

# 1

## Student Achievement Using a Holistic Approach to Standards

**F**or many years, the curriculum in schools has been so loosely outlined that many individual teachers have established their own ad hoc curricula. The teachers have either defined a “go as I teach” curriculum or the more common “follow the book” curriculum. These approaches have obvious repercussions. When curriculum is aligned to the preferences of a teacher or text series rather than to a set of goals mutually agreed upon by school personnel and community, one group of students may be prepared for their next level of study while another group from a different classroom at the same level in the same school may not be prepared for that level. Using standards as a framework for systematic development of curriculum will diminish the chances of a having a map for learning that is based on teacher preferences or textbook chapters. By using standards as the learning targets, the school has the opportunity to be certain that all students are moving toward the same goals, that teachers can see what they are instructionally accountable for achieving, and that students are offered support to enhance student learning.

### WHAT ARE STANDARDS? ■

What standards are and what standards should be is an ongoing discussion in K–12 education. For example, Squires (2005) says that standards

specify what students should know and be able to do. But O'Shea (2005) contends that standards are goals that a teacher can use to measure the success or failure of a lesson when monitoring student responses to the stated goals of the lesson. Both of these definitions fit within the boundaries of the process presented in this book. However, these very concise definitions pale when considering that states have moved beyond listing standards as a litany of simple content expectations within a traditional scope and sequence approach. States' standards are now focused on developing the higher-order assessment of knowledge as defined by Bloom's Taxonomy (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956). Wiles and Bondi (2002) focus the definition of standards for this book when they state that standards have forced a move away from "mastery of low-level isolated facts to a comprehensive curriculum emphasizing problem solving, integrated tasks, real-life problems, and higher-order thinking processes using portfolios and exhibitions" (p. 305).

Standards must be explicit goals that ensure that rigorous academic content is learned in school. Standards must have quantified or qualified characteristics that inform those teaching or learning what is to be done to achieve the standard. A standard can involve one specific statement defining what a student must do to achieve it (see Figure 1.1), or it can involve a series of descriptive statements that clarifies what the student must do to achieve the level of competence expected in the standard statement (see Figure 1.2).

As one can see by the standard from Indiana in Figure 1.1, the statement is very concrete. A student is expected to read and write the numbers from 0 to 1,000,000. The statement is very specific and clear as far as assessing whether a student can do this or not. The student and teacher know the level of performance to achieve the standard.

Unfortunately, not all standards are quite so concrete. Within the myriad of state standards, there are numerous performance standards that leave room for interpretation as to what would be required to attain achievement. Therefore, neither the teacher nor the student knows exactly

**Figure 1.1** A Standard as a Specific Statement

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Standard: Read and write whole numbers up to 1,000,000.

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SOURCE: Indiana Department of Education, 2006

**Figure 1.2** A Standard as a Series of Descriptive Statements

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Standard: Select and use appropriate units and tools to measure to the degree of accuracy required in particular measurement situations.

Descriptive Statements:

- Determine that a micrometer is the best tool for measuring thickness of brake pads.
  - Identify the essential information for the task within the Pennsylvania Safety Code.
  - Utilize the micrometer to measure the size of a brake pad on a vehicle.
  - Demonstrate ability to measure the brake pad within 1/1000th of an inch.
  - Interpret a chart to determine if the brakes need to be replaced.
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what to do in order to measure achievement of the expectation. An example of this can be seen in this Pennsylvania standard: “Select and use appropriate units and tools to measure to the degree of accuracy required in particular measurement situations.” In this case, a listing of descriptors is the only way to define what this standard actually requires. While standing alone, the standard lends itself to clarification questions, such as, “What measurement situations qualify?” or “What tools would be used to prove achievement?”

Figure 1.2 uses the Pennsylvania standard to show how a listing of expectations in relation to the original statement helps to clarify what a student could do to achieve this standard. As Kathleen Harris, who works with the Small Schools Workshops at the University of South Florida, says, “The first step in understanding standards is to draw a picture of them” (2004). What she goes on to say is that a school must determine exactly what is meant by any and all standards in the context of student achievement.

Ultimately, a standard should be one written statement or a series of statements that addresses one or more of the following:

- the level of cognitive difficulty at which a student must perform,
- the number of times a student must perform at a specified level,
- the time frame in which a student must perform at a specified level, and
- the level of teacher expectation for the performance.

The best way to align curricular objectives in terms of standards is to define the standards in terms of student performance. Perhaps the best way to accomplish this, when one statement does not define the student performance, is to render the expectations as *criterion standards*. A criterion standard is a statement listing one expectation of knowledge or performance that a student should accomplish in order to demonstrate partial achievement of a standard. The use of criterion standards recognizes that content and performance standards are two sides of the same coin and should not be thought of as separate. A standards-based curriculum should include a listing of these criterion standards. The standards on the list should reflect both the student performance expectation and the teacher content to be delivered.

The function of criterion standards is the development of a clear picture of what a student must perform in school in order to demonstrate movement toward achievement of all standards for kindergarten through twelfth grade. A strong curriculum will create a composite view in which teachers at all grades and in all courses function as team members, each making sure their respective piece of the K–12 puzzle of learning is in place at the appropriate time. In order for teachers and principals to be aware of each piece of this learning puzzle, all members of the curriculum and instructional team must have a vertical and horizontal view of the standards and their benchmarks from kindergarten through twelfth grade.

Part of putting this standards-based puzzle together is realizing that students at all levels must deal with demonstration of higher-order thinking skills. Standards statements such as “recognize change in natural and physical systems” (Pennsylvania Department of Education, 2001) require students in primary grades to do more than simply memorize content.

Instead, the youngest students are expected to make connections between content items, and a criterion standard can help to define these connections. With a standards-based curriculum, the instruction and assessment of these upper-level thinking skills are not solely the domain of the upper grades. Application, analysis, and evaluation are expected at the kindergarten or even pre-K level, and curriculum should reflect that.

For states such as Colorado, New Jersey, and Pennsylvania, where grade level is used as a benchmark to identify standards (students must have achieved certain standards by the time they finish certain grades), teachers have difficulty determining what is to be done in grades where no standards are identified. The criterion standard becomes vitally important for defining what students are expected to learn and be able to do in those grades. For example, if the state has established benchmarks at second grade and fifth grade, kindergarten through second grade teachers are responsible for the preparation to achieve the second grade benchmark while teachers in third, fourth, and fifth grade are responsible for preparing students to achieve the fifth grade benchmark. This range of grades responsible for a particular benchmark means that teachers in each grade must identify what their respective grade requires of students to move toward the instructional goal provided by the benchmarked standard.

## ■ BEST PRACTICES

Any educational initiative is only as good as those who practice it. Classroom teachers hold the key to the success of a standards-based curriculum. Good teachers evidence professionalism, leadership, and pedagogical expertise every day. Functioning within the framework of standards is simply another opportunity for teachers to apply their skills to positively affect student achievement. However, teachers cannot effectively and efficiently practice what has not been adequately defined. How a standard is defined can make the difference: whether the classroom professional can use the standard as a tool to achieve more positive student outcomes or whether it will confound teachers' efforts and stifle student achievement.

It is important that responsibility for the necessary instruction be placed in the hands of professional educators trained to manage the teaching and learning process. When teachers are included in the articulation and prioritization of state-mandated standards, they are able to see where they play a role in the achievement of the standards. Further, it is likely that they will feel privileged to be part of this process. Educators will know what they have to teach in order to do their parts. Yet, they will have the flexibility to accomplish this in the manner that best suits their teaching style and strengths and in a way that considers the wide range of learning styles of their students.

Since standards are actually statements of what students are supposed to know and do, teachers are now required to exercise their professional judgment as related to the expectations implied by the standards. They must continually evaluate whether individual students are progressing toward the achievement of the established standards. When a teacher recognizes that a student is falling behind, it is the teacher's responsibility to

take whatever intervening steps are necessary to get the student back on track.

In order to assess fully if students are achieving the standards, the curriculum must be directly tied to daily assessment. This daily assessment can be defined in the curriculum through descriptors that identify expectations for student performance aligned to standards. This type of strong, well-enunciated, and thoughtfully written curriculum is a powerful tool for connecting what is taught to what must be assessed. A curriculum that aligns instruction with what must be tested should do the following:

- Address and reflect state standards.
- Recognize time constraints.
- Reflect local consensus and priorities.
- Seek to synchronize content areas and grade levels.
- Allow for reinforcement, reflection, and application without redundancy.
- Contain assessment possibilities within the standards themselves.

A holistic approach to standards development and student achievement results when each of the above components is present. The standards that are established, the material that is taught, and the curriculum that is assessed all will point in the same direction, toward the attainment of the expected standards.

## **State Standards**

What becomes obvious as one examines the standards from various states is that there is no consensus from state to state as to what form standards should take (Kendall & Marzano, 1996; Schmoker & Marzano, 1999; Wiles & Bondi, 2002). Such inconsistency is antithetical to the standards movement in light of the current No Child Left Behind challenges. Both the standards movement and NCLB hold at their cores the concept of establishing rigorous standards to prepare students for competition in the twenty-first century global economy. There is the thought that having students strive to meet challenging standards will cause the competitive juices to flow between states, districts, schools, teachers, and students (Spring, 2006). However, students cannot compete fairly when each state has a different approach to designing and articulating its standards. The desire to challenge our students to meet clearly identified standards so they can be competitive in the global marketplace falters when the standards are organized and articulated in differing ways from state to state. There is no standard for standards, so there is no means by which the educational outcomes of each state can be compared in an apples-to-apples fashion.

The lack of consistency among state standards becomes evident when the levels (grades) at which the standards are to be applied is examined. In Nebraska, benchmarks adopted in 2001 for reading are established for grades one, four, eight, and twelve (Nebraska Department of Education, n.d.). However, in Pennsylvania, the benchmark levels for reading are in grades three, five, eight, and eleven (Pennsylvania Department of Education, 2001). In Indiana, there are no benchmark levels for reading.

Instead, there are English/language arts standards for every grade, and within these standards the reading standards are articulated on a continuum from kindergarten through twelfth grade (Indiana Department of Education, 2006).

More than the issue that standards cannot necessarily be contextually aligned from state to state for competitive purposes, there is a far more pertinent condition that derives from the different ways that states articulate standards. In states where there are standards statements for each grade and course, teachers know exactly what is expected for students throughout their school careers. In states where standards are benchmarked at only a few grades on the K-12 continuum, the teachers of grades for which there are no standards are left to guess what their students are expected to do.

The varying ways of establishing grade-by-grade or benchmark levels for the various standards is not the only difference in the forms that standards take. There is no nationally prescribed way of formatting standards. Some states render their standards vertically (K–12) while others render them horizontally (by subject area). This book will recommend vertical design with attention to horizontal coordination.

In Florida, Connecticut, South Carolina, Washington, and many other states, standards are accompanied by lists of student demonstrations, suggested classroom practices, and suggested parent activities (Developing Educational Standards, 2006). These differences in the way the state standards are designed show that, even though there is consensus about the need for standards, there is little consensus for how to structure a standards document. Because all states have their own standards and ways of articulating the standards, local schools and teachers need a way to develop lessons or curricula based on their own states' standards. All curriculum development should relate to state standards, and teachers, curriculum developers, and administrators need a design method for linking standards and curriculum.

## Time Constraints

When the standards movement first began, researchers for Mid-continent Research for Education and Learning (McREL, formerly Mid-continent Regional Educational Laboratory) analyzed standards documents written by state boards of education and national subject area organizations and found 200 separate standards that addressed 3,093 more specific topics or benchmarks (Kendall & Marzano, 1995). They explained that a student would need to master one and one-half standards per day for 13 years in order to achieve all of the national standards. Many of the states have since determined ways to minimize the total number of standards that their students must achieve. For example, Pennsylvania has reduced the reading, mathematics, and science standards by developing what the state calls *assessment anchors* (Pennsylvania Department of Education, 2005). These assessment anchors reduce the total number of standards statements, and many of them are repeated in subsequent grades, but even with the reduction and repetition, mastering the standards is quite a challenge. A fourth grader is expected to achieve 22 standards related to mathematics, 23 standards related to reading, and 85 standards related to science. A

Pennsylvania fourth grader is expected to show proficiency with 140 standards statements in 180 days of school.

The huge number of standards and the fact that these standards are often poorly or too broadly written have led to frustration on the part of many teachers. In the days of No Child Left Behind, teachers feel compelled to be sure that students can achieve each standard because it might be tested. Beyond that, teachers struggle to determine if their interpretation of a standard is the interpretation that the state intended with the statement. If student success is the focus of a curriculum, it must be devised to help students achieve standards within a workable and worthy amount of instruction. Time is one of the most valuable instructional resources, and it must be used wisely.

### **Local Consensus and Priorities**

The old saying that “all politics are local” holds true for all educational issues as well. There are differences in educational and funding priorities among districts within the same state, and the character and ethos of rural, suburban, and urban schools can differ greatly. Because many states leave funding of local school districts to the property taxes of those persons who reside within the district, local priorities and support are a vital and undeniable requisite for developing a standards-based curriculum. However, because student performance is measured by state testing programs, the school and the community must reach consensus on the best way to articulate local expectations of what is needed to reach the standards. Working together, educators and community members must deal with prescribed standards no matter how abundant or nebulous they may be, but the standards can provide a frame of reference within which to define what the students will be expected to do or perform during the journey through school. All of the stakeholders in the educational process must see a common goal and common purpose for this journey.

Decisions about what to include, how to cover the material, how much time to spend on the material, and how to measure a student’s grasp of the material are made thousands of times every day by classroom professionals and always have been. When these professional judgments are informed by well-articulated, meaningfully defined standards, curriculum can be considered to be aligned with a clearly defined and purposeful schema. This schema can drive what the local community believes are the most important content and details that a student must possess at certain key points along the road in order to achieve the state standards.

### **Content Areas and Grade Levels**

Both the specific content and the level at which the content is to be introduced, mastered, and then applied to new situations are often hotly debated elements when individuals are defining and interpreting what the state standards mean. What should be taught is at least as contentious as how it should be taught. What content should be taught is often seen through the prism of culture, ethnicity, and local priorities. Making the effort at the district or school level to use both subject-area experts and nonexperts from within the local school system and community can create

a rigorous and, at the same time, streamlined curriculum that can deal with the exponential increase of information occurring every year. Standards are brought to life in the classroom only when the curriculum is not only defined but also organized in a manner that recognizes that precious little instructional time is available and that students need to process a massive amount of material.

Integrating the standards into curricula using tools such as curriculum mapping and thematic instruction, which have been described by Jacobs (2004), English (1999), Kovalik (1997), and Fogarty (1991), among others, can greatly enhance the chances that standards will thrive while facilitating student achievement. Much of the good presently done in classrooms is indeed appropriate and should be retained and enhanced. However, what is done must be aligned within the framework of standards. All standards must be addressed in some way in the classroom. It is impossible to teach to each individual standard. Costa (1999) suggests that teachers employ a strategy of “selective abandonment” whereby they prioritize the content that standards define. In order to do this prioritization (see Figure 1.3), Williams and Dunn (2000) and Wiggins and McTighe (2005) propose that three questions be answered: What is essential? What is supportive? What is extraneous? That which is judged to be essential should be given instructional priority; that which is supportive should be dealt with in conjunction with other material or as a cooperative or independent learning experience. The extraneous material should be included only as time allows or simply not used in instruction.

The evidence that such a method works is found in the research discussed by Reeves (2000) concerning the “90/90/90” schools. Ninety percent of students at these schools are minorities, and 90 percent of them receive free or reduced-price lunches. Yet 90 percent of these students score among the top third of students from their areas on state tests. The research shows that these schools focus on core essential expectations, use the supportive details to refine expectations, and literally refrain from dealing with the extraneous information found in the standards or written curriculum.

### **Reinforcement, Reflection, and Application**

How teachers teach is a function of what they are asked to teach (Kovalik, 1997). Classroom professionals must engage in an ongoing dialogue about how each has a role in bringing about student achievement. Teachers can then exercise a farsighted view of what is taking place in their classrooms. When they are aware of what instruction has taken place in earlier grades and within other subject-specific classes, teachers can tailor instruction to reinforce earlier student experience, provide appropriate vehicles for students to reflect upon their prior knowledge, and support application of that knowledge in a real-world context. A clearly defined standards-based curriculum should allow for reinforcement and application without redundancy.

### **Assessment Possibilities**

Under No Child Left Behind, states are attempting to tie their testing programs to standards, as required by federal legislation. Conceptually,



**Figure 1.3** Selective Abandonment Criteria

## Essential:

- Has a real-life practical application
- Is a fundamental step in a larger process
- Is based in the present
- Helps students function in the world in which they live
- Is a district- or system-articulated benchmark directly tied to a vital concept

## Supportive:

- Is collaterally linked to a curricular objective
- Promotes independent study opportunity
- Can be more fully developed in another curricular area
- Provokes student interest and motivation to learn more
- Provides additional opportunities for students to develop a wide range of intelligences

## Extraneous:

- Is based in knowledge about theory or the past without practical application in the future or present
- Is fun but not linked to a curricular concept
- Exercises only the logical/mathematical and verbal/linguistic intelligences
- Does not promote positive group interdependence

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SOURCE: *Brain-Compatible Learning for the Block*, by R. Bruce Williams and Steven E. Dunn. ©2000 Corwin Press. Used with permission.

the standards provide a framework under which assessments can be created. The simplistic view is that if there are standards, schools can test what the standards define as necessary learning. Therefore, the teachers and the school itself can be held accountable for student achievement. Even though many teachers and administrators may question whether testing is an adequate way to appraise learning, government officials and politicians want testing as the accountability factor in creating schools for the global economy and twenty-first century. Citizens will surely compare assessment results among districts, especially when the federal government is using test data as the only gauge for determining the strongest and weakest schools in the nation.

## THE CONSENSUS FOR STANDARDS ■

The idea of and movement toward a standards-based curriculum has had a rather varied effect on teachers. Some teachers have been frustrated by the enormity of standards and the lack of direction they have been given on how to enable students to achieve them. Others believe that they should not waste their valuable time trying to conform to an idea that may be just another passing fancy of theorists, politicians, and business people. Some believe that standards will fall by the wayside as many other initiatives have when the political wind changes, and they see no need for staff development. "Why bother dealing with something that will go away?" they reason.

But standards are not going away. Standards enjoyed broad national support even prior to No Child Left Behind. In 1996, Kendall and Marzano listed no less than 17 national commissions and organizations, such as the National Committee on Science Education Standards and Assessment and the National Council of Teachers of Mathematics, as having designed national standards for their respective academic areas prior to the actual design of state standards. Each of these national groups wrote their standards with the idea that if students strive to meet the articulated standards, they will master the necessary skills within the respective disciplines. Not only is there consensus on a national level for standards, there also appears to be consensus in individual states to create standards for their respective educational programs. As one surfs the Internet to review the varied state standards, one can see that 49 of 50 states have written and adopted academic standards that define what they are expecting students to know, understand, and be able to do.

Another sign that standards are a focal point of education comes from educators and politicians who espouse the value of standards. Daggett (2003) contends that knowledge alone is inadequate and that schools must assume a leadership role in demanding that schools create higher standards so that students are challenged to meet the expectations of the workplace in the twenty-first century. The belief that seems to be defined by No Child Left Behind is that through challenging standards, educational reform will take place because the standards will force educators to examine exactly what students are supposed to know and be able to do.

As early as 1999, the American Federation of Teachers' publication *American Teacher* included an article in its December/January issue that said standards were here to stay. Since that time, we have seen adoption of and support for the basic premise of No Child Left Behind, which says each state must have standards. In November of 2004, the University of Virginia Web newsletter *Inside UVA Online* reported on a conference involving eight nationally prominent educational and political leaders. The report clearly stated that the leaders advocated modifications in programs such as No Child Left Behind, but they were unified in their belief that standards and standardized testing were not going away. A national survey of school superintendents and principals found that 87 percent of superintendents and 85 percent of principals believe that the era of testing and accountability will not end (Farkas, Johnson, & Duffett, 2003). Guskey (2005) best summarizes the issue when he points out that educators are discussing the reality of the standards movement because they are concerned with how these standards can be linked to classroom instruction so that significant improvement can occur.

Further significant evidence that standards are not going away is found in the nationwide discussion going on among noneducators. Across the United States, politicians, media sources, and the general public talk about standards. Rudalevige (2003) shows strong evidence that the concepts of standards, accountability, and testing are bipartisan issues, although there is disagreement between the parties about the nuances, funding, and who gets credit for positive models. Media writers, such as Tom Friedman in his best-selling work, *The World Is Flat* (2005), proclaim that high standards are a way to hold students and schools accountable for developing world-class students. The general public says that they want

standards because the standards will provide a return on their tax dollars in the form of good schools that produce top-quality students.

With all of this said, implementing standards in the classroom remains a challenging task. Guskey (2005) points out that the focus has been on getting results rather than on developing a process of using standards to design experiences that will facilitate student learning. The writers of this book believe this is due to a lack of hands-on training to show teachers how to use the standards as a classroom tool. In many cases, it appears that standards have been designed without prior consideration of how they are supposed to be delivered and assessed in the classroom. This has contributed to the overall frustration with standards. While this frustration is understandable, poor communication should not be allowed to undermine the overall idea of an educational system based on and measured against prescribed standards. This book will help define a process for taking standards into the classroom where teachers can use standards as a focus for leading students to achievement.

## **STANDARDS-BASED INSTRUCTIONAL PLAN: LANGUAGE ARTS**



One of the key ingredients of successfully implementing standards in the classroom is the focus on standards—each part of an instructional plan must relate to standards. Instructional plans can be written in a variety of ways; different examples are shown at the ends of each the first four chapters, and Chapter 5 includes numerous examples. The following plan, devised for primary children, connects three broadly written state graduation standards using criterion standards that relate to the elementary school level, thus aligning state standards to classroom practice.

## LANGUAGE ARTS INSTRUCTIONAL PLAN

SOURCE: Brenda Lorson, Jersey Shore Area School District

**Unit:** Assessing Seeds and Soils for Seed Kits

**Grade:** 1

**Course:** Language Arts

### Overview of the Unit

This is a literacy experience using science content; it is an example of integrated curriculum. Students experiment with three different seeds and three different soils to decide what seeds and soils to place in their seed starter kits. The students produce a list of materials and directions for starting a seed.

### Standards Assessed in This Unit

- **3.3.4.A.** Know the similarities and differences among living things.
  - List three different basic things that plants need in order to grow.
  - List the events by which a seed becomes a tree in sequential order.
  - Predict which soil the seeds will grow in best.
- **3.2.4.C.** Recognize and use the elements of scientific inquiry to solve problems.
  - Write two questions that can be answered through the investigation.
  - Create an investigation to determine which seed and soil are the best for the seed kits.
  - Write observations daily during the experiment.
  - Write a conclusion that states which type of seed and soil will be used in the seed kits, based on the results of the experiment.
  - Assess the validity of the experiment.
- **1.4.1.B.** Write informational sentences using illustrations when relevant.
  - List the materials needed for the seed kit, including which seed and soil will be added to the kit.
  - Compose a set of directions that are written in sequential order.
  - Demonstrate the use of proper capitalization, punctuation, and complete sentences.

SOURCE for standards: Pennsylvania Department of Education, 2001

### Teacher Activities and Instructional Techniques

*Preassessment:* Ask students: What is a plant? What does a plant need in order to grow? How does a seed become a plant?

*Introduction:* Introduce the seed starter kit. Show students an example of a seed kit that you can buy at the store.

*Reading:* Read the book *The Seedling* with students.

## Student Learning Activities

*Preparation:* Have students list three basic things that plants need in order to grow, and have them list the sequence of events by which a seed becomes a tree in sequential order.

*Investigation:*

1. Students write two questions that will be answered by the experiment and make a prediction about which soil is the best to grow seeds in.
2. Students create an investigation using the materials provided by the teacher: three different seeds and three different soils.
3. Students conduct the experiment for one week, writing down their observations daily.
4. Students state a conclusion from the results. They use this conclusion to determine which type of seed and soil they will use in their seed kits.
5. Students assess the validity of the experiment. For example, they might ask if the plants were watered equally or if they each received the same amount of light.

*Further Activity:* Have students create seed kits. The kits should include a list of materials and a set of directions for using the kit.

## Measuring Achievement of Standards

*Criterion Standards Rubric*

1. The student listed three things that plants need to have in order to grow. YES or NO
2. The student listed the events by which a seed becomes a tree in the correct sequential order. YES or NO
3. The student predicted which soil would be the best to grow seeds in. YES or NO
4. The student wrote two questions that could be answered using the results of the experiment. YES or NO
5. The student created an investigation to determine which seed and soil to include in his or her seed kit. YES or NO
6. The student wrote daily observations during the experiment. YES or NO
7. The student wrote a conclusion that stated the type of soil and seed she or he would use in the kit. YES or NO

8. The student correctly assessed the validity of the experiment. YES or NO
9. The student correctly listed the materials needed for the seed kit, including the type of seed and soil to put in the kit. YES or NO
10. The student composed a set of directions that were written in sequential order. YES or NO
11. The student demonstrated the correct use of capitalization, punctuation, and complete sentences. YES or NO