
December 8, 2000

Survey Report #1: Teacher survey responses at the eMINTS kickoffs: A comparison of FY01 and FY00 teacher opinions

The results of a comparison between FY01 and FY00 teacher surveys collected at the beginning of their participation in the program suggest that FY01 teachers do not differ substantially from FY00 teachers in their initial computer skills and usage patterns. However, there are statistically significant differences between the cohorts with respect to their initial perceptions of instructional efficacy and the effectiveness of selected teaching activities. While both cohorts have relatively high scores for school climate and instructional efficacy, FY01 teachers, as a group, initially recorded lower values than FY00 teachers on these dimensions. Fewer FY01 teachers rated seven inquiry-based teaching activities as “very effective,” and FY00 teachers rated their school climates more highly than FY01 teachers. Thus, in FY01 the eMINTS project will have an opportunity to share its distinctive philosophy and practice regarding instructional technology and inquiry-based methods with a somewhat more skeptical group of teachers.

The Context of teacher surveys

This report summarizes baseline results of the FY01 teacher survey and compares information about first and second year eMINTs teachers. Data were gathered from both the first (FY00) and second (FY01) cohorts of eMINTs teachers at their respective eMINTS kickoff meetings—one year apart. Thus, the data represent a “snap-shot” of teacher characteristics at the outset of their involvement in the program.

The FY00 teacher survey was collected by a printed questionnaire. At the FY01 kickoff the teacher survey was administered on-line through the South Central Regional Technology in Education Consortium (SCR*TEC) profiler, which was adjusted to include a similar set of items used in the previous questionnaire.

The on-line survey will be administered to FY00 teachers during their first meetings with their CIS in the autumn of 2000. A report comparing changes from year one to year two for FY00 teachers will be published in January 2001.

The Profiler survey taken by the FY01 teachers was organized into 4 main sections:

- *Section 1:* Teacher Computing and Expertise--addressed teacher rating of their expertise in various computing tasks and teaching strategies,
- *Section 2:* Frequency of Teacher Computer Use in Education--addressed the frequency of teacher computer use in a variety of common educational activities,
- *Section 3:* Teacher Opinions of the Effectiveness of Teaching Activities -- addressed teacher opinions about the effectiveness of various teaching activities,

- *Section 4: Support for Educational Technology, School Climate, Instructional Efficacy and Commitment to Teaching* -- assessed teacher opinions about their school climate, the perceived level of support for educational technology in their school, their sense of instructional efficacy and their commitment to teaching.

This report will summarize results of surveys by section. Because several of these sections were taken from the initial teacher survey administered to the FY00 teachers, where appropriate, the responses of the FY01 teachers will be compared to those of the FY00 teachers.

Section 1: Teacher Opinions of their Computing Skill and Expertise

The first section of the survey addressed teacher opinions of their basic computer skill and their perceived level of expertise in using computer technology in their teaching. The skill items (see Table A.1) were adapted from the SCR*TEC Profiler *Basic Skills Inventory*. Table A.1 compares FY00 and FY01 teachers

The expertise items (see Table A.2) were adapted from the *National Educational Technology Standards for Teachers* summary document. The Technology Standards document addressed several dimensions of technical skill and teacher preparation. There were no equivalent questions to the expertise items on either the eMINTS initial teacher survey or the SCR*TEC Profiler Basic Skills Inventory, so a comparison between FY01 and FY00 teachers is not appropriate.

Teacher Skill Items

The skill items address three general domains of computer use: basic computer use, use of the Internet and e-mail, and use of multimedia. Several of the items on the FY01 survey did not have equivalent questions on the SCR*TEC Profiler *Basic Skills Inventory*, so a comparison with FY00 teachers is not appropriate. However, the bulk of the items do provide a basis for comparison.

Teacher Skill Results

- The results in Table A.1 show no statistically significant differences in computing skill between FY01 and FY00 teachers.
- For the basic skills items, over 40 percent of all FY01 teachers said that they were able to perform these basic operations. The one exception to this is in the use of spreadsheets to graph data, 26.8 percent of FY01 teachers said they could do this.
- For the Internet and e-mail skills, at least 85 percent of FY01 teachers were able to perform basic operations, i.e., accessing web sites, using bookmarks and sending e-mail. About half of the teachers can copy graphics from the web. Fewer teachers say they know how to

download and decompress files and subscribe to e-mail discussion lists.

- For the multimedia items, less than one-third of FY01 teachers said they could manipulate graphic images, and 8 percent said they knew how to record audio clips.

Teacher expertise in the use of computers

The expertise items measured teachers' impressions of their skill in using computers and inquiry-based teaching strategies. FY01 teachers were asked to rate themselves as "Novice", "Apprentice", "Practitioner", or "Expert." Fewer than 15 percent of these teachers rated themselves as "experts" on any item. The individual items are presented in Table A.2.

Section 2: Frequency of Teacher Computer use in Educational Activities

Section 2 of the survey asked teachers to report how often they used computers to complete a set of common educational activities. These activities include general class preparation activities, administrative activities, and teaching activities. These items were taken from the eMINTS Initial Teacher Survey administered in September 1999.

Teacher Computer Use Results

There were few differences in the frequencies of use for FY01 and FY00 teachers (see Table A.3). In each case FY01 teachers used computers more frequently than did FY00 teachers.

- FY01 teachers were more likely to search the Internet for educational materials and use the Internet as a source for background research every day.
- FY01 teachers were more likely to use computers to record attendance and record other administrative data every day.
- More FY01 teachers also report using the Internet in instruction every day.

Section 3: Teacher Opinions of the Effectiveness of Different Teaching Activities

The questions in Section 3 ask teachers to rate the effectiveness of a set of teacher-centered and inquiry-based teaching activities. These items were asked of both FY01 and FY00 teachers, and reflect teacher activities at their respective kickoff meetings. Responses to items in Section 3 were organized to assess the percentage of teachers who report using a given activity and, for those teachers who use an activity, their assessment

of its effectiveness. The percentage of teachers who report using an activity is reported in the left-hand panel of Table A.4, while teachers' rating of the activity's effectiveness is reported in the right-hand panel.

Use of Activities Results

FY01 and FY00 teachers differ in their use of five activities:

- *Use of lectures:* More FY00 teachers report using lectures in their teaching.
- *Use of materials from the Internet:* More FY01 teachers report using materials from the Internet in their teaching.
- *Having students respond to open-ended questions:* More FY00 teachers report using open-ended questions in their teaching.
- *Having students work on problems with several methods of solution:* More FY00 teachers report using these types of problems in their teaching.
- *Having groups of students develop their own class projects:* More FY01 teachers report using this activity in their teaching.

Effectiveness of Activities Results

FY01 and FY00 teachers differ in their ratings of the effectiveness of eight of the activities in Section 3. In all cases, a larger percentage of FY00 teachers thought an activity was “very effective”, compared to FY01 teachers. The items where teachers differed:

- *Use of worksheets and workbooks that emphasize routine practice*
- *Use of materials from the Internet*
- *Use of open-ended questions*
- *Use of problems with several answers*
- *Use of problems with several methods of solution*
- *Having students order events or items and explain their organization*
- *Use of manipulatives*
- *Use of on-line reference materials.*

Although more FY00 teachers thought that the use of worksheets and workbooks that emphasize routine practice were very effective activities, most of the differences between FY01 and FY00 teachers were in ratings of “inquiry-based” activities. In two of these activities, use of open-ended questions and use of problems with several methods of solution, fewer FY01 teachers report using the activity in their teaching.

At the time each cohort of teachers began their initial involvement with the project, the FY01 cohort perceived inquiry-based teaching activities to be somewhat less effective than did the FY00 cohort (see Table A.4). For the project, these differences suggest that FY01 teachers should be introduced to the

philosophy and practice of inquiry-based teaching relatively early in their training.

Section 4: Support For Educational Technology, School Climate, Instructional Efficacy and Commitment To Teaching

The items on Section 4 are taken from the second round of the Missouri School Improvement Project (MSIP) teacher survey. The items are combined into four additive scales measuring teachers' opinion of their school's climate, their perception of the level of support for instructional technology in their school, their perception of their instructional efficacy and their commitment to teaching. Item-level responses are available from the eMINTS evaluation team.

Efficacy and Commitment to Teaching Results

As seen in Table A.5, FY01 teachers differ from FY00 teachers on two of these scales, their perception of the school climate and their opinions of their instructional efficacy. In all cases, a higher mean value indicates a "better" outcome, e.g., a "better" school climate.

For both the school climate and instructional efficacy scales, FY01 teachers scored lower than FY00 teachers. In terms of the instructional efficacy scale, the lower mean value is consistent with the results in Section 3. There, a smaller percentage of FY01 teachers rated a subset of teaching activities as very effective. It follows that these opinions about the effectiveness of their activities would translate into a lower aggregate score on a scale measuring the impact of teachers' activities.

Conclusions

The results of this brief comparison between FY01 and FY00 teachers suggest that FY01 teachers do not differ substantially from FY00 teachers in their computer skills and usage patterns. Results from the comparison show isolated differences in teacher skills and use of computers.

There are statistically significant differences between FY01 and FY00 teachers in their perception of their school climate and their instructional efficacy. The differences in instructional efficacy are reflected in FY01 teachers' rating of the effectiveness of a variety of teaching methods. FY01 teachers rated a set of eight activities as less effective than did their FY00 counterparts. Seven of these activities were the "inquiry-based" activities emphasized by the eMINTS program.

At the time each cohort of teachers began their initial involvement with the project, the FY01 cohort perceived inquiry-based teaching activities to be somewhat less effective

than did the FY00 cohort. These differences also present an opportunity for the eMINTS project to communicate their experiences with the philosophy, practice and impacts of these methods with these teachers.

Appendix A
Summary Tables

Table A.1
Teacher Skills by Program Year
(in Percent)

	No	Yes	All Teachers	P-Value	Number of Respondents
<i>Basic Computer Operations</i>					
<u><i>Setup computer system and connect peripheral devices</i></u>					
FY01	56.7	43.3	100.0	0.5088	97
FY00	50.0	50.0	100.0		32
<u><i>Install application software</i></u>					
FY01	35.1	64.9	100.0	0.8566	97
FY00	36.5	63.5	100.0		52
<u><i>Create and maintain backups</i></u>					
FY01	59.8	40.2	100.0	0.7169	97
FY00	56.4	43.6	100.0		39
<u><i>Cut, copy, and paste text</i></u>					
FY01	25.8	74.2	100.0	0.1921	97
FY00	35.6	64.4	100.0		59
<u><i>Scan a document</i></u>					
FY01	59.8	40.2	100.0	0.8399	97
FY00	57.9	42.1	100.0		38
<u><i>Create a graph from spreadsheet data</i></u>					
FY01	73.2	26.8	100.0	0.2025	97
FY00	60.7	39.3	100.0		28
<u><i>Organize saved files on local hard drive or the network</i></u>					
FY01	47.4	52.6	100.0		97
<u><i>Perform basic folder operations</i></u>					
FY01	37.1	62.9	100.0		97
<u><i>Work with multiple applications</i></u>					
FY01	51.5	48.5	100.0		97

(Continued.)

Table A.1 Continued.

	No	Yes	All Teachers	P-Value	Number of Respondents
<i>Internet and E-Mail Operations</i>					
<u><i>Access a specific Web page (URL)</i></u>					
FY01	13.4	86.6	100.0	0.1456	97
FY00	22.2	77.8	100.0		63
<u><i>Create and use bookmarks/favorites</i></u>					
FY01	14.4	85.6	100.0	0.1756	97
FY00	22.5	77.5	100.0		71
<u><i>Copy a graphic from a Web site</i></u>					
FY01	48.5	51.5	100.0	0.2508	97
FY00	38.3	61.7	100.0		47
<u><i>Download and decompress files</i></u>					
FY01	68.0	32.0	100.0	0.1237	97
FY00	82.8	17.2	100.0		29
<u><i>Subscribe and unsubscribe from a mailing list</i></u>					
FY01	61.9	38.1	100.0	0.7115	97
FY00	58.3	41.7	100.0		36
<i>E-Mail Questions</i>					
<u><i>Send e-mail messages and send/receive attachments</i></u>					
FY00	23.7	76.3	100.0		76
<u><i>Send and receive attachments in e-mail</i></u>					
FY01	50.5	49.5	100.0		97
<u><i>Send and receive e-mail messages</i></u>					
FY01	5.2	94.8	100.0		97
<i>Multimedia Use</i>					
<u><i>Reduce, enlarge, or crop a graphic</i></u>					
FY01	68.0	32.0	100.0	0.2210	97
FY00	56.8	43.2	100.0		37
<u><i>Record an audio file or digitize a video clip</i></u>					
FY01	91.8	8.2	100.0	0.1228	97
FY00	78.6	21.4	100.0		14

Table A.2
Teacher Expertise in Technology Use, FY01 Teachers
(in Percent)

	Novice	Apprentice	Practitioner	Expert	All Teachers	Number of Respondents
Familiarity with using scoring guides or rubrics to evaluate student work	7.3	35.4	42.7	14.6	100.0	96
Ask open-ended questions in class	6.3	35.4	47.9	10.4	100.0	96
Encourage collaboration between students	13.5	31.3	44.8	10.4	100.0	96
Use advanced features of a word processor	36.5	31.3	25.0	7.3	100.0	96
Create an electronic presentation	59.4	15.6	18.8	6.3	100.0	96
Experience with evaluating group work	21.9	38.5	33.3	6.3	100.0	96
Troubleshoot common computer problems	39.6	33.3	21.9	5.2	100.0	96
Addresses growth in use of educational technology	51.0	25.0	19.8	4.2	100.0	96
Learn new software applications using a tutorial or by exploration	30.2	36.5	29.2	4.2	100.0	96
Use technology as a tool for collaboration with peers, parents and the larger community	57.3	18.8	19.8	4.2	100.0	96
Design lessons that require synthesis of information	27.1	37.5	32.3	3.1	100.0	96
Identify and locate technology resources and evaluate them for accuracy and suitability	42.7	30.2	24.0	3.1	100.0	96
Incorporate authentic tasks into lesson plans	20.8	35.4	40.6	3.1	100.0	96
Use technology to support learner-centered strategies to address the diverse needs of students	53.1	30.2	13.5	3.1	100.0	96
Design and build a class web page	72.9	13.5	11.5	2.1	100.0	96
Model and teach legal and ethical practices related to technology use	60.4	27.1	10.4	2.1	100.0	96
Ability to judge the validity of virus warnings	74.0	12.5	12.5	1.0	100.0	96
Awareness of and ability to evaluate various uses of technology in society	35.4	37.5	26.0	1.0	100.0	96
Comfort in planning for management of technology in the classroom	43.8	34.4	20.8	1.0	100.0	96
Facilitate technology-enhanced experiences	54.2	28.1	16.7	1.0	100.0	96

Table A.3
Teacher Frequency of Computer Use by Program Year
(in Percent)

	Less than once a month	2-3 times a month	1-2 times a week	3-4 times a week	Every day	All Teachers	P- Value	Number of Respondents
<i>Class Preparation Activities</i>								
<u><i>Search the Internet for educational materials</i></u>								
FY01	18.4	26.5	26.5	21.4	7.1	100.0	0.0012	98
FY00	37.8	35.6	15.6	6.7	4.4	100.0		90
<u><i>Use the Internet to do background research for school lessons</i></u>								
FY01	28.6	29.6	25.5	12.2	4.1	100.0	0.0043	98
FY00	53.3	27.8	11.1	5.6	2.2	100.0		90
<u><i>Exchange computer files with other teachers</i></u>								
FY01	78.6	10.2	9.2	2.0	0.0	100.0	0.4024	98
FY00	83.3	11.1	3.3	1.1	1.1	100.0		90
<u><i>Make handouts for students using a computer</i></u>								
FY01	19.4	23.5	26.5	18.4	12.2	100.0	0.6862	98
FY00	15.6	31.1	23.3	21.1	8.9	100.0		90
<u><i>Participate in on-line discussion groups addressing general educational issues</i></u>								
FY01	87.8	6.1	1.0	1.0	4.1	100.0	0.1539	98
FY00	96.7	3.3	0.0	0.0	0.0	100.0		90
<u><i>Participate in on-line discussion groups addressing your subject or grade-level specialty</i></u>								
FY01	92.9	2.0	1.0	2.0	2.0	100.0	0.2848	98
FY00	98.9	1.1	0.0	0.0	0.0	100.0		90
<u><i>Use camcorders, digital cameras, or scanners to prepare for class</i></u>								
FY01	77.6	15.3	6.1	1.0	0.0	100.0	0.9958	98
FY00	78.9	14.4	5.6	1.1	0.0	100.0		90
<u><i>Use on-line reference materials and databases maintained by your library</i></u>								
FY01	76.5	15.3	5.1	3.1	0.0	100.0	0.9716	98
FY00	74.4	15.6	6.7	3.3	0.0	100.0		90
<u><i>Write lesson plans or related notes on a computer</i></u>								
FY01	37.8	15.3	15.3	11.2	20.4	100.0	0.4011	98
FY00	44.4	17.8	16.7	11.1	10.0	100.0		90

(Continued.)

Table A.3 Continued.

	Less than once a month	2-3 times a month	1-2 times a week	3-4 times a week	Every day	All Teachers	P- Value	Number of Respondents
<u>Communicate with eMINTS teachers via e-mail</u>								
FY01	93.9	1.0	4.1	0.0	1.0	100.0		98
<u>Communicate with non-eMINTS teachers via e-mail</u>								
FY01	45.9	14.3	10.2	14.3	15.3	100.0		98
Administrative Activities								
<u>Use computers to record attendance or other administrative records</u>								
FY01	55.1	6.1	9.2	6.1	23.5	100.0	0.0006	98
FY00	83.3	4.4	3.3	0.0	8.9	100.0		90
<u>Correspond with parents using e-mail</u>								
FY01	80.6	10.2	5.1	4.1	0.0	100.0	0.6338	98
FY00	77.8	8.9	10.0	3.3	0.0	100.0		90
Teaching Activities								
<u>Use the Internet as part of classroom instruction</u>								
FY01	45.9	24.5	19.4	6.1	4.1	100.0	0.0046	98
FY00	67.8	23.3	6.7	2.2	0.0	100.0		90

Table A.4
 Teachers Rating of Teaching Effectiveness Use by Program Year
 (in Percent)

Use Activity	P-Value	<i>Among Teachers who use Activity...</i>					P-Value	Total Number of Respondents
		Not Effective	Moderately Effective	Very Effective	All Teachers			
<i>Teacher-centered Teaching Activities</i>								
<u><i>Lecture to the class as a whole</i></u>								
FY01	85.4	0.0078	17.1	72.0	11.0	100.0	0.1805	96
FY00	96.7		8.0	77.0	14.9	100.0		90
<u><i>Have students use a textbook</i></u>								
FY01	93.7	0.1760	15.6	73.3	11.1	100.0	0.3197	96
FY00	97.8		9.1	75.0	15.9	100.0		90
<u><i>Demonstrate a concept using the board or an overhead projector</i></u>								
FY01	97.9	0.1686	1.1	59.6	39.4	100.0	0.4526	96
FY00	100.0		0.0	54.4	45.6	100.0		90
<u><i>Use supplementary printed materials other than textbooks</i></u>								
FY01	97.9	0.1710	0.0	45.7	54.3	100.0	0.2576	96
FY00	100.0		1.1	36.0	62.9	100.0		89
<u><i>Have students complete a worksheet or workbook emphasizing routine practice</i></u>								
FY01	95.8	0.0503	20.7	69.6	9.8	100.0	0.0335	96
FY00	100.0		7.8	76.7	15.6	100.0		90
<i>Inquiry-Based Teaching Activities</i>								
<u><i>Have students use materials from the Internet</i></u>								
FY01	83.3	0.0008	6.3	55.0	38.8	100.0	0.0001	96
FY00	61.4		0.0	24.1	75.9	100.0		88
<u><i>Have students analyze and interpret information</i></u>								
FY01	95.8	0.1979	4.3	47.8	47.8	100.0	0.1235	96
FY00	98.9		3.4	33.7	62.9	100.0		90
<u><i>Have students confer with other students about their work</i></u>								
FY01	92.7	0.2317	7.9	60.7	31.5	100.0	0.1249	96
FY00	96.7		4.6	49.4	46.0	100.0		90
<u><i>Have students evaluate the work of other students</i></u>								
FY01	90.6	0.8854	16.1	65.5	18.4	100.0	0.1066	96
FY00	90.0		7.4	64.2	28.4	100.0		90

(Continued.)

Table A.4 Continued.

Use Activity	P-Value	Among Teachers who use Activity...					P-Value	Total Number of Respondents
		Not Effective	Moderately Effective	Very Effective	All Teachers			
<i>Have students evaluate and improve their own work</i>								
FY01	94.8	0.9164	7.7	59.3	33.0	100.0	0.1104	96
FY00	94.4		4.7	47.1	48.2	100.0		90
<i>Work with small groups of students</i>								
FY01	99.0	0.9634	1.1	25.3	73.7	100.0	0.1150	96
FY00	98.9		0.0	14.6	85.4	100.0		90
<i>Have students respond orally to open-ended questions</i>								
FY01	92.7	0.0379	4.5	51.7	43.8	100.0	0.0191	96
FY00	98.9		0.0	39.3	60.7	100.0		90
<i>Have students work on problems for which there are several answers</i>								
FY01	95.8	0.2022	7.6	47.8	44.6	100.0	0.0142	96
FY00	98.9		3.4	30.7	65.9	100.0		89
<i>Have students work on problems for which there are several methods of solution</i>								
FY01	87.5	0.0027	6.0	46.4	47.6	100.0	0.0237	96
FY00	98.9		2.3	29.9	67.8	100.0		88
<i>Have students put events or things in order and explain why they were organized that way</i>								
FY01	96.9	0.6365	3.2	50.5	46.2	100.0	0.0234	96
FY00	95.6		1.2	32.6	66.3	100.0		90
<i>Demonstrate a concept using manipulatives, models other tools or objects</i>								
FY01	96.9	0.3440	0.0	24.7	75.3	100.0	0.0004	96
FY00	98.9		1.1	4.5	94.4	100.0		90
<i>Have students use on-line reference materials maintained by your library</i>								
FY01	60.4	0.0838	6.9	60.3	32.8	100.0	0.0003	96
FY00	47.8		0.0	27.9	72.1	100.0		90
<i>Have groups of students develop their own class projects</i>								
FY01	87.5	0.0447	4.8	44.0	51.2	100.0	0.6441	96
FY00	76.1		3.0	38.8	58.2	100.0		88

Table A.5
MSIP Opinion Scales by Program Year
(in Percent)

	Mean	Standard Deviation	P-Value	Number of Respondents
<i><u>MSIP School Climate</u></i>				
FY01	3.942	0.770	0.0001	98
FY00	4.330	0.562		88
<i><u>MSIP School Level Technology Climate</u></i>				
FY01	2.612	0.758	0.8808	98
FY00	2.595	0.767		87
<i><u>MSIP Instructional Efficacy</u></i>				
FY01	4.136	0.555	0.0366	98
FY00	4.281	0.389		89
<i><u>MSIP Commitment to Teaching</u></i>				
FY01	3.969	0.413	0.2533	98
FY00	4.048	0.514		89