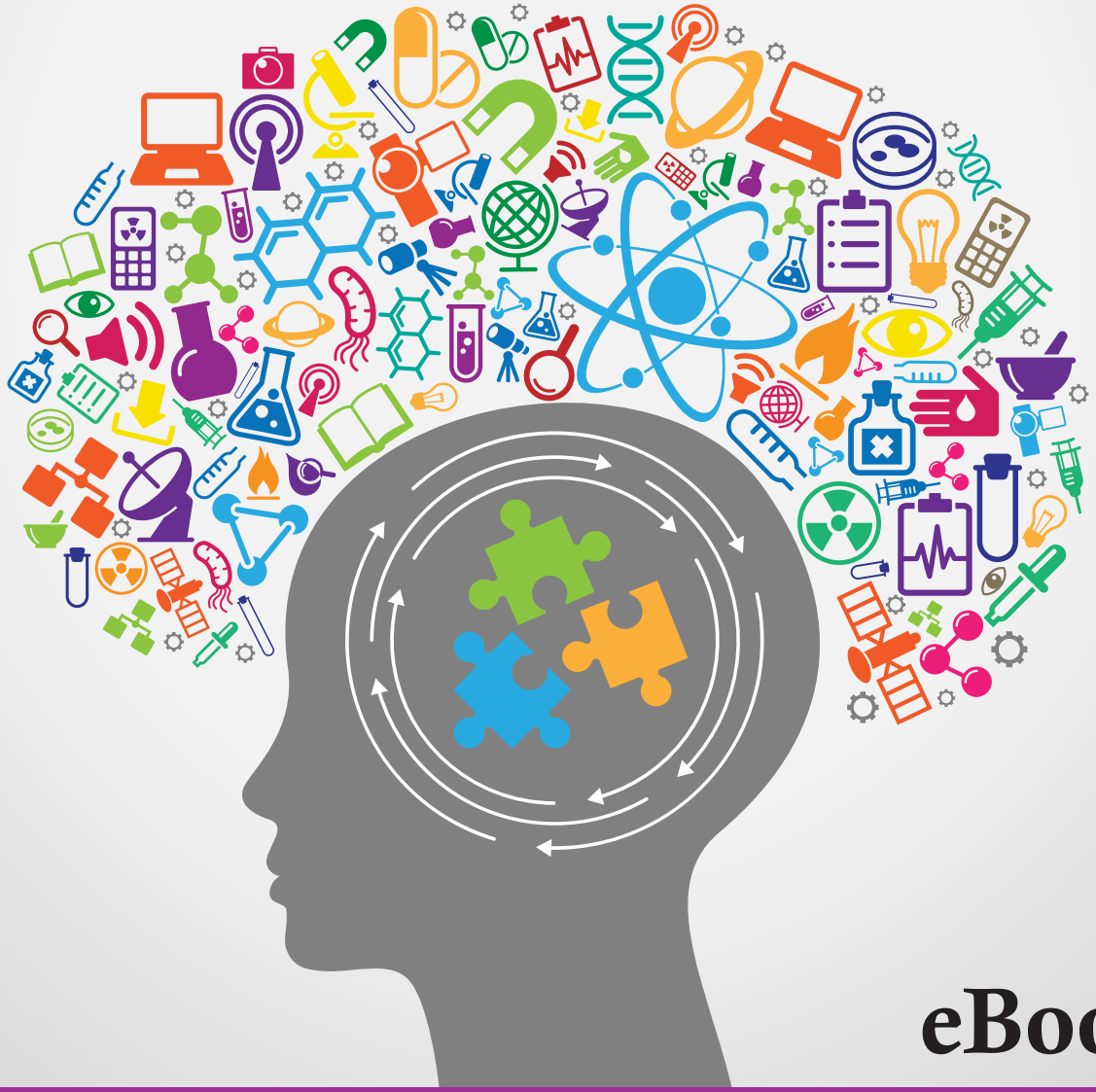
Teaching and Testing:
Steps for using test data as a tool for teaching and learning



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Preface

Assessment of student learning is nothing new. Assessments show educators what students know before instruction begins; whether or not they understand the lesson while it is being delivered; and what, if anything, they have learned from a lesson or series of lessons. Effective teachers use multiple forms of assessment, and the information they gain from the various kinds of assessments—be they formal tests, student discussions, or even student body language—has long been the power that drives the numerous adjustments they make to the teaching and learning activities that take place in their classrooms.

What is new is that assessments are now being used to hold teachers and schools accountable more than ever before. What students have or have not learned is published in local newspapers, and schools that fail to make adequate yearly progress (AYP) face serious consequences. Many teachers feel they spend their days teaching to tests they didn't author, and that creativity and content are being stripped from their classrooms due to state- and federally-mandated tests. However, although "testing" may be the new dirty word of education, an understanding of the various types of assessments and their purposes empowers teachers with the knowledge that meaningful assessment brings to the art and science of teaching and affords teachers the opportunity to use assessment data to enhance their teaching effectiveness in an efficient and practical manner.

The evolution of assessment practice in the United States has led to the belief that school improvement requires clear academic standards measured by rigorous assessments and that educators will be held accountable for student achievement as reflected in student test scores. Test scores tell parents and communities, as well as educators and students, how much students have learned, whether standards are being met, and if educators are doing the job they were hired to do.

The information teachers and other educators gain from these various kinds of assessments has long been the power that drives the numerous adjustments educators make to teaching and learning activities. Thus, effective teachers use assessment results to advance student learning and report student progress.

The process of using data to make decisions is a valuable means for ensuring that a district, school, or individual classroom is on track for a continuous process of improvement and academic achievement. At all levels, the data analysis process is a cycle. The process begins with data collection, moves to analysis and interpretation, and then to the development of an action plan for improvement. The process is cyclical because it continues with the collection of additional data to evaluate the action plan's success.

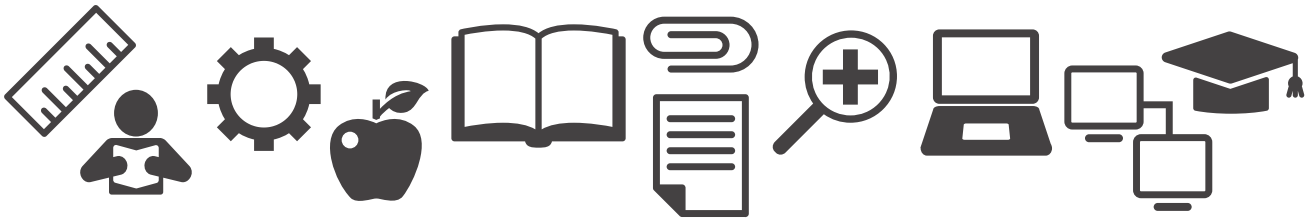
The data analysis process takes on different foci at the district, school, and classroom levels. At the district and school levels, data analysis works to guide budget decisions, staffing decisions, and students' progress toward meeting academic standards. Data is used to provide information to students, parents, community members, and government agencies.

At the classroom level, the data analysis process works to drive curriculum revisions and inform instructional decisions. The analysis of assessment data helps teachers make a variety of instructional decisions and monitor students' progress toward reaching learning targets and standards, and indicates the interventions and enhancements needed to improve learning. The data analysis process at the classroom level is enhanced by collaboration across and within grade levels and subject areas to drive standards-based curriculum, instruction, and assessment plans and to provide students with their own educational data to monitor their progress toward standards and learning targets.

Although student assessment data are an important source of information for teachers, administrators, students, and parents, other forms of educational data are also important. In addition to data from unit tests, projects, classwork, and homework, it is important that the data analysis process include widely accessible non-achievement data such as demographic data, which includes gender, ethnicity, income level, language background, and special needs. Because overall averages gathered from student assessment data can hide learning problems of specific sub-groups, it is useful to combine student assessment data with demographic data so that student assessment data can be disaggregated by sub-group in order to describe the achievement level of each subgroup tested. By disaggregating the data from classroom assessments, teachers are able to examine how various subgroups in their classrooms are progressing toward learning targets and standards and identify subgroups that may be experiencing difficulty with a particular learning target or set of test questions. When teachers take the time to disaggregate student assessment data by sub-group and look at the results, topics for target lessons and next steps for low-achieving subgroups are easily identified. The result is that the achievement of all students is quickly and efficiently increased and greater equity is brought to the education students receive (Sindelar, 2010).

Chapter 1

Types of Assessments and Their Purposes



The Three General Categories of Assessments

Summative Assessments

An assessment that is given at the end of a course or grade level and is used for the purposes of determining that a student has mastered the skills and learning necessary to proceed to the next level as well as for the purposes of assigning a final grade is a summative assessment. School-based summative assessments sum up what a student has learned at a particular point in time and, if aligned with standards, data from these assessments offer a predictive measure of how students will fare on high-stakes state assessments. High-stakes achievement tests based on state or Common Core State Standards also are examples of summative assessments, as are standardized achievement tests such as the Iowa Test of Basic Skills, the California Achievement Test, or the ACT, which are used to measure students' summative achievement in selected subjects.

Summative assessments frequently are called *assessments of learning*, a phrase coined by Rick Stiggins, Founder and Executive Director of the Educational Testing Service Assessment Training Institute. In writing about assessment, he makes the distinction between assessments *of* learning, which provide evidence of achievement for public reporting, and assessments *for* learning, which serve to help students learn more by informing them and their teachers of their progress toward reaching standards or learning targets (2002).

A summative assessment may be a multiple-choice test, in which test items are aligned to specific standards or criteria, or a rubric-graded performance assessment, which uses a rubric that is aligned to specific standards or criteria to determine achievement.

Data collected from summative assessments, or assessments *of* learning, report student achievement at a specific point in time. Data from final exams, state tests, college entrance tests, and other summative assessments give educators, as well as state officials, community members, and parents, a picture of what a student or group of students have learned; report whether or not they have exceeded, met, or are below standards; and are used to compare students or groups of students to one another.

Summative assessments frequently are normed, standardized, and/or standards-based assessments with scores reported as percentiles for specific subject areas. Norm-referenced summative assessments rank students according to how well they performed in relation to other students. The normed tests are developed by administering the test to a nationwide sample, or norm group. Students taking the test are then ranked in quartiles according to how well they did in relation to the norm group.

Summative assessments become standardized when they are administered to students under uniform conditions, so that students' performance may be compared and not influenced by differing conditions such as the length of time used for completing the test. Standardization of protocols for the administration of a summative assessment is important in determining the assessment's validity—or the concept that the test questions measure what they are intended to measure–and the assessment's reliability or consistency of test results. Depending on the content, a standardized summative assessment may or may not be standards-based. However, the benefit of administering a standardized, standards-based summative assessment is that the assessment data will identify specific areas of strength and weakness based on the standards assessed, whereas an assessment that is not standards-based will produce a more generalized score in the subject area tested.

Summative assessments become standards-based when they are made up of a series of questions or tasks that are directly aligned with a specific set of standards. In general, questions on standards-based assessments are content based. Multiple-choice questions ask students to select a correct answer from a series of possibilities. Performance assessments, such as essays, ask students to demonstrate what they have learned and are evaluated using a standards-based rubric. Both multiple-choice and performance assessments measure the standards-based content the students have been taught. As a result, standards-based assessments provide teachers with standards-based test data that allow them to understand their students' areas of strength and weakness and give them the information needed to re-teach strategically and eliminate weaknesses.

Formative Assessments

Formative assessments are assessments *for* learning, which indicate what a student has learned up to a particular point in time, and are used as a guide for further instruction to increase learning. They are often teacher-created instruments that are used on a regular basis to measure student progress toward learning targets. Data from formative assessments identify students' strengths and weaknesses and provide valuable information needed to determine whether to reteach a class, provide special help to individual students, and/or change instructional pacing or materials in the curriculum for future instruction.

Formative assessments include teacher prompts, quizzes, writing samples, labs, and speeches, as well as longer tests—anything that focuses on clear standards or learning targets and tells teachers if their students understand what is being taught to them.

Recent technologies also provide teachers with numerous resources to formatively assess students easily and quickly. For example, *clickers*—devices that allow students to "click" or select a predetermined static response such as A, B, or C—provide teachers with instant feedback on mid-lesson questioning by immediately analyzing students' answers and converting them into graphs. The use of clickers informs teaching by giving them feedback on students' understanding and specific information to make mid-lesson adjustments to instruction.

In addition to using formative assessments during instruction or after a single lesson, teachers can use them to assess instruction that has taken place over multiple lessons. In this case a formative assessment may take the form of a quiz, a chapter assessment, or a *common formative assessment* to determine what students have or have not learned over a period of several lessons.

Common formative assessments measure what has been learned by using products and tests that are closely tied to a common curriculum. Common formative assessments frequently are structured in the form of criterion-referenced tests (CRTs), which test the criteria or standards a student has been taught and measure how much knowledge he or she has gained from instruction. These tests are standardized in that they are common exams administered at the same time and under similar conditions to all students taking a particular course or enrolled in the same grade level. They are criterion-referenced because they are based on the school's local curriculum, which is linked to

standards. By using data from formative assessments for learning, teachers not only know which learning targets and standards students know and do not know, they also have the information needed to remediate students' weaknesses.

Benchmark Assessments

In tracking student progress over time, such as a grading period or a semester, schools often give benchmarks assessments or common final exams. The use of common benchmark assessments help enhance student achievement, because their data help teachers and school leaders identify students' strengths and improvements needed in curriculum and instruction. Thus, specific macro-interventions and resources needed to remediate weaknesses are identified.

Benchmark assessments are common assessments in that all teachers of a particular grade or subject give the same test at approximately the same time.

Benchmark assessments often serve the purpose of being both formative and summative. They are summative assessments in that they may serve as a quarter or semester exam and receive a grade. The same benchmark assessment also may be a formative assessment in that it provides information to teachers and administrators on how a student or group of students is progressing toward meeting standards. Often benchmark assessments are used to predict how students will perform on summative state assessments or graduation tests.

The Complementary Roles of Summative, Formative, and Benchmark Assessments

Formative and benchmark assessments are complementary to summative assessments in that they provide teachers and school leaders with data to monitor students' progress toward standards, provide interventions to increase student learning, and ultimately help students achieve a higher score on high-stakes summative assessments such as state tests of standards. Summative assessments complement formative and benchmark assessments in that they provide assurances to teachers, school district leaders, parents, and community members that the local curriculum and assessments are aligned with standards and levels of achievement outside the school or district. In other words, formative and benchmark assessments measure student progress toward local learning targets and standards for student learning and provide data that show what students have or have not learned. Normed summative assessments assess students' knowledge in given subject areas and/or standards and provide data that show how individuals or groups of students rank or compare with others in their local school, their state, or the nation (Sindelar, 2010).

In general, the information teachers and other educators gain from various kinds of assessments, be they formative, benchmark, or summative, has long been the power that drives the numerous adjustments educators make to teaching and learning activities. Effective teachers use assessments of student achievement to advance students learning and report their progress.

Teachers make assessment a valuable teaching and learning tool by:
1. Articulating to their students the achievement targets they are expected to reach
2. Transforming those expectations into assessment exercises and scoring procedures that accurately reflect student achievement
3. Using assessment results as a source of information for adjusting curriculum and instruction
4. Using assessment results to communicate to students and parents areas of strength and weakness and ways to improve

Assessments and Response to Intervention

Response to intervention (RTI) is a model of academic intervention that provides early, systematic assistance to children who are having difficulty learning. RTI seeks to prevent academic failure through early intervention, frequent progress monitoring, and research-based instructional interventions for children who continue to have difficulty.

The RTI assessment plan for progress monitoring:

1. Identifies students at the beginning of the year who are at-risk or who are experiencing difficulties and students who have reached benchmarks and need to be challenged
2. Monitors students' progress during the year to determine whether at-risk students are making adequate progress in critical skills and identify any students who may be falling behind or need to be challenged
3. Informs instructional planning to meet the needs of individual students
4. Evaluates whether the intervention provided is powerful enough to help students achieve grade-level standards by the end of each year

The RTI assessment plan is achieved using four types of assessments during the school year:

1. Screening assessments provide quick formative measures of overall ability and critical skills known to be strong indicators that predict student performance. Administered to all students as an initial baseline, these assessments help to identify students who do not meet or who exceed grade-level expectations.

2. Progress-monitoring assessments are brief, periodic formative assessments given to determine whether students are making adequate progress and to analyze and interpret gaps in achievement.

3. Diagnostic assessments are more lengthy formative assessments that provide an in-depth, reliable assessment of targeted skills to help diagnose and plan more powerful instruction or interventions.

4. Outcome assessments are group-administered, summative assessments of important outcomes such as state standards. Outcome assessments are often used for school, district, and/or state reporting purposes. These tests are important because they give school leaders and teachers feedback about the overall effectiveness of their instructional program (Fuchs, Compton, & Bryant, 2008).

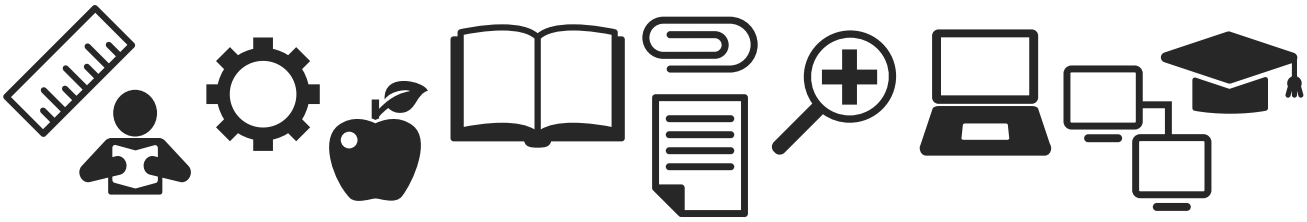
Assessments and College Entrance

Acceptance to a college or university often is determined by standards-based summative assessments that evaluate students' academic readiness for college. The ACT measures college and career readiness using verbal and mathematical achievement. The SAT measures literacy and writing skills that are needed for academic success in college and how well the student analyzes and solves problems.

These tests typically are taken by high school juniors and seniors and are believed to provide a better indicator of success in college than high school grades alone. Because there are substantial differences in funding, curricula, grading, and difficulty among U.S. secondary schools, these assessments are intended to supplement secondary school records and help college admission officers put local data, such as course work, grades, and class rank, in a national perspective.

Chapter 2

How to Write Good Test Questions



Is It a Test or an Assessment?

While educators often use the terms *test* and *assessment* interchangeably, the terms differ in both their primary and secondary meanings. A *test* denotes an examination that is intended to determine factual knowledge or skills and results in a rating or grade. An *assessment* denotes a boarder range of activities and is a tool used for giving judgment, which may or may not result in a grade. The word *assess* dates back to the Medieval Latin word *assidere*, which means "to sit by or attend", and attending to students' learning by using a variety of assessment strategies always has been a trademark of good teaching. As teachers, we formatively assess to inform our teaching and to monitor students' progress toward meeting standards. However, we also test to make certain our students are doing their homework or have the knowledge and skills needed to move on to the next grade level.

Standardized Versus Standards-Based

Depending upon the content, a standardized assessment or test may or may not be standards-based. Similarly, a standards-based assessment or test may or may not be standardized. However, the benefit of administering an assessment or test that is both standardized and standards-based is that the standardization will work to provide reliable data, while the standards-based design will provide data that identifies specific areas of strength and weakness based on the standards assessed.

For more on the difference between standardized and standards-based assessments, see page 3.

Steps for Building Standards-Based Questions

Whether you're writing items for a formative, summative, or benchmark assessments or tests, the process for writing test items is the same and falls into five basic steps.

Step one: Define your learning targets

Decide what it is you want your students to know. For most educators, the answer lies in Common Core or state standards, which are in place throughout the country. When defining your learning targets, you need to have whatever standards you want your students to learn close at hand. It's also a good idea to review state test data for your school to determine standards that are "key," based on difficulty and number of test items, and to identify areas where students' scores are low.

If you are using Common Core or state standards, you probably won't be able to make each standard a learning target. Rather, you will bundle some of the standards together because they seem similar, while you will unpack others into separate targets because of their complexity.

As you develop your learning targets, keep in mind the following:

1. A standards-based learning target may include more than one standard.
2. A standards-based learning target may include only part of a standard.
3. A standards-based learning target will focus on key skills, concepts, and facts that are critical to student success in future coursework and life.
4. A standards-based target is heavily assessed on a high-stakes summative test.
5. A standards-based learning target is formatively assessed as instruction progresses.

By aligning your local formative, benchmark, and summative assessments or tests to learning targets and standards, you will be able to gather data that will create a comprehensive picture of your students' progress toward learning targets. Summative and benchmark assessments will focus on several learning targets, will be used for grades, and usually take the form of a unit test, quarterly assessment, or end-of-course exam. These tests are summative in that they record achievement of learning targets and standards at a particular point in time. However, they are formative in the sense that they can predict results on high-stakes state tests.

Formative assessments will be shorter tests and will probably be aligned with only one or two learning targets. You will use these tests to give yourself and your students feedback regarding their progress toward targets and to guide your reteaching efforts.

Step two: Identify an assessment format

After standards-based learning targets are established, identify one or more formats for either the formative, benchmark, or summative criterion-referenced test (CRT) you plan to create to assess student progress toward one or more standards-based targets or standards. You will consider whether the assessment or test will be formative, benchmark, or summative, and whether it will be an essay; speech; project; lab; or a multiple-choice, short answer, or true/false test.

Common test formats include multiple-choice questions and true/false questions. These formats are helpful for a quick measure of knowledge, application, and comprehension of facts and simple concepts. Fill-in-the-blank and open-ended questions work better for comparing and contrasting issues and measuring analysis and evaluation of more complex concepts.

Essays, speeches, and projects are performance assessments, which evaluate students' knowledge and skills by requiring students to construct a product, such as a written report or a project, or a performance, such as a speech or laboratory experiment. These assessments do not have one correct answer, but are judged upon known criteria, which usually are included in a rubric that defines both the content and the quality of the product or performance.

As with multiple-choice and short-answer tests, rubric-scored assessments also may be used as benchmark or summative assessments to track student progress over time, such as a grading period or a semester, and formatively to predict how students will perform on high-stakes state or college entrance tests.

When using scoring rubrics, the teacher reads the written project or listens to the speech or performance, and then fills in the rubric, which has been aligned with the standards-based learning targets. Standards-based rubrics encourage teachers to communicate clear expectations for projects and provide students with clear goals for their work, while the performance criteria and scoring guides contained in well-crafted rubrics give students the opportunity to self-assess and improve their work along the way.

In addition to considering the type of format that best fits the assessment of a particular learning target or targets, another factor to consider when selecting a test format is how much time the students will have to take the test and how much time you will have to score the tests. Essays, projects, speeches, and open-ended question formats are more time consuming for the student and the teacher. Once you have selected the test format, you will write test questions to use in the given format.

Take into consideration both the learning targets of the assessment and the overall time available for taking and scoring the tests when selecting the best format.

Step three: Develop test items and/or criteria for the performance and the associated rubric

When the type of assessment has been determined, you or you and your team need to agree on test items or the criteria for the essay, project, or performance and the associated common rubric. Test questions and rubrics for projects and essays may come from textbooks, be gathered from online sources, or be created by individual teachers or teacher teams. It is important, however, that test questions and rubrics are aligned to specific standards and learning targets.

Multiple-choice questions

Multiple-choice questions work well to measure students' comprehension of factual information, but they are difficult and time consuming for the teacher to construct. They are composed of a test question stem and several options for the student to select from as their answer.

The following are guidelines to consider when constructing multiple-choice test-questions:

- Be clear and concise in your wording when creating the test question stem.
- Make sure that there is only one clearly correct answer from the options given.
- Minimize the use of "all of the above" or "none of the above" as possible answers.
- Randomly distribute the correct answer options among A, B, C, D, etc., so that there is not a clear pattern.
- Avoid absolutes, such as "always," "never," etc.
- Avoid the tendency to make the correct answer longer than the distractors.
- Beware of grammatical giveaways. For example, if the stem ends with the word "an" and only one or two options begin with a vowel, then the student can easily eliminate the distractors.

True/false questions

True/false questions are best used to test students' ability to recall specific facts or knowledge.

Consider the following when writing true/false test questions:

- Make sure the answer is clear and that it could not be either/or.
- Try not to use negative questions such as "This story was not written by...." but instead use "This story was written by...."
- Use a random order of true/false responses to avoid creating a pattern.
- Make the questions as brief as possible.
- Eliminate giveaways:
    - Keep true and false statements approximately equal in length.
    - Make half the statements true and half false.
    - Try to avoid such words as "all," "always," "never," "only," "nothing," and "alone." Students know these words usually signify false statements.

Fill-in-the-blank questions

Fill-in-the-blank questions require the student to know the correct answer rather than having the ability to guess from a list of possible answers.

Consider the following suggestions when writing fill-in-the-blank test questions:

- Ensure that there is only one possible correct answer to avoid confusion and difficulty grading.
- Place blanks at the end or as close to the end of the question or statement as possible. Blanks at the beginning of a question sometimes decrease the clarity of the question.
- Limit the number of blanks to one or two per item. Statements with too many blanks can be confusing.
- Write questions that recall important information aligned to learning targets.
- If a numerical answer is called for, indicate the units in which it is to be expressed.
- Eliminate giveaways:
    - Make all the blanks an equal length.
    - Avoid grammatical clues such as "an."

Open-ended questions

Open-ended or essay format questions are excellent for measuring higher-level learning and overall comprehension of a subject. They allow the student to select content for their response, organize their thoughts in a logical manner, and present their ideas on a given subject matter.

Consider the following when writing open-ended questions:

- Be sure that the test question clearly states the answer you are seeking from the student. For example, "Discuss the Depression" is a poor test question. But, "Describe the economic impact of the Depression" is a better test question because it gives the student a clearer focus for their answer.
- Don't give students the option to pick two or three questions from among five. This is confusing for students and creates complexity for the teacher when grading. It's difficult for a teacher to accurately score an answer when students have answered different test questions.

Essay questions

Essay questions ask students to supply *extended* written answers to questions. Essays differ from open-ended questions in that they often require a student to take a position on a topic or develop a thesis statement and then support their position with evidence.

Judgments about the accuracy and quality of answers should be made using a rubric, which defines the quality and content of a "Novice," "Nearing Proficient," "Proficient," or "Advanced" answer. Each category on a rubric should be aligned with a specific learning target. Trait rubrics divide students' writing into essential traits so that traits can be judged separately. A separate score is provided for each trait, providing a profile of strengths and weaknesses in a piece of work.

Consider the following suggestions when developing essay questions:

- Provide students with model essays that are aligned with the scoring rubric prior to the assessment.

- Provide students with the rubric when assigning the essay. Explain the rubric so that students understand the criteria for excellence and have the opportunity to verify that they have met the specific criteria for an assignment.

Performance assessments

Performance assessments, such as essays, projects, and speeches are used to assess a variety of complex learning targets.

Consider the following suggestions when developing performance assessments:

- Provide students with models of the performance that are aligned with the scoring rubric prior to the assessment.
- Provide students with the rubric when assigning the performance. Explain the rubric so that students understand the criteria for excellence. When students are given the rubric in advance of the assignment, they have the opportunity to verify that they have met the specific criteria for an assignment.

Step four: Pilot the test

It is helpful to "pilot" a new test or assessment with a class or group of students to maximize alignment with the standards-based learning targets and check for poorly written items. Once a small group of students has "piloted" the test, the piloted test can be scored and analyzed, and weak items eliminated or replaced. Rubrics used for performance assessments need to be checked for *interrater reliability*, which determines that performances can be rated consistently by different teachers (raters) over time. Interrater reliability is strengthened by training raters using models of performance assessments that produce high, medium, and low scores based on defined criteria.

Step five: Analyze the results of the test

Modern assessment software allows teachers to analyze students' answers by learning target or standard, and data analysis reports can be provided to teachers and teacher teams, as well as students, in a timely manner. By reviewing an item analysis by standard or learning target, teachers are able to determine how an individual student, class, or group of classes performed on a specific learning target. These reports provide teachers, students, and administrators with valuable information regarding what a student knows and doesn't know and serve an important role in determining next steps for instruction, changes in the curriculum, and/or student self-help activities. It also is helpful for individual teachers or teacher teams to meet to study assessment results and identify action plans for curricular revision and areas for reteaching and individual student remediation.

Testing alone does little to enhance learning or advance student achievement. It is the use of test results that informs teaching, monitors students' progress toward meeting standards and learning targets, and

provides meaningful feedback to students and parents. For our students to learn and meet or exceed state or Common Core Standards, a relationship between the local curriculum, instructional and assessment practices, and the standards must be established, and data from both classroom tests and state-mandated tests must be used to inform our teaching, change our curriculum, and accelerate student learning. Using assessment software, we can easily use data from our classroom assessments to measure our students' learning and adjust our daily teaching practices to increase student learning and achievement in our classrooms. Gathering and using test data is a powerful tool for teachers and is discussed in the next chapter.

A Word about Rubrics

What is a rubric?

Rubrics are the tools that teachers use to evaluate a student's performance on a written or oral project, a product, such as a painting, or a performance, such as a speech. A rubric is broken down into columns and rows. The columns define the level the student achieved on a particular task, for example, "Novice," "Nearing Proficient, "Proficient," or "Advanced." The rows outline the specific standards or content on which the student is being evaluated, for example, grammatical conventions, organization, or supporting details.

Standards-based assessment rubrics used by teachers to assess student work can be transformed into student rubrics for peer- and self-assessments. Student rubrics feature grade-appropriate, kid-friendly language and symbols. Standards-based rubrics show teachers, parents, and students specific areas of proficiency as well as areas needing improvement, but they take time to develop.

What is an exemplar?

Exemplars are examples of student work that illustrate the range of performance in each level. Samples are evaluated by using the scoring criteria defined on the rubric and exemplify various ways to achieve each score on a rubric. Although each example may "look" different, it still receives the same score for attainment of a standard lesson objective.

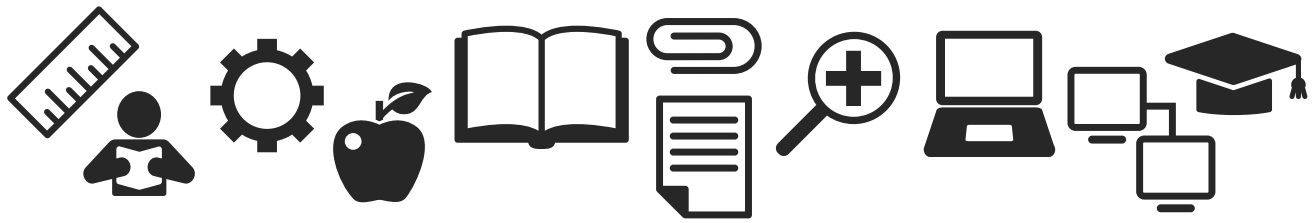
Reflective Essay Rubric

Expectations	Exceeds Standard 4	Meets Standard 3	Nearly Meets Standard 2	Below Standard 1	Little or No Evidence 0
Engages the reader by establishing a context and analyzing a situation	Effectively identifies a condition, a situation, or an issue that addresses the prompt. Insightful analysis conveys significance of the condition, situation, or issue..	Clearly identifies a condition, a situation, or an issue that addresses the prompt. Analysis conveys significance of the condition, situation, or issue.	Identifies a condition, a situation, or an issue but does not adequately address the prompt. Attempts to convey analysis.	Identifies a condition, a situation, or an issue but does not address the prompt. Lacks analysis.	Fails to identify a condition, a situation, or an issue of significance..
Uses a range of writing strategies	Skillfully selects and uses a range of writing strategies such as comparing and contrasting, using concrete details, description, creating a scenario. OR Masterfully uses a more limited range of writing strategies.	Accurately selects and uses a range of writing strategies such as comparing and contrasting, using concrete details, description, creating a scenario. OR Accurately and effectively uses a more limited range of writing strategies.	Attempts to use a range of writing strategies such as comparing and contrasting, using concrete details, description, creating a scenario. OR Ineffectively uses a limited range of writing strategies.	Writing strategies are used ineffectively.	There is no attempt to use a range of writing strategies.
Creates an organizing structure	The response is skillfully organized from beginning to end; this organization can be, but is not necessarily, sequential. This includes an opening, body, and closure that are complex..	The response is clearly organized from beginning to end. Includes an opening, body, and closure.	The response includes and opening, body, and closure; however, one or more of these elements is not fully developed.	The organization is incomplete or one or more of the elements causes confusion.	No organization is evident.
Demonstrates understanding of English language conventions	Demonstrates consistent control of grammar, usage, punctuation, sentence construction, and spelling.	Demonstrates control of usage, grammar, punctuation, sentence construction, and spelling. Occasional errors do not usually interfere with meaning.	Demonstrates some control of usage, grammar, punctuation, sentence construction, and spelling. Frequent errors interfere with message.	Demonstrates little control of usage, grammar, sentence construction, and spelling. Numerous errors interfere with meaning.	Demonstrates no control of usage, grammar, punctuation, sentence construction, and spelling. Work is incoherent.

Chapter 3

Using Data to Make Decisions:

Why It's Important and How to Do It



Four Reasons Teachers Use Student Assessment Data to Make Decisions

1. Curriculum revision

The changes that result from using data to make educational decisions fall into a continuum. At one end are large-scale changes that have an effect on all students. At the other end are small-scale changes or methods of individual help that will only affect a few students or an individual student. Using data to change the curriculum is a large-scale change that is an effective means for improving the achievement of many students.

Troubled by their test data in math, an elementary school in Chicago decided to adopt a new math curriculum that emphasized higher-order thinking and hands-on training for teachers. Based on these changes, the school's math scores on the Illinois Standards Achievement Test (ISAT) jumped from 43 percent to 92 percent meeting standards in third grade, and from 34 percent to 68 percent meeting standards in fifth grade. The school attributed this increase in achievement to the improved curriculum and teacher training (Dell'Angela, 2004).

In addition to changing the curriculum, it also is critical to examine timing and pacing issues within the curriculum. Students frequently do poorly on high-stakes tests because a subject or topic has not been adequately covered in the curriculum prior to their taking the test. It may be that the topic simply is not included in the curriculum, that the topic is in the curriculum but is not studied in depth, or it may be that the topic is covered in the curriculum after the students take the high stakes state test. However, once teachers and administrators look at analyzed test data, any of these problems can be remedied by adjusting the curriculum.

In addition to adjusting the curriculum, schools also need to be certain that students have exposure to the curriculum standards that they are expected to know and be able to do. A school may align the local curriculum with state or Common Core Standards, but not have graduation requirements that ensure all students have exposure to the standards. For example, most states have math standards that require knowledge of algebra and geometry. Yet in some high schools, the math graduation requirement can be fulfilled by taking Pre-Algebra and Algebra, causing large percentages of students to have no exposure to Geometry whatsoever. Though schools in this situation often consider adding Geometry as a third required year of math, they often discover that adding more yearly requirements isn't a solution because there simply isn't enough time in students' schedules. Rather it is better to examine course sequences and

vertical alignment to make certain that standards are met by existing requirements prior to state testing. Using data to make organizational decisions, such as changing the curriculum, fosters a continuous improvement process and an organizational commitment to ongoing learning and improvement.

2. Informing instructional decisions in the classroom

Another way teachers use data for decision-making is to inform their instruction. When the data analysis process is used as an ongoing cycle of improvement, teachers have evidence to bear on their instructional decisions and improve their ability to meet students' individual learning needs. While this method will not have the large-scale effect that changing the curriculum has, it will improve achievement for most students in an individual teacher's classroom.

Effective teachers adopt a systematic data analysis process to improve their ability to meet students' learning needs.

Data from formative assessments produce evidence of learning that allows teachers to adapt teaching to meet the immediate learning needs of students. By using questions, products, and assessments that are closely tied to a standards-based curriculum, teachers are able to make minute-to-minute and day-to-day decisions about next steps in instruction that are likely to be better than the decisions they would have made in the absence of that evidence (Thompson & Wiliam, 2007).

Data from item-analysis reports are an important source of information for informing and making adjustments to instruction. When teachers review item analyses by learning target or standard for their individual classes, they quickly see that their students perform well on some learning targets, but not on others. By reviewing an item analysis by sub-score or standard report, a teacher can determine how an individual student or a group of students performed on a specific sub-score category or standard. Thus data from these reports can be used to monitor or report students' attainment of sub-score categories or key standards. By monitoring attainment of sub-score categories or standards, teachers have the information to make adjustments to curriculum and instruction. When students' attainment of sub-score categories or standards are reported, educators, parents, and school officials know whether students have met or exceeded educational targets and are able to make decisions regarding a school's effectiveness.

No Child Left Behind has mandated that the data analysis on state tests include the disaggregation of data by sub-group. As a result, the collection and analysis of summative assessment data on state mandated summative assessments is done in conjunction with demographic data, which includes gender, ethnicity, income level, language background, and special needs.

Teachers in schools with low-achieving sub-groups find it useful to also disaggregate data from classroom assessments. By disaggregating the data from classroom assessments and tests, teachers are able to examine how various subgroups are progressing toward standards, identify subgroups that may be experiencing difficulty with a particular standard, and develop action plans for low-achieving subgroups in order to close achievement gaps.

Effective teachers interpret test data, develop hypotheses about factors contributing to students' performance, and create specific action plans and interventions they can use to meet students' needs. Teachers then test these hypotheses by implementing changes to their instructional practice. Finally, they continue the data analysis process cycle by collecting and interpreting new student performance data to evaluate their own instructional changes.

3. Monitoring student progress toward meeting standards

When data from standards-based assessments, along with other types of educational data, are collected, analyzed, and used, teachers and students have specific information to monitor the process of continuous improvement. After examining data, teachers are able to interpret it and develop hypotheses about factors contributing to students' performance. They can then create specific action plans and interventions they can use to meet students' needs. This becomes an ongoing cycle of continuous improvement when teachers then test their hypotheses by implementing changes to their instructional practice and continue the educational data analysis process cycle by collecting and interpreting new student performance data to evaluate their own instructional changes and monitor the improvement of their students. The goal of using data is to always get better, and the expectation is that good is never good enough. These objectives are accomplished through incremental, data-based advancements that are deliberate and strategic.

The data and adjustments to instruction help students understand their next steps for learning, and the continuation of the data analysis process helps students to monitor their progress toward reaching specific learning targets and standards. When teachers review analyzed data, they have a compelling reason to redirect and reassess their teaching efforts. When students review their data, they have a compelling reason to take specific next steps and then continue to monitor their own progress. The use of analyzed, standards-based assessment data by teachers and students supports the process of continuous improvement and is reinforced by an increase in learning and achievement.

When assessment data is used by teachers and students to support and monitor the process of continuous improvement, student achievement increases.

4. Empowering students with the results of their learning

Data from formative assessments not only inform teachers, they also can inform students and engage them in the educational process by providing meaningful feedback. John Hattie's research on student learning determined that feedback is "the most powerful single modification" that enhances student achievement and that the "simplest prescription for improving education is 'dollops of feedback'" (Hattie, 1992). However, for feedback to be effective, students must understand three things:

1. Their learning target or the desired goal
2. Their current position in relation to achieving the learning target or desired goal
3. How to close the gap between their current position and their learning target or the desired goal

To achieve these three elements of effective feedback, teachers need to explain the learning targets and the criteria for success when they initiate instruction. Then they need to use feedback provided by formative assessments to give students an understanding of their position in relation to achieving their learning target or desired goal. Finally, corrective instruction should be given to help students understand their next steps for improvement in order to successfully reach learning targets, standards, and desired goals.

Effective feedback can come in the form of teacher-student conferences, class discussions, homework, or formative classroom assessments. Black and Wiliam maintain that "opportunities for pupils to express their understanding should be designed into any piece of teaching, for this will initiate the interaction through which formative assessment aids learning" . Thus, individual student conferences or class discussions should create opportunities for students to display their understanding of learning targets, and homework and classroom assessments should contain questions and performances that are relevant to learning targets in order to give students an understanding of where they are in the learning process.

Feedback provided by formative assessments along with corrective instruction helps students identify next steps for their academic improvement and make progress toward successfully reaching learning targets and standards. When formative assessment data and the corrective feedback are aligned to learning targets and standards, students are better able to see a pathway to their own personal academic success and feel

there's a reason to try. When corrective feedback provides students with next steps for their academic improvement, they begin to think, "I can do this," and are more motivated to take ownership of their learning. Thus, data from the formative assessment process becomes a motivational tool when it identifies errors in learning and is "followed by high-quality corrective instruction designed to help students remedy whatever learning errors [were] identified [by] the assessment" (Guskey, 2007).

Students become partners in the assessment process when teachers provide them with feedback that includes standards-based item analyses of their work. Individual data results of either multiple-choice tests or rubric-graded projects and performances allow students to target the concepts and facts they need to relearn after initial instruction. Individual item-analysis reports for multiple-choice tests outline the questions missed and the specific standards or learning targets the student needs to meet.

Rubrics, too, help students become more analytical about self-assessment and more productive in seeing next steps because they provide them with specific criteria for success before they begin a project and show them where they have fallen short of the learning target when the project is complete. When students compare their work to criteria on a rubric, they learn what elements of their work meet expectations and where they need to learn more to improve their work. Students understand this feedback more readily because it relates directly to their learning and enables them to demonstrate their learning in relation to a particular product. These kinds of specific steps help all students achieve at a higher level because they begin to develop what Michael Fullan calls "assessment literacy" (2001).

Group Process & Participation Rubric

Elements	1- Not Yet Meeting Expectations	2 – Approaching Expectations	3- Fully Meeting Expectations	4 – Exceeding Expectations
Participation:	not engaged; needs frequent reminders to stay on task, often not prepared; does not complete tasks in allotted time	Peripherally engaged and usually cooperative, respectful and prepared; completes most tasks but may need extra support	•actively engaged in partner and group work •generally cooperative, respectful and prepared •completes assigned tasks in allotted time	•actively engaged and may take a leadership role •always cooperative, respectful and well prepared •completes , elaborates and may extend tasks in allotted time
Contribution to team Projects: responsibility	Does not provide much useful information; not able to offer ideas or useful suggestions	Collects information when prodded; occasionally offers some undeveloped ideas, but not well developed	Collects good, useful information for the project; sometimes offers good ideas to meet the team's needs	Collects and presents a great deal of relevant information; offers well-developed and clearly expressed ideas directly related to the group's purpose.
Interpersonal & team skills	Does not perform assigned tasks; misses meetings and expects other team members to do the work; offers no constructive remarks, does not listen to other ideas	Does assigned tasks with many reminders; attends meetings but has little to contribute and does not pay much attention when others talk	Performs all assigned tasks; attends meetings regularly and participates well; generally listens to others' points of view; and uses respectful language	Performs all tasks very effectively; attends all meetings & participates with enthusiasm and always listens to others and helps them develop their ideas - giving them full credit

Some ideas for this rubric came from:
http://www.cse.ohio-state.edu/~neelam/abet/DIRASSMNT/teamworkRubric.html

Looking at student errors on an item-analysis report serves as a rich resource for improving student learning. Guskey notes, "What better learning-to-learn skill is there than learning from one's mistakes? Mistakes should not mark the end of learning; rather, they can be the beginning" (2007). Some assessment experts argue, in fact, that students learn nothing from a successful performance. Instead, they learn when their performance is less than successful, because then they can gain direction about how to improve.

Overall, the process of using data for decision-making is a powerful tool for teachers, students, administrators, parents, or anyone interested in improving academic achievement. The interpretation of assessment data is vital when making decisions about the adequacy of student progress and formulating effective instructional programs. The use of educational data validates that schools, teachers, local curriculum, instructional practices, and local assessments are doing the job of preparing students to meet and exceed standards and future challenges.

School improvement and academic achievement are strongly influenced by the school's ability to collect and use local formative and benchmark assessment data to inform instruction and help students learn. Thus the primary forces in accountability are not only the state or the federal government, but also school and district leaders who are responsible for building and promoting an instructional program based on common, standards-based curricula and assessments that produce reliable formative, benchmark, and summative data so that teachers have the means to guide each student's learning experiences. Used together, data from formative, benchmark, and summative assessments provide a comprehensive picture of what students know and where there are gaps in their learning.

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About the Author

Nancy W. Sindelar, Ph.D., works with schools to increase student achievement through the alignment of local curriculum and assessments to state and Common Core State Standards and the use of test results to inform instruction.

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Nancy is an Executive Consultant on assessment for the American Association of School Administrators (AASA) and has spoken at numerous national conferences, including meetings of the Association for Supervision and Curriculum Development (ASCD), the AASA, and the National Association of School Boards (NASB). She is skilled in helping Illinois schools meet the teacher evaluation demands of the Performance Evaluation Reform Act (PERA) and schools across the country meet the curriculum and assessment demands of the Common Core State Standards.

Nancy received her bachelor's degree from Northwestern University, a master's degree from DePaul University, a certificate of advanced studies from Concordia University, and a doctor of philosophy degree from Loyola University of Chicago. She was a visiting scholar with the English faculty at Cambridge University, England and served a four-year term as president of Northwestern University's School of Education and Social Policy Alumni Board. She is an adjunct faculty member in the Department of Educational Leadership at Roosevelt University and the former Assistant Superintendent for Curriculum, Instruction and Assessment at Dupage High School District 88 in suburban Chicago.

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