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Implementation of the NCTM STANDARDS by District: Chesterfield County Public Schools, Summary of Results

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IMPLEMENTATION OF THE NCTM *STANDARDS* BY DISTRICT

Chesterfield County Public Schools: Summary of Results

METROPOLITAN EDUCATIONAL RESEARCH CONSORTIUM

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Chesterfield County Public Schools: Summary of Results

This report summarizes the responses of Chesterfield County teachers to "Mathematics Instructional Practices in the Richmond Metropolitan Area," a survey which was distributed in March, 1993. This document is a supplement to the full MERC report entitled "Implementation of the NCTM *Standards* in the Metropolitan Area: Final Report," and is intended for the use of Chesterfield administrators. Although designed to be self-explanatory, this supplement will likely be most useful to readers who are familiar with the full report.

Comparisons will occasionally be noted between Chesterfield teachers' responses and the responses of all teachers surveyed, as detailed in the "Implementation" report. These comparisons are necessarily tentative, as small differences in response frequencies do not necessarily reflect important differences in opinions or practices, particularly when the total number of responses being compared is relatively low (as is the case for middle and secondary school teachers here). Thus, these comparisons should be interpreted with caution.

The summaries of responses focus on those items reflecting teachers' awareness of and attitudes toward the *Standards*, their perceptions of the availability and helpfulness of aids to implementation, and their perceptions of various potential obstacles to implementation of the *Standards*. Tables indicating the raw data for these items are included at the end of this report. These tables are numbered to match the parallel tables in the full report, to facilitate comparison with the overall data.

Note that only the "b" series tables (comparisons of Unchanged vs. Changed teachers) are included in this district summary--if total frequencies are desired, they can be estimated by a weighted average of the frequencies in the Unchanged and Changed groups. For middle and secondary school teachers, these two groups contain approximately equal numbers of teachers, so the percent of all teachers selecting any response is approximately equal to the average of the two percentages given. For elementary school teachers, the

Unchanged group outnumbers the Changed group by a ratio of approximately 4 to 1, so the total frequency is approximately equal to [(4U + 1C)/5], where U represents the percent of the Unchanged group endorsing a given response, and C represents the percent of the Changed group endorsing that response. This means that for elementary teachers, the total percent of teachers selecting a given choice will be rather close to the percent of Unchanged teachers selecting that choice, whereas for middle and secondary teachers, the total percent will be about midway between the percents for the Changed and Unchanged groups.

Awareness of and Attitude toward the *Standards*

Usable responses were received from 450 Chesterfield County teachers: 324 elementary (K-5) teachers, 64 middle (6-8), and 62 secondary school teachers, for an overall response rate of 39%. This rate of response was considerably lower than that observed for the total MERC sample, and indicates that these results summarize the perceptions of only a minority of Chesterfield County teachers. Because teachers' motivations for responding or not responding may be related to their attitudes toward the *Standards*, it is difficult to say how well the present findings represent the overall climate of opinion and teaching practices in Chesterfield County. However, it is worth noting that the response rates among middle (65%) and secondary (59%) teachers were higher than that among elementary (34%) teachers, indicating that the opinions of teachers at higher grade levels are more adequately reflected in these findings.

As was the case in the MERC sample as a whole, the vast majority of Chesterfield middle and secondary school teachers reported that they were "well aware" of the *Standards*. Most middle and secondary school teachers who are aware of the *Standards* consider themselves to be in agreement with them, and would be happy if their teaching incorporated more of the recommended ideas and activities. Approximately 56% of all middle school teachers and 48% of all secondary school teachers reported that they had changed what and how they taught based on the *Standards*.

At the elementary level, 48% of the teachers described themselves as "well aware" of the *Standards*, approximately the same percentage that was reported for elementary teachers throughout the metropolitan area. More than two thirds of these "well aware" teachers described themselves as in agreement with the *Standards*, but very few (about 20%) consider themselves prepared to explain them to their colleagues. Approximately 22% of Chesterfield elementary teachers perceived themselves as having made changes in response to the *Standards*. (This is slightly less than half of those who reported that they were well aware--roughly the same proportion as for all MERC elementary teachers.)

Aids to Implementation

Note that Chesterfield teachers, like their colleagues throughout the metropolitan area, were more likely to omit items on this section (quite possibly as an indication that they were not sure whether a given aid to implementation was available in their school or district) than on any other section of the survey. Thus, for elementary school teachers, the response percentages given in the tables represent only about half of the teachers responding to the survey. Teachers in both elementary and middle schools who reported changing in response to the *Standards* (Changed group) were more likely to respond to these items than teachers who had not changed (Unchanged group).

Responses of Chesterfield teachers on items reflecting aids to implementation were for the most part typical of the responses of MERC teachers as a whole. Thus, at all grade levels, teachers indicated that active administrative support, in the form of grants, in-services, and lead teacher initiatives, either was or would be helpful. Relatively inexpensive forms of encouragement, such as revision of criteria for textbook selection, or formulation of school- or district-wide plans for curriculum reform, were also widely regarded as helpful. A final category of changes that were widely regarded as potentially helpful, although rarely reported as being available, were teacher initiatives, including district-wide support groups for mathematics teachers, teachers observing one another's mathematics classes, and teachers' exchange of information and ideas.

Few of the proposed aids to implementation were rated as "not helpful" by any significant proportion of the teachers. Those that were tended to evoke agreement across grade levels, and included parent observation of mathematics classes and requiring teachers to formulate individual staff development plans. Responses of middle and secondary school teachers indicated that a small but significant number of teachers at these grade levels view the appointment of "lead teachers" as unhelpful or potentially unhelpful.

The following sections point out items for which Chesterfield teachers' responses differed noticeably from the general survey results. Again, these findings should be interpreted cautiously, particularly at the middle and secondary school levels, where the number of responses is relatively small. The comparisons given here are qualitative, but frequency data on the aids to implementation items is included in the technical appendix to this report, and may be compared to the corresponding data in the full "Implementation" report.

Elementary

Responses of Chesterfield elementary school teachers were quite similar to those of MERC elementary teachers as a whole. The only consistent exception concerns school- and district-level initiatives such as policy statements and plans for reform and revision of criteria for textbook selection and/or curriculum design. Chesterfield elementary teachers were less likely to indicate that these aids to implementation were available, and more likely to indicate that they were in process, than were MERC elementary teachers in general. This may indicate that these actions have been initiated in Chesterfield more recently than in other MERC districts.

Middle

At the middle school level, Chesterfield mathematics teachers reported a lower availability of several aids to implementation than did MERC middle school teachers in general. These included:

- Awarding of grant money to innovative teachers;

- Offering specific training events for lead teachers;

- Fostering a collaborative climate among mathematics (and other) teachers;

- Teachers use departmental meetings as a time to plan, share suggestions;

All of these stratagems were regarded by the overwhelming majority of respondents as helpful to their efforts at implementation.

Like the elementary teachers, Chesterfield middle school teachers identified school- and district-level initiatives as less available (but more frequently "in process") than did their colleagues throughout the metropolitan area.

Secondary

At the secondary level, no differences were noted between Chesterfield teachers and MERC teachers in general, with the exception that Chesterfield teachers were less likely to report that teachers in their district observe one another's mathematics classes. Among those secondary teachers (approximately 75%) who indicated that this practice was "not available" in their schools, the overwhelming majority thought that it would be helpful to their efforts at implementation of the *Standards*.

Obstacles to Implementation

Again, the overall profile of responses among Chesterfield County teachers closely approximated that of MERC teachers as a whole. Factors that were consistently identified as obstacles by teachers at all grade levels included pressure to have students to succeed on standardized tests and lack of resources such as computers, calculators, and manipulatives. Teachers in the Unchanged group were more likely than those in the Changed group to rate their own lack of knowledge of the *Standards* as a significant obstacle, but a large proportion of teachers in both groups indicated that their own lack of training in methods for incorporating recommended changes was at least a minor obstacle to implementation.

Among middle and secondary school teachers, both student attitudes about mathematics and low level of student ability were perceived as major obstacles to *Standards*

implementation. As in the general survey, these factors were not identified as important obstacles by elementary teachers.

Finally, although no survey item addressed this factor directly, lack of time was clearly perceived as an obstacle by the majority of focus group discussants, and was the single most frequent comment by teachers responding to the survey. Although numerical data are not available on this factor, it is likely that Chesterfield County teachers, like their counterparts in neighboring school systems, feel that lack of time is a major obstacle that stands in the way of their making changes as quickly as they might like.

One exception to the overall similarity to the general survey results that was consistent across all three grade levels concerned teachers' perceptions of standardized tests vis a vis the *Standards*. Although Chesterfield teachers concurred with their colleagues in ranking this obstacle among the top four (elementary) or six (middle and secondary) of those listed on the survey, they were significantly more likely than their colleagues at all three grade levels to report that standardized testing is either a minor obstacle or not an obstacle. This may indicate that, although standardized tests are everywhere perceived as conflicting with the recommendations of the *Standards*, Chesterfield County teachers are less emphatic about this conflict than teachers in neighboring districts.

With the exception of their views about standardized testing, responses of elementary and secondary teachers in the Chesterfield district were typical of those in the metropolitan area as a whole. One further exception emerged at the middle school level, in that Chesterfield middle school teachers were more likely than middle school teachers in general to perceive lack of resources (including computers, calculators, and manipulatives) as an obstacle to implementation of the *Standards*.

Appendix

Tables of Responses

Table 4b: Elementary Teachers: Awareness of and Access to the Standards (Unchanged vs. Changed)

Item # and Description:	(A)	(B)	(C)	(D)	(E)
14. Awareness of the Curriculum and Evaluation Standards	Aware; have read	Aware; have not read	Heard of; don't know much about	Not aware	Not sure
	19% 83%	14% 17%	47% 0%	16% 0%	4% 0%
32. Access to Curriculum and Evaluation Standards at school	Copy of Standards available at school	No copy, but related materials available	School has no copy or related materials		
	65% 80%	21% 10%	14% 10%		
33. Ownership of Curriculum and Evaluation Standards	Yes, I own a copy	No, I do not own a copy			
	18% 35%	80% 62%			
34. Awareness of Professional Standards	Aware; have read	Aware; have not read	Heard of; don't know much about	Not aware	Not sure
	5% 31%	12% 30%	35% 25%	40% 11%	9% 3%

Note: This table summarizes responses from 324 elementary (K - 5) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 253$), and lower entries indicate the percent of Changed teachers ($n = 71$) selecting each response. Actual n's vary.

Only teachers who reported that they were "well aware" of the Standards on item 14 were asked to respond to item 22, which was used to identify the Changed group.

Table 5b: Middle School Teachers: Awareness of and Access to the Standards (Unchanged vs. Changed)

Item # and Description:	(A)	(B)	(C)	(D)	(E)
14. Awareness of the Curriculum and Evaluation Standards	Aware; have read 68% 100%	Aware; have not read 11% 0%	Heard of; don't know much about 14% 0%	Not aware 7% 0%	Not sure 0% 0%
32. Access to Curriculum and Evaluation Standards at school	Copy of Standards available at school 79% 86%	No copy, but related materials available 14% 11%	School has no copy or related materials 7% 0%		
33. Ownership of Curriculum and Evaluation Standards	Yes, I own a copy 39% 36%	No, I do not own a copy 57% 64%			
34. Awareness of Professional Standards	Aware; have read 23% 50%	Aware; have not read 23% 19%	Heard of; don't know much about 12% 17%	Not aware 39% 11%	Not sure 4% 3%

Note: This table summarizes responses from 64 middle (6 - 8) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 28$), and lower entries indicate the percent of Changed teachers ($n = 36$) selecting each response. Actual n's vary.

Only teachers who reported that they were "well aware" of the Standards on item 14 were asked to respond to item 22, which was used to identify the Changed group.

Table 6b: Secondary Teachers: Awareness of and Access to the Standards (Unchanged vs. Changed)

Item # and Description:	(A)	(B)	(C)	(D)	(E)
14. Awareness of the Curriculum and Evaluation Standards	Aware; have read 53% 87%	Aware; have not read 19% 13%	Heard of; don't know much about 28% 0%	Not aware 0% 0%	Not sure 0% 0%
32. Access to Curriculum and Evaluation Standards at school	Copy of Standards available at school 62% 83%	No copy, but related materials available 27% 10%	School has no copy or related materials 10% 3%		
33. Ownership of Curriculum and Evaluation Standards	Yes, I own a copy 16% 37%	No, I do not own a copy 84% 60%			
34. Awareness of Professional Standards	Aware; have read 13% 43%	Aware; have not read 10% 30%	Heard of; don't know much about 53% 7%	Not aware 23% 13%	Not sure 0% 7%

Note: This table summarizes responses from 62 high (9 - 12) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 32$), and lower entries indicate the percent of Changed teachers ($n = 30$) selecting each response. Actual n's vary.

Only teachers who reported that they were "well aware" of the Standards on item 14 were asked to respond to item 22, which was used to identify the Changed group.

Table 31b: Elementary Teachers: Aids to Implementation (Unchanged vs. Changed)

Item # and Description:	(A) Available and helpful	(B) Available, but not helpful	(C) In process; not sure if helpful	(D) Not available; would be helpful	(E) Not available; would not be helpful
125. Awarding of grant money to teachers who take responsibility for planning and/or testing curriculum reforms	31 47	3 0	19 21	43 32	5 0
126. Offering in-service workshops designed to increase teachers' awareness of and incorporation of the Standards	33 56	3 6	32 15	27 23	4 0
127. Notifying teachers of opportunities to attend workshops not on school time (e.g., weekend seminars related to the Standards)	53 64	9 9	20 13	15 11	3 4
128. Encouraging teachers to attend regional and state math conferences which emphasize the Standards	46 59	4 2	20 16	24 20	5 2
129. Offering specific training events for "lead teachers"	44 72	11 10	26 18	17 0	2 0
130. School- or district-wide policy statements articulating a vision of curriculum reform	14 44	8 2	69 41	7 13	3 0
131. School-wide plans for reform (specific recommendations to be implemented by teachers)	16 30	2 0	55 45	24 26	3 0
132. District-wide plans for reform (specific recommendations to be implemented by teachers)	11 30	4 2	70 57	14 11	1 0
133. Revision of criteria for mathematics textbook selection	15 35	2 0	77 57	7 6	0 2
134. Revision of criteria for mathematics curriculum design	14 30	2 2	75 61	10 7	0 0
135. Requiring teachers to formulate individual staff development plans, documenting their efforts to incorporate approaches emphasized in the Standards into their instructional practices	6 22	0 0	36 41	30 27	28 11
136. Designating certain teachers as "lead teachers," who will take initiative in educating themselves and their colleagues regarding the Standards	37 69	9 6	37 22	16 2	2 2
137. Encouraging teachers to make their own decisions regarding curriculum and professional development	37 53	4 3	19 13	34 28	6 5
138. Fostering a collaborative climate among mathematics (and other) teachers	47 51	1 3	25 21	23 26	5 0

Table 31b (continued):

Item # and Description:	(A) Available and helpful	(B) Available, but not helpful	(C) In process; not sure if helpful	(D) Not available; would be helpful	(E) Not available; would not be helpful
139. Administrators observe mathematics classes in progress	49 62	10 7	23 20	8 9	9 2
140. School maintains a library of instructional materials related to the Standards	37 60	2 4	31 8	27 27	3 0
141. Teachers in my school take an active interest in one another's classrooms, and provide mutual suggestions and support for efforts at curriculum change	64 60	1 0	10 10	24 25	1 4
142. Teachers use a portion of the time at mathematics departmental meetings to engage in math activities and to discuss the usefulness of these activities as classroom exercises	40 41	1 0	7 14	45 39	7 6
143. Unofficially recognized "school leader" acts as a catalyst for new instructional practices	32 63	4 4	34 16	25 14	5 2
144. Teachers in a district form a mathematics "support group" to exchange ideas and experiences with teachers from other schools	17 28	3 0	18 18	53 51	10 3
145. Teachers observe one another's mathematics classes	13 15	3 0	3 9	75 75	6 2
146. Mathematics teachers from different program levels (K-4, 5-8, 9-12) meet periodically to discuss and coordinate efforts at implementing the Standards	9 24	1 2	12 11	66 60	13 2
147. Parents observe mathematics classes in progress	9 7	7 2	7 19	27 37	50 35

Note: This table summarizes responses from 324 elementary (K - 5) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 253$), and lower entries indicate the percent of Changed teachers ($n = 71$) selecting each response.

Actual n's vary. On average, less than half of these teachers responded to each item, with teachers in the "changed" group responding in somewhat higher proportions than those in the "unchanged" group.

Table 32b: Middle School Teachers:Aids to Implementation (Unchanged vs. Changed)

Item # and Description:	(A) Available and helpful	(B) Available, but not helpful	(C) In process; not sure if helpful	(D) Not available; would be helpful	(E) Not available; would not be helpful
125. Awarding of grant money to teachers who take responsibility for planning and/or testing curriculum reforms	36 30	9 4	18 13	27 48	9 4
126. Offering in-service workshops designed to increase teachers' awareness of and incorporation of the Standards	50 59	15 3	10 14	25 21	0 3
127. Notifying teachers of opportunities to attend workshops not on school time (e.g., weekend seminars related to the Standards)	47 65	26 10	11 16	16 10	0 0
128. Encouraging teachers to attend regional and state math conferences which emphasize the Standards	33 55	22 10	6 10	33 23	6 3
129. Offering specific training events for "lead teachers"	14 23	7 0	21 15	50 58	7 4
130. School- or district-wide policy statements articulating a vision of curriculum reform	13 46	20 25	47 31	20 19	0 0
131. School-wide plans for reform (specific recommendations to be implemented by teachers)	6 39	6 0	44 31	44 31	0 0
132. District-wide plans for reform (specific recommendations to be implemented by teachers)	0 33	8 4	58 30	33 33	0 0
133. Revision of criteria for mathematics textbook selection	36 48	14 3	43 45	7 3	0 0
134. Revision of criteria for mathematics curriculum design	8 35	8 3	50 38	33 24	0 0
135. Requiring teachers to formulate individual staff development plans, documenting their efforts to incorporate approaches emphasized in the Standards into their instructional practices	0 22	0 0	17 13	17 44	67 22
136. Designating certain teachers as "lead teachers," who will take initiative in educating themselves and their colleagues regarding the Standards	0 12	10 0	10 27	50 54	30 8
137. Encouraging teachers to make their own decisions regarding curriculum and professional development	33 56	8 0	17 20	25 16	17 8
138. Fostering a collaborative climate among mathematics (and other) teachers	25 43	0 7	19 18	38 32	19 0

Table 32b (continued):

Item # and Description:	(A) Available and helpful	(B) Available, but not helpful	(C) In process; not sure if helpful	(D) Not available; would be helpful	(E) Not available; would not be helpful
139. Administrators observe mathematics classes in progress	56 37	6 22	22 33	0 4	17 4
140. School maintains a library of instructional materials related to the Standards	42 50	0 0	0 23	50 27	8 0
141. Teachers in my school take an active interest in one another's classrooms, and provide mutual suggestions and support for efforts at curriculum change	58 62	0 0	5 7	37 31	0 0
142. Teachers use a portion of the time at mathematics departmental meetings to engage in math activities and to discuss the usefulness of these activities as classroom exercises	24 39	6 0	0 7	65 50	6 4
143. Unofficially recognized "school leader" acts as a catalyst for new instructional practices	18 44	0 0	18 9	55 39	9 9
144. Teachers in a district form a mathematics "support group" to exchange ideas and experiences with teachers from other schools	29 25	0 0	7 4	64 63	0 8
145. Teachers observe one another's mathematics classes	29 11	6 4	11 7	56 59	0 19
146. Mathematics teachers from different program levels (K-4, 5-8, 9-12) meet periodically to discuss and coordinate efforts at implementing the Standards	19 12	0 4	13 8	63 69	6 8
147. Parents observe mathematics classes in progress	7 7	0 4	0 7	47 30	47 52

Note: This table summarizes responses from 64 middle (6 - 8) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 28$), and lower entries indicate the percent of Changed teachers ($n = 36$) selecting each response.

Actual n's vary.

Table 33b: High School Teachers: Aids to Implementation (Unchanged vs. Changed)

Item # and Description:	(A) Available and helpful	(B) Available, but not helpful	(C) In process; not sure if helpful	(D) Not available; would be helpful	(E) Not available; would not be helpful
125. Awarding of grant money to teachers who take responsibility for planning and/or testing curriculum reforms	47 55	7 5	0 15	47 25	0 0
126. Offering in-service workshops designed to increase teachers' awareness of and incorporation of the Standards	16 46	28 14	28 18	28 21	0 0
127. Notifying teachers of opportunities to attend workshops not on school time (e.g., weekend seminars related to the Standards)	27 53	14 13	9 9	46 26	5 0
128. Encouraging teachers to attend regional and state math conferences which emphasize the Standards	32 38	5 17	23 4	36 38	5 4
129. Offering specific training events for "lead teachers"	18 19	6 19	12 13	65 44	0 6
130. School- or district-wide policy statements articulating a vision of curriculum reform	28 41	17 9	33 36	22 14	0 0
131. School-wide plans for reform (specific recommendations to be implemented by teachers)	18 29	9 5	23 52	50 14	0 0
132. District-wide plans for reform (specific recommendations to be implemented by teachers)	19 18	0 6	29 65	52 12	0 0
133. Revision of criteria for mathematics textbook selection	33 42	8 12	50 46	8 0	0 0
134. Revision of criteria for mathematics curriculum design	22 17	6 11	39 56	28 17	6 0
135. Requiring teachers to formulate individual staff development plans, documenting their efforts to incorporate approaches emphasized in the Standards into their instructional practices	6 21	0 11	13 16	63 37	19 16
136. Designating certain teachers as "lead teachers," who will take initiative in educating themselves and their colleagues regarding the Standards	8 0	0 5	8 14	62 71	23 10
137. Encouraging teachers to make their own decisions regarding curriculum and professional development	22 33	17 10	17 24	39 29	6 5
138. Fostering a collaborative climate among mathematics (and other) teachers	36 13	0 0	18 30	41 57	5 0

Table 33b (continued):

Item # and Description:	(A) Available and helpful	(B) Available, but not helpful	(C) In process; not sure if helpful	(D) Not available; would be helpful	(E) Not available; would not be helpful
139. Administrators observe mathematics classes in progress	52 50	37 27	11 15	0 4	0 4
140. School maintains a library of instructional materials related to the Standards	25 59	0 0	12 6	47 29	6 6
141. Teachers in my school take an active interest in one another's classrooms, and provide mutual suggestions and support for efforts at curriculum change	68 81	0 0	11 0	18 19	4 0
142. Teachers use a portion of the time at mathematics departmental meetings to engage in math activities and to discuss the usefulness of these activities as classroom exercises	29 58	4 4	4 0	63 39	0 0
143. Unofficially recognized "school leader" acts as a catalyst for new instructional practices	29 37	0 0	5 11	52 53	14 0
144. Teachers in a district form a mathematics "support group" to exchange ideas and experiences with teachers from other schools	10 36	0 0	0 5	91 59	0 0
145. Teachers observe one another's mathematics classes	35 22	0 0	4 4	57 70	4 4
146. Mathematics teachers from different program levels (K-4, 5-8, 9-12) meet periodically to discuss and coordinate efforts at implementing the Standards	4 10	0 0	17 15	75 70	4 5
147. Parents observe mathematics classes in progress	0 0	8 5	15 0	42 53	35 42

Note: This table summarizes responses from 62 high (9 - 12) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 32$), and lower entries indicate the percent of Changed teachers ($n = 30$) selecting each response.

Actual n's vary.

Table 34b: Elementary Teachers: Obstacles to Implementation (Unchanged vs. Changed)

Item # and Description:	(A) Primary obstacle	(B) Major obstacle	(C) Minor obstacle	(D) Not an obstacle	(E) Not sure
148. Parent attitudes about mathematics education (e.g., resistance to new teaching styles)	2 5	8 11	32 40	37 34	21 11
149. Administration attitudes (e.g., resistance to new classroom practices	0 2	1 6	6 12	84 71	9 9
150. Lack of enthusiasm on the part of other mathematics teachers in your school for the types of changes depicted by the Standards	3 3	10 13	25 31	42 40	21 13
151. Student attitudes about mathematics	1 6	3 8	21 15	68 66	7 5
152. Low level of student ability	3 3	12 8	32 25	47 62	6 3
153. Pressure to have students succeed on "standardized" tests	5 2	21 29	24 27	39 37	11 6
154. Your own lack of knowledge of the changes advocated in the Standards	13 3	26 6	34 31	19 53	8 6
155. Your own lack of training in methods for incorporating these changes into the curriculum for your grade level or subject area	19 3	24 17	31 35	16 37	9 8
156. Lack of resources (computers, calculators, manipulatives, etc.)	18 19	23 23	31 31	25 23	3 3

Note: This table summarizes responses from 324 elementary (K - 5) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 253$), and lower entries indicate the percent of Changed teachers ($n = 71$) selecting each response.

Actual n's vary.

Table 35b: Middle School Teachers: Obstacles to Implementation (Unchanged vs. Changed)

Item # and Description:	(A) Primary obstacle	(B) Major obstacle	(C) Minor obstacle	(D) Not an obstacle	(E) Not sure
148. Parent attitudes about mathematics education (e.g., resistance to new teaching styles)	0 6	22 12	35 24	39 52	4 6
149. Administration attitudes (e.g., resistance to new classroom practices	0 0	9 0	9 15	78 85	4 0
150. Lack of enthusiasm on the part of other mathematics teachers in your school for the types of changes depicted by the Standards	0 6	17 15	22 27	44 50	17 3
151. Student attitudes about mathematics	4 12	22 21	48 32	22 35	4 0
152. Low level of student ability	9 18	35 12	48 38	9 32	0 0
153. Pressure to have students succeed on "standardized" tests	13 12	44 24	35 32	9 32	0 0
154. Your own lack of knowledge of the changes advocated in the Standards	9 0	22 0	39 15	30 85	0 0
155. Your own lack of training in methods for incorporating these changes into the curriculum for your grade level or subject area	13 9	44 12	22 29	22 50	0 0
156. Lack of resources (computers, calculators, manipulatives, etc.)	4 15	44 27	39 32	13 27	0 0

Note: This table summarizes responses from 64 middle (6 - 8) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 28$), and lower entries indicate the percent of Changed teachers ($n = 36$) selecting each response.

Actual n's vary.

Table 36b: High School Teachers: Obstacles to Implementation (Unchanged vs. Changed)

Item # and Description:	(A) Primary obstacle	(B) Major obstacle	(C) Minor obstacle	(D) Not an obstacle	(E) Not sure
148. Parent attitudes about mathematics education (e.g., resistance to new teaching styles)	3 0	10 18	31 39	38 36	17 7
149. Administration attitudes (e.g., resistance to new classroom practices	0 0	7 7	14 25	69 64	10 4
150. Lack of enthusiasm on the part of other mathematics teachers in your school for the types of changes depicted by the Standards	7 11	21 11	24 37	41 41	7 0
151. Student attitudes about mathematics	13 7	47 41	17 38	13 14	10 0
152. Low level of student ability	13 4	23 18	33 50	23 29	7 0
153. Pressure to have students succeed on "standardized" tests	7 0	17 39	28 18	38 39	10 4
154. Your own lack of knowledge of the changes advocated in the Standards	14 0	28 11	28 18	24 71	7 0
155. Your own lack of training in methods for incorporating these changes into the curriculum for your grade level or subject area	28 7	35 39	21 21	10 32	7 0
156. Lack of resources (computers, calculators, manipulatives, etc.)	17 15	23 26	37 22	23 37	0 0

Note: This table summarizes responses from 62 high (9 - 12) school teachers who could be classified as Changed or Unchanged. Upper entries indicate the percent of Unchanged teachers ($n = 32$), and lower entries indicate the percent of Changed teachers ($n = 30$) selecting each response.

Actual n's vary.