Writing**
			— MiC —			
Calhoun North-Schroeder	Strongly agree		Disagree	Agree	Disagree	Agree
Calhoun North-Wells	Strongly agree	Strongly disagree	Strongly disagree	Agree	Disagree	Strongly agree

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 54

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 3, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Calhoun North-Schroeder	Agree	Agree	Disagree	Agree	Agree	Agree
Calhoun North-Wells	Strongly agree	Strongly agree	Disagree	Agree	Strongly disagree	Agree
School-Teacher	**Pedagogy**					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Calhoun North-Schroeder	Agree	Agree	Agree	Agree	Agree	Agree
Calhoun North-Wells	Strongly agree	Agree	Agree	Agree	Strongly agree	Agree

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 55

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 3

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— *MiC* —			
Calhoun North-Schroeder	Never	Not important at all	Not important at all	Sometimes	Not important at all	Somewhat important
Calhoun North-Wells	Never	Not important at all	Not important at all	Sometimes	Not important at all	Not very important

School-Teacher	Types of Formal Assessment					
	Classroom Quizzes and Tests			Portfolios of Student Work		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— *MiC* —			
Calhoun North-Schroeder	Sometimes	Somewhat important	Somewhat important	Often	Somewhat important	Somewhat important
Calhoun North-Wells	Often	Somewhat important	Not very important	Sometimes	Not important at all	Somewhat important

Table 56

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 3

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —									
Calhoun North-Schroeder	Often	Very important	Very important	Often	Very important	Very important	Often	Very important	Very important
Calhoun North-Wells	Always	Very important	Somewhat important	Always	Somewhat important	Somewhat important	Always	Somewhat important	Somewhat important

School-Teacher	Types of Informal Assessment					
	Observation of Student Work			Student Work Across Assessments Inferred Growth of Student Knowledge and Reasoning Power		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —						
Calhoun North-Schroeder	Always	Very important	Very important		Somewhat important	Very important
Calhoun North-Wells	Always	Very important	Somewhat important	Always	Very important	Somewhat important

Table 57

Summary Data on Background Characteristics, Eighth-Grade Teachers in 1999-2000, District 4

School-Teacher	Sex	Ethnicity	Full-Time Teaching (years)	Part-Time Teaching (years)	Teaching at School (years)	Current Grade Level	Grade Levels Taught	Current Position
				— *MiC* —				
Kelvyn Park-Downer	F	African American	12	1	10	8	6, 7, 8	Classroom teacher
Kelvyn Park-Novak	M	White	11		10	8	6, 7, 8	Lead teacher
Kelvyn Park-Woods	M	White	16	0	5	8	7, 8	Classroom teacher

Table 58

Experience Teaching Mathematics in Context, Eighth-Grade Teachers in 1999-2000, District 4

School-Teacher	Years of Experience	Units Taught in Previous year (#)	Unit(s) Taught
		— *MiC* —	
Kelvyn Park-Downer	More than two years	8	Some of the Parts, Measure for Measure, Per Sense, Reallotment, Comparing Quantities, Powers of Ten, Ups and Downs, Triangles and Patchwork
Kelvyn Park-Novak	One year	7	Looking at an Angle, Cereal Numbers, Powers of Ten, Ups and Downs, Triangles and Patchwork, Graphing Equations, Patterns and Figures
Kelvyn Park-Woods	One year	4	Looking at an Angle, Powers of Ten, Ups and Downs, Triangles and Patchwork

Table 59

Professional Training, Eighth-Grade Teachers in 1999-2000, District 4

School-Teacher	B.A.			M.A.			PhD			Other Credentials
	Major	Minor	Courses	Major	Minor	Courses	Major	Minor	Courses	
					— MiC —					
Kelvyn Park-Downer	Applied Mathematics		14+	Multicultural Education	Mathematics Education	45+	Mathematics Education		In progress	
Kelvyn Park-Novak	Marketing	Economics	8	MBA-Finance	Economics	15				37+ credits above masters
Kelvyn Park-Woods	Speech	Education	36							

Table 60

Characterization of Mathematics, Eighth-Grade Teachers in 1999-2000, District 4

School-Teacher	Static 1	Static 2	Dynamic 3	Dynamic 4
		— MiC —		
Kelvyn Park-Downer	Strongly agree	Agree	Agree	Strongly agree
Kelvyn Park-Novak	No opinion	Agree	Agree	Agree
Kelvyn Park-Woods	Strongly agree	Agree	Strongly agree	Agree

Characterization of Mathematics

Static

1. Mathematics is a collection of concepts and skills used to obtain answers to problems.
2. Mathematics is facts, skills, rules, and concepts learned in some sequence and applied in work and future study.

Dynamic

3. Mathematics is thinking in a logical, inquisitive manner and is used to develop understanding.
4. Mathematics is an interconnected logical system that is dynamic and changes as new problem-solving situations arise.

Table 61

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 4, Part I

School-Teacher	Student Learning					
	1. Context	**2. Skill before More Math**	**3. Skills before Higher Order Thinking**	**4. Small Groups**	**5. Technology**	**6. Writing**
			— MiC —			
Kelvyn Park-Downer	Strongly agree	Disagree	Agree	Strongly agree	Disagree	Strongly agree
Kelvyn Park-Novak	Disagree	Strongly agree	Agree	No opinion	Disagree	Agree
Kelvyn Park-Woods	Agree	Agree	No opinion	No opinion	No opinion	Agree

Student Learning

1. Students learn best when they study mathematics in the context of everyday situations.
2. Students need to master basic computation facts and skills before they can engage effectively in studying more mathematics.
3. Students must learn basic skills before they can be expected to analyze, compare, and generalize.
4. Students learn mathematics best in classes where they are able to work in small groups.
5. If students use calculators, they won't learn the mathematics they need to know.
6. Students should write about how they solve mathematical problems.

Table 62

Mathematics Teaching and Learning, Eighth-Grade Teachers in 1999-2000, District 4, Part II

School-Teacher	Pedagogy					
	1. Less Coverage & More Depth	**2. More Content Strands**	**3. Directive**	**4. Model/Example**	**5. Mastery of Concepts**	**6. Student Thinking**
			— MiC —			
Kelvyn Park-Downer	Strongly agree	Strongly agree	Agree	Strongly agree	Disagree	Agree
Kelvyn Park-Novak	Agree	Agree	Agree	Agree	Agree	Agree
Kelvyn Park-Woods	Disagree	Agree	No opinion	No opinion	Strongly agree	Strongly agree
School-Teacher	**Pedagogy**					
	7. Student Thinking	**8. Invented Strategies**	**9. Open-Ended Tasks**	**10. Discussion**	**11. Problem Solving**	**12. Connections**
			— MiC —			
Kelvyn Park-Downer	Disagree	Disagree	Strongly agree	Strongly agree	Agree	Strongly agree
Kelvyn Park-Novak	Disagree	No opinion	No opinion	Agree	Agree	Agree
Kelvyn Park-Woods	Disagree	No opinion	No opinion	No opinion	Agree	Strongly agree

Pedagogy

1. It is more important to cover fewer topics in greater depth than it is to cover the text.
2. More algebra, geometry, probability and statistics should be introduced in the elementary and middle school curriculum.
3. Instruction should include step-by-step directions.
4. Teaching a mathematical concept should begin with a concrete example or model.
5. In teaching mathematics, my primary goal is to help students master basic concepts and procedures.
6. Teachers should plan instruction based upon their knowledge of their students' understanding.
7. More emphasis should be given to simple mental computation, estimation, and less emphasis to practicing lengthy pencil-and-paper calculation.
8. Teachers should encourage children to find their own strategies to solve problems even if the strategies are inefficient.
9. Instruction should include many open-ended tasks.
10. Students should learn mathematics through regularly discussing their ideas with other students.
11. Mathematical problem solving should be a central feature of the elementary and middle school curriculum.
12. In my teaching I try to make connections among mathematical topics and between mathematics and other disciplines.

Table 63

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Formal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 4

School-Teacher	Types of Formal Assessment					
	Standardized Tests			Classroom Projects		
	Frequency	What to Teach Next	Grades	Frequency	What to Teach Next	Grades
			— *MiC* —			
Kelvyn Park-Downer	Never	Somewhat important	Not important at all	Often	Very important	Very important
Kelvyn Park-Novak	Often	Very important	Somewhat important	Sometimes	Not important at all	Not important at all
Kelvyn Park-Woods	Always	Very important	Somewhat important	Always	Very important	Very important
School-Teacher	**Types of Formal Assessment**					
	Classroom Quizzes and Tests			**Portfolios of Student Work**		
	Frequency	**What to Teach Next**	**Grades**	**Frequency**	**What to Teach Next**	**Grades**
			— *MiC* —			
Kelvyn Park-Downer	Always	Very important	Very important	Always	Very important	Very important
Kelvyn Park-Novak	Often	Very important	Very important	Sometimes	Not important at all	Not very important
Kelvyn Park-Woods	Always	Very important	Very important	Often	Not very important	Somewhat important

Table 64

Importance of Student Performance in Determining Instructional Decisions and Grades, Type of Informal Assessment and Frequency of Use, Eighth-Grade Teachers in 1999-2000, District 4

School-Teacher	Types of Informal Assessment								
	Student Questions			Student Explanations			Student Written Explanations on Classwork and Assignments		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —									
Kelvyn Park-Downer	Always	Very important	Very important	Always	Very important	Very important	Always	Very important	Very important
Kelvyn Park-Novak	Always	Very important	Very important	Always	Very important	Very important	Sometimes	Somewhat important	Somewhat important
Kelvyn Park-Woods	Always	Very important	Very important	Always	Very important	Very important	Always	Very important	Very important

School-Teacher	Types of Informal Assessment					
	Observation of Student Work			Student Work Across Assessments Inferred Growth of Student Knowledge and Reasoning Power		
	Frequency	What to Teach Next	Student Grades	Frequency	What to Teach Next	Student Grades
— MiC —						
Kelvyn Park-Downer	Always	Very important	Very important	Always	Very important	Very important
Kelvyn Park-Novak	Often	Not very important	Very important	Often	Not very important	Somewhat important
Kelvyn Park-Woods	Always	Very important	Very important	Always	Somewhat important	Somewhat important