

Evaluation of Macmillan/McGraw-Hill Science 2005 Curriculum in Charlotte-Mecklenburg: Report on Results of Data from Teacher Logs, Teacher Surveys, and Classroom Observations

Introduction

During the 2005–06 school year, Westat conducted a formative evaluation of the use of the Macmillan/McGraw-Hill (MMH) Science 2005 curriculum. The evaluation was designed to determine the extent to which various features of the curriculum were being used. Features targeted for study were 1) hands-on activities, 2) reading skills, 3) the use of visuals to support learning, and 4) the 5E Inquiry Instructional Learning Model, on which the curriculum is built. In addition, there was a strong interest in finding out the extent to which these features and the materials that support them were perceived by teachers to be effective for students with different skill levels and needs.

The study in Charlotte-Mecklenburg was carried out in eight schools, starting in February 2006. In all participating schools, the 2005–06 school year was the first year of implementation.

The Study Sample

All teachers in the sample were volunteers; they agreed to be part of the formative assessment after being contacted by Charlotte-Mecklenburg district personnel and Westat staff. Teachers in the study also represented schools employing different models of science instruction. Most of the study schools had high percentages of African American students and students eligible for free or reduced-price lunch.

Table 1 presents characteristics of these schools.

Table 1.—Demographic characteristics of participating schools

School	Number of students	Percent American Indian	Percent Asian	Percent African American	Percent Hispanic	Percent white	Percent multiracial	Percent limited English proficient	Percent free and reduced-price lunch
A.....	712	0.7	3.2	56.0	28.0	8.4	3.7	22.8	81.2
B.....	699	0.4	5.9	68.5	2.0	19.9	3.3	2.4	58.4
C.....	513	1.2	1.4	51.3	2.3	42.1	1.8	1.8	32.0
D.....	461	0.7	4.3	69.6	16.5	8.5	0.4	15.4	79.2
E.....	524	0.0	3.1	44.7	40.8	8.6	2.9	33.8	90.1
F.....	760	0.5	7.5	74.0	3.3	11.8	2.9	2.6	53.7
G.....	737	0.1	6.4	6.0	6.0	79.2	2.3	7.3	13.7
H.....	985	1.2	4.5	57.1	19.3	14.1	3.9	15.7	61.9

NOTE: Percents may not add to 100 because of rounding.

Procedures

The study collected data from three sources: teacher logs, teacher surveys, and classroom observations. All teachers were asked to participate in the first two sets of activities. Only selected teachers were observed.

- Teachers were asked to fill out logs three times during the second semester, at approximately six-week intervals. The purpose of the logs was to determine which components of the curriculum had been used during the previous two weeks. Teachers were also asked to indicate the unit(s) covered during the reporting period. The logs asked about three dimensions of each component: frequency of use, ease of use, and value.¹ One major change from log 1 to logs 2 and 3 was to add a response that allowed teachers to indicate that a component was not available for use because the material referred to had not been provided.

Teachers were also asked to provide a reason for *never* or *rarely* using a particular component. This question was open-ended, and teachers were not given prompts from which to choose.

- The teacher survey was administered at the end of the school year. The survey asked about many of the same components as the logs, focusing on their effectiveness with different types of populations: Approaching Readers, On-Level Readers, Beyond-Level Readers, and English Language Learner Readers. The survey also collected data on teachers' background and experiences, as well as the types of students they taught.
- Observations of selected classrooms were conducted in April 2006. A total of seven classes were observed for one science period, and each classroom was observed only once. The data served more to familiarize the Westat team with the actual implementation of the program and provide a forum for teacher interviews than for assembling any representative picture of how the program was being implemented.

One issue that emerged early on and remained a problem was teacher nonresponse or incomplete response in the logs. Although they were told they would receive an incentive payment in MMH curriculum materials for their cooperation (the requirement was that they fill out at least two logs and the survey), many found the requests overly burdensome.

Table 2.—Number of teachers responding to the survey and logs, by grade

Grade taught	Teacher survey	Log 1	Log 2	Log 3
Grade 1	5	7	6	4
Grade 2	0	1	1	1
Grade 3	2	5	4	3
Grade 4	1	2	3	1
Grade 5	4	4	3	3
Special education	3	0	0	0
Total.....	15	19	17	12

¹ We asked about all three of these areas because we felt that teachers might rate a component differently depending upon which aspect was being examined; that is, we expected that teachers might frequently use a strategy that was hard to use if it was perceived to be of high value. Our results show much less variation in response than we had anticipated, and components that were frequently used were generally seen to be easy to use. We propose to eliminate one of these categories—probably ease of use—in the next set of study instruments.

Findings

In this report, we present findings from the teacher logs, surveys, and observations. For the first two data sources, we present the results separately for data collected from teachers for grades 1–2 and 3–5 because the curriculum varies by grade level.

Teacher Logs

Through the logs, we found that most teachers were using the main components of the curriculum (e.g., the Explore activities), but they reported more infrequent use of other components (e.g., cross-curricular links). The most common reason that certain activities and materials were not used was time. Most of the teachers in the study do not teach science every day. Those who do teach multiple classes and grades, and as a result, cannot fit in all of the activities. In addition, some teachers noted that science, unlike math or reading, is not a tested subject, and teachers therefore either omit activities entirely or modify them because of time constraints. For example, with respect to differentiating instruction, some teachers did not use the Reaching All Learners activities when applicable, but rather modified their regular instruction to address all students' needs. With respect to integrating reading and writing into the science curriculum, there is some indication that teachers see these literacy activities (as well as the Cross Curricular Activities) as infringing on the already limited time they have for science. Some teachers feel that reading and writing are covered adequately at other times in the day.

Activities and materials commonly were not used because they were not applicable either during the reporting period or for a teacher's class in general. Some activities are not included in every lesson, or a teacher may not have any ELL or inclusion students. In addition, at least two teachers explained that North Carolina's pacing guide and competency goals do not require teachers to teach an entire unit or chapter, which leads to activities such as chapter reviews being modified or omitted.

In logs 2 and 3, many teachers explained nonimplementation as arising from the lack of alignment between the MMH curriculum and North Carolina's fourth quarter competency goals for grades 3 and 4. While MMH provided the district with a supplemental book of Blackline Masters, the materials were insufficient for teachers to create complete lessons and they had to rely on other resources.

Some teachers explained that they either do not have certain materials from the curriculum (e.g., the Explore Activity videos, Cross Curricular books, or Pupil Editions of the textbook) or they have limited resources at their school. Several teachers noted that there are copying restrictions that prevent them from using the Blackline Masters frequently or lead them to adapt their use (e.g., by having students respond in journals). Another example, mentioned by a few teachers, is the lack of audiovisual equipment in their classrooms (e.g., televisions, VCRs, and overhead projectors). At least one teacher explained that she is still becoming familiar with the curriculum and as her familiarity increases, so will her usage of various activities.

The teacher logs provide information on the extent of use and teachers' perception of the ease of use and value of curricular components in the following categories: Scientific Literacy, Inquiry Skills, Basic Literacy, Visual Literacy, Reaching All Learners and Cross Curricular Activities, and Assessment. In our analyses, data from the three teacher logs have been consolidated to provide a semester-long view of strategy usage.

Tables 3a–6b present teachers’ responses to questions regarding components within each of these categories, organized by the two grade groups. The following information is provided for each component.

- Frequency of use in the previous two weeks of instruction is classified into four categories: never used, rarely used, frequently used, and always used.
- Ease of use is classified into three categories: challenging, moderately easy, and easy.
- Finally, value is classified into three categories: high, moderate, or low.

Scientific Literacy

Explore Activity

Grades 1–2. MMH’s Science program offers three tiers of inquiry for each Explore Activity: structured, guided, and student-initiated. Structured and Guided Inquiry were used the most frequently, and all teachers at these grade levels reported using them at least on occasion. Sixty percent of teachers reported that they always used the Structured Inquiry activity, and 65 percent reported the same for the Guided Inquiry activity (Table 3a). An additional thirty-five percent of teachers reported using each activity frequently.

Table 3a.—Percent of grade 1–2 teachers reporting use of the Scientific Literacy components of the Science curriculum across all three logs

Component	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Explore Activity: Structured Inquiry (PE).....	0.0	5.0	35.0	60.0	5.0	25.0	70.0	80.0	20.0	0.0
Explore Activity: Guided Inquiry (PE).....	0.0	0.0	35.0	65.0	0.0	5.0	95.0	100.0	0.0	0.0
Explore Activity: Student-Initiated Inquiry (TE).....	0.0	20.0	45.0	35.0	0.0	25.0	70.0	79.0	21.1	0.0
Alternative Explore Activity.....	15.0	40.0	40.0	5.0	10.0	25.0	60.0	68.4	26.3	5.3
Inquiry Skill Builder...	5.0	15.0	40.0	40.0	5.0	35.0	60.0	73.7	26.3	0.0
Inquiry Skills MiniLesson	35.0	15.0	35.0	15.0	10.0	40.0	40.0	57.9	36.8	5.3
Did You Ever Wonder?	5.0	15.0	15.0	65.0	10.0	5.0	80.0	75.0	20.0	0.0
Science Center Cards .	60.0	15.0	25.0	0.0	35.0	30.0	30.0	47.4	26.3	21.1

TE = Teacher Edition; PE = Pupil Edition.

NOTE: Percents may not add to 100 because the categories don’t know/don’t use are not included or because of rounding.

Teachers reported using Student-Initiated Inquiry less frequently, but still on a regular basis. Thirty-five percent of teachers reported that they always used Student-Initiated Inquiry, and another 45 percent reported frequent use. As with Structured and Guided Inquiry, all of the teachers reported using Student-Initiated Inquiry at least occasionally.

Teachers overwhelmingly found these three inquiry activities to be easy to implement and of high value. Guided Inquiry was rated the highest on both factors, with 95 percent of teachers reporting it easy to use and 100 percent of teachers reporting it of high value. Structured Inquiry and Student-Initiated Inquiry were rated highly as well, with 70 percent of teachers reporting each as easy to use and 80 and 79 percent of teachers reporting them of high value. The only inquiry activity rated as challenging was Structured Inquiry (5 percent), with one teacher commenting that it was “too advanced” for her students.

Grades 3–5. For grades 3–5, teachers were still more likely to report always using the Structured Inquiry activity (29 percent) than the Guided or Student-Initiated Inquiry (21 and 18 percent, respectively), but the percentages of teachers never using any of these activities (39 percent for Structured and Guided Inquiry, and 50 percent for Student-Initiated Inquiry) were much greater than among teachers of grades 1 and 2 (Table 3b). A smaller percentage of teachers in these grades than teachers in the lower grades considered the activities easy to use (36 percent for Structured and Guided Inquiry, 32 percent for Student-Initiated Inquiry) and of high value (48 percent for Structured and Guided Inquiry, 37 percent for Student-Initiated Inquiry).

Table 3b.—Percent of grade 3–5 teachers reporting use of the Scientific Literacy components of the Science curriculum across all three logs

Component	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Explore Activity: Structured Inquiry (PE).....	39.3	7.1	25.0	28.6	14.3	17.9	35.7	48.2	7.4	11.1
Explore Activity: Guided Inquiry (PE).....	39.3	7.1	32.1	21.4	10.7	21.4	35.7	48.2	7.4	7.4
Explore Activity: Student-Initiated Inquiry (TE).....	50.0	21.4	10.7	17.9	10.7	10.7	32.1	37.0	11.1	7.4
Alternative Explore Activity.....	64.3	14.3	14.3	7.1	21.4	10.7	21.4	28.0	24.0	8.0
Quick Lab.....	53.6	7.1	25.0	14.3	10.7	28.6	17.9	34.6	15.4	11.5
Inquiry Skill Builder...	53.6	21.4	10.7	14.3	7.1	17.9	28.6	32.0	16.0	4.0
Inquiry Skills MiniLesson.....	53.6	21.4	17.9	7.1	10.7	17.9	28.6	30.8	15.4	7.7
Did You Ever Wonder?	39.3	10.7	25.0	25.0	10.7	21.4	35.7	42.3	15.4	3.9

TE = Teacher Edition; PE = Pupil Edition.

NOTE: Percents may not add to 100 because the categories don't know/don't use are not included or because of rounding.

Some teachers cited time and student ability as the reasons preventing them from implementing these activities, but the main factor behind nonimplementation (and this is true for other activities as well) is that the primary MMH curriculum does not cover two of North Carolina's competency goals: Skeletal and Muscle Systems (3rd grade) and Food Growth and Energy (4th grade). Teachers were provided with a supplemental book of Blackline Masters, but this resource was not a sufficient base for complete lessons. Thus, it is not necessarily true that grade 3–5 teachers did less Explore-type activities than grade

1–2 teachers; rather, many were not using the MMH curriculum during two of three reporting periods. In fact, one teacher described these units as “difficult to implement given what [they] were offered with the MMH Science Program” and said it “took a lot of time and energy to create both activities and assessments for the students to complete.”

One other factor that may contribute to nonimplementation of Explore Activities is the model of science instruction used by the school. Some schools have a designated science teacher who focuses on labs, while the classroom teacher supports that instruction through other activities. At least one of the science teachers in the study primarily relied on her own labs for instruction.

Alternative Explore Activity

In general, teachers focused more of their instructional time on the primary Explore Activity than the Alternative Explore activity because it was not necessary, nor was there time, to do both. A few teachers commented that they reviewed each activity to determine which was the better one for their students, and it usually was the primary Explore activity.

Grades 1–2. Five percent of grade 1–2 teachers reported always using the Alternative Explore activity (compared to 60 percent for Structured Inquiry), while 15 percent reported never using it (Table 3a). The remaining 80 percent of teachers were evenly split between using it frequently or rarely. The majority of teachers still found it easy to use (60 percent) and of high value to them (68 percent), but the percentages are somewhat lower than those for the three inquiry activities.

Grades 3–5. Sixty-four percent of grade 3–5 teachers never used the Alternative Explore Activity, compared to only 7 percent who always used it (Table 3b). Approximately half of teachers described the Alternative Explore Activity’s ease of use and value as unknown. Most of the remaining teachers were split between viewing it as easy to use (21 percent) or challenging (21 percent) and its value as high (28 percent) or moderate (24 percent).

Inquiry Skill Builder and MiniLesson

Grades 1–2. The Inquiry Skill Builder, an additional hands-on activity focusing on a different inquiry skill such as observe or measure, was regularly used by 80 percent of grade 1–2 teachers; 40 percent of teachers always used it and another 40 percent frequently used it (Table 3a). The Inquiry Skills MiniLesson, which accompanies each Inquiry Skill Builder, was used regularly by 50 percent of teachers, while 35 percent of teachers reported never using it.

More teachers rated the Inquiry Skill Builder as easy to use (60 percent) and of high value (74 percent) than they did the Inquiry Skills MiniLesson (40 percent and 58 percent, respectively). A couple of teachers described these activities as less important than others when faced with the prospect of omitting activities, maintaining that the concepts had been covered adequately and additional coverage was not necessary. In addition, at least two teachers commented that they did not know where to find the Inquiry Skills MiniLesson.

Grades 3–5. As with the other scientific literacy activities, teachers in grades 3–5 were less likely to report using the Inquiry Skill Builder and MiniLesson; 54 percent of teachers report never using either of them (Table 3b). While a lower percentage of grade 3–5 teachers rated these activities easy to use (both 29 percent) and of high value (32 and 31 percent) than the grade 1–2 teachers, many reported the ease and value as unknown because they did not use them.

Did You Ever Wonder?

Grades 1–2. Sixty-five percent of teachers reported that they always used the Did You Ever Wonder? activity, which serves as an introduction to each chapter and is labeled in the curriculum as guided inquiry (Table 3a). Only 5 percent of teachers reported never using it. Eighty percent of teachers found it easy to use (10 percent found it challenging), while 75 percent said it was of high value. None said it was of low value.

Grades 3–5. The greatest percentage of teachers in these higher grades, on the other hand, never used this activity (39 percent). They were also much less likely to view the activity as easy (36 percent) and of high value (42 percent) (Table 3b). As noted above, this activity appears at the beginning of each chapter and as a result, was often not implemented because it was not an applicable activity during the reporting period.

Science Center Cards

Grades 1–2. The Science Center Cards, which provide hands-on activities for students in grades 1 and 2 to reinforce unit objectives and skills, were never used by 60 percent of teachers (Table 3a). In contrast, 25 percent of teachers frequently used them. Teachers were split on the ease of use of the cards (30 percent found them easy to use, whereas 35 percent found them challenging), and fewer teachers rated them of high value compared to other Scientific Literacy activities (47 percent compared to 58 to 100 percent).

Two main factors limited the use of the Science Center Cards. Teachers commented on the issue of time, with most indicating that there is not enough time to incorporate the cards; one teacher felt that the Science Center Card activities were too short to be center activities. Other teachers felt that their students did not have the skill level needed to successfully implement the card activities. Specifically, one teacher said that the activities were too difficult for her students to be a student-guided activity, while another described the cards as not being “child friendly” for her low-ability students.

Quick Labs

Grades 3–5. Quick Labs are additional hands-on activities provided in the curriculum for grades 3–5. While a majority of teachers never used the Quick Labs (54 percent), 14 percent always used them, and 25 percent frequently used them (Table 3b). Twenty-nine percent of teachers rated the Quick Labs’ ease of use as moderately easy (compared to 18 percent who rated them easy) and 36 percent reported they were of high value.

Many teachers cited time as the reason they did not do all of the scientific literacy activities in a lesson, including the Quick Labs, and at least one teacher cited “student discipline” as preventing her from implementing these labs.

Inquiry Skills

Grades 1–2. The grade 1–2 curriculum primarily addresses eight Inquiry Skills:

- Observe—to use one or more of the senses to identify or learn about an object or event.

- Infer—to form an idea from facts or observations.
- Classify—to place things that share properties together in groups.
- Measure—to find the size, distance, time, volume, area, mass, weight, or temperature of an object or event.
- Communicate—to share information.
- Predict—to state possible results of an event or experiment.
- Experiment—to perform a test to support or disprove a hypothesis.
- Make a Model—to make something to represent an object or event.

Teachers' coverage of these skills varied widely, but coverage was most often related to the fact that some of these skills were not covered in the lessons on which teachers reported. Grade 1–2 teachers most frequently addressed the Observe, Communicate, and Infer skills. These three skills were rated as being always used by 90, 80, and 70 percent of teachers, respectively (Table 4a). Least frequently addressed were the Make a Model and Measure skills. Only 20 percent of teachers always addressed the Make a Model skill, while 20 percent never did. Similarly, only 20 percent of teachers always addressed the Measure skill, while 10 percent never did.

The Make a Model and Measure skills were the least frequently reported as easy to use (65 percent for each) and of high value (65 percent for each). In comparison, the most frequently used skill—Observe—was rated as easy to use by 100 percent of the teachers and of high value by 95 percent.

With respect to how teachers taught inquiry skills to their students, either through hands-on activities, through the text, or a combination of both, most grade 1–2 teachers approached the skills by using both methods. For example, the Observe skill was taught through hands-on and reading methods by 95 percent of teachers.

Grades 3–5. The curriculum for grades 3–5 addresses the eight inquiry skills listed above, as well as the following five skills:

- Use Numbers—to order, count, add, subtract, multiply, and divide to explain data.
- Interpret Data—to use information that has been gathered to answer questions or solve a problem.
- Form a Hypothesis—to make a statement that can be tested to answer a question.
- Use Variables—to identify things in the experiment that can be changed or controlled.
- Define Based on Observations—to put together a description that is based on observations and experience.

Table 4a.—Percent of grade 1–2 teachers reporting use of the Inquiry Skills of the Science curriculum across all three logs

Skill	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Observe	0.0	0.0	10.0	90.0	0.0	0.0	100.0	95.0	5.0	0.0
Infer.....	0.0	0.0	30.0	70.0	0.0	10.0	90.0	95.0	5.0	0.0
Classify	0.0	0.0	55.0	45.0	0.0	20.0	80.0	85.0	10.0	5.0
Measure.....	10.0	5.0	65.0	20.0	5.0	30.0	65.0	65.0	35.0	0.0
Communicate	0.0	0.0	20.0	80.0	0.0	5.0	95.0	95.0	5.0	0.0
Predict	0.0	0.0	40.0	60.0	0.0	5.0	95.0	80.0	20.0	0.0
Experiment.....	5.0	0.0	40.0	55.0	0.0	15.0	80.0	80.0	10.0	5.0
Make a Model	20.0	0.0	60.0	20.0	0.0	26.3	63.2	65.0	15.0	10.0

NOTE: Percents may not add to 100 because the categories don't know/don't use are not included or because of rounding.

Table 4b.—Percent of grade 3–5 teachers reporting use of the Inquiry Skills of the Science curriculum across all three logs

Skill	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Observe	28.6	3.6	3.6	64.3	7.1	10.7	57.1	73.1	0.0	0.0
Infer.....	25.0	3.6	7.1	64.3	21.4	25.0	32.1	65.4	7.7	0.0
Classify	46.4	3.6	17.9	32.1	7.1	14.3	35.7	50.0	7.7	7.7
Measure.....	57.1	3.6	28.6	10.7	10.7	17.9	17.9	40.0	8.0	8.0
Use Numbers.....	33.3	3.7	25.9	37.0	7.4	29.6	33.3	50.0	16.7	4.2
Communicate	28.6	3.6	10.7	57.1	7.1	21.4	46.4	61.5	11.5	0.0
Predict	25.0	7.1	14.3	53.6	7.1	25.0	46.4	69.2	3.9	0.0
Interpret Data	25.9	3.7	14.8	55.6	14.8	14.8	48.2	60.0	12.0	4.0
Form a Hypothesis	25.9	11.1	22.2	40.7	18.5	22.2	37.0	64.0	12.0	0.0
Use Variables	33.3	18.5	37.0	11.1	22.2	22.2	25.9	56.0	16.0	0.0
Experiment.....	39.3	10.7	14.3	35.7	14.3	21.4	28.6	61.5	3.9	0.0
Make a Model	46.4	10.7	21.4	21.4	7.1	17.9	32.1	53.9	7.7	3.9
Define Based on observations.....	33.3	7.4	18.5	40.7	14.8	14.8	40.7	60.0	12.0	0.0

NOTE: Percents may not add to 100 because the categories don't know/don't use are not included or because of rounding.

Teachers of grades 3–5 most frequently addressed skills similar to those addressed by teachers of grades 1–2, but at lower percentages. The most frequently addressed skills were the Observe, Infer, and Predict skills, which were rated as being always used by 64, 64, and 54 percent of teachers, respectively (Table 4b). Least frequently addressed were the Measure, Make a Model, and Classify skills, which were rated as never used by 57, 46, and 46 percent of teachers, respectively. Overall, greater percentages of grade 3–5 teachers than grade 1–2 teachers reported never teaching these skills.

Frequency of usage appears to correspond less to ease of use than to value. For example, Infer was rated as one of the more challenging skills to teach (21 percent), but it was still taught the most frequently. With respect to value, the most frequently used skills were also those most rated as being of high value (73, 65, and 69 percent for Observe, Infer, and Predict, respectively). Still, only one skill—Measure—was rated to be of high value by less than half of the teachers.

Teachers of grades 3–5 who taught a specific inquiry skill usually taught it through both the text and hands-on activities, as did their counterparts in grades 1–2. Teachers who reported teaching a skill using one method versus the other more often reported teaching the skill through a hands-on activity than

just the text. However, greater percentages of these teachers reported never addressing the skills at all, which can mainly be attributed to the skill not being applicable during the reporting period and the lack of coverage by the MMH curriculum of the 3rd and 4th grade competency goals for the fourth quarter. As one teacher noted, she “used, taught, and incorporated these skills,” but not from the MMH curriculum. Time, a common theme throughout teachers’ comments, did not appear to be an issue in terms of inquiry skills.

Basic Literacy

Grades 1–2. Among grade 1–2 teachers, the most frequently used Basic Literacy activities were Previewing/Developing Vocabulary, the Read to Learn Activity, and Think and Write Questions, reported as always used by 95, 75, and 70 percent of teachers, respectively (Table 5a). Ninety percent of teachers found the vocabulary activities easy to use and of high value, which corresponds with another indication of the importance of vocabulary—teachers’ observation debriefings—in which vocabulary was often mentioned as a key objective of teachers’ lessons. For the most part, teachers also found the Read to Learn Activities and Think and Write Questions easy to use (70 and 60 percent) and of high value (75 and 80 percent).

The Least used Basic Literacy Activities and materials were the Writing Activities, Reading Aid Transparencies, and Reading MiniLessons, which were never used by 53, 45, and 42 percent of teachers, respectively. The Writing Activities appear only once each unit and, as a result, were often not applicable for the lessons teachers taught during the reporting period; however, most teachers indicated they did not have time for these and many other of the literacy-oriented activities.

Table 5a.—Percent of grade 1–2 teachers reporting use of the Basic Literacy activities of the Science curriculum across all three logs

Activity	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Chapter Reading Skills.....	25.0	5.0	35.0	35.0	5.0	30.0	55.0	50.0	30.0	20.0
Read to Learn Activity	10.0	0.0	15.0	75.0	5.0	20.0	70.0	75.0	20.0	5.0
Reading Link.....	35.0	10.0	30.0	25.0	0.0	45.0	35.0	52.6	42.1	5.3
Think and Write Questions	5.0	5.0	20.0	70.0	0.0	35.0	60.0	80.0	15.0	5.0
Reading MiniLesson (TE).	42.1	10.5	26.3	21.1	5.3	26.3	47.4	36.8	63.2	0.0
Blackline Masters: Chapter Graphic Organizer.....	35.0	20.0	40.0	5.0	10.5	36.8	42.1	26.3	36.8	36.8
Blackline Masters: Reading Skill	25.0	20.0	40.0	15.0	5.3	21.1	68.4	47.4	31.6	21.1
Blackline Masters: Lesson Outline	20.0	15.0	50.0	15.0	5.3	26.3	57.9	68.4	15.8	15.8
Blackline Masters: Interpret Illustrations.....	20.0	10.0	45.0	25.0	5.3	21.1	68.4	57.9	26.3	15.8
Reading Aid Transparency	45.0	5.0	25.0	25.0	0.0	26.3	47.4	57.9	21.1	10.5
Previewing and Developing Vocabulary .	5.0	0.0	0.0	95.0	0.0	5.0	90.0	90.0	10.0	0.0
Grade Level Science Books.....	22.2	5.6	38.9	33.3	0.0	21.1	63.2	66.7	16.7	11.1
Writing Activity (provided with Science Books)	52.6	10.5	26.3	10.5	10.5	15.8	42.1	66.7	16.7	11.1

TE = Teacher Edition.

NOTE: Percents may not add to 100 because the categories don’t know/don’t use are not included or because of rounding.

Grades 3–5. In general, the grade 3–5 teachers reported less frequent use of these Basic Literacy Activities than grade 1–2 teachers, due, in part, to the fourth quarter alignment issues mentioned above. MMH supplied the district with a supplemental book of Blackline Masters on the topics, but the Blackline Masters are insufficient as a base for complete lessons, and teachers, in general, seem to have used the Blackline Masters less frequently than other resources anyway.

As with grade 1–2 teachers, grade 3–5 teachers reported most commonly using Previewing/Developing Vocabulary (50 percent of teachers reported always using these activities) and Read to Learn (46 percent) (Table 5b). In addition, 43 percent of teachers also reported always using Chapter Reading Skills and Grade Level Science Books. However, large percentages of teachers also reported never using each of these activities. In part, this may be because there were a few teachers in the study who are science teachers at their school and therefore only teach hands-on activities, while classroom teachers at their school incorporate other types of science activities. As with grade 1–2 teachers, the largest percentages of teachers reporting never using an activity or material were for the Writing Activities and Reading Aid Transparencies, each with 64 percent of teachers never using them.

Table 5b.—Percent of grades 3–5 teachers reporting use of the Basic Literacy activities of the Science curriculum across all three logs

Activity	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Chapter Reading Skills	46.4	0.0	10.7	42.9	7.4	7.4	48.2	50.0	7.7	3.9
Read to Learn Activity	35.7	3.6	14.3	46.4	7.4	11.1	51.9	53.9	11.5	0.0
Literature Link	55.6	7.4	29.6	7.4	11.5	23.1	15.4	28.0	20.0	8.0
Think and Write Questions	50.0	0.0	17.9	32.1	7.4	14.8	33.3	40.0	12.0	8.0
Reading MiniLesson (TE)	46.4	14.3	25.0	14.3	7.4	22.2	25.9	38.5	15.4	7.7
Blackline Masters: Chapter Graphic Organizer	57.1	7.1	25.0	10.7	11.1	14.8	22.2	32.0	16.0	8.0
Blackline Masters: Reading Skill	53.6	21.4	7.1	17.9	7.4	18.5	25.9	40.0	12.0	8.0
Blackline Masters: Lesson Outline.....	50.0	10.7	14.3	25.0	7.4	18.5	29.6	30.8	19.2	7.7
Blackline Masters: Interpret Illustrations	42.9	25.0	10.7	21.4	7.4	18.5	37.0	42.3	11.5	7.7
Reading Aid Transparency	64.3	10.7	17.9	7.1	7.4	7.4	22.2	24.0	12.0	16.0
Previewing and Developing Vocabulary ..	35.7	7.1	7.1	50.0	11.1	11.1	48.2	53.9	7.7	3.9
Grade Level Science Books.....	42.9	7.1	7.1	42.9	11.1	11.1	37.0	46.2	7.7	3.9
Writing Activity (provided with Science Books).....	64.3	14.3	14.3	7.1	11.1	11.1	18.5	20.0	20.0	8.0

TE = Teacher Edition.

NOTE: Percents may not add to 100 because the categories don't know/don't use are not included or because of rounding.

Teachers cited time as a major reason behind nonimplementation. In discussing the issue, some teachers explicitly touched on the idea of integrating science with other subjects such as reading. They explained that given the limited time available for science instruction, they made a priority of the science activities. Teachers also explained that their students were receiving adequate instruction in other subject areas already (e.g., writing during Open Court Reading).

Other factors mentioned by teachers include copy restrictions at their school, not having the materials, and teaching the lessons in such a way that it is not necessary to do the activity. For example,

one teacher explained that she has her class discuss illustrations during the text rather than as a separate Blackline Master activity.

Visual Literacy

The grades 1–2 and 3–5 curricula share four visually oriented activities and materials: Look!, Get Ready, Explore Activity Videos, and Visual Aid Transparencies. These activities provide teachers with the opportunity to enhance instruction. Teachers generally reported using these features less frequently, and rated them lower in terms of ease of use and value, than other features.

Grades 1–2. For grade 1–2 teachers, the Get Ready feature, which is designed to address the first E of the 5E Learning Cycle and asks students to use the illustrations from the text to answer questions that encourage their interest in the topic and prepare them for the lesson, was the most frequently used Visual Literacy activity (74 percent of teachers always use it) (Table 6a). It was also the activity most teachers rated as easy to use (79 percent) and of high value (89 percent). Least used was the Explore Activity Video, an option teachers can use to preview the Explore Activity when they are short on time. Eighty-four percent of teachers reported never using it. Fewer teachers considered the Explore Videos to be easy to use (42 percent) and of high value (41 percent).

Table 6a.—Percent of grade 1–2 teachers reporting use of the Visual Literacy activities of the Science curriculum across all three logs

Activity	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Look! Feature.....	26.3	0.0	26.3	47.4	5.3	21.1	52.6	61.1	22.2	5.6
Get Ready Feature.....	5.3	0.0	21.1	73.7	0.0	15.8	79.0	88.9	11.1	0.0
Explore Activity Video	84.2	5.3	10.5	0.0	0.0	21.1	42.1	41.2	17.7	17.7
Visual Aid Transparency...	47.4	0.0	15.8	36.8	10.5	26.3	52.6	61.1	22.2	16.7

NOTE: Percents may not add to 100 because the categories don't know/don't use are not included or because of rounding.

Grades 3–5. The percentages of teachers reporting never using the four activities and materials discussed above generally ranged from 41 percent for the Get Ready Feature to 74 percent for the Explore Activity Video (Table 6b). These teachers were also much less likely to rate them easy to use and of high value.

Table 6b.—Percent of grade 3–5 teachers reporting use of the Visual Literacy activities of the Science curriculum across all three logs

Activity	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Look! Feature.....	63.0	3.7	18.5	14.8	7.4	7.4	29.6	20.0	32.0	4.0
Get Ready Feature.....	40.7	11.1	18.5	29.6	7.4	11.1	48.2	46.2	19.2	0.0
Reading Tables.....	53.9	0.0	11.5	34.6	7.7	0.0	46.2	46.2	7.7	7.7
Reading Charts.....	46.2	0.0	15.4	38.5	7.7	3.9	50.0	50.0	7.7	7.7
Reading Diagrams.....	23.1	0.0	30.8	46.2	7.7	19.2	57.7	61.5	15.4	3.9
Reading Graphs.....	50.0	0.0	11.5	38.5	7.7	3.9	46.2	53.9	7.7	7.7
Reading Maps	57.7	3.9	11.5	26.9	7.7	7.7	34.6	42.3	7.7	11.5
Explore Activity Video	74.1	3.7	14.8	7.4	7.4	0.0	25.9	24.0	12.0	12.0
Visual Aid Transparency...	66.7	14.8	11.1	7.4	7.4	3.7	29.6	19.2	19.2	11.5

NOTE: Percents may not add to 100 because the categories don't know/don't use are not included or because of rounding.

The curriculum for grades 3–5 includes additional activities to teach students how to interpret data presented in numerous formats. These include reading tables, charts, diagrams, graphs, and maps. Of these five activities, teachers reported using Reading Diagrams most often; 46 percent of these teachers always used this activity, while 23 percent never used it. Teachers reported using Reading Maps least often; only 27 percent always used it, while 58 percent of teachers never did.

For the most part, teachers rated these activities similarly in terms of ease of use and value. The highest percentage of teachers found the Reading Diagrams activity easy to use (58 percent) and of high value (62 percent); the lowest percentage of teachers did so for Reading Maps (35 for easy to use and 42 percent for high value).

Teachers often felt the Visual Literacy materials were not necessary. For example, some teachers commented that the Explore activity was self-explanatory without the video, and many said that they did not have the time to incorporate it. Other teachers said they did not have the videos or the transparencies. An issue for grade 1–2 teachers not mentioned by grade 3–5 teachers was the lack of audiovisual equipment (i.e., televisions, VCRs, and overhead projectors) needed to use these materials. Even though many of teachers’ comments in logs 2 and 3 discussed the fourth quarter competency goals not addressed by the curriculum, it does not appear that teachers would have used many of these activities and materials regardless given the reasons noted above.

Reaching All Learners and Cross Curricular Activities

The MMH curriculum provides teachers with additional supports for meeting the different needs of their students. As with the Visual Literacy features, and not unexpectedly, these features were used less frequently by teachers. For example, a teacher with no ELL or Special Education students would not need to incorporate components of the program designed for these students into their lessons.

Grades 1–2. Overall, these activities were used infrequently (or not at all) by large percentages of grade 1–2 teachers. The Science for All activities for Advanced Learners and Inclusion were used most frequently, with 58 percent of teachers reporting that they regularly used each (Table 7a). Thirty-seven percent of teachers reported never using the former, while 32 percent reported never using the latter. Among the remaining five activities, teachers who reported never using them ranged from 47 percent for the Cross Curricular Links to 74 percent for Sally Ride Science.

Table 7a.—Percent of grade 1–2 teachers reporting use of the Reaching All Learners and Cross Curricular Activities of the Science curriculum across all three logs

Activity	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Science for All: English Language Learners.....	57.9	5.3	21.1	15.8	5.3	21.1	52.6	36.8	36.8	21.1
Science for All: Advanced Learners	36.8	5.3	36.8	21.1	10.5	31.6	36.8	57.9	31.6	5.3
Science for All: Inclusion...	31.6	10.5	31.6	26.3	0.0	36.8	47.4	42.1	36.8	21.1
Math MiniLesson	52.6	15.8	5.3	26.3	5.3	21.1	42.1	50.0	27.8	16.7
Cross Curricular Links	47.4	10.5	31.6	10.5	15.8	31.6	26.3	44.4	33.3	5.6
Time for Kids	68.4	0.0	15.8	15.8	0.0	15.8	36.8	37.5	25.0	0.0
Sally Ride Science.....	73.7	0.0	5.3	21.1	5.3	15.8	42.1	38.9	22.2	22.2

NOTE: Percents may not add to 100 because the categories don’t know/don’t use are not included or because of rounding.

Teachers’ opinions about the ease of use and the value of these activities were mixed. Only the Science for All activities for ELL students had at least 50 percent of teachers reporting them as easy to use. In terms of value, however, only the Science for All activities for Advanced Learners and the Math MiniLessons had at least 50 percent of teachers rating them as being of high value.

Grades 3–5. Teachers of grades 3–5 also reported using these activities infrequently, if at all. As with most activities, the percentages of teachers never using activities were higher than for grade 1–2 teachers. The percentages of teachers who reported never using these activities ranged from 61 percent for the Math MiniLessons to 85 percent for the Science for All activities for ELL students (Table 7b). Teachers were mixed on their ease of use and value, but many reported that they did not know either.

The Math MiniLessons, Cross Curricular Links, Time for Kids, and Sally Ride Science appear less frequently throughout the curriculum than most other activities and were often not applicable during the reporting period. Regardless, teachers explained that time is the biggest issue preventing them from using many of these activities and that the value to their students is not enough to justify the time needed to incorporate them. In addition, the more infrequent use and lower value ratings may reflect the composition of teachers’ classes and their having little or no need for activities geared toward specific student populations. As noted above in the discussion of Basic Literacy activities, some teachers chose to focus their science instruction on activities that were first and foremost science activities, omitting Cross Curricular Activities because of time constraints and because they felt that their students were receiving ample practice during other parts of the day.

Table 7b.—Percent of grade 3–5 teachers reporting use of the Reaching All Learners and Cross Curricular Activities of the Science curriculum across all three logs

Activity	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Science for All: English Language Learners.....	85.2	0.0	7.4	7.4	7.7	7.7	19.2	29.2	8.3	12.5
Science for All: Advanced Learners	74.1	7.4	3.7	14.8	11.5	3.9	26.9	37.5	12.5	12.5
Science for All: Inclusion..	75.0	3.6	17.9	3.6	7.4	7.4	25.9	26.9	15.4	11.5
Math MiniLesson	60.7	10.7	21.4	7.1	14.8	7.4	25.9	32.0	8.0	16.0
Cross Curricular Links	64.3	10.7	17.9	7.1	11.1	7.4	25.9	34.6	11.5	11.5
Time for Kids	71.4	0.0	10.7	17.9	7.4	3.7	22.2	28.0	8.0	8.0
Sally Ride Science.....	64.3	14.3	7.1	14.3	7.4	3.7	25.9	28.0	8.0	8.0

NOTE: Percents may not add to 100 because the categories don’t know/don’t use are not included or because of rounding.

Assessment

Grades 1—2. Teachers of grades 1–2 reported most frequently using the After Reading Questions, which are built into the Read to Learn component of the curriculum, as a way to assess students’ understanding of the material on an ongoing basis. Seventy percent of teachers reported that they always asked students these questions, and another 15 percent frequently used the questions (Table 8a). Seventy percent of teachers said this type of ongoing assessment was easy to use (none reported it as challenging), and teachers overwhelmingly said these questions were of high value (94 percent).

Teachers also used formal assessments fairly regularly. The percentage of teachers reporting always or frequently using the various formal assessments ranged from 55 percent for the Chapter Test to 75 percent for the Lesson Review. For the most part, teachers found the formal assessments easy to use

and of high value, although 17 percent of teachers reported the Lesson Vocabulary and Cloze Test, Chapter Vocabulary Review, and Unit Vocabulary Review each as being of low value.

The least used assessment was the Performance Assessment, with 75 percent of teachers reporting that they never used it. Teachers were also much less likely to rate this assessment as easy to use and of high value, but many reported that they did not know its ease of use or value given that they did not use it.

Table 8a.—Percent of grade 1–2 teachers reporting use of the Assessment Strategies of the Science curriculum across all three logs

Strategy	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Ongoing Assessment:										
After Reading Questions (PE).....	15.0	0.0	15.0	70.0	0.0	15.0	70.0	94.1	5.9	0
Informal Assessment:										
Easy/Average (TE).....	15.0	5.0	35.0	45.0	0.0	25.0	65.0	68.4	21.1	10.5
Informal Assessment:										
Challenging (TE)	20.0	5.0	40.0	35.0	0.0	25.0	65.0	73.7	15.8	10.5
Formal Assessment:										
Lesson Review (Think and Write) (PE).....	25.0	0.0	35.0	40.0	0.0	20.0	55.0	64.7	23.5	5.9
Formal Assessment:										
Chapter Review and Test Prep (PE).....	30.0	0.0	30.0	40.0	0.0	10.0	70.0	76.5	11.8	11.8
Formal Assessment:										
Lesson Vocabulary and Cloze Test	25.0	5.0	25.0	45.0	0.0	15.0	70.0	72.2	11.1	16.7
Formal Assessment:										
Chapter Vocabulary Review	25.0	10.0	15.0	50.0	0.0	5.0	80.0	77.8	5.6	16.7
Formal Assessment: Unit										
Vocabulary Review	25.0	10.0	20.0	45.0	0.0	10.0	75.0	72.2	11.1	16.7
Formal Assessment:										
Chapter Test (Assessment Book)	40.0	5.0	10.0	45.0	5.0	10.0	60.0	72.2	11.1	5.6
Performance Assessment										
(PE, Assessment Book) ..	75.0	5.0	15.0	5.0	0.0	30.0	20.0	35.3	23.5	11.8

TE = Teacher Edition; PE = Pupil Edition.

NOTE: Percents may not add to 100 because the categories don't know/don't use are not included or because of rounding.

Grades 3–5. Similar to the grade 1–2 teachers, the grade 3–5 teachers reported using the After Reading Questions the most frequently, with 43 percent reporting that they always asked these questions and another 11 percent reporting that they frequently asked them (Table 8b). However, much larger percentages of grade 3–5 teachers than grade 1–2 teachers reported never using the various MMH assessments, ranging from 43 percent for the After Reading Questions to 71 percent for the Unit Vocabulary Review. As a result, many teachers reported that they did not know the ease of use or value of these assessments.

For all grades, several of the assessments were reported as never used because they were not applicable during the reporting period (e.g., end of chapter and end of unit tests). In addition, some teachers explained that teaching an entire chapter or unit is often not necessary because the chapters and units cover more than is called for by the state's competency goals. As a result, some assessments (e.g.,

Unit Vocabulary Review) were not entirely relevant. A few teachers did note, however, that they adapted some of the assessments by choosing questions pertinent to the material they covered.

Other comments from teachers of grades 1–2 and 3–5 reflected teachers’ desire to use their own assessments, for example, those that are better fit to their students’ abilities. Some teachers also noted that not all the assessments are needed. For example, one teacher explained that her students did so many of the Explore Activities, and were successful on the formal assessments, that the performance assessments were not necessary. Time and not having the materials (e.g., Pupil Editions, the Assessment Book) were also an issue. Some teachers assigned their students the formal assessments as homework as a way to fit in these activities.

Table 8b.—Percent of grade 3–5 teachers reporting use of the Assessment Strategies of the Science curriculum across all three logs

Strategy	Frequency of use				Ease of use			Value		
	Never	Rarely	Frequently	Always	Challenging	Moderately easy	Easy	High	Moderate	Low
Ongoing Assessment:										
After Reading										
Questions (PE).....	42.9	3.6	10.7	42.9	10.7	17.9	32.1	46.2	7.7	7.7
Informal Assessment:										
Easy/Average (TE).....	60.7	14.3	10.7	14.3	7.1	10.7	25.0	28.0	16.0	8.0
Informal Assessment:										
Challenging (TE).....	60.7	14.3	14.3	10.7	7.1	14.3	25.0	23.1	19.2	11.5
Formal Assessment:										
Lesson Review (Think and Write) (PE)	53.6	7.1	14.3	25.0	10.7	3.6	35.7	42.3	7.7	11.5
Formal Assessment:										
Chapter Review and Test Prep (PE)	57.1	3.6	25.0	14.3	10.7	10.7	25.0	28.0	16.0	4.0
Formal Assessment:										
Lesson Vocabulary and Cloze Test.....	53.6	7.1	21.4	17.9	10.7	10.7	32.1	42.3	7.7	7.7
Formal Assessment:										
Chapter Vocabulary Review	53.6	3.6	21.4	21.4	7.1	14.3	32.1	44.0	12.0	4.0
Formal Assessment: Unit										
Vocabulary Review	71.4	3.6	10.7	14.3	7.1	10.7	25.0	32.0	8.0	8.0
Formal Assessment:										
Chapter Test (Assessment Book).....	57.1	10.7	14.3	17.9	10.7	14.3	28.6	32.0	12.0	12.0
Performance Assessment (PE, Assessment Book)	57.1	10.7	17.9	14.3	10.7	17.9	21.4	19.2	26.9	7.7

TE = Teacher Edition; PE = Pupil Edition.

NOTE: Percents may not add to 100 because the categories don’t know/don’t use are not included or because of rounding.

Teacher Survey

The Teacher Survey provides information on the demographic characteristics of teachers, and their rating of the effectiveness of the curricular components from the analysis logs in the following areas: Scientific Literacy, Basic Literacy, Inquiry Skills, Visual Literacy, Reaching All Learners and Cross Curricular Activities, and Assessment. These ratings are available for each component based on students’ reading levels, i.e., Approaching Readers, On-Level Readers, Beyond-Level Readers, and ELL Readers.

Survey Sample. In this section, we present survey findings for the regular classroom teachers only—five teachers of grades 1–2 and seven teachers for grades 3–5. All of the teachers in the sample were female; 11 were white, and 1 was African American. All of the grade 1–2 teachers held a BA or BS degree, and one had a master’s degree. Among grade 3–5 teachers, three held a BA or BS degree, two held an MA or MS degree, one held a JD degree, and one specified she was a National Board Certified Teacher. All had multisubject teaching credentials.

Overall, the range of teaching experience extended from 2 to 33 years. Teachers of grades 1–2 were newer to the field, having taught full time approximately five years on average, with the majority of that time spent teaching grades K–2. Teachers of grades 3–5 had taught full time approximately 15 years on average. The majority of their time was spent teaching grades 3–5, but they also indicated having experience in teaching grades K–2 and 6–8. On average, teachers had been at their current school for three years. Almost all teachers indicated that they considered themselves as self-contained classroom teachers, responsible for science and several other subjects.

Survey Responses. Similar to the presentation of results of the teacher logs, results of the teacher surveys are also presented separately for teachers of grades 1–2 and 3–5. Overall ratings of effectiveness for the various components are presented in Tables 9 and 10. More detailed information of these ratings by specific components of the various strategies and students’ reading levels are presented in Tables 11a through 15d. These tables present the percentage of teachers reporting that the components were not effective and the percentage reporting that they were very effective. Note that because the sample size is small, seemingly large differences in percentages may reflect a one- or two-teacher difference.

Overall Ratings of Effectiveness. Overall, teachers of grades 1–2 rated curricular components higher than did teachers of grades 3–5, but teachers of all grades gave ratings of average or above for all components of the curriculum (Tables 9 and 10). Components rated particularly high by grade 1–2 teachers were Scientific Literacy, Visual Literacy, and Assessment, with all of these components receiving ratings of very good or excellent. Teachers of grades 3–5 reported a more mixed picture of effectiveness ratings, although 100 percent of teachers rated Scientific Literacy as very good. A majority of these teachers also rated Basic Literacy, Visual Literacy, and Assessment as being very good or excellent. Basic Literacy was the one category of curricular components that was viewed more effective by grade 3–5 teachers than by grade 1–2 teachers.

Table 9.—Percent of grade 1–2 teachers reporting their ratings of various components of the Science curriculum in teacher surveys

Rating	Scientific Literacy (N = 5 teachers)	Basic Literacy (N = 5 teachers)	Visual Literacy (N = 5 teachers)	Reaching All Learners (N = 5 teachers)	Assessment (N = 4 teachers)
Poor.....	0.0	0.0	0.0	0.0	0.0
Below Average.....	0.0	0.0	0.0	0.0	0.0
Average.....	0.0	40.0	0.0	40.0	0.0
Very Good.....	100.0	60.0	20.0	40.0	75.0
Excellent.....	0.0	0.0	80.0	20.0	25.0

Table 10.—Percent of grade 3–5 teachers reporting their rating of various components of the Science curriculum in teacher surveys

Rating	Scientific Literacy (N = 7 teachers)	Basic Literacy (N = 7 teachers)	Visual Literacy (N = 7 teachers)	Reaching All Learners (N= 7 teachers)	Assessment (N = 7 teachers)
Poor.....	0.0	0.0	0.0	0.0	0.0
Below Average.....	0.0	0.0	0.0	0.0	0.0
Average.....	0.0	14.3	28.6	57.1	28.6
Very Good.....	100.0	85.7	42.9	28.6	57.1
Excellent	0.0	0.0	28.6	14.3	14.3

NOTE: Percents may not add to 100 because of rounding.

Scientific Literacy

Grades 1–2. In general, a majority of grade 1–2 teachers rated each of the Scientific Literacy components highly effective, particularly for On-Level Readers (Table 11a). Between 75 and 100 percent of teachers indicated that each of these components was highly effective for On-Level Students. Only four components received a rating of not effective for at least one of the reading levels (Table 11b). The Student-Initiated Inquiry component and the Inquiry Skill Builders were rated not effective for Approaching Readers by 20 percent of teachers, and the Inquiry Skill MiniLessons by 25 percent. The Structured Inquiry component was rated not effective for ELL Readers by 25 percent of teachers.

Table 11a.—Percent of grade 1–2 teachers reporting the Scientific Literacy components of the Science curriculum are highly effective in teachers surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Structured Inquiry (PE)	60.0	80.0	40.0	75.0
Guided Inquiry (PE).....	80.0	100.0	40.0	50.0
Student-Initiated Inquiry (TE).....	40.0	80.0	80.0	25.0
Alternative Explore Activities.....	100.0	100.0	66.7	66.7
Inquiry Skill Builders.....	60.0	80.0	100.0	50.0
Inquiry Skill MiniLessons.....	50.0	75.0	50.0	33.3
Did You Ever Wonder?.....	60.0	80.0	60.0	75.0
Science Center Cards	0.0	0.0	100.0	0.0

TE = Teacher Edition; PE = Pupil Edition.

Table 11b.—Percent of grade 1–2 teachers reporting the Scientific Literacy components of the Science curriculum are not effective in teachers surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Structured Inquiry (PE).....	0.0	0.0	0.0	25.0
Guided Inquiry (PE).....	0.0	0.0	0.0	0.0
Student-Initiated Inquiry (TE).....	20.0	0.0	0.0	0.0
Alternative Explore Activities.....	0.0	0.0	0.0	0.0
Inquiry Skill Builders.....	20.0	0.0	0.0	0.0
Inquiry Skill MiniLessons.....	25.0	0.0	0.0	0.0
Did You Ever Wonder?.....	0.0	0.0	0.0	0.0
Science Center Cards	0.0	0.0	0.0	0.0

TE = Teacher Edition; PE = Pupil Edition.

Grades 3–5. Effectiveness ratings from teachers of grades 3–5 were more mixed than those from grade 1–2 teachers (Tables 11c and 11d). These teachers found the Scientific Literacy components to be most effective for On-Level and Beyond-Level Readers. However, compared to grade 1–2 teachers, grade 3–5 teachers rated more components as not effective. The greatest percentage of teachers who reported a component not effective was 50 percent. That same percentage of grade 3–5 teachers reported that the Student-Initiated Inquiry component was not effective for Approaching Readers or ELL Readers (29 percent of teachers also found it not effective for On-Level Readers); further, 50 percent of teachers reported that the Structured Inquiry component was not effective for ELL Readers.

Table 11c.—Percent of grade 3–5 teachers reporting the Scientific Literacy components of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Explore Activities: Structured Inquiry (PE)	25.0	85.7	85.7	0.0
Explore Activities: Guided Inquiry (PE)	25.0	85.7	100.0	0.0
Explore Activities: Student-Initiated Inquiry (TE)	25.0	57.1	57.1	0.0
Alternative Explore Activities	0.0	66.7	66.7	0.0
Quick Labs	75.0	100.0	100.0	50.0
Inquiry-Skill Builders.....	66.7	83.3	83.3	0.0
Inquiry Skills Mini Lessons.....	0.0	83.3	83.3	0.0
Did You Ever Wonder?.....	33.3	80.0	80.0	0.0

TE = Teacher Edition; PE = Pupil Edition.

Table 11d.—Percent of grade 3–5 teachers reporting the Scientific Literacy components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Explore Activities: Structured Inquiry (PE)	25.0	0.0	0.0	50.0
Explore Activities: Guided Inquiry (PE)	25.0	0.0	0.0	0.0
Explore Activities: Student-Initiated Inquiry (TE)	50.0	28.6	0.0	50.0
Alternative Explore Activities	33.3	0.0	0.0	0.0
Quick Labs	0.0	0.0	0.0	0.0
Inquiry-Skill Builders.....	33.3	0.0	0.0	0.0
Inquiry Skills Mini Lessons.....	0.0	0.0	0.0	0.0
Did You Ever Wonder?.....	0.0	0.0	0.0	0.0

TE = Teacher Edition; PE = Pupil Edition.

Basic Literacy

Grades 1–2. In general, teachers of grades 1–2 rated the Basic Literacy components highly effective, and many components, such as the Reading MiniLessons and the Writing Activities, were rated consistently across at least three of the four reading levels; Chapter Reading Skills ratings were consistent across all four (Tables 12a and 12b). In contrast, one component—Reading in Science Resources—was rated as highly effective by fewer than 50 percent of teachers for three reading levels. This component was also rated as not effective for Approaching Readers by 20 percent of teachers. However, only one other component received a rating of not effective. The Read to Learn Activities were rated as not effective for Approaching Readers by 20 percent of teachers.

Table 12a.—Percent of grade 1–2 teachers reporting the Basic Literacy components of the Science curriculum are highly effective in teachers surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Chapter Reading Skills.....	80.0	80.0	80.0	75.0
Read to Learn Activities.....	80.0	100.0	60.0	75.0
Literature Links.....	50.0	100.0	50.0	0.0
Think and Write Questions.....	50.0	75.0	75.0	33.3
Reading MiniLessons (TE).....	100.0	100.0	66.7	100.0
Reading in Science Resources.....	40.0	80.0	40.0	25.0
Reading Aid Transparencies.....	75.0	50.0	25.0	66.7
Vocabulary.....	80.0	100.0	100.0	80.0
Grade-Level Science Books.....	80.0	60.0	75.0	66.7
Writing Activities (provided with Grade-Level Science Books).....	100.0	100.0	100.0	50.0

TE = Teacher Edition.

Table 12b.—Percent of grade 1–2 teachers reporting the Basic Literacy components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Chapter Reading Skills.....	0.0	0.0	0.0	0.0
Read to Learn Activities.....	20.0	0.0	0.0	0.0
Literature Links.....	0.0	0.0	0.0	0.0
Think and Write Questions.....	0.0	0.0	0.0	0.0
Reading MiniLessons (TE).....	0.0	0.0	0.0	0.0
Reading in Science Resources.....	20.0	0.0	0.0	0.0
Reading Aid Transparencies.....	0.0	0.0	0.0	0.0
Vocabulary.....	0.0	0.0	0.0	0.0
Grade-Level Science Books.....	0.0	0.0	0.0	0.0
Writing Activities (provided with Grade-Level Science Books).....	0.0	0.0	0.0	0.0

TE = Teacher Edition.

Grades 3–5. As with the Scientific Literacy components, teachers rated the Basic Literacy components most effective for On-Level and Beyond-Level Readers (Table 12c). Unlike their counterparts for grades 1–2, most grade 3–5 teachers rated the Reading in Science Resources as highly effective. Conversely, Reading MiniLessons, which were highly rated by grade 1–2 teachers, were not rated as highly by grade 3–5 teachers. Six of the 10 Basic Literacy components received at least one rating of not effective (Table 12d). Two of these components, the Read to Learn Activities and Vocabulary, were rated not effective by 50 percent of teachers, the former for Approaching Readers, the latter for ELL Readers.

Table 12c.—Percent of grade 3–5 teachers reporting the Basic Literacy components of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Chapter Reading Skills.....	50.0	80.0	80.0	0.0
Read to Learn Activities.....	50.0	60.0	80.0	0.0
Literature Links.....	33.3	66.7	66.7	100.0
Think and Write Questions.....	33.3	83.3	83.3	0.0
Reading MiniLessons (TE).....	0.0	20.0	20.0	0.0
Reading in Science Resources.....	100.0	100.0	75.0	0.0
Reading Aid Transparencies.....	100.0	25.0	66.7	0.0
Vocabulary.....	25.0	85.7	100.0	0.0
Grade-Level Science Books.....	66.7	100.0	66.7	0.0
Writing Activities (provided with Grade-Level Science Books).....	0.0	50.0	66.7	0.0

TE = Teacher Edition.

Table 12d.—Percent of grade 3–5 teachers reporting the Basic Literacy components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Chapter Reading Skills.....	0.0	0.0	0.0	0.0
Read to Learn Activities.....	50.0	0.0	0.0	0.0
Literature Links.....	33.3	0.0	0.0	0.0
Think and Write Questions.....	33.3	0.0	0.0	0.0
Reading MiniLessons (TE).....	0.0	0.0	20.0	0.0
Reading in Science Resources.....	0.0	0.0	0.0	0.0
Reading Aid Transparencies.....	0.0	0.0	0.0	0.0
Vocabulary.....	25.0	0.0	0.0	50.0
Grade-Level Science Books.....	0.0	0.0	0.0	0.0
Writing Activities (provided with Grade-Level Science Books).....	33.3	0.0	0.0	0.0

TE = Teacher Edition.

Visual Literacy

Grades 1–2. Teachers of grades 1–2 overwhelmingly rated the Look! Feature and Get Ready Feature highly effective for each of the reading levels and none of the four Visual Literacy components was rated not effective (Tables 13a and 13b). The Visual Aid Transparencies was the only component that fewer than 75 percent of teachers rated as highly effective.

Table 13a.—Percent of grade 1–2 teachers reporting the Visual Literacy components of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Look! Feature.....	100.0	100.0	100.0	100.0
Get Ready Feature.....	100.0	100.0	80.0	100.0
Explore Activity Videos.....	0.0	0.0	0.0	0.0
Visual Aid Transparencies.....	75.0	75.0	50.0	66.7

Table 13b.—Percent of grade 1–2 teachers reporting the Visual Literacy components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Look! Feature.....	0.0	0.0	0.0	0.0
Get Ready Feature.....	0.0	0.0	0.0	0.0
Explore Activity Videos.....	0.0	0.0	0.0	0.0
Visual Aid Transparencies	0.0	0.0	0.0	0.0

Grades 3–5. The curricula for grades 1–2 and 3–5 share four Visual Literacy components—the Look! Feature, Get Ready Feature, Explore Activity Videos, and Visual Aid Transparencies. Teachers of grades 3–5 overwhelmingly rated the first two components as highly effective (Table 13c). The Visual Aid Transparencies were also rated highly effective by a large majority of teachers as well, and the Explore Activity Videos were rated highly effective by 50 percent of teachers for each of the reading levels. Only the Visual Aid Transparencies received ratings of not effective, ranging from 14 percent for On-Level and Beyond-Level Readers to 33 percent for ELL Readers (Table 13d).

In addition to the four components listed above, the curriculum for grades 3–5 includes several other Visual Literacy components designed to teach students how to interpret data presented in varying formats. Teachers viewed these components similarly in terms of their effectiveness. A large majority of teachers rated them as highly effective for On-Level and Beyond-Level Readers, while a smaller percentage did so for ELL Readers and an even smaller percentage for Approaching Readers (with the exception of Reading Maps).

Table 13c.—Percent of grade 3–6 teachers reporting the Visual Literacy components of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Look! Feature.....	100.0	85.7	85.7	100.0
Get Ready Feature.....	100.0	85.7	85.7	100.0
Reading Tables.....	25.0	85.7	100.0	50.0
Reading Charts.....	25.0	85.7	100.0	50.0
Reading Diagrams.....	25.0	83.3	100.0	50.0
Reading Graphs.....	25.0	85.7	100.0	50.0
Reading Maps.....	50.0	100.0	100.0	50.0
Explore Activity Videos.....	50.0	50.0	50.0	50.0
Visual Transparencies	75.0	85.7	71.4	66.7

Table 13d.—Percent of grade 3–6 teachers reporting the Visual Literacy components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Look! Feature.....	0.0	0.0	0.0	0.0
Get Ready Feature.....	0.0	0.0	0.0	0.0
Reading Tables.....	0.0	0.0	0.0	0.0
Reading Charts.....	0.0	0.0	0.0	0.0
Reading Diagrams.....	0.0	0.0	0.0	0.0
Reading Graphs.....	0.0	0.0	0.0	0.0
Reading Maps.....	0.0	0.0	0.0	0.0
Explore Activity Videos.....	0.0	0.0	0.0	0.0
Visual Transparencies.....	25.0	14.3	14.3	33.3

Reaching All Learners and Cross Curricular Activities

Grades 1–2. While Reaching All Learner and Cross Curricular Activities were used less frequently than other components, a majority of teachers rated them highly effective (Table 14a). Time for Kids and Sally Ride Science were rated highly effective by smaller percentages of teachers, and Sally Ride Science was rated not effective by 20 percent of teachers for each of the reading levels (Table 14b).

Table 14a.—Percent of grade 1–2 teachers reporting the components to Reach All Learners and Cross Curricular Activities of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Science for All.....	100.0	100.0	66.7	100.0
Math MiniLessons.....	0.0	0.0	0.0	0.0
Cross Curricular Links.....	100.0	50.0	100.0	100.0
Time for Kids.....	50.0	100.0	50.0	0.0
Sally Ride Science.....	40.0	80.0	80.0	40.0

Table 14b.—Percent of grade 1–2 teachers reporting the components to Reach All Learners and Cross Curricular Activities of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Science for All.....	0.0	0.0	0.0	0.0
Math MiniLessons.....	0.0	0.0	0.0	0.0
Cross Curricular Links.....	0.0	0.0	0.0	0.0
Time for Kids.....	0.0	0.0	0.0	0.0
Sally Ride Science.....	20.0	20.0	20.0	20.0

Grades 3–5. A majority of grade 3–5 teachers rated the Reaching All Learner and Cross Curricular Activities highly effective (Table 14c), but a greater percentage of these teachers also rated Time for Kids and Sally Ride Science highly effective. Math MiniLessons were rated as not effective for Beyond-Level Readers by 20 percent of teachers, while Sally Ride Science was rated as not effective for Approaching Readers by 33 percent (Table 14d).

Table 14c.—Percent of grade 3–6 teachers reporting the Reach All Learners and Cross Curricular Activities components of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Science for All	100.0	100.0	75.0	0.0
Math MiniLessons.....	0.0	50.0	60.0	0.0
Cross Curricular Links	66.7	80.0	80.0	0.0
Time for Kids.....	66.7	100.0	100.0	0.0
Sally Ride Science.....	66.7	66.7	75.0	100.0

Table 14d.—Percent of grade 3–6 teachers reporting the Reach All Learners and Cross Curricular Activities components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Science for All	0.0	0.0	0.0	0.0
Math MiniLessons.....	0.0	0.0	20.0	0.0
Cross Curricular Links	0.0	0.0	0.0	0.0
Time for Kids.....	0.0	0.0	0.0	0.0
Sally Ride Science.....	33.3	0.0	0.0	0.0

Assessment

Grades 1–2. Teachers of grades 1–2 varied in how effective they rated the different assessment options of the curriculum (Table 15a). The more highly rated assessments include the Easy/Average Informal Assessments, the Lesson Review, Lesson Vocabulary and Cloze Tests, and Chapter Assessments. The component rated the least effective was Performance Assessments, with only 33 percent of teachers rating it highly effective for all reading levels, although none of the teachers rated it not effective. After Reading Questions was rated as not effective for Approaching Readers by 20 percent of grade 1–2 teachers, while the Challenging Informal Assessments, Chapter Vocabulary Review, and Unit Vocabulary Review were rated not effective for Approaching and ELL Readers by 20–25 percent of teachers.

Table 15a.—Percent of grade 1–2 teachers reporting the Assessment components of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Ongoing Assessments: After Reading Questions	60.0	80.0	80.0	60.0
Informal Assessments: Easy/Average (TE).....	75.0	75.0	0.0	75.0
Informal Assessments: Challenging (TE).....	0.0	25.0	80.0	0.0
Formal Assessments: Lesson Review (Think and Write) (PE).....	75.0	75.0	80.0	50.0
Formal Assessments: Chapter Review and Test Prep (PE).....	50.0	75.0	75.0	50.0
Formal Assessments (Lesson Vocabulary and Cloze Tests).....	75.0	75.0	50.0	75.0
Formal Assessments: Chapter Vocabulary Review	40.0	60.0	60.0	40.0
Formal Assessments: Unit Vocabulary Review.....	25.0	50.0	50.0	25.0
Formal Assessments: Chapter Tests (Assessment Book).....	75.0	75.0	50.0	75.0
Performance Assessments (PE, Assessment Book).....	33.3	33.3	33.3	33.3

TE = Teacher Edition; PE = Pupil Edition.

Table 15b.—Percent of grade 1–2 teachers reporting the Assessment components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Ongoing Assessments: After Reading Questions	20.0	0.0	0.0	0.0
Informal Assessments: Easy/Average (TE).....	0.0	0.0	0.0	0.0
Informal Assessments: Challenging (TE).....	25.0	0.0	0.0	25.0
Formal Assessments: Lesson Review (Think and Write) (PE).....	0.0	0.0	0.0	0.0
Formal Assessments: Chapter Review and Test Prep (PE).....	0.0	0.0	0.0	0.0
Formal Assessments (Lesson Vocabulary and Cloze Tests).....	0.0	0.0	0.0	0.0
Formal Assessments: Chapter Vocabulary Review	20.0	0.0	0.0	20.0
Formal Assessments: Unit Vocabulary Review.....	25.0	0.0	0.0	25.0
Formal Assessments: Chapter Tests (Assessment Book).....	0.0	0.0	0.0	0.0
Performance Assessments (PE, Assessment Book).....	0.0	0.0	0.0	0.0

TE = Teacher Edition; PE = Pupil Edition.

Grades 3–5. Teachers of grades 3–5 also varied in how effective they rated the different assessment options of the curriculum (Table 15c), but they were much more likely to rate assessments as not effective (Table 15d). They were also more likely to rate the assessments highly effective for On-Level and Beyond-Level Readers.

Table 15c.—Percent of grade 3–6 teachers reporting the Assessment components of the Science curriculum are highly effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Ongoing Assessments: After Reading Questions	50.0	66.7	66.7	0.0
Informal Assessments: Easy/Average (TE).....	50.0	66.7	66.7	50.0
Informal Assessments: Challenging (TE).....	0.0	50.0	83.3	0.0
Formal Assessments: Lesson Review (Think and Write) (PE).....	50.0	100.0	100.0	0.0
Formal Assessments: Chapter Review and Test Prep (PE).....	25.0	100.0	100.0	0.0
Formal Assessments (Lesson Vocabulary and Cloze Tests).....	25.0	83.3	66.7	0.0
Formal Assessments: Chapter Vocabulary Review	25.0	83.3	83.3	0.0
Formal Assessments: Unit Vocabulary Review.....	0.0	83.3	100.0	0.0
Formal Assessments: Chapter Tests (Assessment Book).....	0.0	71.4	85.7	0.0
Performance Assessments (PE, Assessment Book).....	0.0	40.0	60.0	0.0

TE = Teacher Edition; PE = Pupil Edition.

Table 15d.—Percent of grade 3–6 teachers reporting the Assessment components of the Science curriculum are not effective in teacher surveys, by reading levels

Component	Approaching Readers	On-Level Readers	Beyond-Level Readers	ELL Readers
Ongoing Assessments: After Reading Questions	25.0	0.0	16.7	50.0
Informal Assessments: Easy/Average (TE).....	25.0	16.7	16.7	50.0
Informal Assessments: Challenging (TE).....	50.0	16.7	0.0	50.0
Formal Assessments: Lesson Review (Think and Write) (PE).....	25.0	0.0	0.0	50.0
Formal Assessments: Chapter Review and Test Prep (PE).....	25.0	0.0	0.0	50.0
Formal Assessments (Lesson Vocabulary and Cloze Tests).....	50.0	0.0	0.0	50.0
Formal Assessments: Chapter Vocabulary Review	25.0	0.0	0.0	50.0
Formal Assessments: Unit Vocabulary Review.....	50.0	0.0	0.0	50.0
Formal Assessments: Chapter Tests (Assessment Book).....	25.0	0.0	0.0	50.0
Performance Assessments (PE, Assessment Book).....	33.3	0.0	0.0	50.0

TE = Teacher Edition; PE = Pupil Edition.

Use of Curricular Materials to Help Teach Science to Students

Teachers also reported whether the curricular materials were helpful to them in teaching science to students of all ability levels in the classroom. As Tables 16a and 16b indicate, teachers rated a long list of curricular materials. Some materials, such as the Flipbook, were included on a survey for kindergarten teachers, but we had no kindergarten teachers in our Charlotte sample.

Grades 1–2. Of the 19 materials on which grade 1–2 teachers provided ratings, 11 were rated as very helpful by more than 50 percent of teachers and three—the Activity Resources Blackline Masters (40 percent), Science Resource Book (33 percent), and Test Preparation and Practice (25 percent)—were three rated very helpful by fewer than 50 percent. Materials seen as very helpful by the largest percentages of teachers were the Pupil and Teacher’s Editions (100 and 80 percent), Science Materials Kits (100 percent), Vocabulary Cards (100 percent), and Online Pupil and Teacher’s Edition (100 percent). Materials that received ratings of not helpful were the Activity Resources Blackline Masters (20 percent), Reading in Science Resources Blackline Masters (25 percent), Cross Curricular Projects Blackline Masters (100 percent), Assessment Book Blackline Masters (25 percent), and Dinah Zike’s Foldables (25 percent).

Table 16a.—Percent of grade 1–2 teachers reporting whether the Science program materials help teach students at all levels in the classroom

Material	Very helpful	Not helpful
Pupil Edition	100.0	0.0
Teacher's Edition	80.0	0.0
Science Materials Kits.....	100.0	0.0
Grade Level Science Books.....	60.0	0.0
Cross Curricular Books	0.0	0.0
Literature Big Books	66.7	0.0
Flipbook	0.0	0.0
Activity Resources (Blackline Masters)	40.0	20.0
A to Z Activity Book.....	0.0	0.0
Reading in Science Resources (Blackline Masters).....	50.0	25.0
Science Resource Book	33.3	0.0
Cross Curricular Projects (Blackline Masters).....	0.0	100.0
Assessment Book (Blackline Masters)	75.0	25.0
Visual Aid Transparencies	75.0	0.0
Reading Aid Transparencies.....	75.0	0.0
Vocabulary Cards.....	100.0	0.0
Photo Sorting Cards	75.0	0.0
Floor Puzzles.....	0.0	0.0
Test Preparation and Practice	25.0	0.0
School to Home Activities.....	0.0	0.0
ELL Activity Guide.....	0.0	0.0
ELL Transparencies	0.0	0.0
ELL Science Materials Kit	0.0	0.0
Scoring Rubrics.....	0.0	0.0
Dinah Zike's Foldables	50.0	25.0
Music CD.....	0.0	0.0
Science on the Go.....	0.0	0.0
Explore Activities Videos	0.0	0.0
Science Newsroom CD-ROMs.....	0.0	0.0
Macmillan/McGraw-Hill Website.....	50.0	0.0
Teacher Works	50.0	0.0
Sunburst Videos	0.0	0.0
Test Generator.....	0.0	0.0
Online Pupil Edition and Teacher's Edition.....	100.0	0.0

Grades 3–5. Of the 26 materials on which grade 3–5 teachers provided ratings, 11 were rated very helpful by more than 50 percent of teachers and 10 were rated very helpful by fewer than 50 percent. Materials seen as very helpful by the largest percentages of teachers were the Pupil and Teacher's Editions (86 and 83 percent), Science Materials Kits (100 percent), Assessment Book (86 percent), Vocabulary Cards (83 percent), MMH website (83 percent), Teacher Works (100 percent), and Online Pupil and Teacher's Editions (80 percent). Materials that received ratings of not helpful were the Test Preparation and Practice (17 percent), School to Home Activities (20 percent), Scoring Rubrics (25 percent), and Dinah Zike's Foldables (40 percent).

Table 16b.—Percent of grade 3–6 teachers reporting whether the Science program materials help teach students at all levels in the classroom

Material	Very helpful	Not helpful
Pupil Edition	85.7	0.0
Teacher's Edition	83.3	0.0
Science Materials Kits	100.0	0.0
Grade Level Science Books	20.0	0.0
Cross Curricular Books	25.0	0.0
Activity Resources (Blackline Masters)	57.1	0.0
Reading In Science Resources (Blackline Masters)	57.1	0.0
Cross Curricular Projects (Blackline Masters)	50.0	0.0
Assessment Book (Blackline Masters)	85.7	0.0
Visual Aid Transparencies	50.0	0.0
Reading Aid Transparencies	20.0	0.0
Vocabulary Cards	83.3	0.0
Test Preparation and Practice	33.3	16.7
School to Home Activities	20.0	20.0
ELL Activity Guide	0.0	0.0
ELL Transparencies	0.0	0.0
ELL Science Materials Kits	0.0	0.0
Scoring Rubrics	0.0	25.0
Dinah Zike's Foldables	40.0	40.0
Explore Activities Videos	33.3	0.0
Mind Jogger Videos	33.3	0.0
Science Newsroom CD-ROM	0.0	0.0
Macmillan/McGraw-Hill Website	83.3	0.0
Teacher Works	100.0	0.0
Sunburst Video	33.3	0.0
Test Generator	66.7	0.0
Online Pupil Edition and Teacher's Edition	80.0	0.0
Science Handbook	33.3	0.0
Skills Handbook	33.3	0.0
Health Handbook	50.0	0.0

Observation Debriefings

After the classroom observations, teachers were asked several questions about the observed lesson. Of the seven teachers who were observed, six taught an MMH lesson to some extent and five of the six were able to complete an interview on the observed lesson. The teacher who did not teach an MMH lesson was also interviewed, and her answers are included in the summary below where applicable.

Is this a typical lesson for you?

Three of the teachers teaching an MMH lesson described the observed lesson as typical. One of the three said she goes through the curriculum but incorporates her own resources as well. A second teacher said her typical lesson includes the use of the Explore Activities and PowerPoint presentations from MMH's CD-ROM. The third teacher noted that there are times when she has to finish the lesson later in the day, but that depends on the activity included in the lesson.

The two remaining teachers who taught an MMH lesson described the lessons as being atypical. One class started 15 minutes late and the teacher said she incorporated skill sheets, which she would not normally use, because the concepts in the lesson were more difficult than others they had previously covered. Another class was not taught during its normal morning time period due to the observation schedule, and the teacher said she had more time for instruction than she normally would. She also described her students as less engaged given the late time in the school day.

The teacher who did not teach an MMH lesson described her teaching as not having typical days because of the variety of activities she does with her classes.

Is this the first time you've taught this lesson?

For all of the teachers, this was their first year teaching from this curriculum. Only one teacher had taught the observed lesson more than once because she teaches the same lesson to all of the second grade classes.

What science program did you use previously? How does this program/lesson compare with those you've taught before?

Four of the teachers said they taught using different district-supplied kits and modules, which were described as being a combination of materials from Delta Education and Foss kits. Three of these teachers noted that there were no student textbooks provided previously and there was some indication that having student textbooks was one of the things they liked about the MMH curriculum.

The two remaining teachers described a more ad hoc system for teaching science. One teacher said she based her lessons on her prior knowledge and other resources she could pull together; the second teacher said she relied on an onsite science teacher to help provide materials, but had to pull together some of her own lessons as well.

Five of the six teachers expressed a preference for the MMH curriculum. The majority of the opinions stressed that the materials are put together to provide teachers with a variety of resources in a teacher-friendly way, which saves them from having to do their own search for materials and lesson preparation. One teacher said that program hits the skills that the students need, while another teacher described the curriculum as “much better.”

The sixth teacher, who did not teach an MMH lesson, said that she uses the standard course of study to guide her teaching and loved the kits that the district had supplied previously. While she does not generally use the MMH curriculum, she praised several components of it, such as the text, which she described as “wonderful,” the packaging of the kits in units, the Reading in Science book, the Quick Labs, and the foldables. She feels the curriculum is weakest on labs and should contain more of them (e.g., a lab on simple machines) with more explanatory text for teachers. She also noted that some of the classroom teachers' kits are in a storeroom at her school, untouched.

Teachers were then asked several questions specifically about the observed lesson including their objectives for the lesson, their students' level of engagement in the lesson, and what aspects of the lesson they felt worked the best and the least. Their answers to those questions are summarized below.

What were your goals for today's lesson?

Teachers' answers varied, which was expected given that except for two first grade teachers who were both teaching force, they were each teaching different lessons. The majority of the teachers, however, specifically cited students' understanding of vocabulary as a key objective. Teachers described the objectives of the lessons as follows:

- Mainly, I wanted them to understand the concept of force, to understand that an object must have force to move and to know the related vocabulary.
- Have students review the terms *sound* and *vibrate* and introduce the terms *pitch*, *loudness*, and *vocal chords*.
- To help students understand that things move in many ways with a focus on the three terms—*pull*, *push*, and *position*.
- Introduce vocabulary and have the students get comfortable with it. To enhance the lesson, I took the diagram in the textbook and made it into a physical demonstration. My students wouldn't understand the way that it was illustrated in the text. I just need to do something more hands-on to build the foundation for the vocabulary.
- To see different interpretations of the same data and to compare different expressions of data. Also, to see what things mean (on charts) and how they connect.

To what extent do you think you achieved those goals?

Overall, teachers felt that they achieved the goals they had for the day's lesson and students were developing a good understanding of the key concepts. Again, most of the five teachers who taught an MMH lesson specifically addressed vocabulary, with comments that included the following:

- They were very strong with the vocabulary (and these were words they not been exposed to before).
- For an intro, I feel that they are getting comfortable with the words, but will have to continue to work on these concepts. They are grasping the concepts but are not able to give a definition. (Other units are easier than this one.)
- They had a good grasp of *sound* and *vibrate* and today's lesson was a good beginning to the term *pitch*.

One teacher said she would have liked not to have to guide her students' conclusions as much as she did, but given that this was the first time they were being asked to do this task, it was about what she expected.

Two teachers noted their class demographics when talking about how well their lesson goals were achieved. One teacher noted that her students are "advanced" and therefore "catch on very quickly." Another teacher explained that while her class is mixed in terms of ability levels, the students and the school are "well-supported by the parents."

How would you describe your students' engagement in today's lesson? Is this typical of their engagement with this program's lessons in general?

Four of the five teachers described their students as engaged and on task and said that such engagement was typical for their students during science lessons. One teacher commented that her students were more engaged in the activity than in the teacher-directed component of the lesson, which was normal, while another teacher noted that her students are math or science oriented so it is not difficult to maintain their attention.

Four teachers mentioned students who were not engaged during the lesson, but explained that this behavior was typical for those students regardless of the lesson.

Only one teacher said that her students were less engaged than what they would typically be, which she attributed to the time of day (last period) and the weather (rainy). She said that some of her students have a low threshold for frustration at this point in the day.

What aspects of today's lesson do you think worked the best?

Three teachers cited hands-on activities (i.e., the Explore Activity and the use of manipulatives) as the best aspects of the lesson. Teachers felt that the activities effectively allowed students to explore and discuss the concepts they were learning.

Two teachers mentioned visual aspects of the lesson—a teacher-led demonstration and PowerPoint presentations from the MMH CD-ROM.

Other aspects of the lessons that teachers particularly liked were the way the vocabulary was explained, time spent in small group instruction, and the ability of students to use tables to display information and draw conclusions, which exceeded the teacher's expectations.

What aspects of today's lesson do you think worked the least?

Four of the five teachers provided aspects of the lesson they felt did not work well, while one teacher felt that the whole lesson contributed to the overall goal of the lesson and worked well.

Two teachers mentioned the Blackline Masters, which one described as being “really easy”; the other felt that while they are a valuable tool, her students were too off task by the time the skill sheet was introduced in the lesson for it to be successful. A third teacher mentioned that her students needed more exposure to the concept of wind speed before the lesson and, as a result, got frustrated.

Interestingly, the fourth teacher cited the aspects that worked the best as those that also worked the least. She explained that she needed more supplies so that she could have had each group do the demonstration instead of just having one whole class demonstration. She also had to cut the small group work short because the lesson started late.

Did you omit or modify any portion of the lesson? If so, why did you decide to omit or modify that aspect of the lesson? How often do you make this type of change when teaching the curriculum (e.g., is it a typical omission or modification)?

Two teachers said that they did not modify or omit any portion of the lesson.

The remaining three teachers who taught an MMH lesson explained the modifications and omissions they made to their lessons:

- The first teacher said she always skips the Reading MiniLessons because “I just don’t have the time, but I think they’re good.” This teacher also said she does not use transparencies when talking about the lesson and does not know what Sally Ride Science is.
- The second teacher said she omitted the activity workbook pages and Science Center Card #31. She said she would use these as an extension experience at a later point in the day or during a reteaching moment. Reteaching moments are incorporated into other subjects, such as Open Court.
- The third teacher omitted the reading sections and group discussion because of time constraints. She teaches all the science lessons for all of the grade levels at her school and, as a result, only teaches each class once a week. Thus, her time with each class very limited.

Finally, teachers were asked several questions pertaining to their opinions of the overall MMH curriculum.

Are there any changes you would make to today’s lesson or other lessons from the curriculum (e.g., content, format, types of activities, additional teaching supports...)?

Overall, the teachers we interviewed suggested very few changes to the lessons that they have taught using the MMH curriculum. One teacher commented that the program was “very developmentally appropriate,” while another said the lessons lead into each other well with the inclusion of review, new vocabulary, and new ideas.

There were some suggestions for changes, including the following:

- Make the independent work more challenging.
- Add a few more manipulatives.
- Offer a below-level textbook for ESL students that addresses the same concepts, but at a lower grade level. This teacher felt that there should be simpler vocabulary when teaching from a nonfiction text.
- Add minilessons on the topic. This teacher said that she typically does not have as much time as she did during the observed lesson to teach science. With respect to the observed lesson, she said she would have done a minilesson beforehand to introduce students to the topic. She said she basically follows the curriculum, using extra videos and readings when needed.

Are there any teaching supports not including in the lesson or the curriculum that you would find useful to have?

In response to this question, two teachers directed their comments to the kits. One teacher described the kits as “awesome... one of my favorite things about the program,” while another said, “I love the kits.”

One teacher said she would have loved to have had the Read Aloud books, which are available through MMH, but she thinks it may have been a school decision not to order them.

Another teacher said that she could use previews at the beginning of each lesson. She said that her students do not have exposure to some of these topics, and she has to do extra work to build up prior knowledge that students are assumed to have.

A third teacher said that she could use more manipulatives, specifically animal and plant models. She did note, however, that the curriculum is an adequately supplied one, but said she could always ask for extra stuff that is not needed.

A fourth teacher, who felt that this curriculum “pretty much nailed it,” said that the only thing she could think of needing at the time of the interview was nonfiction texts that are written one grade level below the one being taught, because nonfiction topics are difficult for students to read. She also named the supports she uses the most: text, kits, resource books, and ideas pulled from the project book.

The teacher who did not implement an MMH lesson, but spoke as though she were familiar with it, said that she felt the curriculum needs to include more “elaboration for teachers” and “a place for teacher education,” because most teachers in elementary school do not have a background in science. She said while teachers are not as afraid of the life sciences, their knowledge about physical science is weaker.

Overall, how effective has the program been for your students? Has the program met the needs of your students at different ability levels?

Teachers were overwhelmingly positive in their assessments about the program.

- I think it’s excellent. There are a lot of different options and you can choose what you need. [The program] really does a good job of breaking down the concepts.
- We love it! It works to challenge higher level students, boost lower students; we are a high ESL school and this program offers many visual and activities that help with learning the key ideas and keep the learning focus—and I am talking about the teacher editions—not the ELL component. That is just an extra bonus!
- The program is very effective and fabulous for the average 1st grader.

Teachers who used this opportunity to address areas that they felt were less effective focused on the needs of different student populations. The teacher who felt the program is effective for On-Level students stated that she could use more activities for her advanced students (e.g., a challenge workbook). Currently, she does extra activities for these students.

Another teacher who described the curriculum as “overall, very effective,” said that while the curriculum is a little difficult for her lower ability readers, she incorporates a lot of class discussion into the lesson, which helps those students. She said the curriculum is a challenge for the higher ability students and easy to adapt for the lower ability student.

Finally, a third teacher addressed the needs of her ESL students, saying that she feels that the reading level is too high for these students at all grade levels. She noted that time constraints prevent her from doing specialized small group instruction and explained that she does not have enough textbooks for her students, resulting in the need for students to share. She described her school as high transition, with new students coming in all of the time, and she said that the district is slow in providing books. She did state that she thinks the curriculum will be more effective when she become accustomed to it and is able to adapt the curriculum as needed for her students.