Comprehensive Assessment System:
Rhode Island Criteria & Guidance

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Table of Contents

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I. Background and Rationale

On January 7, 2010, The Rhode Island Board of Regents approved *Transforming Education in Rhode Island,* the strategic plan for 2010-2015. Deborah A. Gist, Commissioner of Education, guided the development of this strategic plan. With input from the Board of Regents, Rhode Island Department of Education (RIDE) staff, educators, parents, community members, civic leaders, and youth, five priorities were set. One of the five priorities, Establish World-Class Standards and Assessments, mirrors the expectations in the Basic Education Program (BEP). The BEP states that by 2015 all Local Education Agencies (LEAs) will have comprehensive curriculum, instruction, and assessment systems that are internationally benchmarked. Supporting this strategic objective is another objective: Monitor and support LEA implementation of comprehensive local assessment and reporting systems based on internationally benchmarked standards (WCS 3).

On July 1, 2010, the Basic Education Program (BEP) that was adopted by the Board of Regents went into effect. It details expectations for implementation of a comprehensive assessment system. An excerpt from Section G-13-3, Comprehensive Local Assessment and Reporting Systems, follows:

> *"Each LEA shall develop a Comprehensive Assessment System that includes measures of student performance for the purposes of formative, interim, and summative evaluations of all students in each core content area."*

A comprehensive assessment system is a coordinated plan for monitoring the academic achievement of students from Pre-Kindergarten through Grade 12. The goal of the comprehensive assessment system is to increase student learning by producing actionable data[*], evaluate the effectiveness of programs, and ensure that all students are making progress toward achieving learning goals. Research has shown that data-informed decision-making on the part of educators leads to greater student achievement.[1] In addition, students benefit when they understand the criteria for success and receive regular, descriptive feedback on their progress toward their goals.[2] The statewide adoption of the Response to Intervention (RTI) Framework necessitates that educators be well-versed in how to collect and interpret student data. Though the BEP requires a comprehensive assessment plan in the core content areas, the best practices and expected assessment literacy addressed in this document are applicable to all content areas, grades, and groups of students.

When properly designed and implemented, a comprehensive assessment system provides multiple perspectives and sources of data to help educators understand the full range of student achievement. This information can be used to evaluate educational programs and practices and make informed decisions related to curriculum and instruction, professional development, and the allocation of resources to better meet students' needs. The data inform educators and families regarding student performance on state, LEA, school, and classroom assessments and their relationship to ongoing instructional practice. Various types of assessments are required because

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[*] For the purpose of this document, *data* refers to information about or measures of student behavior, performance, or learning. For example, attendance rates, spelling quiz averages, NECAP scores, graduation rates, and grade point averages are all pieces of data.

they provide different types of information regarding performance. A comprehensive assessment system must be appropriate for the student population and address the assessment needs of all students, including students with disabilities, culturally and linguistically diverse students, and students in early childhood programs.

Defining a process for how assessments are used to make educational decisions is critical to ensure there is consistency of rigor and expectations across all buildings and levels within an LEA. LEAs should have a well-established and documented system with reliable assessments that shows how data are used to make timely decisions about when and how to provide additional support or extend student learning.

The following information must be documented for each assessment in the comprehensive assessment system:

1. The name of the assessment
2. The purpose and use of data
3. The type of assessment (e.g., formative, interim, summative)
4. The scoring procedures along with the expected turnaround time for providing feedback to students
5. The implementation schedule
6. The allowable accommodations and/or modifications for specific students.

The above information should be kept on file and used as evidence of the LEA's comprehensive assessment system work, a foundation for conversations about changes to the assessment system, and guidance for future decisions regarding the assessment system. LEAs can review their assessment system using the tools and guidance provided in this document.

The purpose of this document is to outline the elements and features of a comprehensive assessment system, primarily as they apply to the roles and responsibilities of LEA leadership. However, the definitions, habits of thinking, and tools contained in the guidance may also be of use to school-level administrators and teachers. It provides a framework that LEAs should use to take inventory of existing assessments so as to determine any possible redundancy or gaps. Ideally, this work should be completed by teams of LEA and school leaders as well as content and grade-level experts who have a solid understanding of what data are needed and which assessments are best suited to provide it. Special educators and teachers of English Learners should also contribute to this analysis.

In some cases, LEAs may find that a fairly comprehensive assessment system is already in place. In others, LEAs may find that existing assessments are being used inappropriately or that more assessments are being employed for a given purpose than are needed. Or, LEAs may find that additional assessments are needed. Thoroughly evaluating the assessment systems in place to ensure that they are comprehensive will enable LEAs to introduce more efficiency, rather than additional burdens. Furthermore, data produced by a comprehensive assessment system will serve definable and significant purposes that, taken together, will enhance the educational outcomes for all students.

There are numerous ways to categorize and label the variety of assessments that are used in Rhode Island schools. For the purposes of this document, assessments are described in terms of purpose (to inform instruction, to screen/identify, and to measure outcomes) and type (summative, formative, interim). Students with disabilities and English learners are not addressed specifically in

any one section of the document. This is because, in most cases, good assessment practices for general education students are good assessment practices for diverse learners. Information about modifications and accommodations is contained in the "Consider Quality: Validity, Reliability, & Fairness" section of this document.

Current Efforts

RIDE, in partnership with local educators, has a multi-pronged strategy for enhancing existing assessment infrastructure, increasing assessment literacy, and assisting with the development of comprehensive assessment systems across the state. The instructional management system (IMS), which will launch in 2012, will be a single sign-on, web-based platform that will house curriculum, instruction, and assessment material and data. Through the IMS, educators will be able to access reports and query data at the student, classroom, school, and LEA level. The IMS will support an interim assessment item bank and test-development engine, which LEAs may use to design, generate, and score interim assessments. Also in development is a series of online formative assessment modules, which will be housed on the IMS, to familiarize educators with general assessment literacy and concrete formative assessment strategies. In addition, professional development will be offered to leadership teams to increase capacity in understanding and using data.

II. Purposes of Assessment

Assessment has an important and varied role in public education. Assessments are used to inform parents about their children's progress and overall achievement. They are used by teachers to make decisions about instruction, assign grades, and determine eligibility for special services and program placement. They are used by evaluators to measure program and educator effectiveness.

Assessments are used to track progress toward school and LEA goals set by the state in accordance with federal regulations.

When it comes to assessment of student learning, the *why* should precede the *how*. Often the emphasis on measuring student learning creates very real pressure to purchase and implement programs and assessments that may not accurately assess the content and skills that need measuring. This pressure is felt at all levels of education and underscores the need to make thoughtful assessment choices that are not often amenable to quick solutions.

The vast majority of assessments are used for one of three general purposes: *to inform and improve instruction, to screen/identify (for interventions), and to measure outcomes (as part of an accountability system, for school improvement planning, or for evaluation).*

When assessments are used *to inform instruction*, the data typically remain internal to the classroom. They are used to provide specific and ongoing information on a student's progress, strengths, and weaknesses, which can be used by teachers to plan and/or differentiate daily instruction. This is most typically referred to as Formative Assessment. However, interim and summative assessments can also be used to impact instructional decision-making, though not in the "short cycle" timeline that characterizes formative assessments. Assessments such as unit tests and even state assessment data can be used to reflect on and inform future instructional decisions.

When assessments are used *to screen/identify*, the data typically remain internal to the school or LEA. Assessments that are used primarily to screen are administered to the total population of students and generally assess key skills that are indicators of students' larger skill set, rather than an in-depth

analysis of the standards. They should be relatively quick to administer and easy to score. Assessments used for screening purposes can inform decisions about the placement of groups of students within an academic program structure or individual students' needs for academic interventions or special programs. When needed, screening assessments are followed by diagnostic assessments to determine if more targeted intervention is necessary or if a student has a disability.

Finally, when assessments are used *to measure outcomes*, data are communicated to parties external to the classroom. Whether it is a unit test that is entered into a grade book and communicated to parents or a standardized test that is reported to the SEA, assessments used to measure outcomes attempt to measure what has been learned so that it can be quantified and reported. Some assessments that are used to measure outcomes may also be used to serve accountability requirements. These requirements are determined by state or federal regulations and corresponding state policy. In all cases, the particular type of assessment that is used is dependent on the claims that will be made about student learning, how the data will be used, and with whom it will be shared. No single type of assessment, and certainly no single assessment, can serve all purposes.

III. Types of Assessments

From informal questioning to final exams, there are countless ways teachers may determine what students know, understand, and are able to do. The instruction cycle generally follows a pattern of determining where students are with respect to the standards being taught before instruction begins, monitoring their progress as the instruction unfolds, and then determining what knowledge and skills are learned as a result of instruction. Assessments, based on when they are administered relative to instruction, can be categorized as formative, summative, or interim. Figure 1 and Table 1 illustrate how these types of assessments compare in terms of scope and use/purpose.

Figure 1. Tiers of Assessment
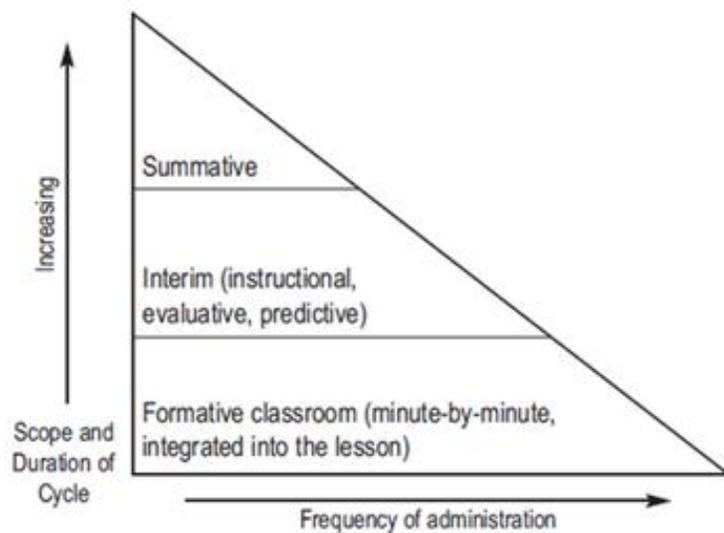
Source: Policy brief by Aspen/Achieve/Center for Assessment

Table 1: Intersections between Purposes and Types of Assessment

	Inform Instruction	**Screen/Identify**	**Measure Outcomes**
Summative	Generally not used as the primary source of data to inform instruction. May be useful in examining program effectiveness	Generally not used as the primary source of data to screen/identify students. May be one of multiple sources used	Primary purpose is to measure outcomes (at classroom, school, LEA, or state level). Can be used for accountability, school improvement planning, evaluation, and research.
Formative	Primary purpose is to inform instruction	Generally not used to screen/identify students	Generally not used to measure long term outcomes; rather, it is used to measure whether students learned what was just taught before moving on to instructional "next steps"
Interim	May be used to inform instruction	May be used to screen/identify students	May be used to measure outcomes in a longer instructional sequence (e.g., end of a unit of study or quarter, semester).

Summative Assessment: *Formal assessments that are given at the end of a unit, term, course, or academic year.*

These assessments are designed to judge the extent of student learning for the purpose of grading, certification, or evaluating the effectiveness of a curriculum. They are retrospective assessments of what students have learned, know, or are able to do. Given that common purpose, summative assessment items may take the form of anything from a persuasive essay to a geometry proof. Summative assessments typically have the most robust technical merit, allowing for more comparison and analysis of data, particularly on

developing trends. These are the assessments most appropriately used to answer big questions such as "How are a group of students performing with respect to a body of standards or to their peers?" and "How well is the school/LEA/state serving its students?"

While a formative assessment might ascertain what students understand (and do not understand) at the end of a mini-lesson, a summative assessment measures what students can demonstrate they have learned at the end of a unit of study. Summative assessments typically have a less frequent cycle of administration than formative assessments and, as a

result, include more content. Because of the less frequent cycle of administration and more cumulative content, summative assessments are not typically used to inform instruction. Often, by the time assessments have been scored and results reported, the teacher has moved on to different material or group of students. The data produced are not particularly useful to teachers for creating student groupings or re-teaching material. However, it can be useful for informing *future* instruction. As teachers rethink the structure of a class after it has ended, they might review summative assessment data to determine what content or concepts were most challenging to students and, therefore, may warrant more time and attention next semester or next year. In some cases, summative assessments may signal whether a student should be more closely evaluated to determine if there is a need for additional supports or additional challenges.

Finally, summative assessment data can sometimes be used to evaluate the effectiveness of a particular program, curriculum, or instructional strategy. For example, if two similar elementary schools within an LEA are using two very different science curriculums (one project-based and the other more traditional), a common summative assessment might provide interesting data for comparing the effectiveness of the two programs, thus informing school-improvement planning. Additionally, summative assessments can be used for determining whether or not a student has met graduation requirements and for evidence of Student Learning Objectives[*] in the Rhode Island Model for Educator Evaluation.

Formative Assessment: *A process and/or a set of strategies that teachers and students use to gather information*

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[*] Student Learning Objectives are long-term, measureable academic goals for students and are one measure of student learning in the Rhode Island Model for Educator Evaluation.

during (as opposed to after) the learning process and to make adjustments accordingly.[3]

At the other end of the assessment spectrum is *formative assessment*. A teacher using formative assessment strategies knows where students need to end up and regularly checks in with students, using a wide variety of methods and strategies, to determine where they are in the learning process. Once the teacher clearly understands where students are, instruction is adjusted to accommodate the needs of the students in order to get them to where they need to be.

In contrast with summative assessment, formative assessments (such as quizzes, assignments, or quick verbal or non-verbal checks for understanding) are not used to grade in a formal sense. Rather, they are an exchange between the student and the teacher to determine what the student understands (and is therefore ready to move on from) and what may need to be re-taught or reinforced. A useful component of formative assessment may include teacher-student conferences and student reflections on their learning and skill development. Students must be actively involved in the formative assessment process, reflecting on their work and conducting self-evaluations of their learning. Students must be equal partners in the process in order to gain an awareness of where they are, where they are going, and what they need to keep moving forward toward their learning targets.

Formative assessment encompasses a variety of strategies. Teachers may require students to summarize the main idea of a story on an exit ticket before leaving class or to vote for which multiple choice selection they think is correct and defend their choice. They might give every student a whiteboard and require each one to solve a mathematics problem and hold up his or her work. Wiliam (2009) explains that formative assessment is

effective because it utilizes *pedagogies of engagement* and *pedagogies of contingency*.[4] By pedagogy of engagement, he means that effective formative assessment strategies require that 100% of the students in a classroom participate. All students must demonstrate their understanding (or lack thereof), thereby avoiding a scenario in which the teacher is directing most of his or her attention to those students whose hands are raised while neglecting those who choose not to participate. There is no opting out. By pedagogy of contingency, he means that formative assessment strategies require the teacher to adjust his or her instruction based on the data produced by these informal assessments.

For example, if a teacher administers a formative assessment and finds that all of the students are able to demonstrate understanding of a particular concept, he or she may adjust the lesson plan and move forward to match the pace of student learning. If the teacher finds that some students are able to demonstrate understanding while others are not, he or she may choose to create a small group for re-teaching or to create heterogeneous partnerships so that those students who can demonstrate competency can re-teach those who cannot. Or, in a third scenario, the teacher may find that few or no students are able to demonstrate understanding of a particular concept, in which case, he or she may decide to alter the next day's lesson plan in order to re-teach the concept in a different way or with greater detail. The key point is that formative assessment involves a short cycle of collecting data and using that data to keep instruction at pace with student needs and learning styles.

Shavelson (2006) describes three types of formative assessment: a) "on-the-fly," (b) planned-for-interaction, and (c) formal and embedded in curriculum. On-the-fly formative assessment occurs during "teachable moments" within the class. They are not planned for, yet they are an important opportunity to redirect misconceptions or flawed understanding.

During a planned-for-interaction assessment, a teacher may identify areas in the lesson plan to stop and assess understanding using response cards, one-sentence summaries, or purposeful questioning. This requires the teacher to plan questions ahead of time to be posed strategically throughout the lesson and the unit. The in-class questions as well as the delivery of the questions (using wait time to allow students appropriate time to think and respond) are key to advancing student learning.[5]

Finally, formal embedded-in-the-curriculum formative assessments may be administered every few lessons to determine student progress on sub-goals needed to meet the goals of the unit. For example, a teacher might administer a quiz that isn't factored into students' averages but is used to determine groupings or inform review for a summative assessment. These activities provide opportunities to teach to the students' areas of need.[6] In addition, formative assessment should provide opportunities for students to gain experience with and skills for self- and peer-evaluation. By setting clear learning targets and criteria for success, and providing multiple, low-stakes opportunities for assessment, teachers can help students become more independent, self-regulated learners.

Imagine a middle school writing class in which the teacher, unskilled in the strategies of formative assessment, is working to get her students to write informational essays with proficiency. She gives the assignment, which requires students to write an essay on an informational topic of their choice, sets a deadline, and provides work time in class and as homework. A few days or weeks later, the students

turn in their essays and the teacher grades and returns them. Work has been done, but has learning taken place? Have the students' writing skills been developed or just measured?

Now consider the same objective in the classroom of a teacher who has been trained in the formative assessment process. The teacher might begin with the same assignment. However, she also shows the students an exemplary essay, pointing out its features, and takes time to discuss what makes it a strong piece of work. Then, she has the class help create the rubric on which their essays will be scored. These activities clarify for students the *criteria for success*—what they need to incorporate in their writing in order to score highly. After writing their thesis statements and outlines, students are required to score each other's work and provide commentary on areas for improvement. During in-class writing time, the teacher conferences with students and asks them to assess their pieces against the rubric. After making careful observations to *identify gaps in learning*, she convenes strategy groups of students who are all struggling with the same concept, such as thesis sentences or paragraphing. This targeted intervention assists those who need it without slowing down those who don't. When rough drafts are submitted, the teacher provides *descriptive feedback*, which the students may use to revise their final draft. In the second scenario, students are required to be more engaged in and reflective about the writing process. The teacher assumes the role of a coach, assessing and guiding students during the writing process, not simply evaluating after the writing has been completed.

Formative assessment, in all forms, enables teachers to extract prior knowledge, identify concepts that students struggle with, and tailor instruction to meet the unique needs of a particular group of students. It enables students to strategically reflect upon their learning and become more aware of what they need

to do to progress. Because it requires full participation of students and leads to more personalized, responsive teaching, formative assessment is a powerful tool for raising student achievement.

Interim Assessment: *Assessments administered during instruction that are designed to evaluate students' knowledge and skills relative to a specific set of goals to inform decisions in the classroom and beyond.*

As the name suggests, interim assessments fall between formative and summative assessments. They are typically administered every 6 to 8 weeks at the school or LEA level. Their purposes may include predicting a student's ability to succeed on a large-scale summative assessment, evaluating a particular educational program or pedagogy, or diagnosing gaps in students' learning.[7] As with any quality assessment, the specific interim assessment used is driven by the purpose and intended use of the data, but the results of an interim assessment must be reported in a manner that allows for aggregating across students, occasions, or concepts.[8] For example, LEAs might administer interim assessments to all the Algebra II classes in its high schools, half of which are using a new piece of technology, in order to evaluate the effectiveness of that tool. An LEA might administer interim reading assessments in order to identify or verify students for Personal Literacy Plans (PLPs). Or, in implementing RTI, an LEA may use interim assessments for progress monitoring, which may be administered at more frequent intervals, depending upon the intensity of the instruction or intervention. Many common assessments can be used as interims, including the Group Reading Assessment and Diagnostic Evaluation (GRADE) and the Developmental Reading Assessment (DRA), as well as quick tools, such as curriculum-based measurements.

Given their various purposes, interim assessments may be used both to inform instruction and to measure and document what has been learned.[9] Like formative assessments, interim assessments should inform classroom practice, though not with the same frequency and immediacy. Similarly, like summative assessments, interim assessments can be used for accountability purposes, though they don't typically carry the same high-stakes weighting. Interim assessments can be administered at the classroom level to track individual student progress. Common school or LEA interim assessments allow for comparisons across classrooms or schools. As a result, the line between interim and summative and interim and formative is not as distinct as the line between summative and formative.

In sum, each type of assessment has a role in a comprehensive assessment system. The goal is not to have "some" or "enough" of each type; rather it is to understand that each type of assessment has a purpose and, when used effectively, can provide important information to further student learning.

IV. Developing and Selecting Assessments

LEAs will not need to build a comprehensive assessment system from scratch. Rather, the process is one of revising the current system to make it more comprehensive and efficient. This involves identifying data needs, analyzing the quality of available assessments, and considering the capacity of the LEA to create, administer, score, and report on assessments. Once appropriate assessments are chosen, LEAs should document their comprehensive assessment systems and carefully review them for gaps and

redundancies. Note that in the case of formative assessment, LEAs should identify the formative assessment practices that are widely used among their teachers. Documentation may include the formative assessment training that has been provided to teachers, the LEA's process for systematically implementing formative assessment strategies, and protocols for observing the use of formative assessment practices and sharing best practices/exemplars.

Consider Needs: Purpose, Alignment, and Form

Building or refining a comprehensive assessment system begins by agreeing upon the purposes of the assessments the LEA will administer. Decision-makers must first ask: "What claims do we want to make about student learning?", "What do we want to learn about students' skills and knowledge?" and "What data do we need?" Once claims and needs are identified, the appropriate assessments are selected to fulfill those data needs by asking: "Which assessment best serves our purpose?" Therefore, the LEA should not be concerned with having a sufficient number of each type of assessment but should select assessments that deliver the needed data for the intended purpose.

Consider Purpose First: Example 1

A 3rd grade teacher who wants to assess the reading skills and strategies a student uses for the purpose of informing instruction might administer a Record of Reading Behaviors.

Consider Purpose First: Example 2

A 7th grade mathematics teacher wants to know if any of his students may be in need of Tier 2 or Tier 3 interventions for mathematics computational skills. He administers the AIMSweb probes for computation and concepts and applications throughout the year.

In addition to considering what purpose an assessment will serve, attention must be paid to the alignment of the assessment with the curriculum and instruction within the school or LEA. The Board of Regents adopted the Common Core State Standards on July 1, 2010. As a result, LEAs will align their curriculum and assessments with these comprehensive standards for college and career readiness. Assessments that are not adequately aligned with what is taught are not accurate indicators of student learning. This is especially important when assessment data are used in high-stakes decision-making, such as student promotion, graduation, or educator evaluation. Because every assessment has its limitations and it is difficult to prove that any assessment is perfectly aligned with standards, it is preferable to use multiple measures when data are used in high-stakes decisions. By collecting a body of evidence, which hopefully indicates an overall conclusion, one can feel more confident in inferences drawn from such data. When curriculum, instruction, and assessment are carefully aligned and working together, student learning is maximized.

Assessment

Curriculum ⟷ Instruction
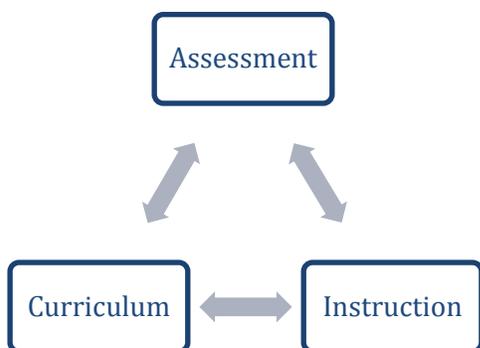
Finally, when developing or selecting assessments, knowing whether an assessment is a good fit for your needs requires a basic understanding of item types and assessment methods and their respective

features, advantages, and disadvantages. Though this is certainly not an exhaustive list, a few of the most common item types and assessments methods are outlined here.

Selected Response – Selected response items present a question and a list of possible answers that a student can choose from. These can take the form of multiple choice questions, true/false questions, or matching questions. Selected response items often contain distractors, which are plausible incorrect answers intended to obscure the correct answer. They are generally used to assess recall knowledge and for questions for which it is easy to identify one correct answer. This item type can sometimes be used to assess higher-order thinking skills, though writing selected response items for this purpose is much more difficult.

Advantages: They allow for quick, inexpensive, and objective scoring. Because they usually take less time for students to complete, an assessment can contain a much higher number of these items than other item types, which increases the validity (see p. 14 for more information about validity) of inferences made on their basis.

Disadvantages: By definition, selected response items are fairly limited in form. Because the response options are provided, students' memories may be triggered, making it more difficult to accurately assess their knowledge and determine if they are able to generate authentic representations of learning.

Constructed Response – Constructed response items are open-ended questions that require students to produce a written response to a prompt or question. It may involve fill-in-the-blank, a short written paragraph, an extended response, working out a problem, or some other short, written activity.

Constructed response items are typically scored using a rubric or on a scale ranging from no credit to partial credit to full credit.

Advantages: Students must recall or produce a response without being prompted or reminded by options. Constructed response items are considered a more "authentic" assessment of certain skills, particularly writing.

Disadvantages: Constructed response items are more difficult to score because students can answer them in innumerable ways, usually necessitating human scoring. This makes scoring more time-consuming, expensive, and potentially open to subjectivity in the absence of strong scoring guides. Additionally, because these items usually take longer for students to complete, assessments usually contain fewer constructed response items, decreasing the validity of inferences made on their basis. Finally, because constructed response items typically require a written response, these items can conflate the skills being assessed. For example, a student's ability to express his understanding of the causes of the American Revolution may be limited by his ability to organize ideas in writing or express himself clearly in written English.

Selected response and constructed response items make up the majority of item types found on both locally developed and standardized assessments. On traditional assessments, either paper-and-pencil or computer-based, students answer the same core set of items (though they may appear in different forms) and their score is calculated based on the number of points earned out of the total number of possible points. On **computer-adaptive assessments** the items presented to a student are dependent upon his or her previous responses. For example, if a student consistently answers items

correctly, the computer-adaptive program will select progressively more difficult items for that student. If the student answers incorrectly, the computer will select and present a less difficult item. The score is calculated automatically as the student completes the assessment. Computer-adaptive assessments might also contain a small number of constructed response items, which are either scored automatically by the computer or scored separately by human scorers and added into the overall score at a later time. In most cases, the overall score is calculated and ready to be reported by the time the student completes the assessment.

Performance Tasks – These are items or assessments that require students to apply their understanding to complete a demonstration, performance, or product that can be judged on clear performance criteria. For example, an essay might be considered a performance task if the skill being assessed is essay writing. However, an extended response on how to measure pH levels would not be a performance task if the skill being assessed is the ability to measure pH levels. In that case, having students use lab equipment to *actually measure* the pH levels of different substances may be considered a performance task. Strong performance tasks require students to apply and demonstrate their understanding, knowledge, skill, or ability. Performance tasks are often included as one type of assessment in portfolios and exhibitions, such as those used as part of Rhode Island's Proficiency Based Graduation Requirements. They could also be used as one type of evidence of progress or mastery for Student Learning Objectives, as part of the Rhode Island Model for Educator Evaluation.

Advantages: Because of their broad range of forms and contexts, performance tasks allow for richer, more "authentic" assessment of skills. In addition, depending upon the quality of the performance task, they can require higher-order

thinking and the application of multiple skills. Strong performance tasks require students to *apply* their understanding.

Disadvantages: Given their formats, forms, and contexts, performance tasks can be difficult and expensive to develop and score. They usually require human scorers. Ensuring consistency in the evaluation of performance tasks requires training of scorers. Performance tasks can be difficult to administer in a controlled and consistent manner. As they often require significantly more time than other item types, assessments usually only include one or a small number of performance tasks. This decreases the validity of the inferences made on their basis. Additionally, performance tasks can also conflate the skills being assessed. For example, a laboratory experiment designed to assess students' understanding of how energy is transferred may also assess students' ability to properly use laboratory equipment.

Observations/Interviews – This form of assessment includes actually watching students perform a task in order to determine if they are able to do it properly or having a formalized discussion with a student about the knowledge or skill being assessed. Observations and interviews are commonly used in early childhood education and as alternate assessments when students have difficulty expressing their knowledge or understanding on a written assessment.

Advantages: Observations and interviews are considered authentic assessments because they allow students to demonstrate their knowledge/understanding/skill firsthand and in a natural setting.

Disadvantages: This assessment method is very time-consuming and, therefore, can be very

expensive to use and score. For this reason, it is often difficult to conduct more than a few of observations/interviews per student. This limits the validity of inferences drawn on their basis. In addition, observers and interviewers must be trained to know what to look for, how to avoid influencing the child during the assessment, and how to score consistently.

Consider Quality: Validity, Reliability, & Fairness

LEAs have discretion in deciding which assessments to use to meet their various needs. However, they should always seek to create or purchase assessments of high quality. Assessments of poor quality are of limited utility as the information they produce does not represent student learning well enough to properly inform decision-makers about the changes that are needed. There are three major indicators of assessment quality: validity, reliability, and fairness.

Validity refers to the accuracy of inferences drawn from an assessment, or the degree to which the assessment measures what it is supposed to measure. Valid interpretations provide an accurate picture of what students know, understand, and are able to do at different levels of application and understanding (i.e., cognitive complexity). How do you determine if the interpretation of a particular assessment is valid? Because validity is closely tied to the purpose or use of an assessment, the appropriate question is not "Is this assessment valid?" but "Is the interpretation of this assessment valid *for my purpose*?" For example, if a student's weight is 100 pounds, and the nurse's scale indicates that the student weighs 100 pounds, the scale has provided a valid assessment of the student's weight. However, it would not be valid to interpret this as an assessment of the student's height.

As described in the *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 1999)

below, the process of validation requires the collection of various sources of evidence:

> Validity refers to the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests. Validity is, therefore, the most fundamental consideration in developing and evaluating a test. The process of validation involves accumulating evidence to provide a sound scientific basis for the proposed score interpretations. It is the interpretations of test scores required by proposed uses that are evaluated, not the test itself. When the tests are used or interpreted in more than one way, each intended interpretation must be validated (p. 9).

It is also helpful to have a basic understanding of various types of validity, including *construct validity*, *concurrent validity*, and *predictive validity*.

Every assessment is designed to measure something. For interpretations of an assessment to have c*onstruct validity*, the assessment must actually measure what it is designed to measure and not contain features that would convolute interpretations. For example, a teacher finishes a unit on multi-digit multiplication and he wants to assess his students' understanding of said skill. He needs to administer an assessment that truly measures students' understanding of how to do multi-digit multiplication, not their understanding of multi-digit addition *or* their ability to memorize common multi-digit multiplication problems.

Construct validity depends not only on alignment to content but also on the level of cognitive demand. Assessments must ask students to engage in the content at different levels of understanding, depending on where they are in their learning. When students are learning a new concept or skill, an assessment should be of a sufficient cognitive demand to allow them to demonstrate where they

are and then require them to apply those concepts at increasing levels of complexity.

There are many frameworks for measuring cognitive demand. This document refers to Webb's Depth of Knowledge Framework (2002), which outlines four levels of cognitive demand that are applicable to all content levels:

1. Level 1 is Recall and is characterized by simple retelling or recitation of facts or a procedure.
2. Level 2 is Skill/Concept and necessitates some type of decision-making. The response to a prompt will not be automatic and will require more than one step for the student to arrive at the answer.
3. Level 3 is Strategic Thinking. This is where reasoning becomes more complex and demanding. Tasks of this variety require greater planning, abstraction, evidence, and justification from the student. A student engaged in Level 3 is often required to form a hypothesis or conjecture.
4. Level 4 is Extended Thinking and manifests itself in tasks that require an extended period of time utilizing complex thinking and planning. Level 4 tasks compel students to make connections within a discipline and/or to other disciplines. More than likely, there are multiple solutions to a problem and multiple pathways for attaining a solution. Level 4 tasks are not typically found in large-scale assessments as they usually require multiple days of thought and consideration by the student. Students should be applying what they know to new situations to come up with complex answers and justifications.

It is important to note that Depth of Knowledge levels are not discrete but rather they are on a continuum. For this reason, it is important to

discuss test items and be familiar with DOK levels in order to ensure that students apply their skills and knowledge in the ways that encourage creativity, proficiency, and independence. Furthermore, DOK levels do not necessarily involve steps to solving a problem but rather how the students are being asked to apply their skills and knowledge. So while multi-digit multiplication involves more than one step, it is not necessarily a level 2 DOK because students are still applying a procedure.

Concurrent validity is an indicator of how well an assessment correlates with other assessments that measure the same skill/content. For example, a student who scored highly on the AP Biology exam is expected to also score highly on the SAT II Biology Subject Test. In the aforementioned mathematics teacher example, if the data from the multi-digit multiplication test were similar to the LEA interim assessment on multi-digit multiplication administered one week later, the teacher can assume that concurrent validity has been established.

On the other hand, consider a scenario in which an LEA has purchased a reading fluency intervention program and its accompanying assessments. That LEA needs to ensure that concurrent validity exists among program assessments by using multiple measures. If students who receive the intervention show increased scores on both the program-supplied assessment and on other measures of reading fluency, the LEA might infer that the program is effective for improving reading fluency and that interpretations based on program-supplied assessments are valid. However, if the students show improved scores on the program-supplied assessment but not on other measures of reading fluency, the program-supplied assessment might not be a valid measure of student reading fluency or the fluency intervention program might not be sound.

This example underscores the importance of using multiple sources of data, when possible.

Predictive validity is an indicator of how accurately an assessment can predict performance on a future assessment. For example, college admissions officers use SAT scores to predict how a student will perform in college. If the mathematics teacher's multi-digit multiplication test data are highly correlated with students' scores on the end-of-the-year mathematics assessment, which is heavily based on multi-digit multiplication, it can be inferred that predictive validity has been established.

An assessment that is highly reliable is not necessarily valid. However, for an assessment to be valid, it must also be reliable.

Reliability refers to the consistency of an assessment. A reliable assessment provides a consistent picture of what students know, understand, and are able to do. For example, if the nurse's scale reports that a student weighs 100 pounds every time he steps on it, that scale provides a reliable assessment of the student's weight. If his true weight is 104 pounds, however, the scale does not provide an accurate assessment of his weight.

Understanding reliability measures in large scale or purchased assessments and programs is important. It is also important to note that reliability measures will be available for the stated purpose of the test, not for any imagined or alternative purpose. This is another reason why it is important to use the programs and assessments for their stated purposes and be wary of alternative uses.

Determining reliability in teacher-developed assessments is a little more difficult given the small scale of the administration and the multiple purposes of assessments. It is useful to compare the results of a teacher-developed assessment with other assessment results. Did the students who are doing poorly on other assessments and classroom work pass this test? Did generally high-performing students do poorly on the test? If the test results indicate that struggling students are doing well, then the test is probably not reliable. This is one instance where gathering multiple sets of data is useful. It can help teachers evaluate the effectiveness of their own assessments.

How do you know if an assessment is reliable? A reliable assessment should yield similar results for the same student if administered more than once. All commercially available assessments should provide reliability information within their technical manuals. Reliability information can be reported in different ways, including, but not limited to, standard errors of measurement, confidence intervals, reliability coefficients, generalizability coefficients, and/or IRT-based (Item Response Theory) test-information curves.[10] Ideally, assessment should have high reliability and generalizability coeffiecients, low standard errors, and small confidence intervals. For IRT-based test-information curves, the test information (i.e., a numerical value indicating the precision of measurement) should be high at cut scores (e.g., between below proficient and proficient).

How reliable does an assessment need to be? The answer depends on the

purpose of the assessment. When data are used to make high-stakes decisions (regarding student promotion, graduation, or educator evaluation, for example), they need to be highly reliable, in addition to being valid. Teachers, students, and parents need to feel confident that the assessments results are an honest representation of what students know and are able to do.

To understand how validity and reliability are linked, consider the target analogy. The center of the target is what you are trying to measure (student learning). Imagine that each dot on the target represents one measure of student learning. If the inferences based on that assessment are perfectly valid, the center of the target would be consistently hit, as in Figure 1. If the inferences are not valid, the dots would miss the center. If each of the dots hits the target at about the same spot, the assessment is reliable. However, as Figure 2 illustrates, a reliable assessment is not necessarily valid. The goal is to administer assessments that accurately reflect student learning (hitting the center of the target) and produce consistent data (dots are closely grouped). [11]

Figure 1

Both Reliable
And Valid

Figure 2

Reliable,
Not Valid

Figure 3

Neither Reliable
Nor Valid
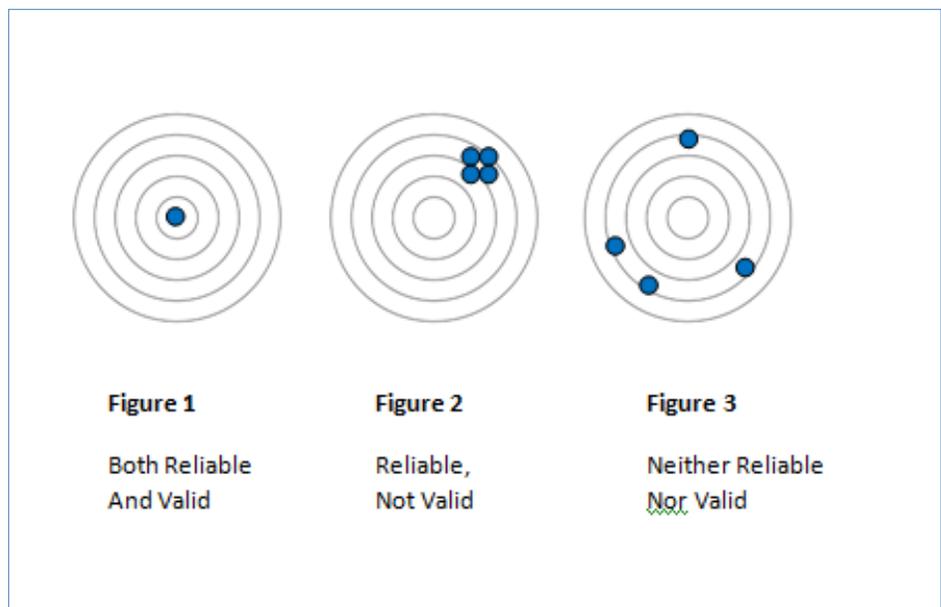
Fairness entails a lack of bias, the accessibility of the assessment, and the equity with which the assessment is administered.[12] A fair assessment is one that distinguishes only between students on the basis of the skills or content being measured. Therefore, on an unbiased assessment, a student will not have an advantage or disadvantage based on cultural background or gender. In designing an assessment, it is critical to not include terminology or examples that favor the background knowledge or experience of one group of students over another.

Accessibility refers to the ability of all students to participate in the assessment and may be ensured by offering assessments in various modalities (Braille, oral) and languages. If accessibility is not considered, an assessment of a non-native English speaker's content knowledge may be highly influenced by his or her language skills. Nonetheless, an assessment administered with accommodations must still measure the construct it is designed to measure. For example, it might be appropriate to provide a scribe to type a student's response on a final exam in American history, but it would not be appropriate to provide a scribe to type a student's final exam in typing.

Equity of test administration means that all students took the assessment under equitable conditions that were appropriate to produce the best working environment for the student (i.e., they were allowed the appropriate amount of time, they were provided with the materials they needed, they took the assessment under appropriate testing conditions). Ensuring equitable test administration may require the use of alternative ways to administer the test and/or the use of tools that enable students to engage in the test content.

The New England Common Assessment Program (NECAP) Accommodations Guide states:

Test accommodations are changes in setting, timing (including scheduling), presentation format, or response format that do not alter in any significant way what the test measures, or the comparability of the results. When used properly, appropriate test accommodations remove barriers to participation in the assessment and provide students with diverse learning needs an equitable opportunity to demonstrate their knowledge and skills (p.14).

Accommodations may include small group testing to reduce distractions, Braille or large-print materials, extended time, or access to a word processor. Conversely, assessment *modifications* may include focusing the assessment on some standards (versus all), reducing the complexity of a performance task (i.e., eliminating steps), or using alternative scoring rubrics. Accommodations are typically an adjustment in *how* a student is assessed while modifications are an adjustment in *what* is assessed. Modifications should be used only when available accommodations have been used and the assessment is still prohibitive.

The decision of what, if any, accommodations and/or modifications to use depends on the purpose of the assessment. For example, if the purpose is to screen/identify or to measure outcomes, the same assessment must be administered to all students in order to meaningfully compare the data. However, if the purpose is solely to inform instruction, a modification might be useful in order to assess a particular student's appropriate level of instruction.

Ensuring equity of administration also requires LEAs to consider the security and implementation schedule of their assessments. They must establish procedures for how teachers and other test administrators receive and return their materials, so as to standardize access to the materials and protect the comparability of results.

Some assessments, such as the Northwest Evaluation Association (NWEA), require careful planning to reserve computer lab space and produce alternate schedules. For LEA-wide assessments, common schedules should be articulated to ensure that differences in data reflect differences in student achievement, not differences in access to the test.

Similarly, an established procedure for moving from a screening assessment to a diagnostic or identification assessment should be in place within an LEA. Without one, schools may have dramatically different steps and timeframes for administering the assessments, therefore rendering the results less comparable across schools.

LEAs should make every effort to ensure that the assessments their students encounter are valid, reliable, and fair, particularly for high-stakes testing and decision-making. When common or highly validated assessments are not available, multiple measures must be used. For example, a teacher may not have a common assessment to measure a Student Learning Objective. In this case, the teacher should use more than one measure of student learning. By triangulating data sources, the teacher can determine if each measure is reporting the same or similar results, therefore allowing for more confidence in the validity of the inferences.

Formative assessments should also be held to high standards of validity, reliability, and fairness. They are not typically subjected to external validation but can be validated by multiple measures. Generally, however, the best way to ensure quality formative assessment is to provide comprehensive training to teachers in formative assessment strategies and techniques and conduct regular observations to ensure that they are utilizing them properly.

Table 2: Ensuring validity, reliability, fairness

Purpose:	To inform instruction	To screen/diagnose/ascertain outcomes
Validity	Ask questions based on taught curricula Ask questions in various modes (paper and pencil, orally, in groups) Allow students to demonstrate knowledge/skills in multiple ways Ask questions at varying Depth of Knowledge levels	Ensure alignment with standards Ensure a variety of Depth of Knowledge levels Ensure a variety of item types (multiple-choice, constructed response) Ensure accurate test delivery Ensure high correlation with outcome variable
Reliability	Ask the same question more than once (to a different student, to the same student at a later time) or in different ways Ask questions randomly/call on students who have not raised their hands	Review rubrics to ensure alignment and clarity Review internal consistency of assessment (Published in technical reports) Review scorer reliability, when necessary
Fairness	Provide multiple ways for students to demonstrate what they know Expect participation from 100% of students	Ensure equitable testing conditions (time, materials, tools, conditions) Provide appropriate accommodations Ensure items have been reviewed for potential bias (statistically and/or via bias committees)

Note: This is a sample of strategies, not an exhaustive list.

Consider Capacity: Administration, Scoring, & Reporting

The purpose and quality of an assessment are not the only considerations when building a comprehensive assessment system. An assessment might be perfectly suited to an LEA's purpose and of the highest quality and still not be an appropriate addition to the comprehensive assessment system. Decision-makers must also consider the professional development, funding, and personnel capacity necessary and available to appropriately administer, score, and interpret the results.

For example, in order to administer an assessment in a valid and reliable manner, appropriate procedures must be followed. Thus, LEAs should ask: "Do we have the technological capacity to properly administer this assessment?" and "What support will teachers need to use the data effectively?" This may include ongoing professional development to develop and administer assessments or to administer commercially developed assessments. Additionally, data that are reported in a manner that teachers cannot understand or interpret are ultimately not useful. LEAs, therefore, must provide assessment literacy professional development to teachers on how to interpret the score reports and act upon the data. Assessments that require computer administration or teacher scoring may necessitate additional training and will certainly require an investment of time and funding. These considerations are mentioned to promote discussion and careful thought, not to discourage the use of assessments that require significant time, resources, or training. Assessments should not be chosen on the basis that they are inexpensive, quick, and easy to administer, score, and report. However, an assessment that is not (or cannot be) used properly is probably not the best use of LEA resources or students' time.

V. Interpreting and Communicating Data

Administering a rich repertoire of appropriate assessments generates meaningful data for schools and LEAs—but it cannot be the end of the story. In order to truly have a comprehensive assessment system, LEAs need to close the loop by effectively *using* the data their assessments generate. To do so, it is critical that teachers, students, school administrators, parents, and LEA administrators have a level of assessment literacy that enables each group to communicate and understand the information disseminated from assessments commensurate with their roles and responsibilities. Each group must understand what the various types of scores mean and how to properly interpret them. They must understand what the data show and, just as important, what the data do not show. LEAs must also consider how they are converting data into actionable information and then communicating this information in a manner that makes it not only available, but also salient and accessible to a variety of stakeholders.

Interpreting Scores & Scales

In order to properly interpret assessment data produced by a comprehensive assessment system, it is necessary to have a basic understanding of common score types and scales. Knowing what these scores and scales are—and are not—will limit misunderstanding and misuse of assessment data.

A common source of confusion is the difference between criterion-referenced assessments and norm-referenced assessments. **Criterion-referenced assessments** measure a student's level of mastery on a set of criteria such as the Rhode Island state standards on the NECAP or WIDA standards on the ACCESS. **Norm-referenced assessments** compare a student's performance with the performance of a group. Percentile rank scores are used exclusively with norm-referenced

assessments. Raw and scaled scores are used for both norm-referenced and criterion-referenced assessments.

Raw scores are the most straightforward type of score. They typically represent the number of multiple-choice or short-answer items that a student answered correctly, plus any additional points earned on extended-response questions (if available). Raw scores are often converted to derived scores, which allow for easier comparison and interpretation. Common types of derived scores include scaled scores, percentile rankings, and grade-equivalent scores.

Scaled scores convert raw scores into scores on a different scale. For example, students' NECAP scores are converted from a raw score on the test (the number answered correctly out of the total number of items on the test) into a score on the 80-point NECAP scale. This allows for comparisons between the tests across years, subject areas, and grade levels.

Cut scores are those scores at which score categories are divided (e.g., the point at which Proficient scores are separated from Proficient with Distinction scores). Typically, cut scores are represented as scaled scores. For example, the NECAP cut score between Partially Proficient and Proficient is 40 for all tested grades and subjects.

Percentile rankings are generally easy to understand and communicate to various stakeholders such as parents and students. A percentile score is measured on a 100-point scale. A student's performance is typically measured in relation to a norm group—a sample of the intended audience of the assessment that represents the demographic composition of the larger population. Large-scale assessments use norm groups to control for slight variation from administration to

administration. A percentile score represents the percentage of students scoring at or below the student's raw score. For example, a raw score of 120 that converts to a percentile ranking of 64 would indicate that 64% of students in that normative group scored equal to or less than 120.

Grade-equivalent scores are another type of derived score. They are most commonly used at the elementary level and are expressed in terms of the grade level and the month of the academic year. For example, a score of 3.6 would indicate the sixth month of grade 3. These scores are often misunderstood as the grade level work that a student is capable of completing. That is not an accurate interpretation of this type of score. Consider, for example, a fifth grade student who receives the following grade equivalent scores.

Mathematics   5.4

Reading   8.1

Many people misunderstand this data to mean that this student is reading at an 8th grade level. The score actually indicates that the student read the test as quickly as, and made as few errors as, an average 8th grader in his or her first month of school might have on the 5th grade test. It cannot be inferred that he or she can read 8th grade texts because he or she has not been tested on 8th grade material.

Stanine scores (short for standard nine) are based on a scale of 1 to 9. Typically, a stanine score of 1, 2, or 3 indicates below-average performance, a score of 4, 5, or 6 indicates average performance, and a score of 7, 8, or 9 indicates above-average performance, as compared with other students who took the test.

Normal Curve Equivalent (NCE) scores indicate where a student falls along a normal curve using a scale of 1-99. The benefits of using NCEs is that

under certain conditions (normally distributed populations, nationally representative norming groups) NCEs are based on an equal-interval scale and, therefore, can be averaged and used to compare student achievement from year to year. For example, in a normally distributed population, if a student made exactly one year of gains, his or her NCE score would remain the same and their NCE gain would be zero (though they *have* progressed). A student with a net loss in NCE score has made less progress on the skills/content assessed than the general population, while a student with a net gain in NCE score has made more. Caution should be taken when comparing NCE results from different assessments. If a student receives an NCE score of 40 on a reading test and an NCE score of 30 on a mathematics test, it does *not* necessarily mean that the student is doing better in reading than in mathematics. The scores represent different content areas that have been assessed in different ways and are therefore not comparable.

Standard scores (z-scores or t-scores) also allow for comparison between various assessments because they are "standardized" to the same numerical scale. The scores represent raw scores converted to standard scores, which indicate how far above or below the average (i.e., mean) an individual score falls when using a common scale such as a t-scale with a mean of 50 and standard deviation of 10.

Though the aforementioned score types are the most commonly reported by commercial assessments, this is certainly not an exhaustive list. The important take away from this section is that whenever educators use a type of score to make programmatic or instructional decisions, they should have a solid, common, and *accurate* understanding of what those scores represent and how they are intended to be used.

Another common confusion stems from interpreting data based on ordinal scales and interval scales. On an **ordinal scale**, numbers are ordered such that higher numbers represent higher values, but the intervals between the numbers on the scale are not necessarily equal. For example, consider the Fountas & Pinnell reading level scale, which identifies 26 reading levels labeled with letters of the alphabet. A student reading at a level E is certainly a stronger reader than one reading at a level C. However, we cannot accurately quantify the differential between these two readers because we cannot know that the difference between a level C text and a level D text is the same as the difference between a level D text and a level E text. Other examples of ordinal scales are ranks and percentile scores. Because the intervals between the numbers on an ordinal scale are not necessarily equal, it is inappropriate to calculate averages or subtract scores with ordinal scales. However, in practice this misuse of ordinal-scale data occurs often.

On an **equal-interval scale**, the difference between any two consecutive points on the scale is always the same, as on a thermometer (the difference between 14°and 15° is the same as the difference between 15° and 16°). This type of scale allows for more manipulation of data, such as subtracting scores to calculate differences and calculating averages. Common examples of interval scales include the NECAP and SAT. One limitation of this and ordinal-scale data is that these scales do not have a "true" zero point; rather zero points are arbitrarily set (0°F does not actually represent the absence of temperature). Therefore it is not possible to make statements about how many times higher one value or score is than another (it is not valid to say that 50°F is twice warm as 25°F). These types of comparisons can only be made using a **ratio scale**, such as the Kelvin scale of temperature, which are uncommon in educational testing. It is important to understand the type of score and scale being used

before attempting to calculate averages or otherwise manipulate or graph data. One way to do so is by considering the following:

Are the data simply ordered from highest to lowest, or do increases (or decreases) in the scale represent equal intervals? An affirmative answer to the former statement would indicate an ordinal scale, while an affirmative answer to the latter would indicate an interval scale.

A **vertical scale** is one that allows a student's score in one grade to be compared with his or her scaled score in another grade (provided the scores are in the same language and subject). In order to allow for this, the assessment contains spiraled content from the previous grade's assessment. The ACCESS test for English Learners is an example of an assessment that uses a vertical scale. It is important to note that the NECAP does *not* have a vertical scale. It may appear, for example, that the fourth grade scale (which ranges from 400-480) is a continuation of the third grade scale (which ranges from 300-380), but it is not. The grade level included as the first digit of the score is for informational and organizational purposes only. Therefore, it is *not* appropriate to calculate a growth score, for example, by subtracting a student's third grade NECAP score from their fourth grade NECAP score. However, growth scores can be calculated on assessments, like the NECAP, that are not vertically scaled using other methods like those used in the Rhode Island Growth Model[†].

Of course, only a portion of the assessments administered LEA-wide use these types of standardized scores and scales. LEAs should also consider what types of scores and scales are used on

local assessments and other measures of student learning, such as grades. For example, does the LEA have a grading policy that requires the use of a common scale? Are grades allowed to be curved and, are therefore, norm-referenced? Are there guidelines available to direct teachers as to what distinguishes a B- from a C+? When using local assessments that do not have standardized scores and scales, it is important to think about and discuss issues such as what qualifies as proficient and what the cut scores are between letter grades. In addition, LEAs should examine the consistency of policies for allowable accommodations and modifications, as inconsistencies may limit the degree to which scores can be compared across classrooms and schools. These discussions lead to common understandings and, ultimately, more appropriate interpretation and use of assessment data.

**Considerations for
Non-Standardized Assessments:**

- **What are the cut points between letter grades?**

- **Is there a common grading scale in the LEA?**

- **Is the common grading scale adhered to consistently?**

- **Is there a policy for accommodations and modifications?**

- **What is the cut score for proficiency?**

Understanding the Limitations of Data

Data-informed decision making has become a best practice among educators. Allowing data to guide the allocation of resources leads to a more strategic use of funds and more targeted interventions. However, while data provide a wealth of important

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[†] The Rhode Island Growth Model is one measure of student learning in the Rhode Island Model for Educator Evaluation. For more information on the model, please visit http://www.ride.ri.gov/assessment/RIGM.aspx

information, it is critical that decision-makers are clear about its limitations.

State assessment results, likely to be many LEAs' largest data set, are very useful for providing descriptive information on students' performance and identifying general areas of improvement or need. For example, when the results signal an improvement, they can be used as one indicator that a new reading curriculum is having a positive effect. When the results signal a need, they can be used as part of the basis for a decision to reallocate a coach from one school to another. However, results on a single state assessment should not be used to make programmatic, curricular, or instructional decisions; rather a body of evidence should be used from various sources to mitigate some of the limitations of educational assessment. By triangulating data sources, educators either gain confidence in the interpretations of the data or have reason to question the significance of any one piece.

At its core, educational assessment is about making inferences concerning students' knowledge, skills, and accomplishments. Yet educational assessment is limited because data are never completely comprehensive or unequivocal. In fact, educational assessments represent just a sampling of items measuring all possible aspects of a construct, such as mathematical ability. Thus, it is inappropriate to conclude that a student is or is not proficient in regard to a mathematics standard based on their performance on only a very small number of test items measuring that standard, for example. Such conclusions are only warranted using a body of evidence from a comprehensive assessment system.

Furthermore, as in any assessment situation, there is error in educational assessment due to various sources relating to the task at hand, the rater/scorer, or the occasion. These may include the characteristics of assessment itself (i.e., task) such as

ambiguous questions and confusing directions; rater characteristics such as inconsistent scoring or a weak adherence to the rubric; and student characteristics such as test anxiety, guessing, or mood on testing day.

Despite this inevitable uncertainty, we must interpret the data in order to reach accurate conclusions about students. This involves understanding what evidence the data provide. The same data can prove conclusive for some inferences about student performance, but barely suggestive for others. It is important to understand why certain data is being collected, and in turn, use this evidence to reach appropriate conclusions. Part of this process involves understanding the purpose that the assessment was designed to serve. Summative assessments are typically not designed to inform instruction. Formative assessments are not designed to measure outcomes for high-stakes decisions. LEA leadership must be clear about what data the assessment was designed to produce and ensure that they are using that data accordingly. When using assessments for a different purpose than that for which it was originally designed, it is important to validate the assessment for the new purpose.

Similarly, attention should be paid to the type of score that is being reported. Norm-referenced scores compare student performance against the performance of the norm group, not against the standards. This type of score might be very useful in some scenarios, but may not explicitly reveal a student's level of proficiency. Other types of scores do measure students' proficiency with specific standards or curricular domains. However, it is important to be aware of the number of items that are used to calculate any type of score. A low number of items might encourage the interpreter of the scores to be cautious as they likely do not represent the broad spectrum of the construct being measured, but rather a small sample.

Communicating Assessment Data

Assessment data needs to be analyzed and converted into usable, actionable information if it is to be used to inform decision making. In order to package the information in a way to maximize use, an LEA should consider the target audience, from teachers and administrators to parents, students, and community partners (such as after school tutoring programs). Different stakeholders may require different types of data in different formats (data briefs, score reports, report cards, etc.).

First, consider what is being reported. Perhaps parents are being excluded from the conversation because assessment data are not shared with them. Or, perhaps parents are being inundated with scores and reports that they do not understand and cannot interpret. It is the responsibility of the LEA to ensure that students and their families are receiving sufficient and clear communication about the assessment data that is collected and what it can and cannot tell them. LEAs should look critically at the reports that are distributed and reach out to parents to ask them if their needs are being met and if they understand what is being shared with them. If not, the LEA might consider hosting an information session about assessment data or simply including a "How to Read this Score Report" memo when the data are sent home.

Students, when old enough to properly understand, should be encouraged to look at their assessment data. If students understand the purposes for which they are being assessed, they may be more motivated to perform and more engaged in their learning. Educators and parents should help them to understand what the data say and what the limitations of that data are. The goal is to equip all parties with the available information to lead to the best questions, the richest discussions, and the most appropriate decisions.

VI. Suggested Next Steps

Establishing an assessment system that monitors the academic achievement of students from Pre-Kindergarten through Grade 12 and produces actionable information to inform the learning process will take time. Not only must it provide all of the necessary information, but it must be of high quality and function smoothly. Revisions will be needed as curricula change, student learning improves, or new data needs arise. Certainly, this process requires a significant investment of time, energy, and resources. However, investing in a comprehensive assessment system will promote efficiency and produce programs that are tailored to local needs and more effective for promoting student achievement.

The Steps of Evaluating an Assessment System

Step 1: Inventory the assessments used across the LEA, at all grades, for all purposes, and in all content areas. The Assessment Map documents (Appendix A) will help LEA teams gather information from across the LEA and present it in a format where it provides an overview of what assessments are being used for which purposes. These tools will highlight areas where LEAs are not collecting data where they should be, and areas where they are administering assessments that produce redundant data. This step may be organized by the LEA team in one of two ways: have the schools complete the inventory on their own and then aggregate the information at the LEA level or have the LEA team complete the table on behalf of the schools.

Step 2: The LEA assessment team discusses the populated maps to understand the number and purposes of the assessments being used. It is important to understand if the intent of the assessments and their application is understood across all of the schools using that assessment.

Step 3: Are the assessments being used for their intended purpose? To help LEAs more clearly understand the information better, below are key questions to ask of each other and the schools:

Purchased Assessments and Programs

1. Are the assessments listed being used for their intended purpose? For example: if a screening assessment is being used for progress monitoring, this may not be appropriate given the design of the test.
2. Are the assessments being used to the full extent possible? Why or why not? For example: many purchased programs have different types of assessments built into them that may or may not be useful for teachers. The vocabulary component of a reading assessment may not be as thorough as a different assessment or it may not serve a particular set of students adequately so an additional assessment may have been purchased or developed to augment or supplement that component.

LEA and Teacher-Developed Common Assessments (e.g., PBGR and common tasks)

1. Are these assessments being used at the appropriate curricular time during the school year?
2. Were assessments validated, benchmarked, and scored according to a standard protocol?
3. Are assessments being used by all teachers in the necessary grade/content area?
4. Do the assessments address the needs of students both at low and high levels of achievement?

Step 4: Now that the assessments have been identified and their purposes and uses are understood, it is important to ask questions about the number of assessments used in a given area. Are

there too many or two few in any area? Reading is a clear example as there are many purchased assessments available that address the various components of reading (see Appendix C) as well as RTI models. When determining whether or not there are redundancies, it is helpful to consider the finer points of the assessment design.

Purchased Assessments

1. What grade levels do the assessments serve? If there are two screening assessments used, each at different grades, does the information generated by the results "match" or "complement" the results from the first assessment? In other words, if reading assessment 1 provides a benchmark of reading comprehension that involves retelling, does reading assessment 2's benchmark of reading comprehension also involve a type of retelling? In this way, results may be complementary across assessments because they are measuring a skill or concept in a similar way. It is important to note that differences in assessments from one grade to another are necessary because of the depth of the skill being measured. It is important to have an understanding of *why* and *how* each assessment measures the content and skill in question. This ensures that results are used appropriately and avoids improper inferences.
2. It is important to talk with teachers about these assessments and programs to understand why the assessments are or are not needed and what they find valuable about each component.

LEA and Teacher Developed Common Assessments

1. Is there a particular strand or domain in a content area that has too many assessments developed for it?

2. Are there assessments across the various strands and domains that stretch high achieving and low achieving students appropriately?

3. Teacher-developed assessments and common tasks have a unique place in educational assessment in that they can be complex, dynamic, and incorporate many instructional strategies that other assessments cannot. The creativity employed by teachers in developing tasks and common assessments is wide; do enough common tasks incorporate various ways students work: with technology, research, self-direction, etc.

Step 5: Outline changes and alterations that need to be made and develop a timeline.

Step 6: Repeat Step 1. Assessments and the systems that use them should be constantly evolving. LEA and school staff should be continuously improving their assessment literacy skills so they can evaluate and discuss new developments in assessment. This ensures that everyone has a stake in gathering data that improve instruction and student learning and that cutting-edge research and assessment designs are used well and appropriately. Assessments are tools, not ends in themselves, and better, more accurate tools provide better data from which to make decisions.

The BEP only requires a comprehensive assessment system for the core content areas. However, LEAs should extend this work across all content areas. Such careful reflection and analysis leads to improved quality of assessment by encouraging alignment to state or national content standards, raising expectations for the assessment literacy of all content educators, and providing consistency in expectations and language across the curricula.

The second tool—Considerations for Interim and Summative Assessments (Appendix B)—provides a set of prompts to guide LEA leadership as they determine whether or not an assessment is a good match for their purpose, is of high quality, and fits within the LEA's capacity for administration, scoring, and reporting. This tool can be used to determine the appropriateness of an assessment that the LEA has been using or an assessment under consideration. The tool can be applied to assessments developed at the LEA level and those that are purchased. In addition to these two general tools, which can be used for any content area, you will also find a comprehensive Reading Needs Assessment Worksheet (Appendix C). This worksheet determines what assessments are being used and documents the reading assessment system within the LEA.

The data culled from of these tools provides a fairly complete picture of the assessment system currently in place within the LEA. As a result, LEAs should begin asking questions. What additional assessments appear to be necessary? What, if any, assessments are redundant and unnecessary? A good practice for evaluating the need for adjustments and revisions to the comprehensive assessment system is to ask if the needs of the LEA, schools, teachers, parents, and students are being met.

At the LEA level, are sufficient data available to analyze the academic achievement of subgroups? Can the LEA identify gaps between populations of students? Do the data allow for the identification of trends over time?

At the school level, are data available to analyze the effectiveness of programs and curriculums? Can school leaders use data to get a picture of what is going on in particular classrooms? Can they use data to track at-risk students? The best way to determine

if a school's data needs are being met is to ask leaders, either in face-to-face meetings or in surveys.

Similarly, LEAs should inquire as to whether teachers' data needs are being met. At the classroom level, do they have assessments for producing the data they want? Do they know how to read and interpret the data? Do they have the knowledge of how to use the data? LEAs should think deeply about the capacity of its educators to properly utilize the data produced by the assessment system. After all, if the data cannot be properly interpreted and utilized, the system will not wield a significant impact on student achievement. A crucial final step, therefore, is determining the professional development needs that exist within the LEA. Some areas of need may include interpreting multiple pieces of data, translating data into instruction, and communicating data to students and parents.

Finally, LEAs should ask families and students if they are satisfied with the amount and quality of the data that are being collected and communicated by the LEA. Do they have questions that aren't being answered or needs that aren't being met?

Ensuring a comprehensive assessment system at the LEA level is not a simple process. It must be artfully pieced together through collaboration, reflection, discussion, and analysis. It cannot be dashed together, hired, or purchased. It is RIDE's belief that the tools and considerations in this guidance help facilitate that process. Carefully thinking about the assessment system as a whole will promote alignment between standards and assessments. It will reduce redundancies, inefficiencies, gaps in data, and misuse of assessments. The result will be a comprehensive assessment system that yields meaningful data for educators who are equipped to utilize it to promote student achievement. RIDE believes that taking the steps outlined in this guidance to create comprehensive assessment systems across the state will move Rhode Island closer to the goal of college and career readiness for every student.

Appendix A

Assessment Maps

The Assessment Maps are two tools that can be used to inventory the assessments administered at each grade level in each content area across the LEA (see page 26 for more information about how to use the Assessment Maps). Note that the same assessment can be used for multiple purposes, as long as they are appropriate uses of that assessment.

The following is a list of assessments required by the Rhode Island Department of Elementary and Secondary Education, which should be included in your comprehensive assessment system, in addition to all summative and interim assessments administered in the LEA.

NECAP Reading, Writing, and Mathematics Grades 3-8, 11
Alternative Assessment   Grades 2-8, 10
Developmental Reading Assessment   Grades K, 1
NECAP Science Testing   Grades 4, 8, 11
WIDA ACCESS Placement Test (W-APT) Grades K-12
Assessing Comprehension and Communication in English State-to-State (ACCESS for ELLs®) Grades K-12
TechLiteracy Assessment Grade 8

The partially-populated maps below are included to illustrate the features of these tools. The map templates can be downloaded at
http://www.ride.ri.gov/Assessment/CAS.aspx

Assessment Map 1: Example

Grade Level	Type of Assessment	ELA / literacy	MATH / numeracy	SCIENCE	HISTORY/ SOCIAL STUDIES	WORLD LANGUAGE	ENGLISH LANGUAGE ACQUISITION
PK	Screeing/ diagnostic	Preschool Language Scale;Fluharty Speech and Language Screening; Early Screening Inventory; First Step Screening	Early Screening Inventory; First Step Screening		Ages and Stages Questionnaire - Social/Emotional (addresses social-emotional development which is PK focus in this content area)		
	Interim/ progress monitoring	Teaching Strategies GOLD	Teaching Strategies GOLD	Teaching Strategies GOLD	Teaching Strategies GOLD		Teaching Strategies GOLD
	Summative/ Accountability						
K	Screening/ diagnostic						W-APT
	Interim/ progress monitoring						
	Summative/ Accountability						ACCESS for ELLs©
1	Screening/ diagnostic						W-APT
	Interim/ progress monitoring						
	Summative/ Accountability						ACCESS for ELLs©
2	Screening/ diagnostic						W-APT
	Interim/ progress monitoring						
	Summative/ Accountability	Alternate Assessment	Alternate Assessment				ACCESS for ELLs©

Assessment Map 2: Example

Assessment Name	Grade / Range	Description of assessment (e.g., content strand, domain, areas covered within assessment)	Purpose and use of data	Type of assessment	Scoring procedure / turnaround time for providing feedback to students	Implementation schedule	Allowable accommodations / modifications	# of schools using this assessment / total # of schools in LEA serving these grades
NECAP Mathematics	3-8, 11	Assesses the GLEs/GSEs in Number & Operations, Functions & Algebra, Geometry & Measurement, and Data, Statistics & Probability.	Measure outcomes	Summative	Testing Contractor scores/3-4 months	October - 3 week window	Reference NECAP Accomodation Guide	
NECAP Reading	3-8, 11	Assesses Word ID, Vocab, Initial Understanding for Literary and Informational Text, Analysis & Interpretation for Literary and Informational Text	To screen for PLPs, To measure outcomes	Summative	Testing Contractor scores/3-4 months	October - 3 week window	Reference NECAP Accomodation Guide	
NECAP Science	4, 8, 11	Assessess concepts andskills in Life Science, Earth and Space Science, and Physical Science. Inquiry skills are also assessed during a separate assessment.	Measure outcomes. Program evaluation.	Summative	Testing Contractor scores/3-4 months	May - 3 week window (in Gr. 4)	Per Table of Standard NECAP Accomodations found in appendices of NECAOP Administrator	
NECAP Writing	5, 8, 11	Writing Conventions, Response to Literary Text, Response to Informational Text, Report Writing, Narrative Writing	Measure outcomes	Summative	Testing Contractor scores/3-4 months	October - 3 week window	Reference NECAP Accomodation Guide	

Appendix B

Determine Appropriateness:
Interim and Summative Assessment Prompts

It is important to consider a variety of factors to determine whether or not an assessment is appropriate for your needs and capabilities. The prompts below should be used to generate discussion about an assessment currently being used or about an assessment being considered. Comments should be recorded as evidence of the reflection and analysis. For more information refer to section IV Developing and Selecting Assessments.[‡]

Assessment:	Comments / Summary Statement
Purpose/Use	
What is the intended purpose of this assessment?[§] What is the target population for which this assessment was designed? Is the assessment being used for its intended purpose, with its intended population?	
Alignment	
What is your evidence that the assessment items are aligned to the standards? Who completed the study of alignment? How rich is the representation of the content standards?	

[‡] Adapted from Li, Marion, Perie, & Gong (2010). An approach for evaluating the technical quality of interim assessments. *Peabody Journal of Education: Issues of Leadership, Policy, and Organizations*, 85, 2. and The Council of Chief State School Officers (2010). *Building an interim assessment system: A workbook for school districts*. Washington, DC: Author.

[§] When using commercial assessments, the intended purpose is usually described in the test publisher's materials.

Validity & Reliability	
If the assessment is to be used to monitor whole class student progress, does it include at least three forms of the assessment to be given throughout the year? If the assessment is to be used to monitor individual student progress, does it include multiple forms of the assessment to be administered to match the frequency of interventions? If multiple forms of the assessment are provided, what is the evidence of equating procedures to ensure comparability across forms? How varied are the assessment response types (e.g., selected response, constructed response)? Are they varied enough to assess the complexity of the content? How have you ensured that the assessment is paced with the curricula so that students are not being tested on standards that have not been taught?	
Fairness	
What accommodations are available? What training needs to be offered to teachers to ensure the valid, reliable, and effective administration, interpretation, and use of the assessment? What procedures are in place to ensure equitable testing conditions?	

Administration	
How is the assessment administered? (Individual, small group, or whole class? Paper and pencil, via computer, or other?) If the materials are consumable, how will the LEA replenish supplies? Is the amount of time it takes to administer reasonable given the frequency with which it will be administered? What training needs to be offered to teachers to ensure proper administration?	
Scoring & Reporting	
How long will it take the LEA or vendor to score the assessment? Are open-ended items included in the assessment? If so, how explicit are scoring guidelines/rubrics? If open-ended items are included in the assessment, what training materials and exemplar papers are available? Does the type of score (e.g., raw, scale, norm-referenced, criterion-referenced) reported match the assessment purpose? What, if any, quantitative and qualitative data are included in the assessment reports? How can it be used to inform instruction? What training do teachers need in how to read/use the reports? How can results be aggregated or disaggregated? Are score reports easily understood by parents? Students?	

Appendix C

Best Practices in Reading and Writing Assessment

Reading

The act of reading and comprehending is complex and requires the acquisition of many overlapping and supporting skills and strategies. Effective reading instruction depends on sound instructional decision-making in partnership with the use of reliable data regarding students' strengths, weaknesses, and progress in reading. The National Reading Panel (2000) concluded that there are no easy answers or quick solutions for optimizing reading achievement. Nor is there one assessment that will screen, diagnose, benchmark and progress monitor students reading achievements. Multiple indicators from different types of assessments provide a more complete picture of students' reading processes and achievement.[13]

There are various ways to gather assessment data.[14] Teachers can test students, analyze student work samples, observe students performing literacy tasks, or interview students on their reading skills. Teachers can gain the most information by using all of these methods to collect data.

"Timely and reliable assessments indicate which children are falling behind in critical reading skills so teachers can help them make greater progress in learning to read. Reliable and valid assessments also help monitor the effectiveness of instruction for all children; without regularly assessing children's progress in learning to read, we cannot know which children need more help and which are likely to make good progress without extra help."[15]

When developing items for reading assessments, it is necessary to consider the cognitive complexity of the proposed task/question. The four DOK levels focus attention on the cognitive processes required by students to complete a task or answer a question. By creating assessments that encourage students to demonstrate their ability across all DOK levels, students will become strategic thinkers who can analyze, synthesize, communicate their understanding, and apply their thinking to new situations/tasks.[16]

DOK should not be confused with difficulty. What does the word *secure* mean? and What is the definition of the word *prescient*? are both DOK 1 level questions even though few students might correctly answer the second question. The second question is more difficult but not more complex. Both questions merely require recall.

The information below is not all inclusive but merely a few examples[5] of questions that are aligned to each DOK level for reading.

Level 1: Many questions at this level require the ability to:

- locate answers in the text; recall details from the text
  - Which is true according to the Nutrition Facts chart found in the article? (given multiple choice answers)
  - What is similar about the two men's experiences before law

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[5] Some examples are NECAP Released Items or adaptations of NECAP Released Items.

school? (given selected response answers and information is explicitly stated in the text)

- use language structure or word relationships to determine meanings of words
    - Which word(s) has the same vowel sound as blue? (given multiple choice answers or word box)
    - The root *bio* in biography and antibiotic means (given multiple choice answers)
- select appropriate words to use in context when intended meaning is clearly evident
    - In paragraph 10, the word _____ means (given multiple choice answers)
- identify or describe characters, setting or sequence events
    - Why is the hockey game different than other games for the narrator? (information is explicitly stated in the text)

Level 2: Many questions at this level require the ability to:

- use context cues or resources to identify the meaning of an unfamiliar word
    - *Use the definitions below to answer the question.*
        condition *n* **1.** state of health or well-being **2.** social status **3.** the state of usability **4.** demand or requirement
        Which is the **best** definition of the word condition as it is used in this sentence?
        Mark said he would accept the job on one condition.

- make basic a inference or draw a basic conclusion about information presented in the text
    - Why did the Northwest Coast Indian tribes call the western cedar tree the "Tree of Life"? (given multiple choice answers)
- recognize appropriate generalizations about text
    - The author most likely wrote this story to (given multiple choice answers)
- summarize the major events, problem, solution, etc. in a literary text
    - Identify how the sons change in the story. Use details from the passage to support your answer.
- distinguish between fact and opinion
    - Which of the following phrases from the text is an opinion? (given multiple choice answers)
- organize information using mapping, charting, summarizing, etc.

Level 3: Many questions at this level require the ability to:

- make and support inferences using evidence from the text or other sources
    - What conclusion can be drawn from these three texts?
- describe how word choice, point of view or bias affects the interpretation of a text
    - Describe the author's attitude toward (the subject of the article) and analyze how she communicates this attitude to the reader. Use examples from the article to support your answer.
- interpret the use of author's craft to analyze/critique text

o Examine the author's use of literary devices in conveying the theme of the passage.

Level 4 assessments require an extended period of time and usually include accessing multiple sources of information. Many projects or assignments may include the ability to:

- gather, analyze, organize, and interpret information from multiple sources to discuss author's craft, universal themes, drafting a reasoned report, etc.
- evaluate the relevancy and accuracy of text using multiple sources to support or refute claims

The following has been developed as a guide for LEAs to evaluate their comprehensive assessment system in the area of reading.

Guidance for Developing a Comprehensive Assessment System in Reading

This guidance provides Local Education Agencies (LEAs) with tools and information to assess their areas of need in reading instruction.

The *Facets of a Comprehensive Assessment System in Reading* defines the types of assessments needed for a thorough reading development system of measurement for students in grades K-12.

The *Needs Assessment Worksheet* determines what assessments are currently being implemented within the LEA and provides an overall picture of the reading assessment system within the LEA.

Directions to complete the *Needs Assessment Worksheet*:

List the LEA-wide reading assessments currently in place. The provided grade ranges identify what grades need specific assessments. Please note: some assessments measure more than one component and should be listed within *each* category. If an assessment

is given multiple times within the year for a variety of purposes, it should be listed in every category that it is currently being used for in the LEA.

Example: What phonics assessment is used to screen students in grades K-1?

In grades 3-5? Does the same assessment screen phonemic awareness skills? Are there alternate forms of the assessment that may be used for benchmarking?

Keep in mind that intervention assessments are needed for a much broader range of grades due to the variety of student needs or gaps in instruction.

Upon completion of the *Needs Assessment Worksheet*:

Use the questions below to guide the analysis of the information collected:

- Which COMPONENTS have assessments ranging across the grade levels?
- Does any ASSESSMENT TYPE (screening, benchmark, progress monitoring, etc.) have an overabundance of assessments currently in place?
- Does any COMPONENT have an overabundance of assessments?
- Does any ASSESSMENT TYPE (screening, benchmark, progress monitor, etc.) have insufficient assessments and/or does not range across the grade levels?
- Does any one COMPONENT have insufficient assessments and/or does not range across the grade levels?
- Which assessments are being used within multiple categories? Is the assessment designed to produce data for all of these categories?

Facets of a Comprehensive Assessment System in Reading

Classroom Instructional Assessments

Screening Assessment(s) ~ a type of interim assessment

- Used as a first alert or indication of being at-risk for reading below grade level
- Administered to all students *before* instruction
- Quick and easy to administer to a large number of students and are correlated with end-of-year achievement tests
- Rarely provide specific information needed to determine the most appropriate invention or target for instruction

All essential components of reading may not be included within any given grade level's Screening Assessment. However, to make informed decisions on a student's proficiency in reading, ample data must be collected. Therefore, a screening assessment should include at a minimum, two of the components that influence reading proficiency.

Key questions that should be answered by the screening assessment(s):
- Which student(s) is experiencing reading difficulty?
- Which student is at-risk for reading difficulty and in need of further diagnostic assessment(s) and/or additional interventions?

Benchmark Assessments ~ a type of interim assessment

- Used to chart growth in reading
- Administered to all students
- Determine if students are making adequate progress in overall performance towards standard(s)

- Typically administered at predetermined time (examples: end of a unit/theme, quarterly, etc.)

Key questions that should be answered by the benchmark assessments:
- What is the effectiveness of classroom instruction?
- Which student(s) needs extra support to acquire a particular reading skill(s) or standard(s)?
- How should groups be formed for classroom reading instruction?
- Which specific reading skills need to be emphasized/re-taught?

Progress Monitoring ~ a type of formative or interim assessment

- Used to determine next steps
- Used during classroom reading instruction (may occur daily, weekly)
- Aligned to instructional objective
- Can be used on an ongoing basis and may include teacher made-assessments, book logs, work samples, anecdotal records, standardized or semi-structured measures of student performance such as a miscue analysis and observational notes from a reading conference

Key questions that should be answered by the progress monitoring assessments:
- How does the data articulate if the students "got it"?
- Does the lesson need to be re-taught to the whole class or just a few students?
- Who needs extra support?
- How is specific, constructive, and timely feedback provided to students promoting

student learning or relearning of reading skills/standards?

Outcome Measures ~ a type of summative assessment

- Used as a program or student evaluation in reading
- Used to indicate a student's learning over a period of time and how proficient a student is towards meeting the grade level standards in reading

Key questions that should be answered by the outcome assessments:

- To what degree has the student achieved the reading content standards?
- Is the assessment aligned to the state adopted reading standards?
- What information/data is provided and maybe used to evaluate the effectiveness of the reading curriculum?
- Can decisions about selection, utilization of resources, materials and personnel be made with data collected from this reading assessment?

Intervention Assessments

Diagnostic Assessment(s) ~ a type of interim assessment

- Used to gain an in-depth view of a student's reading profile
- Administered to students who have already been identified as being at-risk of reading below grade level during the screening process
- Often are individually administered so observations of behaviors can also be included

Diagnostic assessments are used to determine specific areas of need and may not include all essential components of reading. However, a comprehensive assessment system must include a variety of assessments that address all essential

components of reading for educators to use as needed.

Key questions that should be answered by the diagnostic assessments:

- What are a student's strengths in reading?
- What are a student's weaknesses in reading?
- Which components of comprehensive reading (fluency, phonemic awareness, phonics, text comprehension, and vocabulary) are problematic for the student?
- Are other students exhibiting similar reading profiles?
- How should reading intervention groups be formed?

Progress Monitoring of Intervention ~ a type of formative or interim assessment

- Used to chart rate of growth towards benchmark/goal/standard
- Used for students who have intervention services in reading

Key questions that should be answered by the progress monitoring assessments when using a method of intervention:

- Has this intervention been proven effective in improving students' literacy skills?
- Is the individual student progressing at a sufficient rate to achieve the goal?
- Are instructional revisions needed in order for sufficient progress to be made towards the student's goal/standard?

Comprehensive Assessment System in Reading: Needs Assessment Worksheet

Components that Influence Reading Proficiency		Screening	Benchmark	Progress Monitoring	Outcome Measures		Diagnostic	Progress Monitoring
Comprehension *RL & RI 1-3 and 5-10* *Does the student demonstrate an understanding of the key ideas and details within a text or multiple texts that has been read?* *Does the student use their understanding of text structure, words and phrases and point of view to gain meaning from text(s)?* *Does the student analyze how the author's choice(s) contributes to the overall structure and meaning of the text?* *Does the student integrate knowledge and ideas to analyze and evaluate various aspects of texts?* *Does the student read and comprehend literary and informational grade appropriate text independently and proficiently? Grades 2-12*	**Class Instruction**	*1-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*	**Intervention**	*1-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*
Vocabulary *L 4,5,6 and RL/RI 4* *Is the student able to determine and clarify the meaning of unknown and multiple meaning words using various strategies?* *Does the student demonstrate an understanding of figurative language, word relationships and nuances in word meanings?* *Has the student acquired a range of general academic and domain specific words and phrases sufficient for reading and understanding a variety of texts?* *Is the student able to determine the meaning of grade appropriate words and phrases as they are used in text (including figurative and connotative meanings)?*		*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 –Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*		*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 Elementary* *3-5 Elementary* *Middle School* *High School*

Components that Influence Reading Proficiency (continued)	Classroom Instruction	Screening	Benchmark	Progress Monitoring	Outcome Measures	Intervention	Diagnostic	Progress Monitoring
Fluency *RF-4* *Is the student's reading fluency at a sufficient level of accuracy to comprehend appropriate grade level text?* *Is the student's reading fluency at an appropriate rate for grade level text?* *Does the student read on-level text with expression on successive readings?* *Does the student use context, language structures, and/ or visual cues to confirm or self-correct understanding and word recognition?* *Does the student adjust their rate of fluency within various contexts and texts?*		*1-2 Elementary* *3-5 Elementary*	*K-2 -Elementary* *3-5 Elementary*	*K-2 -Elementary* *3-5 Elementary*	*K-2 Elementary* *3-5 Elementary*		*1-2 Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 –Elementary* *3-5 Elementary* *Middle School* *High School*
Phonics/Decoding/Word Analysis *RF-3* *Does the student know and apply the grade-level phonics and word analysis skills in decoding unfamiliar words?* *Does the student have knowledge of syllables and syllable patterns to decode multi-syllabic words?* *Does the student have mastery of needed sight words at each grade level including irregularly spelled words?*		*K-2-Elementary* *3-5 Elementary*	*K-2 -Elementary* *3-5 Elementary*	*K-2 -Elementary* *3-5 Elementary*	*K-2 -Elementary* *3-5 Elementary*		*K-2-Elementary* *3-5 Elementary* *Middle School* *High School*	*K-2 -Elementary* *3-5 Elementary* *Middle School* *High School*
Phonemic Awareness *RF-2* *Does the student demonstrate an understanding of spoken words, syllables and sounds?*		*K-1-Elementary*	*K-1-Elementary*	*K-1-Elementary*	*K-1-Elementary*		*K-1 Elementary* *2-5 Elementary*	*K-1 Elementary* *2-5 Elementary* *Middle School*
Print Knowledge *RF-1* *Does the student demonstrate an understanding of the organization of print (directionality, return sweep, page by page, spacing between words, first and last concepts as they relate to words, sentences and whole text, etc.)?* *Does the student demonstrate an understanding of the basic features of print (connection between spoken and written language, first word in a sentence, capitalization, punctuation, etc.)?*		*K-1-Elementary*	*K-1-Elementary*	*K-1-Elementary*	*K-1-Elementary*		*K-1 Elementary* *2-5 Elementary*	*K-1 Elementary* *2-5 Elementary* *Middle School*

Writing

Writing requires the coordination of multiple skills and abilities, including organization, purpose/focus, elaboration, voice, word choice, sentence structure, spelling, planning and revising, etc. "To address each of these aspects instructionally, educators need an assessment plan that is comprehensive and meets the varied needs of students."[17]

Writing assessments may be used for a variety of purposes i.e., providing assistance to students, assigning a grade, determining proficiency, placing students in instructional groups or courses, and even evaluating writing curricula/programs. The National Council of Teachers of English (NCTE) believes that the primary purpose of assessment is to improve teaching and learning. Consequently, the goal of assessing students' writing should always be for refining instruction and improving student learning.

Writing assessments must reflect the social nature of writing and its recursive process; while also considering that each writing piece has a specific purpose, audience and task. Due to the variety of genres of writing, the skills associated with each, the diverse audiences and various purposes for writing (entertain, persuade, inform), a student's overall writing ability should be based upon multiple measures. One piece of writing, regardless of the quality of the writing and/or the conditions that it was written for, should never be the sole indicator of overall writing ability. "Ideally, writing ability must be assessed by more than one piece of writing, in more than one genre, written on different occasions, for different audiences, and responded to and evaluated by multiple readers as part of a substantial and sustained writing process."[18] Students may draw incorrect conclusions about the very nature of writing when there is a lack of multiple measures. "For example, timed writing may

suggest to students that writing always cramps one for time and that real writing is always a test. Machine-scored tests may focus students on error-correction rather than on effective communication."[19]

Students should be able to demonstrate what they do well in writing. Assessment criteria should match the particular kind of writing piece being created and its purpose. These criteria should be directly linked to the standards and clearly communicated to students in advance so that the students can be guided by the criteria while writing. In some cases, teachers may even want to involve students in the creation of the rubric, a process which can solidify their understanding of the criteria for success and invest them in the assessment process.

Most standardized tests focus on easily assessed features of language (grammar, usage and mechanics) through the use of multiple choice questions. Choosing a correct response from a set of possible answers is not writing. This type of assessment lends itself to provide information on what students do wrong or do not know rather than on how well a student can communicate through writing.

Classroom formative assessments are short-term, ongoing, in-process judgments about what the students know and what to teach next. Classroom assessment should include a period of ungraded work that receives feedback from multiple readers, including peer reviewers. Writing feedback often occurs within a conference, both peer and teacher, which provides specific feedback to improve the piece. Sometimes this type of conference provides written feedback but not always, sometimes it is just oral (promoting the social aspect of writing). Self-assessment should also be encouraged. "Ultimately, we want students to internalize the qualities of good

writing and to have inner conversations about their writing- in other words, to have conferences with themselves in which they notice their strengths, critique their own writing, set reasonably high goals, know how and when to seek help, and work towards accomplishing their goals."[20] Classroom-level assessment of writing should also include reviewing the initial piece through to final drafts of a writing piece and multiple opportunities to demonstrate quality writing. Classroom "assessment gets to the heart of teaching and lets us decide how and when to offer support to writers"[21] to develop proficiency in writing.

Educators need to understand the following in order to develop a system for assessing writing:

- How to find out what students can do in writing informally and on an ongoing basis
- How to use that assessment in order to decide how and what to teach next
- How to assess in order to form judgments about the quality of student writing and learning
- How to assess ability and knowledge across varied writing engagements
- What the features of good writing are
- What the elements of a constructive process of writing are
- What growth in writing looks like, the developmental aspects of writing
- How to deliver useful feedback, appropriate for the writer and situation
- How to analyze writing tasks/situations for their most essential elements, so that assessment is not of everything about writing all at once, but rather targeted to objectives
- How to analyze and interpret both qualitative and quantitative writing assessments
- How to use portfolios to assist writers in their development
- How self-assessment and reflection contribute to a writer's development

- When determining proficiency in writing, multiple student writing samples should be reviewed from various genres, and for diverse audiences, tasks, and purposes.
Adapted from Newkirk and Kent (2007)[22]

When creating items for local writing assessments, it is necessary to consider the cognitive complexity of the proposed task or question. The DOK levels focus attention on the cognitive processes required by students to complete a task or answer a question. The information below is not all inclusive but merely a few examples[6] of questions/prompts that are aligned to each DOK level for writing tasks.

Level 1 requires the student to write or recite simple facts. Students may be asked to use standard English conventions to edit sentences, identify misspelled words or apply conventional spelling patterns and rules in a sentence and paragraph or to new situations, use resources to correct spelling, identify grammatical errors, apply basic formats for documentation, select appropriate vocabulary to convey intended meaning, or write simple sentences.

- Which word in the sentence below should be capitalized? (given multiple choice answers)
- Which of the following is a complete sentence? (given multiple choice answers)
- Choose the correct punctuation to complete the following sentence: Which is your favorite book_ (given multiple choice answers)
- How should the underlined word in the sentence below be spelled?
     The brilliennt ocean lay sparkling before them.

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[6] *Some examples are NECAP Released Items or adaptations of NECAP Released Items.

Level 2 requires some mental processing, such as beginning to connect ideas using a simple organizational structure. At this level, students are engaged in first draft writing for a limited number of purposes and audiences. This may include note taking or outlining to organize ideas in writing, developing text that is approximately one paragraph in length, constructing a variety of sentence types, writing summaries that contain the main idea of a reading selection and pertinent details, editing final drafts of compositions for mechanics and conventions.

- Think about your **least** favorite activity. Write a paragraph that explains how your character tries to avoid doing the activity. Use descriptive details to convey the character's feeling(s) about the activity.
- What is the best way to combine the two sentences below? (given the prompt and multiple choice answers)
- Combine the two sentences below into one complex sentence.
- Given a picture prompt, the student could be asked to use dialogue, descriptive details and/or sensory language to capture the action and convey the experience or event

Level 3 requires some higher level mental processing. Students are developing multi-paragraph compositions that include complex sentence structures or may demonstrate some synthesis and analysis. Students show awareness of audience and purpose through focus, organization, and voice/tone. Students edit and revise to improve the quality of the writing, support ideas with details, examples, quotations, text references and/or citations, and summarize information from multiple sources to address a specific topic. Assessments would be completed in one sitting and students might be presented with a text to draw information from to complete the response.

Sample on-demand writing tasks/questions:

- What would a person from ancient Rome find familiar and/or different about writing today? Write an informative/explanatory response to convey the ideas by selecting information found in given facts and connecting to prior knowledge.
- When given an informational text to read, student may be asked to address something from the text or support/refute the claims in the text, using details from the text to support their response.
- When given a literary text to read, the student may be asked to compare two or more (characters, settings, or events) in the story, drawing on specific details to support the analysis.

Level 4 Higher-level thinking is central to this level. Multi-paragraph extended writing demonstrates synthesis and analysis of complex idea or themes and evidence of a deep awareness of purpose and audience. Gathering, analyzing and evaluating written information for the purpose of drafting a reasoned report that supports and appropriately illustrates inferences and conclusions drawn. Writing will usually take place over an extended period of time.

Sample writing performance assessment tasks:

- short research projects to answer a question, drawing on several sources to build knowledge and/or summarize findings
- arguments to support claims with clear reasons and relevant evidence
- opinion pieces on topics supporting a point of view with reasons and information
- informative or explanatory text which examine a topic and convey the ideas, concepts and information through the selection, organization and analysis of relevant content

Appendix D

Best Practices in Mathematics Assessment

In reviewing the research on best practices in mathematics assessment, it becomes clear that practitioners should employ formats that are varied in nature, foster deep and rich thinking, and target the critical areas of skill mastery, concept development, and problem solving. Additionally, as outlined in the National Council of Teachers of Mathematics (NCTM) *Assessment Standards for School Mathematics*, quality assessment in mathematics should be an open and coherent process that enhances mathematical learning. It should simultaneously promote equity and the development of valid inferences about mathematical learning. [23]

As with assessment in any other discipline, mathematical assessment has a recursive relationship with instruction. When planning a unit, it is essential to reference the standards in order to determine what students need to learn and be able to do. Consequently, it is at this point that a teacher will be able to contemplate and design assessment models that they will administer both during and at the conclusion of the instructional roll-out. This pre-planning of assessment directs the path of instruction. The recursive nature of the relationship manifests itself through the use of formative and interim assessments. (e.g., screening, diagnostic, progress monitoring, and benchmark assessments). By utilizing the information garnered from these sources of data, a teacher is able to fine tune his/her instructional path to better serve the needs of all learners (e.g., creating small groups of students with similar needs for re-teaching, providing additional practice to others to cement concept development, or posing challenges to some that are ready for enrichment.) If the students' needs have been adequately addressed, their success

should be maximized when it comes time to evaluate student learning through the use of summative assessments (e.g., outcome measures). [24]

When designing mathematics assessments, it is necessary to consider the cognitive complexity of proposed tasks. In the Depth of Knowledge (DOK) Framework, Webb outlines four levels of cognitive demand – Recall, Skill/Concept, Strategic Thinking, and Extended Thinking. Level 1 cognition is characterized by simple recall. As illustrated in Table D.1, tasks of this nature require a rote response or the performance of a simple algorithm (e.g., *Find the next three terms . . .*). Level 2 DOK necessitates some type of decision making. The response to a prompt will not be automatic and will require some "mental processes" involving more than one step (e.g., *Draw the next figure in the following pattern . . .*). Moving up the spectrum to a Level 3 DOK, the quality of reasoning becomes more complex and demanding. Tasks of this variety require greater planning, abstraction, evidence and justification of thought. A student engaged in Level 3 cognition could be required to form a hypothesis or conjecture (e.g., *Find the next three terms in the pattern and determine the rule for. . .*). Lastly, the highest tier of DOK, Level 4, manifests itself in tasks that require an extended period of time utilizing complex thinking and planning. Level 4 tasks compel a student to make connections within a discipline and/or to other disciplines. More than likely, there are multiple solutions to a problem and multiple pathways for attaining a solution (e.g., *Find the next three terms in the pattern, determine the rule for finding the next number in the pattern, and make or find a model for . . .*).[25]

Table D.1.

Recall & Reproduction (DOK 1)	Skills & Concepts/ Basic Reasoning (DOK 2)	Strategic Thinking/ Complex Reasoning (DOK 3)	Extended Thinking & Reasoning (DOK 4)
Find the next three terms in the following pattern: 2/7, 4/7, 6/7…	Draw the next figure in the following pattern:	Find the next three terms in the pattern and determine the rule for the following pattern of numbers: 1, 4, 8, 11, 15, 18, 22, 25, 29, …	Find the next three terms in the pattern, determine the rule for finding the next number in the pattern, and make or find a model for the pattern: 1, 1, 2, 3, 5, 8, 13, 21, 34, …[26]

Bush and Leinwand offer some guidance in the selection and design of varied assessment items. When measuring skill attainment, items are best kept short necessitating a single correct answer. Generally involving simple recall or the use of a routine procedure, skill items require little or no context. Conceptual items can also be short in duration, but are not based on rote memorization and thus are non-routine. They are steeped in context requiring the production of some explanation or representation from the student. In relation to Norman Webb's Depth of Knowledge levels, both of these types of items most likely fall within the scope of Level 1 or Level 2 cognition. Lastly, problem solving items capitalize on a student's ability to apply their "mathematical power" in creating and using a plan. Such assessment items are context rich, require a sustained effort, are non-routine, and may have more than one correct solution.[27] The Depth of Knowledge for these items usually draws on Level 2

or Level 3 thinking, but in some complex situations reach to the top of the spectrum, Level 4. Students need to regularly encounter a balance of all of these types of assessment items in order to fully demonstrate the depth and breadth of their learning.[28]

When designing or selecting these varied assessment items, the infusion of writing in mathematics gives the teacher access to the inner thinking and reasoning of their students. Written evidence provides assistance in determining what the next instructional steps should be.[29] The use of writing is beneficial when assessing procedural or conceptual knowledge as well as reviewing a student's justification for a solution path when problem solving.[30]

Finally, the role of the student in the assessment process cannot be overlooked. NCTM calls for a switch in focus from "students as the objects of assessment" to "students as active participants in

the assessment process." As multiple measures are employed to assess a student's "mathematical power," a student is required to become more responsible for and reflective of their own learning.[31] When students engage in critical self-assessment of their own work and they gain frequent and targeted feedback from their teacher, they have a clearer understanding of expectations and their own mathematical learning. This combination fosters an environment that moves away from one that is judgment-oriented to one that focuses on the continued growth of all students.

Classroom Instructional Assessments for Mathematics

A comprehensive assessment system provides multiple pieces of information on student achievement. Various types of assessments are required because they provide different types of information. The *Best Practices in Assessing Mathematics* section described what quality assessments in mathematics should look like. With respect to the purpose of an assessment, the outline that follows offers guidance as to what types of tools should be included within an LEA's Comprehensive Assessment System.

Screening Assessment(s) ~ a type of interim assessment

- Used as a first alert or indication of being at risk for deficits in mathematics skills or concepts.
- Administered to ALL students *before* instruction.
- Quick and easy to administer to a large number of students.
- Correlated with content and/or instructional objectives germane to grade level performance.
- Rarely provide specific information needed to determine the most appropriate invention or target for instruction.

Mathematics screening instruments are broad in nature, so they are not able to address all facets of grade level content or standards. With that said, their design should target the identification of common misunderstandings and should address the focal areas for that grade level. Items should assess factual and procedural knowledge as well as the application of concepts. Finally, they need to be reliable, have predictive validity, and be efficient in terms of administration and reporting.

Key questions that should be answered by the screening assessment(s):
- Which student(s) is experiencing mathematics difficulty?
- Which student is at risk for mathematics difficulty and in need of further diagnostic assessment(s) and/or additional interventions?

Benchmark Assessments ~ a type of interim assessment

- Used to chart growth in mathematics. Administered to all students.
- Determine if students are making adequate progress in overall performance towards standard(s).
- Typically administered at predetermined time (examples: end of a unit/theme, quarterly, etc.).

Key questions that should be answered by the benchmark assessments:
- What is the effectiveness of classroom instruction?
- Which student(s) need extra support to acquire a particular mathematics skill(s), concept(s), or standard(s)?
- How should groups be formed for classroom mathematics instruction?
- Which specific mathematics skills, concepts and/or standards need to be emphasized/ re-taught?

Progress Monitoring ~ a type of formative or interim assessment

- Used to determine next steps.
- Used during classroom mathematics instruction (may occur daily, weekly).
- Aligned to instructional objective.
- Can be used on an ongoing basis and may include teacher made-assessments, work samples, observational notes, and standardized or semi-structured measures of student performance.

Key questions that should be answered by the progress-monitoring assessments:

- How does the data articulate if the students "got it"?
- Does the lesson need to be re-taught to the whole class or just a few students?
- Who needs extra support?
- How is specific, constructive, and timely feedback provided to promote student learning or relearning of mathematics skills, concepts, or standards?

Outcome Measures ~ a type of summative assessment

- Used as a program or student evaluation.
- Used to indicate a student's learning over a period of time and how proficient a student is towards meeting the grade level standards in mathematics.

Key questions that should be answered by the outcome assessments:

- To what degree has the student achieved the mathematics content standards?
- Is the assessment aligned to the state adopted mathematics standards?
- What information/data are provided and used to evaluate the effectiveness of the mathematics curriculum?
- Can decisions about selection, utilization of resources, materials and personnel be made with data collected from this mathematics assessment?

INTERVENTION ASSESSMENTS

Diagnostic Assessment(s) ~ a type of interim assessment

- Used to gain an in-depth view of a student's mathematics profile.
- Administered to students who have been identified as at-risk of not achieving grade level mathematical proficiency during the screening process.
- Often are individually administered so observations of behaviors may also be included.

Diagnostic assessments are used to determine gaps in student learning. They provide evidence to make inferences with respect to instructional interventions.

Key questions that should be answered by the diagnostic assessments:

- What are a student's strengths in mathematics?
- What are a student's weaknesses in mathematics?
- What are the specific areas of need for the student?
- Are other students exhibiting similar mathematics profiles?
- How should mathematics intervention groups be formed?

Progress Monitoring of Intervention ~ a type of formative or interim assessment

- Used to chart growth towards benchmark/goal/standard.
- Used for students who have intervention services in mathematics.

Key questions that should be answered by the progress-monitoring assessments when using an intervention:

- Is the individual student progressing at a sufficient rate to achieve the goal?
- Are instructional revisions needed in order for sufficient progress to be made towards the student's benchmark/goal/standard?
- Has this intervention been proven effective in improving students' mathematics skills?

Appendix E

Best Practices in Science Assessment

Assessment in science is everywhere. It is present in the form of a simple clarifying question, a paper and pencil test, an investigation, or a large-scale assessment. The National Science Teachers Association Position Statement on Assessment states:

> *"Science assessments are necessary tools for managing and evaluating efforts to ensure all students receive the science education necessary to prepare them for participation in our nation's decision-making processes and lifelong learning of science in a technology-rich workplace."* [32]

As a content area, science is something that students actively do, rather than something that is done to them or for them. Science is not merely a collection of concepts; it involves the development of skills in investigation, measurement, observation, analysis, discourse, and synthesis. Science also involves problem solving and the application of new knowledge gained through the process of connecting evidence to form conclusions.

Measurement of student learning of these skills and concepts requires a variety of assessment strategies and tools. Assessment in science is organic to instruction and learning. Assessment, by its very nature, can be likened to a scientific process. It involves careful planning, entails the design of measurement tools and instruments, necessitates the collection of data along with analysis and discussion, and, ultimately, requires decision-making based upon conclusions drawn from the data.

What Does Assessment Look Like In A Science Classroom?

The word science is derived from the Latin verb *scire* which means to know. Students have an innate desire to discover, explore, and investigate. Our goal as science educators is to capitalize on that natural curiosity and build understanding. To determine student understanding, science educators ask questions and listen to student responses, observe how students engage in activities, and study their work. Student discourse, inquiry, and the free flow of ideas should be encouraged. The ideal orchestration and measurement of science instruction is a blend of purposeful and spontaneous teacher-to-student, student to-teacher, and student-to-student verbal and written interactions that involves a variety of assessment techniques.[33] These assessment techniques are used to aid students in thinking deeply about their ideas in science, uncover pre-existing ideas students bring to their learning, and help teachers and students determine how well individuals and the class are progressing toward developing scientific understanding.

In a comprehensive assessment system, science educators must accommodate the variety of purposes that the assessments will serve. Of the three assessment types outlined in the *Criteria and Guidance*, research strongly supports the use of formative assessment to strengthen students' understanding of science.[34] Science educators need to spend time understanding how their students think and what they know prior to and during instruction and use that information to design opportunities to learn that help students develop conceptual understanding. These opportunities to

learn are historically defined as *"what schools and teachers must do if curriculum and achievement standards are to be met"*.[35] They exist as a result of educator awareness of the experiences and understandings that students bring into the classroom. It is incumbent upon the educator to connect these experiences with learning goals. This "bridging" process comes about with the careful and cohesive use of formative assessment to inform instruction.

With respect to a comprehensive local assessment system, collaboratively-designed and administered interim assessments in science are useful for assessing progress of students at the grade or course level. For example, collaboratively-designed assessments may be constructed at the school level using item banks that have been aligned to standards. If the assessments are administered as part of a guaranteed and viable curriculum, the data garnered over prescribed intervals (approximately 6-8 weeks) will provide important guidance to students, teachers, schools, families, and LEAs.

A summative assessment in science may take many forms. For instance, an end-of-unit assessment determines student learning over the course of several lessons. Science projects as well as topic papers and lab reports may be used in a summative way as well. Summative assessments could be either objective or subjective in nature, or some combination of the two. An example objective assessment item would be those that generate clear correct or incorrect responses (i.e., multiple choice, true and false, fill in the blank) whereas subjective items would be open-ended in design such as constructed response or performance based tasks. Objective tasks can be scored easily and fairly quickly. Subjective tasks, on the other hand, require calibration, as well as more time and analysis. The scorer must possess requisite knowledge of the concepts in order to make proper judgments of learning. Table E.1 describes various assessment formats that may be used in a science classroom.

Regular administration of a variety of assessments produces rich data that science educators can use to adjust instruction and carefully monitor students' progress. Science educators are the critical agents in aligning assessment, instruction, and learning with a guaranteed and viable curriculum that will boost student achievement in science classrooms.

Table E.1: Assessing Student Learning In the Science Classroom

Objective-Response Formats		Subjective-Response Formats		
		Product	**Performance**	**Process-Focused Assessment**
▪ Multiple-choice ▪ True-false ▪ Matching ▪ Enhanced multiple choice ▪ Simple calculations	▪ Fill in the blank ▪ Phrase(s) ▪ Label a diagram ▪ Visual representation	▪ Constructed response ▪ Concept maps ▪ Research paper ▪ "Show your work" ▪ Portfolio ▪ Model ▪ Video/audiotape ▪ Charts/Graphs ▪ Lab report ▪ Student notebooks	▪ Oral presentation ▪ Science lab/demonstration ▪ Hands-on inquiry task ▪ Data analysis task	▪ Debate ▪ Teach-a-lesson ▪ Oral questioning ▪ Observation checklist ▪ Interview ▪ Conference ▪ Process description ▪ "Think aloud" ▪ Lab skills

Adapted from McTighe and Ferrara (1998)

Appendix F

Best Practices in Social Studies Assessment

Social studies is comprised of several diverse disciplines: civics, economics, geography, and history. Social studies prepares students to participate in our nation's democracy by helping them to become well-informed and civic-minded and to develop cultural, historical, and political understanding. The National Council for the Social Studies states:

> *"Social studies programs prepare students to identify, understand, and work to solve the challenges facing our diverse nation in an increasingly interdependent world. Education for citizenship should help students acquire and learn to use the skills, knowledge, and attitudes that will prepare them to be competent and responsible citizens throughout their lives. Competent and responsible citizens are informed and thoughtful, participate in their communities, are involved politically, and exhibit moral and civic virtues."[36]*

In order for that purpose to be achieved, social studies instruction and assessment must be "meaningful, integrative, value-based, challenging, and active".[37] Meaningful instruction engages students in rigorous curricula and helps them connect their learning with current issues and events. They learn how to apply critical thinking skills to situations beyond the classroom. Meaningful assessment for social studies goes beyond multiple-choice and short-answer tests.

Large-scale assessment in social studies has not been implemented to a great degree, in part due to its complex nature and the wide variety of social studies standards available. This make it difficult to agree upon the assessment of one particular sequence of learning. In social studies, unlike mathematics or literacy, the order in which the knowledge and skills are gained is less critical. Provided that the depth and breadth of the content is developmentally appropriate, students don't need to learn about the ancient world before learning about the history of their state, for example. Therefore, it is important that LEAs have a standards-based comprehensive social studies assessment system that fairly assesses student knowledge, skills, and attitudes.

Social Studies Assessment

Social studies assessment needs to be goal-oriented and standards-based to measure learner outcomes in knowledge, skills, and attitudes. [38] There are two main purposes of social studies assessment: to inform instruction and to measure outcomes. Social studies assessment has not included screening or identifying students for placement into particular programs or for interventions, except for course level placement.

When developing a comprehensive social studies assessment system, LEA's must ensure that curriculum and instruction are based on rigorous social studies standards. Social studies standards generally fall into two categories: content-based, and theme-based. Content-based standards focus on the facts and particular skills within a particular discipline (e.g., era-based and chronological history standards; economics standards that focus on economics topics and skills). Theme-based standards focus on the "big ideas", often integrating several disciplines into strands based on unifying elements and themes (e.g., the National Social Studies Standards, which

incorporate standards on geography, history, and economics into a single strand that focuses on "People, Places, and Environments").

LEAs may adopt the National History Standards (UCLA), the Civics GSEs (RI), the National Economic Standards (NCEE), and the National Geography Standards (National Geographic) and use standards from each set as applicable within the curriculum; or an LEA may adopt the Civics GSEs and the National Social Studies Standards; or some combination thereof that addresses the knowledge, skills, and attitudes expected in Rhode Island's Basic Education Program.

Social studies assessment may take a variety of forms in order to best fit the learning being assessed. Regardless of the form, they should adhere to several key principles:

1. Assessment is considered an integral part of the curriculum and instruction process.
2. Assessment is viewed as a thread that is woven through the curriculum, beginning before instruction and occurring at junctures throughout in an effort to monitor, assess, revise, and expand what is being taught and learned.
3. Assessment practices should be goal-oriented, appropriate in level of difficulty, feasible, and cost-effective.
4. Assessments should benefit the learner (promote self-reflection and self-regulation) and inform teaching practices.
5. Results should be documented to track responses and develop learner profiles.[39]

In the Classroom
Commonly-used assessments include textbook-based, program-based, and teacher-created written tests and projects. These can provide valuable data so long as they assess the standards on which the curriculum and instruction are based. Project-based learning is an essential component of social

studies as it not only introduces the content that students need to learn, but provides them with experience in finding more information and developing critical thinking, research, and action skills that are necessary within and beyond the classroom. Portfolio projects that are implemented in a thoughtful and purposeful way can also be a valid assessment of student learning.

Robust assessments include items that test students' knowledge and understanding at a variety of cognitive levels. Many assessments focus on how much knowledge has been gained in history, government, geography, economics, or other social sciences. These assessments usually take the form of multiple-choice or short-answer questions that rely on knowledge recall skills. Textbook or large-scale assessments (without thematic elements) usually fall into this category. Other assessments focus on the overarching themes of a topic (e.g., a particular culture or region, era in history, string of events) and students' ability to synthesize ideas and communicate their understanding of a "bigger picture." These conceptual assessments may include multiple-choice answers, but are likely to include extended response items that require students to demonstrate their understanding of a topic and how it relates to other topics. Both conceptual and objective assessments can be used to assess student attitudes. Some areas of social studies also include an experiential component that may require the use of alternative forms of assessment such as common tasks/projects, portfolios, or reflective journals.

Formative assessment in the social studies classroom looks similar to most content area classrooms: impromptu and planned question and answer, observations of student behavior and engagement, short quizzes that may not count towards the final grade, class discussions, and

other group activities (e.g., small group discussions, brainstorming assignments). Interim and summative assessments for reporting outcomes may have similar formats but cover different scopes of learning. These assessments are commonly given in the form of examinations or written tests to determine understanding of content knowledge and students' abilities to use that knowledge and critical thinking/analysis skills to demonstrate their understanding. The most meaningful results are generated by assessments that are cross-classroom and even cross-LEA. When a comprehensive social studies assessment system is in place, LEAs can more easily facilitate collaboration and the administration of common assessments.

Appendix G

Best Practices in Early Childhood Assessment

The early childhood years are commonly held to include children ages birth through age eight. For the purposes of this document, the age range addressed is limited to children served in public schools, specifically children ages three through eight. While the purposes of assessment in early childhood classrooms and schools are the same as those for older children, the design of a comprehensive assessment system in early childhood is necessarily different because of the age of the child. Assessment of children in this age range is significantly impacted by the nature of the young child. Early childhood development and learning is rapid, episodic, and highly influenced by experience. In the preschool and early elementary years, rates of development in all areas outpace growth rates at any other time and because children develop and learn so rapidly, assessments given at one point in time might not give a complete picture of a child's abilities. Additionally, young children have uneven access to environmental supports prior to formal schooling. The young child's performance on assessment tasks is highly influenced by their emotional states and the conditions of the assessment. Young children are not consistent in demonstrating their abilities. Additionally, the younger the child, the less likely they are to be familiar with the goals of formal testing and the less likely they are to understand the need to perform well during assessments. It is more difficult to use assessment methods which require sustained, focused attention and cooperation with the examiner. Young children are better able to demonstrate their abilities, than to talk or write as a means of showing what they know. For these reasons, careful attention must be paid to the

design of the early childhood assessment system and to the accuracy of the conclusions which can be drawn from the assessment information.

Guiding Principles

Assessment of young children should:

- Focus on goals which are developmentally and educationally important.
- Be aligned with learning standards.
- Include teacher observations, student work, checklists and rating scales completed by teachers and parents, criterion-referenced tests, curriculum-based measures, and norm-referenced tests.
- Rely on instruments selected by qualified professionals for reliability, validity, and appropriateness (e.g., include manipulatives vs. abstract pen/pencil tasks).
- Address all domains of learning, not just cognitive domains of literacy and mathematics.
- Be systematically obtained over time using repeated measures and using a variety of methods and sources in each domain.
- Rely on demonstrated performance during real, not contrived, activities.
- Not threaten children's psychological safety and self-esteem and be sensitive to children's motivation, interest, and attention span.
- Provide a clear benefit for children either in the services they receive or in the quality of their educational program.

Authentic Assessment

Authentic assessment generally results in the most valid information about what children know and are able to do. However, authentic assessment is often seen as time and cost intensive due to data collection, coding and entry, and data analysis requirements. Authentic assessment information needs to come from a variety of methods, including child observation, work samples, child interviews, and information gathered from a variety of sources, including parents and other relevant adults. Ongoing teacher observations of children have proven effective at shaping instruction to meet children's rapidly changing learning needs. However, these observations of children go beyond anecdotal notes and instead are used to complete developmental scales of proven reliability and validity. Examples of student work provide meaningful evidence of learning and development as long as the examples are aligned with learning goals and instruction.

Authentic assessment information is:

- Systematically obtained over time, across contexts, through multiple sources and methods.
- Generated using multiple methods for children to demonstrate what they know and can do – this is especially beneficial for children with disabilities.
- Collected in all domains of development and learning.
- Conducted in the natural environment as part of the child's daily experience – real knowledge measured in the context of real activities which are meaningful to children.
- Conducted in an ongoing manner, but should include more formal progress assessments at least twice a year.

Standardized Assessments

Standardized assessments, when administered, appropriately allow for fair comparisons among individual children and groups of children. They are considered objective, and both time and cost efficient. However, assessment experts advise that caution should be used when interpreting the standardized assessment results of young children's learning. There are a variety of issues which need to be taken into account when using standardized assessments as a part of a comprehensive early childhood assessment system. In general, obtaining valid scores on standardized assessments with children younger than age 8 is challenging because children may not understand the need to do well when tested, are inconsistent in their ability to demonstrate what they know and can do, and are easily influenced by their emotional states and testing conditions. In general, the long-term predicative validity of standardized assessments for children under the age of eight is not high. Additionally, adequate instruments do not exist to test in all domains or learning and development. Available tests primarily cover discrete components of language development, literacy, and mathematics. When standardized assessments are used, they should measure developmentally and educationally significant items and be aligned with early learning standards and program goals.

Because standardized instruments are so fallible, it is important that the measures selected meet rigorous standards of reliability and validity. Additionally, they must be administered and interpreted by trained professionals and scores should be interpreted within a broader assessment which includes information gathered from a variety of sources. Standardized assessments for young children must include enough items to

allow scores to represent a wide range of abilities and be sensitive enough to represent minor differences in skills. Assessments should be used for their intended purpose with their intended population and should be reliable, valid, and fair for that purpose; including culturally and linguistically appropriate. To some extent all standardized assessments are a measure of language, so it is critical that assessments be linguistically appropriate and that first and second language development are taken into account when selecting standardized assessment measures and interpreting the results. Lastly, standardized assessments must be administered in environments which correspond to the testing manual's specifications – usually controlled, relatively quiet areas with no distractions.

Conducting Early Childhood Assessment

Implementing comprehensive systems of early childhood assessment requires a substantial investment in training and professional development of teachers and assessors and ongoing quality checks. For effective child assessment, staff need to be educated about assessment principles and understand the limitations of standardized tests. Additionally, they need opportunities to practice classrooms assessment and interpret assessment information.

All assessors of young children should be knowledgeable about both early childhood development and learning and skilled in the use of early childhood assessment measures, whether they will be using authentic or standardized assessment measures. Assessors also must have knowledge about cultural differences and their impact on development and learning. When implementing systems of authentic assessment, care should be taken to ensure that both the selected tool and the use of that tool are both reliable and valid. Additional competencies

related to objectively documenting observations and reliably interpreting those observations against recognized standards are also necessary.

Screening and Identification

Approximately 10% of all children born each year have developmental disabilities or live in environments that place them at risk for delays in learning and development. It has been clearly demonstrated that children with developmental delays who receive early identification and intervention services require less intensive services or no services at all when they are older. Early identification not only effectively promotes positive outcomes for young children and their families, but also has substantial cost benefits to our educational systems and to society. However, in special education, there is a tension between the need to identify children with disabilities early and to provide intervention and the possible harm of labeling children and subjecting them to ineffective treatments. This is complicated by the fallibility of standardized assessment instruments used to determine eligibility for special education. Screening serves as a first step in the process of identifying children who have special needs and ensuring that they receive appropriate services and interventions. Additionally, federal and state special education regulations require that LEAs have a process for identifying children with disabilities beginning at age three.

Developmental Screening

In Rhode Island, all LEAs have established developmental screening programs called Child Outreach and seek to annually screen all children, ages three through five, in the following areas: Vision, Hearing, Speech/Language Skills, Social/Emotional Development, and General Development (including, but not limited to gross and fine motor skills, language, and cognition). Developmental screening, as conducted by Child

Outreach, samples developmental tasks to determine whether a child may experience a challenge that will interfere with the acquisition of knowledge or skills. Developmental screening tests focus on a child's ability to acquire skills as opposed to other types of screening which seek to find out what skills the child has already acquired. Examples of the latter types of screening include literacy screenings and readiness testing. Screening measures should never be used as the sole measure to identify children for special services as they are limited assessments and often administered by staff who are not trained to make interpretations based on the results. Screening and diagnostic assessment measures used to determine whether a child has a disability are designed to assess a child's ability to learn and are traditionally designed to be "curriculum free" and therefore should not be used for instructional planning purposes.

Diagnostic Assessment

Although diagnostic assessment tied to eligibility determination for special education is the more common occurrence in early childhood education, increasingly, results from diagnostic assessment of early academic problems are being employed to guide instruction and intervention. The purpose of diagnostic assessment in early childhood is to identify and secure appropriate intervention services for children whose development and learning is delayed. Diagnostic assessment entails a comprehensive process that addresses specific questions about the development, knowledge and skills of young children. During diagnostic assessment, information is obtained to develop an in-depth analysis and description of a child's level of development in an area or areas of concern. This involves identifying the nature and the severity of the developmental or learning problems comprehensively and systematically. The diagnostic assessment of early academic

problems typically considers criterion-referenced, grade-level academic expectations comparing the performance of the individual child to local norms and curriculum benchmarks. The use of norm-referenced diagnostic tests that are not directly connected with the curriculum should be limited in young children. A thorough diagnostic assessment in early childhood includes the following components:

- Use of a valid, reliable tool that is implemented with fidelity
- Developmentally appropriate evaluation tasks (e.g., manipulation of toys and materials for younger children versus pictures and pencil and paper tasks)
- Use of experienced diagnosticians well-versed in child development who have experience working with young children
- Collection of information from multiple sources, including families.

The results of diagnostic assessment are used to guide targeted interventions, as well as to determine eligibility for special education services. Results of diagnostic assessments should be combined with information gathered using authentic assessment methods in a problem solving process to establish potential causality for the delay and develop intervention strategies. The individualized instructional plan stemming from this diagnostic assessment of early academic problems includes the clear articulation of goals and the monitoring plan for measuring progress. The diagnostic assessment of early academic problems should be a part of the responsive system of supports and interventions serving all students in elementary and secondary education.

Eligibility for Special Education

Eligibility determination by the evaluation team is perhaps the most common example of diagnostic

assessment in early childhood. Eligibility determination across all ages requires the development of a full and complete evaluation plan consistent with guidelines requiring assessment of the child in all areas related to the suspected disability. Procedures, methods, criteria, and timelines for determining eligibility for children ages 3 to 21 are regulated through the Rhode Island Special Education Regulations available at: http://www.ride.ri.gov/Special_Populations/State_federal_regulations/Default.aspx

The composition of the evaluation team and process for evaluation is individualized in response to the needs of the child and family. Diagnostic procedures include multiple sources of information collected over multiple points in time, with special attention to the family perspective in gathering information and interpreting results. Best practices include developmentally appropriate, evidenced based, comprehensive evaluation tools and practices administered by highly qualified professionals with expertise in early childhood development. Many young children have limited social exposure making the commitment to assessment and evaluation in a non-discriminatory, culturally and linguistically sensitive process the highest priority.

Given the challenges of standardized assessment inherent with young children, diagnostic assessment in young children relies on authentic assessment practices involving observation of children in their natural environments. While eligibility determination is a primary purpose of diagnostic assessment, the evaluation and assessment process must be embedded into a comprehensive system which guides instruction and intervention and informs the development of the Individual Education Plan.

Ascertaining Outcomes

Early childhood assessment information may be used to monitor trends in children's learning and development, inform program improvement and staff development needs, and to evaluate programs. When using assessment information for these purposes, the assessments must meet high standards of technical adequacy – observational assessments by teachers can only be used when there is sufficient information that the tool and the administration are valid and reliable. When evaluating programs, assessment data should be combined with program data that measure the overall classroom quality and teaching practices – it should not be used as the sole measure of program effectiveness. Additionally, there must be alignment between the assessment tools used for the purposes of classroom instruction and those used for program evaluation. Large scale assessments should use sampling so as not to over burden children and to protect against the potential misuse of assessment information at the individual child level. Authentic assessment measures do not meet the strict standards for technical accuracy required for high-stakes accountability purposes and therefore also should not be used as the only source of evidence when making high-stakes decisions.

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