

Section Six

Factors Affecting Instruction

NCTM's *Curriculum and Evaluation Standards* and *Professional Standards for Teaching Mathematics* were published in 1989 and 1991, respectively. In both 1993 and 2000, program questionnaire respondents were asked a series of questions about how broadly the NCTM *Standards* had been disseminated in their school and district. (The NRC *National Science Education Standards* were published in 1996; thus trend data are not available.) Given how long the NCTM *Standards* have been in the field, it is somewhat surprising that elementary and middle school program respondents in 2000 were less likely than in 1993 to perceive their school and district administrators as being well-informed about the documents. (See Table 6.1.) In both 1993 and 2000, roughly half of all schools in the nation reported school-wide efforts to implement the NCTM *Standards*.

Table 6.1
Respondents Agreeing[§] with Various Statements Regarding the NCTM *Standards* for Mathematics Curriculum, Instruction, and Evaluation, by School Type: 1993 and 2000

	Percent of Schools	
	1993	2000
Elementary Schools		
The principal of this school is well-informed about the <i>Standards</i>	59 (2.8)	50* (3.6)
There is a school-wide effort to make changes inspired by the <i>Standards</i>	48 (2.8)	55 (3.8)
Our district is organizing staff development based on the <i>Standards</i>	50 (4.3)	46 (3.9)
The superintendent of this district is well-informed about the <i>Standards</i>	55 (3.4)	34* (3.4)
The <i>Standards</i> have been thoroughly discussed by teachers in this school	21 (2.6)	33* (3.7)
The School Board is well-informed about the <i>Standards</i>	28 (2.7)	22 (2.9)
Our district has changed how it evaluates teachers based on the <i>Standards</i>	19 (2.8)	16 (2.5)
Parents of students in this school are well-informed about the <i>Standards</i>	8 (2.2)	14 (2.5)
Middle Schools		
The principal of this school is well-informed about the <i>Standards</i>	55 (3.9)	35* (3.4)
There is a school-wide effort to make changes inspired by the <i>Standards</i>	53 (4.1)	54 (4.2)
Our district is organizing staff development based on the <i>Standards</i>	41 (3.9)	39 (3.6)
The superintendent of this district is well-informed about the <i>Standards</i>	49 (4.1)	30* (3.3)
The <i>Standards</i> have been thoroughly discussed by teachers in this school	30 (4.0)	30 (3.0)
The School Board is well-informed about the <i>Standards</i>	23 (3.4)	20 (2.2)
Our district has changed how it evaluates teachers based on the <i>Standards</i>	17 (3.8)	14 (2.3)
Parents of students in this school are well-informed about the <i>Standards</i>	10 (3.0)	8 (1.9)
High Schools		
The principal of this school is well-informed about the <i>Standards</i>	35 (3.3)	32 (2.8)
There is a school-wide effort to make changes inspired by the <i>Standards</i>	45 (2.4)	49 (3.5)
Our district is organizing staff development based on the <i>Standards</i>	34 (2.4)	38 (2.7)
The superintendent of this district is well-informed about the <i>Standards</i>	33 (2.6)	26 (2.6)
The <i>Standards</i> have been thoroughly discussed by teachers in this school	39 (3.5)	32 (2.7)
The School Board is well-informed about the <i>Standards</i>	14 (1.7)	14 (2.6)
Our district has changed how it evaluates teachers based on the <i>Standards</i>	6 (1.4)	12* (1.9)
Parents of students in this school are well-informed about the <i>Standards</i>	6 (1.3)	6 (1.1)

* p < 0.05

§ Includes teachers responding “strongly agree” or “agree” to each statement.

Program respondents were also given a list of potential problems and asked to rate how serious each was for science and mathematics instruction in their school. The percentages rating each as a “serious problem” are shown in Tables 6.2 and 6.3. The most consistent change concerned access to computers, with significantly fewer schools in 5 of the 6 subject/grade range groups rating this factor as a serious problem.

Table 6.2
Science Program Representatives Viewing Each of a Number of Factors as a Serious Problem for Science Instruction in Their School, by School Type: 1993 and 2000

	Percent of Schools					
	Elementary Schools		Middle Schools		High Schools	
	1993	2000	1993	2000	1993	2000
Facilities	26 (3.4)	20 (3.0)	23 (5.2)	28 (4.0)	18 (1.9)	21 (3.3)
Funds for purchasing equipment	47 (5.3)	35 (3.6)	40 (5.9)	33 (4.0)	30 (3.7)	25 (3.4)
Materials for individualized instruction	36 (4.3)	27 (3.2)	36 (5.9)	25 (3.8)	30 (2.4)	16* (2.1)
Access to computers	23 (3.8)	17 (2.9)	35 (4.3)	18* (3.0)	39 (4.3)	22* (2.7)
Appropriate computer software	40 (4.7)	33 (3.5)	43 (5.8)	40 (3.9)	40 (3.9)	32 (3.0)
Student interest in science	3 (0.9)	4 (1.8)	8 (1.8)	4 (1.0)	17 (1.3)	8* (1.8)
Student reading abilities	14 (3.2)	11 (2.2)	21 (5.7)	18 (2.4)	20 (2.2)	22 (2.4)
Student absences	1 (0.7)	4 (1.4)	4 (0.7)	9* (2.0)	12 (1.3)	20* (2.6)
Teacher interest in science	3 (1.4)	8* (2.0)	1 (0.6)	3 (1.2)	1 (0.9)	2 (1.4)
Teacher preparation to teach science	12 (1.7)	14 (2.7)	4 (1.5)	5 (2.1)	3 (1.1)	5 (2.5)
Time to teach science	19 (3.7)	20 (2.9)	5 (1.7)	12 (3.2)	9 (2.0)	4* (0.9)
Opportunities for teachers to share ideas	29 (3.5)	24 (3.2)	14 (2.5)	21 (2.9)	21 (2.5)	21 (2.8)
In-service education opportunities	18 (3.4)	14 (2.6)	10 (2.3)	13 (2.8)	17 (2.7)	9* (1.4)
Interruptions for announcements, assemblies, other school activities	7 (1.8)	10 (2.3)	8 (1.9)	12 (2.7)	19 (3.5)	13 (1.9)
Large classes	12 (1.6)	7* (1.9)	15 (2.2)	12 (1.7)	20 (2.6)	14 (2.0)
Maintaining discipline	6 (1.6)	6 (1.8)	6 (1.3)	6 (1.1)	10 (1.5)	5* (0.9)
Parental support for education	7 (1.6)	12 (2.4)	8 (1.6)	11 (2.1)	16 (2.1)	13 (2.2)
State and/or district testing policies	11 (2.4)	11 (2.1)	5 (1.5)	9 (1.4)	9 (2.1)	13 (1.9)

* p < 0.05

Table 6.3
Mathematics Program Representatives Viewing Each of a Number of Factors as a Serious Problem for Mathematics Instruction in Their School, by School Type: 1993 and 2000

	Percent of Schools					
	Elementary Schools		Middle Schools		High Schools	
	1993	2000	1993	2000	1993	2000
Facilities	6 (2.3)	4 (1.5)	8 (4.2)	4 (1.6)	4 (0.6)	5 (1.1)
Funds for purchasing equipment	33 (6.3)	23 (4.1)	31 (5.9)	19 (4.0)	26 (2.6)	18* (3.1)
Materials for individualized instruction	26 (5.0)	14* (2.5)	24 (6.0)	13 (2.9)	20 (2.0)	11* (1.6)
Access to computers	27 (5.0)	14* (2.5)	37 (5.8)	17* (2.7)	41 (3.3)	19* (3.0)
Appropriate computer software	27 (3.6)	20 (2.9)	35 (4.3)	29 (3.7)	41 (3.5)	27* (3.1)
Student interest in mathematics	4 (1.5)	5 (1.3)	9 (2.2)	10 (1.7)	13 (2.3)	20* (2.5)
Student reading abilities	12 (2.9)	15 (2.5)	16 (4.9)	15 (2.2)	16 (2.1)	20 (2.5)
Student absences	1 (0.5)	4* (1.3)	5 (0.9)	7 (1.6)	12 (1.5)	17* (2.0)
Teacher interest in mathematics	1 (0.8)	1 (0.4)	1 (0.2)	0* (0.2)	0 (0.3)	0 (0.3)
Teacher preparation to teach mathematics	4 (1.2)	7 (2.0)	1 (0.2)	5 (2.2)	1 (0.4)	2 (1.0)
Time to teach mathematics	3 (0.8)	2 (0.9)	2 (0.8)	3 (0.9)	3 (0.5)	5 (1.2)
Opportunities for teachers to share ideas	20 (2.9)	15 (2.9)	15 (2.9)	14 (2.9)	20 (2.8)	14 (2.2)
In-service education opportunities	11 (4.0)	10 (2.3)	5 (1.3)	9 (2.8)	11 (2.8)	10 (2.6)
Interruptions for announcements, assemblies, other school activities	4 (1.1)	4 (1.1)	7 (1.6)	9 (1.6)	13 (2.3)	11 (1.7)
Large classes	12 (1.8)	8 (2.0)	11 (1.8)	6* (1.2)	11 (1.3)	10 (1.3)
Maintaining discipline	5 (1.7)	7 (1.9)	5 (0.8)	4 (0.9)	3 (0.6)	5 (1.1)
Parental support for education	10 (2.3)	11 (2.0)	11 (1.7)	11 (2.0)	15 (1.2)	15 (2.2)
State and/or district testing policies	12 (2.3)	15 (2.8)	9 (1.7)	10 (1.8)	10 (2.1)	17* (1.9)

* p < 0.05